UAMS JOURNAL
UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES • FALL 2011

Closing the Distance

Better health through COMMUNICATIONS TECHNOLOGY

MESSAGE
from the Chancellor

Dear Readers,

It's my pleasure to welcome you to our inaugural issue of *UAMS Journal*, a publication that will show how the University of Arkansas for Medical Sciences is working to improve health in Arkansas and beyond.

Our purpose at UAMS is to engage in activities that result in better health — through patient care, education of health professionals, discovery of new knowledge through research, and translation of that knowledge into improvements in health and economic development.

Over time, this magazine will present a profile of the scope of what we do at UAMS. In this issue, we look at how UAMS uses communication technology to increase our impact on health by expanding our educational reach and research, and removing geography as a barrier to treatment.

As Arkansas' only comprehensive academic health sciences center, our focus on health unifies all we do.

You will read about our innovative ANGELS program that helps high-risk pregnant women and their newborns get medical care and our Arkansas SAVES program that makes livesaving stroke treatment available throughout the state. Telemedicine brings education to our students and continuing education to rural physicians. We are expanding broadband to 474 health care and education sites in Arkansas, and working with India, China and other regions of the world to bring an exchange of students and faculty for education and research.

As Arkansas' only comprehensive academic health sciences center, our focus on health unifies all we do. The vast array of resources under our watch not only includes a state-of-the-art medical center, but also Colleges of Medicine, Nursing, Pharmacy, Health Related Professions, Public Health and a Graduate School. Further exploration is underway within our Institutes on translational research, cancer, aging, psychiatry, the eye and the spine, as well as a statewide approach through our Area Health Education Centers. All of these efforts help us pave the way toward a healthier future.

So enjoy our story!

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

UAMS Journal
FALL 2011

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Communication Technology Delivers

THE POWER OF TECHNOLOGY is nowhere as breathtaking and life changing as it is when applied to improving the health of millions of people.

In Arkansas, parents can turn on their home computer to talk to their preemies and watch them sleep in the hospital's neonatal intensive care unit. Stroke patients brought to their community hospital can be quickly and accurately diagnosed and treated by stroke neurologists located in metropolitan areas.

Pharmacy, medical and nursing students attending class in one part of the state can hear, see and ask questions of a professor teaching in a classroom hundreds of miles away. Medical professionals can take continuing education classes without driving great distances that would cost them greater time away from their jobs and families.

Medical records and images can be transported in seconds between physicians consulting on a hard-to-diagnose-case. Researchers can hasten results from their labs to become life-saving treatments by pooling statistics online with researchers across the country.

At the University of Arkansas for Medical Sciences (UAMS), the use of communication technology to deliver health care and continuing health education as well as improve research capabilities has grown in leaps and bounds since its beginnings in the 1990s.

At the University of Arkansas for Medical Sciences (UAMS), the use of communication technology to deliver health care and continuing health education as well as improve research capabilities has grown in leaps and bounds since its beginnings in the 1990s.

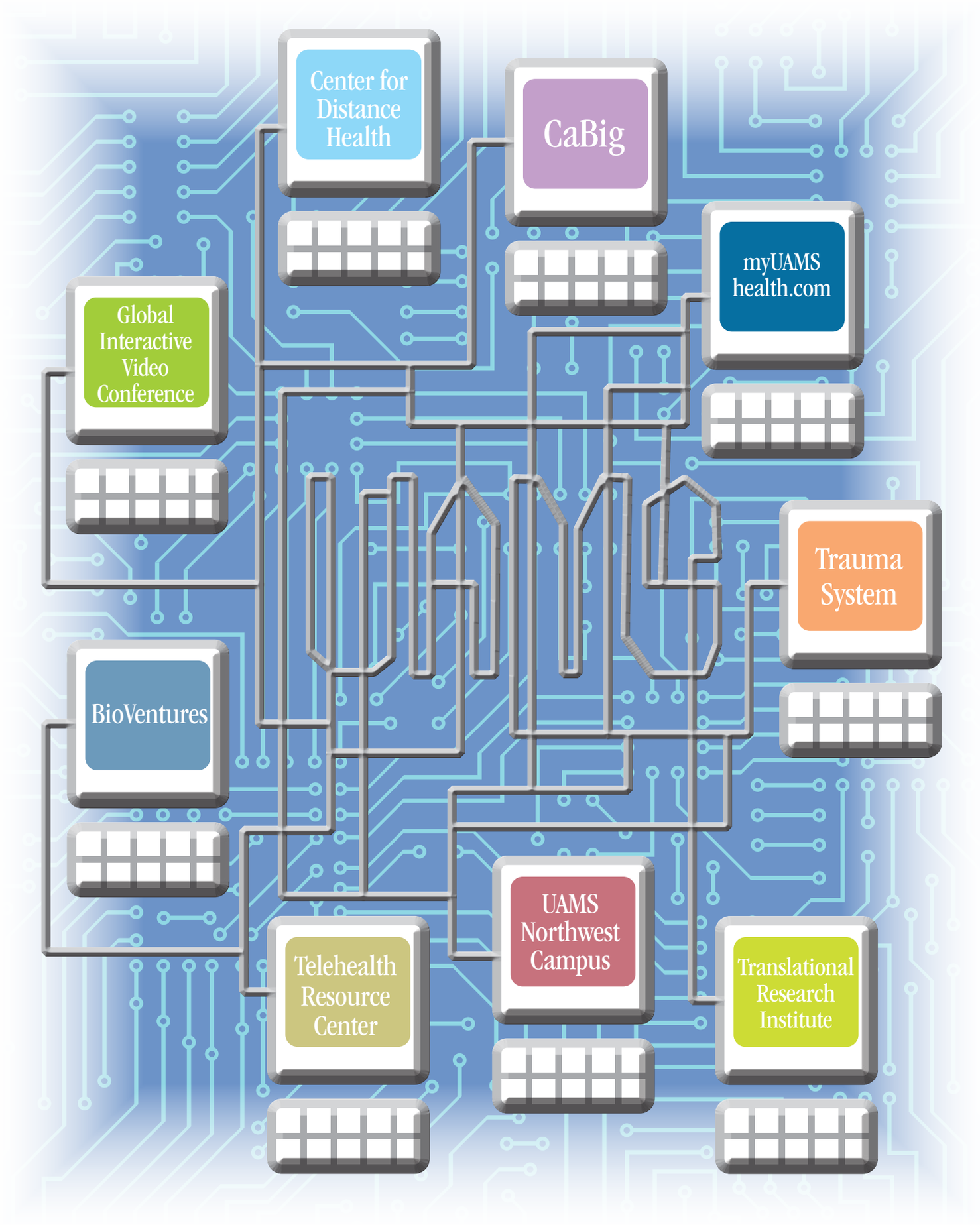
Arkansas' rural nature was a driving force in finding ways to meet the health care needs of its population. Early video technology was used to deliver continuing education to rural hospitals and to make advanced nursing degrees available in rural areas.

Then in 2003, UAMS took another huge step, and telemedicine — allowing doctor and patient to communicate in real time over interactive video — was born with the creation of a high-risk pregnancy program that worked to decrease the number of babies born throughout the state with severe health problems.

Since then, UAMS' use of communication technology has expanded to include:

- A Center for Distance Health in the College of Medicine that works to decrease disparities in health care
- A national virtual information network for researchers and physicians to more easily share data and knowledge for cancer research and treatment
- A patient portal for access to medical tests and online bill payment
- A research data repository
- A statewide trauma system
- A second campus for educating health professionals
- A regional telehealth resource center to provide technical assistance and training in establishing telehealth programs in a three-state area
- Opportunities for marketing telemedicine tools created at UAMS
- International partnerships with medical schools and hospitals

In 2010, UAMS received a $102 million federal grant to establish or upgrade broadband connections and equipment at 474 health care and education sites across the state. When the three-year project is complete, Arkansas will be one of the best-connected states in the country, bringing health care and health education within reach of every Arkansan. ❖


Center for Distance Health
CaBig
myUAMS health.com
Global Interactive Video Conference
Trauma System
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In the Beginning

Rural Hospital Needs and College of Nursing Spark Telehealth

By David Robinson

IN THE MID 1990s, UAMS' Ann Bynum, Ed.D., was challenged by a mandate to share UAMS resources with rural hospitals, many of which were closing their doors.

"We wanted to help them by exporting UAMS services," said Bynum, who at the time directed the UAMS Rural Hospital Program and was director of program development for the UAMS Area Health Education Centers (AHEC) Program.

"That seemed like the perfect answer for us to export our programs."

The focus was on sharing the medical knowledge that was concentrated on the UAMS campus. Initially, faculty were asked to drive to distant communities to deliver continuing education programs, but time and costs made that impractical on a regular basis.

A light bulb went on for Bynum one day when she read about the emergence of interactive video communications.

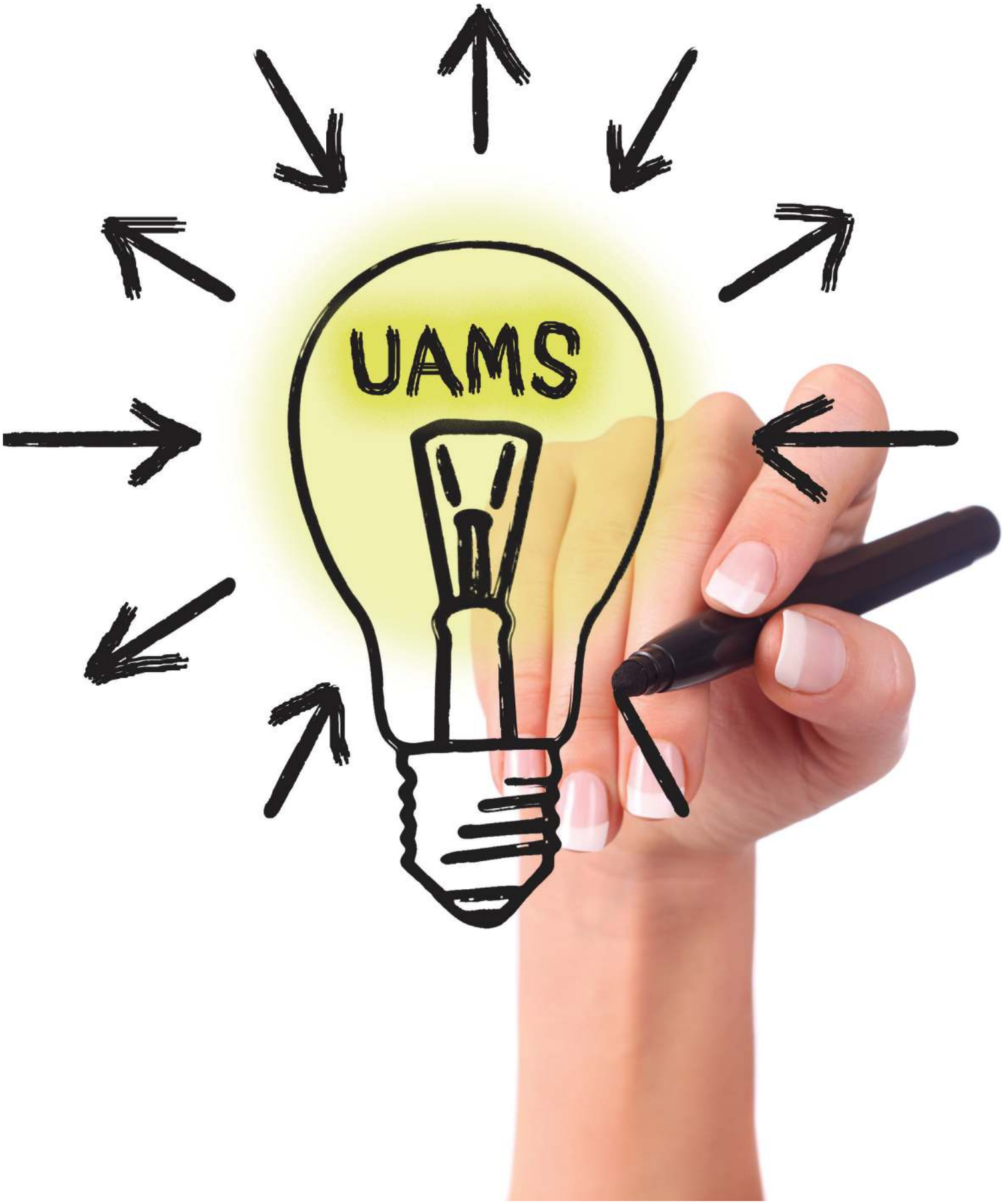
"That seemed like the perfect answer for us to export our programs," said Bynum, who now is assistant vice chancellor for UAMS Regional Programs and director of the Center for Rural Health.

About the same time, then-College of Nursing Dean Linda Hodges, Ed.D., R.N., was leading an effort to make advanced nursing degrees available in rural Arkansas using interactive video, and later, the Internet.

Not only did the communications technology arrive at the right time for Bynum and Hodges, grant funds were available too. In 1994, Hodges had received $407,240 in state grants to link UAMS to its AHECs in Fayetteville, Fort Smith, Texarkana, El Dorado and Jonesboro.

The same year, Bynum received a $500,000 grant that enabled interactive video links between UAMS and hospitals in Helena-West Helena and Warren.

Working in collaboration with nursing schools at the University of Central Arkansas and Arkansas State University, Hodges led the


UAMS

establishment of the R.N.-to-B.S.N. program that was taught using interactive video.

In 1999, Hodges received a $1 million federal grant to begin the state's first online higher education degree program. The Internet was used for the bachelor's program as well as graduate courses.

"Before our distance education program, there was no way nurses who lived out in the state could get an advanced degree without driving all the way to Little Rock," Hodges said. "I am very proud of UAMS, the AHEC program and the nursing schools in the state since we were major leaders nationally in the area of telecommunication and online education."

In the mid 1990s, an interactive video unit cost $80,000 compared with $13,000 to $30,000 today.

As Hodges had hoped, more than 50 percent of nurses who received their bachelor's degree through the distance education program went on to even higher levels of nursing. Some got their master's degrees and became instructors while others became nurse practitioners. Both helped fill critical voids in Arkansas' health care system.

Grant funding for UAMS' telehealth outreach program with rural hospitals continued to flow, and by 2006, more than $6 million in grants had been acquired by the UAMS Rural Hospital Program.

While the emphasis was on education, UAMS faculty sometimes used interactive video to provide patient consults, but there was no mechanism for reimbursement.

That began to change in 2002, when the newly proposed UAMS ANGELS program was included in a grant application. ANGELS, (Antenatal and Neonatal Guidelines and Education Learning System) uses telemedicine to make its maternal-fetal medicine and neonatal medicine expertise available in distant hospitals.

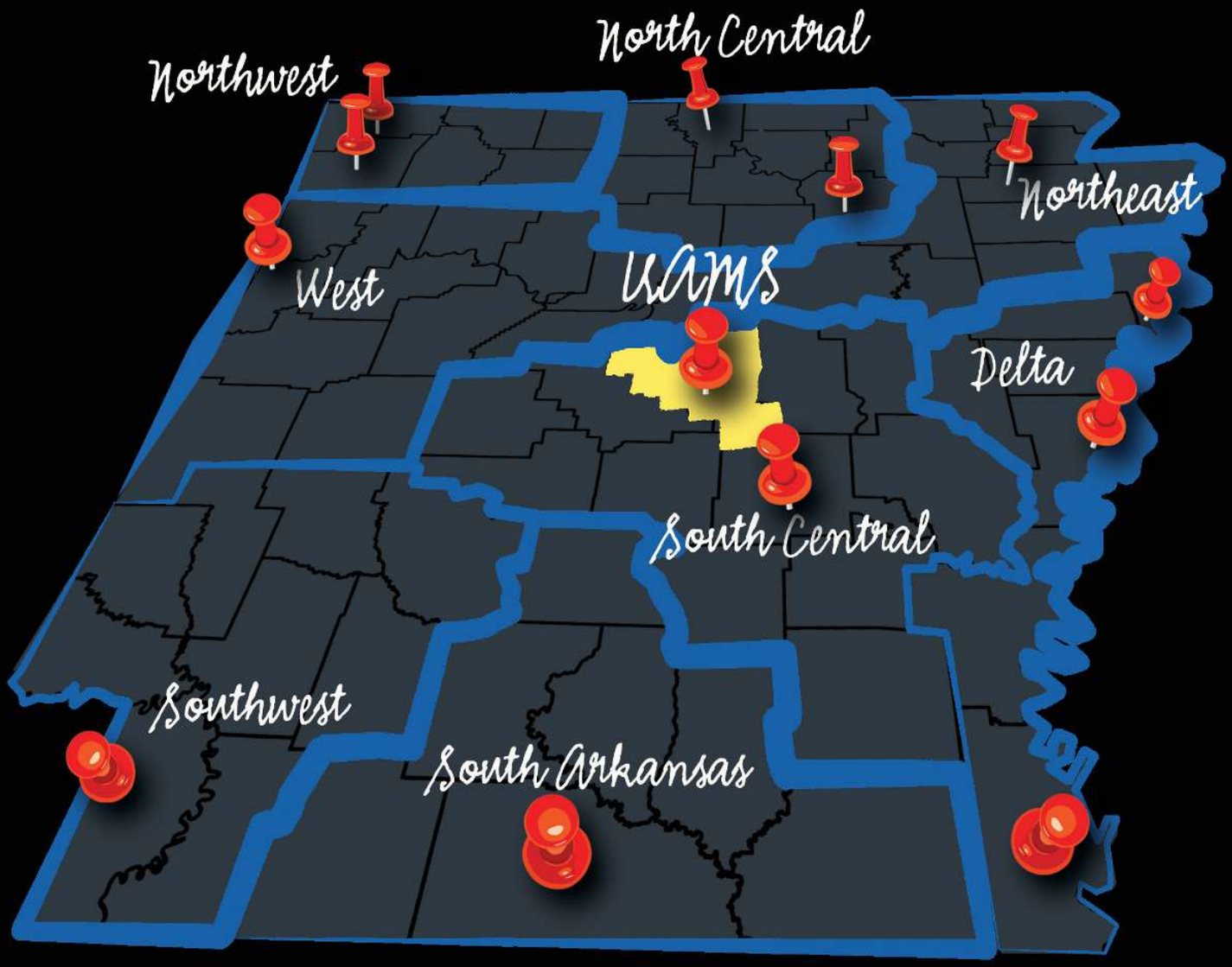
ANGELS is the brainchild of UAMS' Curtis Lowery, M.D., who is director of the UAMS Center for Distance Health, director of the Translational Research Institute and chair of the College of Medicine's Department of Obstetrics and Gynecology.

"Dr. Lowery just took to it like a duck to water and started building the clinical portion of our interactive video program," Bynum said. "That's what it needed, a physician champion to get that part of it going, and he's just taken off."

Today, UAMS has 130 distant sites in its interactive video network, including all 86 rural hospitals connected to the UAMS campus. Within the last year, the Center for Rural Health recorded more than 6,000 participants in its continuing education programs provided via telehealth to rural hospitals and the AHECs. The center also broadcasted 425 continuing education programs for physicians, nurses, pharmacists and all the allied health professions.

Bynum said there's no doubt that interactive video is improving health care in Arkansas. Participants evaluate every continuing education program on the benefit to their practice and patient care, and they nearly always receive the highest score of five, she said.

"There's so much knowledge here at UAMS, and there is such a need in rural Arkansas for a connection to knowledge," she said. "Communications technology has made it possible for us to share our knowledge across the state and beyond." ❖



Area Health Education Centers

AHECs Provide One Platform for Expanding Distance Health

By David Robinson

EDUCATION, clinical subspecialty care and — coming soon — research are on the menu of outreach services provided via interactive video at UAMS Area Health Education Centers (AHECs).

Located strategically across the state in the 1970s, the AHECs have expanded their education and patient care roles thanks to high-speed communications links with the UAMS campus. Interactive video at the AHECs offers a platform for more subspecialty follow-up care from the main campus, and it enables the AHECs to become Patient Centered Medical Homes, a designation by the National Committee for Quality Assurance.

Telemedicine allows seamless live two-way communication and the use of instruments and monitors, such as ultrasound and fetal echocardiogram equipment, designed for distance medicine.

The use of distance health education at the AHECs began when the UAMS College of Nursing was awarded a series of state higher education grants beginning in 1992 to establish a Bachelor of Science in Nursing degree program to registered nurses around the state.

The use of interactive video for patient care in the AHEC clinics was pioneered by UAMS' Curtis

Lowery, M.D., a maternal-fetal medicine specialist who in 2002 established the ANGELS (Antenatal, Neonatal Guidelines Education Learning System) program. Through ANGELS, UAMS has used telemedicine to help manage and improve outcomes of high-risk pregnancies in rural Arkansas, including OB patients at the AHEC clinics.

Telemedicine allows seamless live two-way communication and the use of instruments and monitors, such as ultrasound and fetal echocardiogram equipment, designed for distance medicine.

From a management perspective, interactive video has brought all the AHECs and UAMS together like never before, said Ann Bynum, Ed.D., assistant vice chancellor for UAMS Regional Programs and director of the Center for Rural Health. Nearly all directors' meetings involve interactive video, with all participants visible on their conference room screens.

"Interactive video has been fantastic for our team of AHEC directors," Bynum said. "They get to stay in their communities and their offices and save travel dollars."

The ANGELS program regularly uses telehealth for lectures and weekly OB case conferences to family medicine residents and faculty at the AHECs as well as other primary care physicians around the state. All 86 rural Arkansas hospitals also have interactive video links with UAMS.

"It's extremely important that our family medicine residents and private practice physicians know the guidelines for OB patients," said Tina Benton, director of the ANGELS program. "Not only do we present cases, but the AHECs can present cases, so it's a real sharing of information."

In more recent years, the ANGELS program has included the management of neonates, ensuring the highest level of care for very-low-birth-weight babies at 22 hospital nurseries across the state.

Today, each of the eight AHECs has at least three interactive video units that can link with any of the 114 units on the UAMS campus in Little Rock. In addition, the UAMS Center for Distance Health — established in 2006 — has expanded telemedicine's capacity to allow nearly 300 simultaneous connections.

Such capacity has opened the door to additional subspecialty care offerings. For example, Benton said, the Department of Neurology in the UAMS College of Medicine is planning to offer follow-up care at AHECs through telemedicine. ANGELS is performing community needs assessments to determine subspecialty care needs in each AHEC region.

"We want to offer our subspecialty care where it is needed," Benton said. "We don't want to duplicate services that may already exist in a community."

The AHECs also will have an important role in future research projects, especially as UAMS continues rolling out translational research projects as part of a $20 million 2009 Clinical and Translational Science Award. Using telemedicine, the AHECs could become a conduit for additional clinical trials subjects. In one upcoming study, UAMS will test the benefits of telemedicine on weekly follow-up care of patients with hyperfunctional speech disorder.

Follow-up care typically has a no-show rate of 30 to 40 percent on the UAMS campus, Benton said, compared to less than 15 percent for clinical telemedicine patients.

"Patients who live far away simply can't travel every week due to issues such as work obligations, finances and transportation," Benton said. ❖

"We want to offer our subspecialty care where it is needed."

Interactive Video Crucial to Northwest Campus

By Jon Parham

College of Pharmacy students at UAMS Northwest

WHEN A STUDENT at the UAMS Northwest campus walks into a classroom in Fayetteville, he or she may as well be entering a class on the main UAMS campus in Little Rock.

Through interactive video and distance education tools, the 200 miles between central Arkansas and northwest Arkansas are virtually bridged. Medical and pharmacy students in Fayetteville hear the same lectures at the same time from the same faculty members and can ask questions right then, just as their fellow students in Little Rock.

UAMS established the regional campus as a way to address growing shortages of health care professionals in Arkansas at a time when demand for health care is increasing. Technology has been a key ingredient in the campus, which welcomed its first students in 2009.

"While our regional campus allows us to expand enrollment, our technology infrastructure ensures that our academic programs remain seamless between the two campuses," said Peter Kohler, M.D., vice chancellor for UAMS Northwest.

The first six medical students to complete their third and fourth years at the regional campus graduated in May 2011. By fall 2011 the campus included the first group of 21 third-year pharmacy students who joined 19 medical students. Eventual enrollment will total more than 300 medical, pharmacy, nursing and allied health professions students, along with resident physicians.

The fledgling campus got a boost from a $650,000 grant from the Walmart Foundation in 2010 that funded the learning technology. Four classrooms and a conference center are now equipped with audio-video linkups with plans to expand the technology into conference rooms for student and faculty meetings, continuing education and other needs.

The classrooms feature a hookup with dual screens, allowing students to see the lecturer on one screen and then any presentation, video or computer screen on the other. Classroom microphones are activated when a student speaks and a camera automatically zooms in so that the lecturer can see who is asking a question and respond directly.

Tests can be simultaneously administered to students at the regional campus via a computer lab adjacent to the regional campus' library.

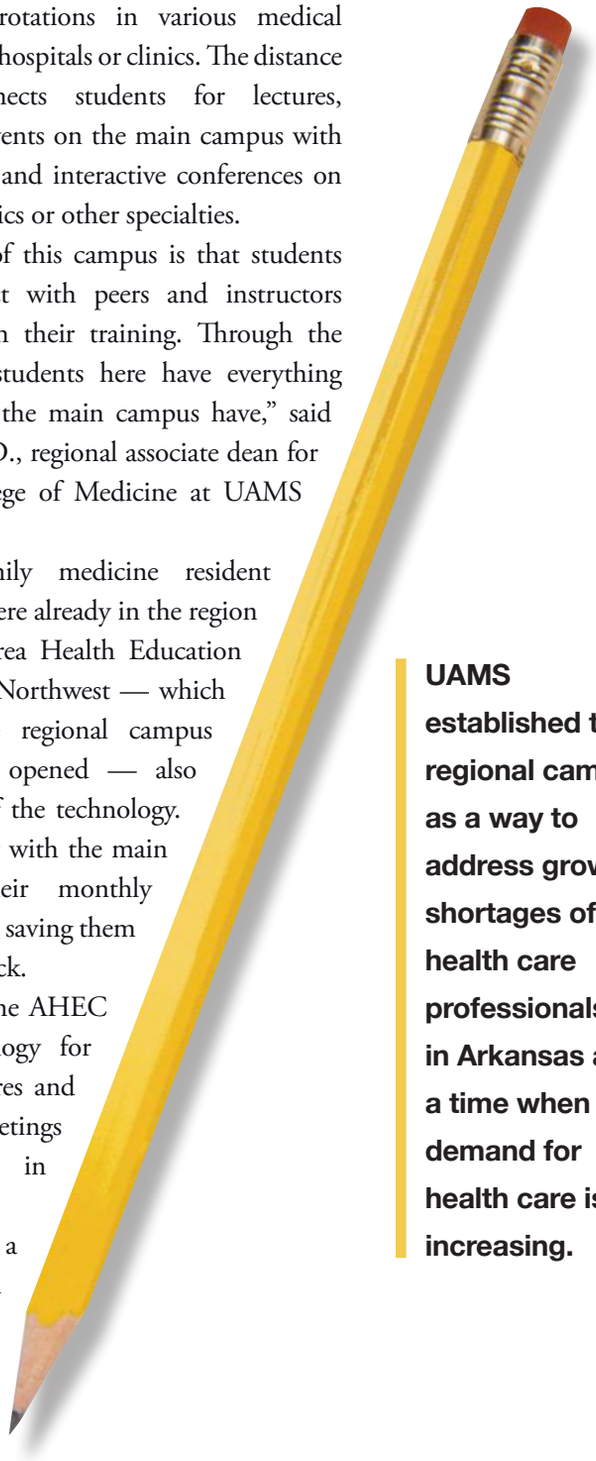
The third and fourth years of medical school mainly involve rotations in various medical specialties at local hospitals or clinics. The distance technology connects students for lectures, Grand Rounds events on the main campus with visiting lecturers, and interactive conferences on obstetrics, pediatrics or other specialties.

"The beauty of this campus is that students here can connect with peers and instructors and connect with their training. Through the technology our students here have everything that students on the main campus have," said Chris Smith, M.D., regional associate dean for the UAMS College of Medicine at UAMS Northwest.

The 27 family medicine resident physicians who were already in the region at the UAMS Area Health Education Center (AHEC) Northwest — which relocated to the regional campus facility when it opened — also take advantage of the technology. They can connect with the main campus for their monthly resident meetings, saving them a trip to Little Rock.

In addition, the AHEC uses the technology for educational lectures and administrative meetings with colleagues in Little Rock.

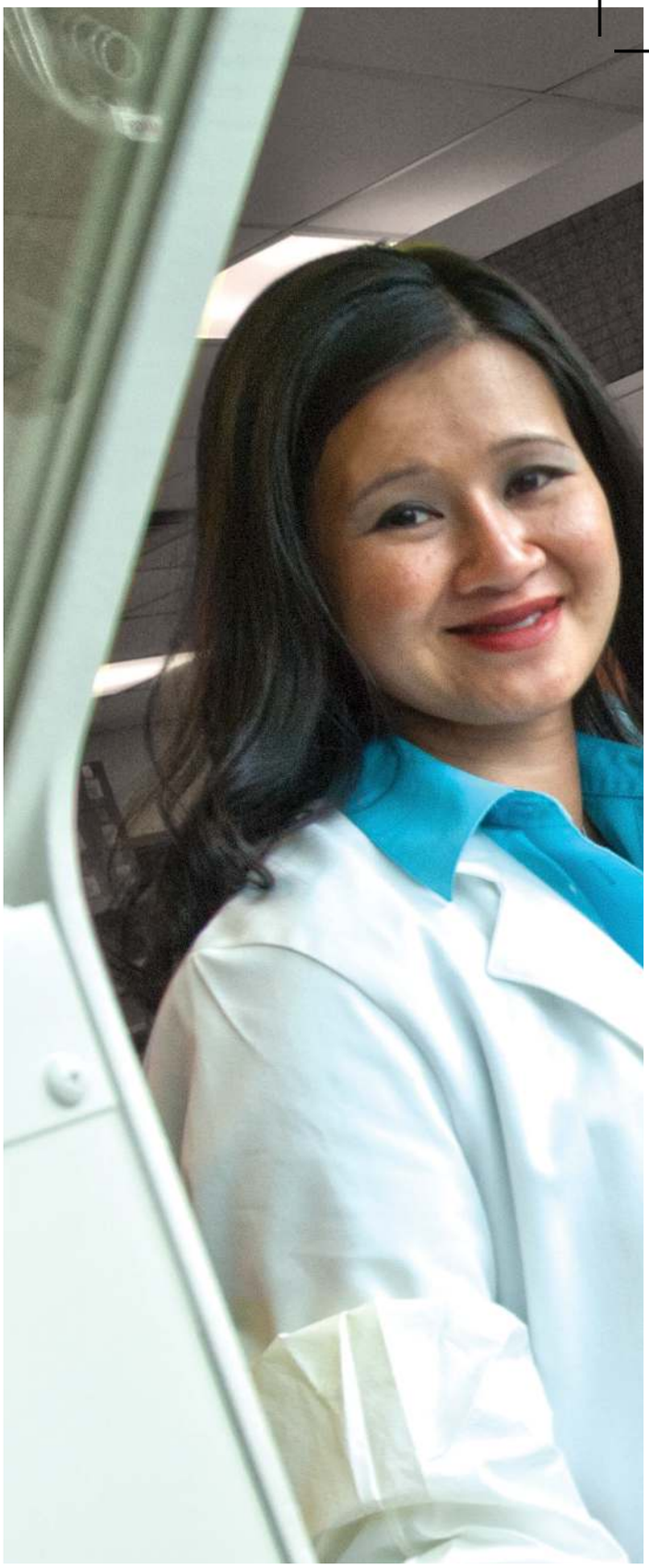
"It has been a godsend," said Robert Gullett, M.D., AHEC Northwest director. ❖



UAMS established the regional campus as a way to address growing shortages of health care professionals in Arkansas at a time when demand for health care is increasing.

Nuclear Pharmacy Training Delivers Online

By Nate Hinkel



AS ONE OF ONLY a handful of universities in the country to offer nuclear education and training for traditional student pharmacists, the UAMS College of Pharmacy also leads the way training students all over the world with its innovative online program.

While it was the UAMS College of Health Related Professions (CHRP) that began offering a Nuclear Medicine Technology online program in 1998, it was the vision of Nicki Hilliard, Pharm. D., a 1983/1996 graduate of the UAMS College of Pharmacy, that transformed it. Hilliard, who began the nuclear pharmacy program at UAMS, recognized an early opportunity to merge UAMS efforts with the University of New Mexico (UNM), which had established the nation's first commercial radiopharmacy in the early 1970s.

The program trains nuclear pharmacists, nuclear cardiologists, pharmacy technicians and general radiation workers.

"The three of us came together in 1999 to launch an educational consortium to help expand specialty education and training beyond the walls of the universities and meet the growing workforce demand," Hilliard said.

The program trains nuclear pharmacists, nuclear cardiologists, pharmacy technicians and general radiation workers. A $440,000 grant the Nuclear Education Online program received from the U.S. Department of Education Fund for the Improvement of Post-Secondary Education (FIPSE) allowed recent expansion of online educational programs to train nuclear cardiologists, radiologists, oncologists, nuclear pharmacy technicians, Positron Emission Tomography (PET) cyclotron operators and shippers and transporters of radiopharmaceutical supplies.

The program has graduated more than 1,200 nuclear professionals and hundreds of trained general radiation workers from all over the world

Dao Le, Pharm.D.,(left) and Nicki Hilliard, Pharm.D., have nurtured the nuclear pharmacy program into one of the most respected in the country.

and ensures online graduates meet the education and training requirement necessary to be an authorized nuclear pharmacist by the federal Nuclear Regulatory Commission.

"Through our online program, an existing pharmacist can be up and running with a job as a nuclear pharmacist within a few months," Hilliard said. "We get inquiries from all over the world from pharmacists looking for a career change or additional training." ❖

A Lifeline for Newborns

Telemedicine connections prove their worth to nurseries

By David Robinson

THE NEWBORN BOY at Washington Regional Medical Center in Fayetteville had just arrived in the neonatal intensive care unit when nurses noticed he was struggling to breathe.

Matthew Cheadle, M.D., a neonatologist at the hospital, suspected reverse differential cyanosis, a rare heart defect that only reveals itself after birth.

He set up the NICU's echocardiogram and called Arkansas Children's Hospital (ACH) in Little Rock, where he talked to Thomas H.H. Best, M.D., a University of Arkansas for Medical Sciences (UAMS) pediatric cardiologist based at ACH.

"We actually decrease the number of transports a little bit by using telemedicine."

Using the latest communications technology linking ACH with Washington Regional, Best was able to confirm Cheadle's diagnosis by viewing live, high-resolution video of the heart. Cheadle put the baby on a ventilator and arranged for immediate air transport to ACH, the only hospital in Arkansas with the ability to provide the required surgery.

"He got to his surgery in as good a condition and as fast as he could under any circumstances," Cheadle said. "It was almost as if he had been born at Children's."

Not all telemedicine consults are so dramatic, but telemedicine is an exciting advance in the care of many Arkansas newborns as part of UAMS ANGELS (Antenatal and Neonatal Guidelines, Education and Learning System).

Telemedicine is being used in NICUs to assess for retinopathy of prematurity in very-low-birth-weight neonates, in obstetrical units to provide fetal ultrasonography, in cardiology to perform echocardiography, and to provide education and family support.

UAMS neonatologist Whit Hall, M.D., leads a telemedicine program that partners UAMS, a Level III perinatal center, with 22 outlying hospital nurseries. Through live video conferencing, Hall meets with the nursery physicians at all 22 sites each Monday, Wednesday and Friday, focusing on the care of very-low-birth-weight neonates (less than 1,500 grams).

Very-low-birth-weight neonates are among the most critically ill and fragile patients. Mortality rates range from 15 percent to 25 percent, and those who survive often have serious, chronic health conditions.

"Telemedicine offers a novel solution for getting these high-risk newborns the tertiary care resources they need," Hall said. "We know that they have lower mortality rates when they're born in perinatal centers."

Consultation and collaboration through telemedicine is making regionalization of neonatal care a reality with fewer very-low-birth-weight deliveries in hospitals without neonatal intensive care units.

Hall recently put the practice to the test as the principal investigator in a nine-month study of UAMS' telemedicine partnership with nine hospital nursery sites around the state.

Called TOUCH — Telemedicine Outreach Utilizing Collaborative Healthcare, the program led

Matthew Cheadle, M.D., a Fayetteville neonatologist

to trends in improved regionalization of neonatal care and fewer very-low-birth-weight deliveries in hospitals without neonatal intensive care units.

The study found that the proportion of very-low-birth-weight neonates delivered in telemedicine hospitals without NICUs decreased from 13.1 percent to 7 percent.

"About 10-20 percent of the time we see things on video that help us make better decisions as opposed to using only the telephone," Hall said. "What we've found is that we actually decrease the number of transports a little bit by using telemedicine."

In addition, TOUCH has improved evidence-based clinical practice compliance; provided better coordination when managing discharges of very-low-birth-weight neonates and high-risk OB patients, and made fetal echocardiography available to identify congenital heart conditions in more high-risk obstetrical (OB) patients in the partnering hospitals.

Although the study revealed positive effects on the care of neonates, Hall said telenursery programs need to be studied on a larger scale to reach more definitive conclusions. ❖

Rebecca Smith, R.N., adjusts the Angel Eye camera over a baby in the UAMS neonatal intensive care unit.

UAMS Angel Eye Drawing National Attention

By David Robinson

Developed in 2010 and integrated with equipment that's part of each Isolette, the web camera system is believed to be unique in the United States.

RENOWNED for its use of communications technology, UAMS has reached another high-water mark with a camera system that allows distant family members to see and talk to their newborns in the UAMS neonatal intensive care unit via the Internet.

Developed in 2010 and integrated with equipment that's part of each Isolette, the web camera system is believed to be unique in the United States.

Families and NICU nurses have embraced the technology, and hospitals around the country are inquiring about them, said Sarah Rhoads, D.N.P., A.P.N., who spearheaded the camera innovation.

"We have 30 other institutions interested in using the Angel Eye cameras right now," said Rhoads, an assistant professor in the Department of Obstetrics and Gynecology in the UAMS College of Medicine. "It's really exciting."

Rhoads is working with UAMS BioVentures, which helps commercialize discoveries at UAMS, and UAMS' IT Department to begin marketing the Isolettes.

UAMS now has 21 Angel Eye cameras for its 58 private NICU patient rooms. Funding for the Angel Eye program came from the Gertrude E. Skelly Charitable Foundation, which donated $31,750 in 2010 and $31,500 in 2011.

The redesigned camera is mounted in a protective casing on an arm that swings above the Isolette. When a nurse positions the camera above the baby, it provides a wide view, ensuring that the baby is seen by family back home or wherever they have computer access. The new cameras, available 24 hours a day, have better picture quality and are capable of showing the baby in total darkness.

The new audio feature regulates sound levels no matter how loud it is coming through the Isolette speaker from a parent's microphone. Whether it's a barking dog or a loud sibling, the audio system limits the sound in the Isolette to 65 decibels.

UAMS ANGELS and NICU leaders believe the camera system will have long-term benefits for the physical and emotional health of both the baby and the parents. A recent survey and a qualitative study by Rhoads have confirmed benefits of the program. ❖

Spreading Its Wings By David Robinson

HAVING ESTABLISHED itself in Arkansas, the UAMS ANGELS program is now using communications technology to provide continuing education to doctors and nurses in eight states of the Delta region.

ANGELS, (Antenatal & Neonatal Guidelines, Education and Learning System) is preparing nurses and doctors to respond to non-routine, high-risk health factors for pregnant mothers, infants and children.

In its first year, the program delivered more than 278 continuing education hours to health care providers who treat high-risk pregnancies and newborns.

"We expect this number to triple in year two with the implementation of our new learn-on-demand website: http://cdh.uams.edu/LearnOnDemand," said Sarah Rhoads, D.N.P., A.P.N., assistant professor and the principal investigator on the $300,000, three-year federal grant.

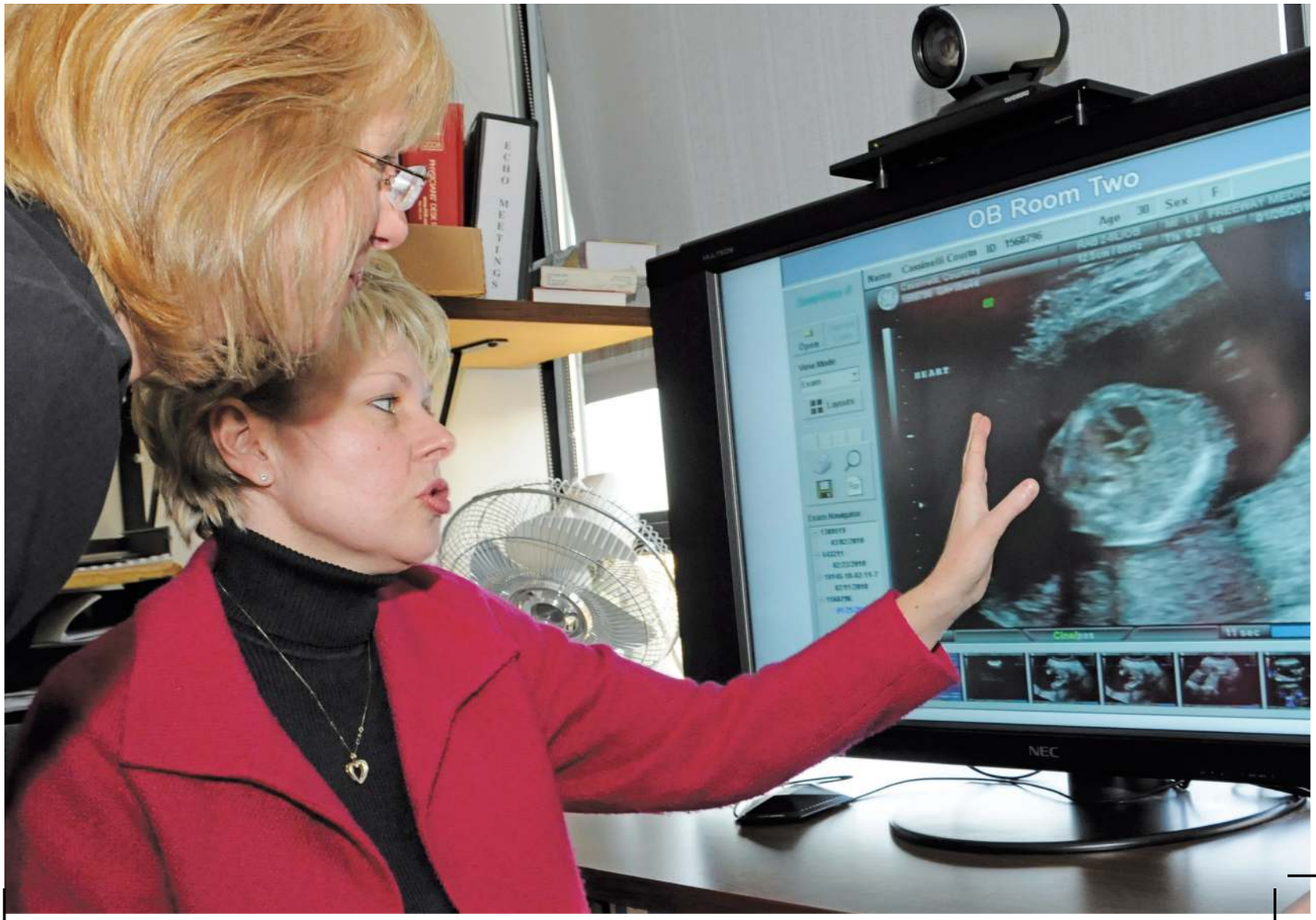
As a result of the grant, for the first time, UAMS is able to live-stream its events and access archived presentations for continuing education hours, Rhoads said.

The U.S. Department of Health and Human Services (HHS) grant was announced last year by U.S. Sen. Mark Pryor and then-U.S. Sen. Blanche Lincoln and-U.S. Rep. Mike Ross and then-U.S. Reps. Marion Berry and Vic Snyder.

"This funding will enable UAMS to reach more rural health care professionals and provide them with training that is central to the evidence-based practice of medicine," Rhoads said. ❖

In its first year, the program delivered more than 278 continuing education hours to health care providers who treat high-risk pregnancies and newborns.

Renee Bornemeier, M.D, points to an ultrasound image.



Seeing Is Believing

Telemedicine delivers dramatic results for Arkansas stroke patients

By David Robinson

ONE AFTER ANOTHER, members of the UAMS stroke team who had worked to save David Bullock came by his hospital room.

"They couldn't believe it; they said they had to see for themselves," Bullock, 52, said. "One of the doctors said it was a miracle."

Despite having a severe stroke in DeWitt that was later complicated by four subsequent seizures, Bullock went home from UAMS two days later with no discernable, lingering effects.

For Julie Hall-Barrow, Ed.D., program director for AR SAVES and education director for the UAMS Center for Distance Health, the case illustrates the life-saving power of telemedicine, even for patients who ultimately must be transported for subspecialty care that is available in Arkansas only at UAMS.

"We know from many, many studies that the earlier you intervene the better the chances are for somebody to come out of a stroke with no disability or far less disability," Hall-Barrow said. "Mr. Bullock is the ultimate example where communications technology made successful treatment possible."

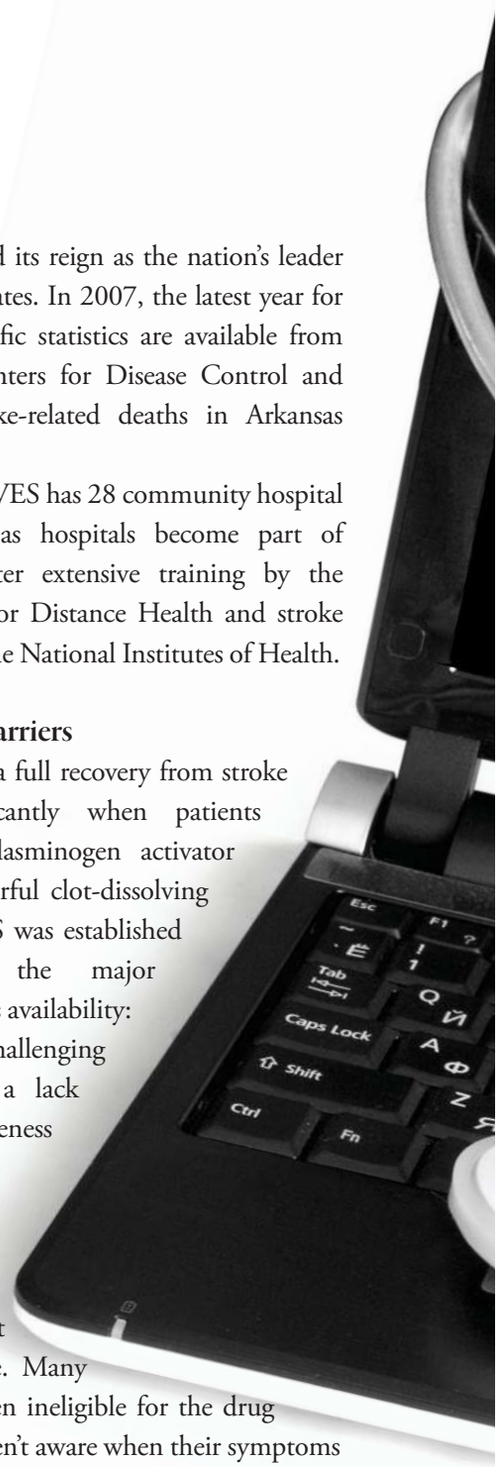
Since the program began, more than 700 patients have received stroke consults through AR SAVES, and more than 130 patients have received t-PA.

AR SAVES

Bullock was the beneficiary of AR SAVES (Arkansas Stroke Assistance through Virtual Emergency Support), a UAMS-led telemedicine program to improve stroke outcomes statewide. Established in November 2008, the program removes the barriers to timely care thanks to partnerships that involve the UAMS Center for Distance Health, Arkansas Department of Human Services, Arkansas Department of Health and Sparks Regional Health System in Fort Smith.

Through AR SAVES, health officials hope that Arkansas will end its reign as the nation's leader in stroke death rates. In 2007, the latest year for which state-specific statistics are available from the national Centers for Disease Control and Prevention, stroke-related deaths in Arkansas totaled 1,873.

So far, AR SAVES has 28 community hospital partners. Arkansas hospitals become part of the program after extensive training by the UAMS Center for Distance Health and stroke certification by the National Institutes of Health.



Overcoming Barriers

Prospects for a full recovery from stroke improve significantly when patients receive tissue plasminogen activator (t-PA), the powerful clot-dissolving drug. AR SAVES was established to overcome the major obstacles to t-PA's availability: limited time, challenging geography and a lack of public awareness about stroke.

Intravenous t-PA must be given within 4.5 hours of the first signs of a stroke. Many patients have been ineligible for the drug because they weren't aware when their symptoms began or didn't interpret their symptoms as an emergency. A public awareness campaign is a big part of AR SAVES, with staff working to educate communities about stroke.

The telemedicine component helps overcome the issues of geography and time. The high-speed


AR SAVES

connections link patients who arrive at their local hospitals to one of the five stroke neurologists who are part of the AR SAVES team. The stroke neurologist can then advise whether the patient should receive t-PA. Making the correct stroke diagnosis is critical when deciding whether to use t-PA. If the patient has a hemorrhagic stroke rather than an ischemic stroke, the drug will cause further brain damage.

Timely Connection

Bullock's stroke occurred on a hot June day as he climbed the steps to his family's crop-dusting business. His wife, Shannon, an EMT II, witnessed the fall, rushed to his aid and called 911. An ambulance arrived in less than 10 minutes, and the DeWitt Hospital, about 1.5 hours from UAMS, was linked to a UAMS stroke neurologist through AR SAVES in about an hour.

With live two-way audio/video, and with assistance from DeWitt Hospital staff, the stroke neurologist could see Bullock's right-side weakness, loss of peripheral vision on the right, and inability to speak, understand spoken language, and feel touch or a pinprick on that side.

The live connection allowed the stroke neurologist to determine that Bullock's stroke was large and severe, something that wouldn't have been evident if just relying on a telephone conversation.

Stroke Pathway

For a stroke as large as Bullock's, t-PA isn't enough, so the stroke neurologist urged his immediate air transport to UAMS and simultaneously activated UAMS' "stroke pathway," which ensures that UAMS subspecialists and staff, imaging devices and procedure room are ready when the patient arrives.

"The minute he hit the door, all the doctor had to do was lay an eye on him to know if he was better or not," Hall-Barrow said. "We weren't starting from scratch, so there was no time wasted, and that's tremendously helpful."

Bullock, who arrived at UAMS within about two hours of his stroke, needed aggressive, acute endovascular therapy that could be provided only by one of UAMS' interventional neuroradiologists — in this case, Eren Erdem, M.D., who is internationally known for his advanced catheter-based treatments.

Subspecialty Care

Erdem used the Penumbra device, one of the latest devices for retrieving blood clots that works by fragmenting and sucking the clot. Bullock's clot was affecting two-thirds of his left hemisphere, but Erdem was able to open the vessel and restore blood flow before extensive damage occurred.

"The device was very important to the outcome, but just as important was the ability to make the right decision and act very fast, which couldn't have been done without a team of highly experienced doctors, the stroke team and the AR SAVES program," Erdem said.

Following his emergency treatment, Bullock was taken to the neurointensive care unit where his care was overseen by one of just two neurointensivists in Arkansas, both at UAMS.

"Everything went perfectly," Hall-Barrow said. "You can't hope for a better outcome." ❖

Back in the Pulpit

By David Robinson

PARALYZED ON HIS LEFT SIDE and in the UAMS intensive care unit, the Rev. William L. Robinson of North Little Rock said he was on the verge of depression.

He had seen people crippled for life by stroke, and he didn't want to become another casualty.

"I was sad, and I was asking God to just have mercy on me," said Robinson, 50, who speaks to congregations all over the United States.

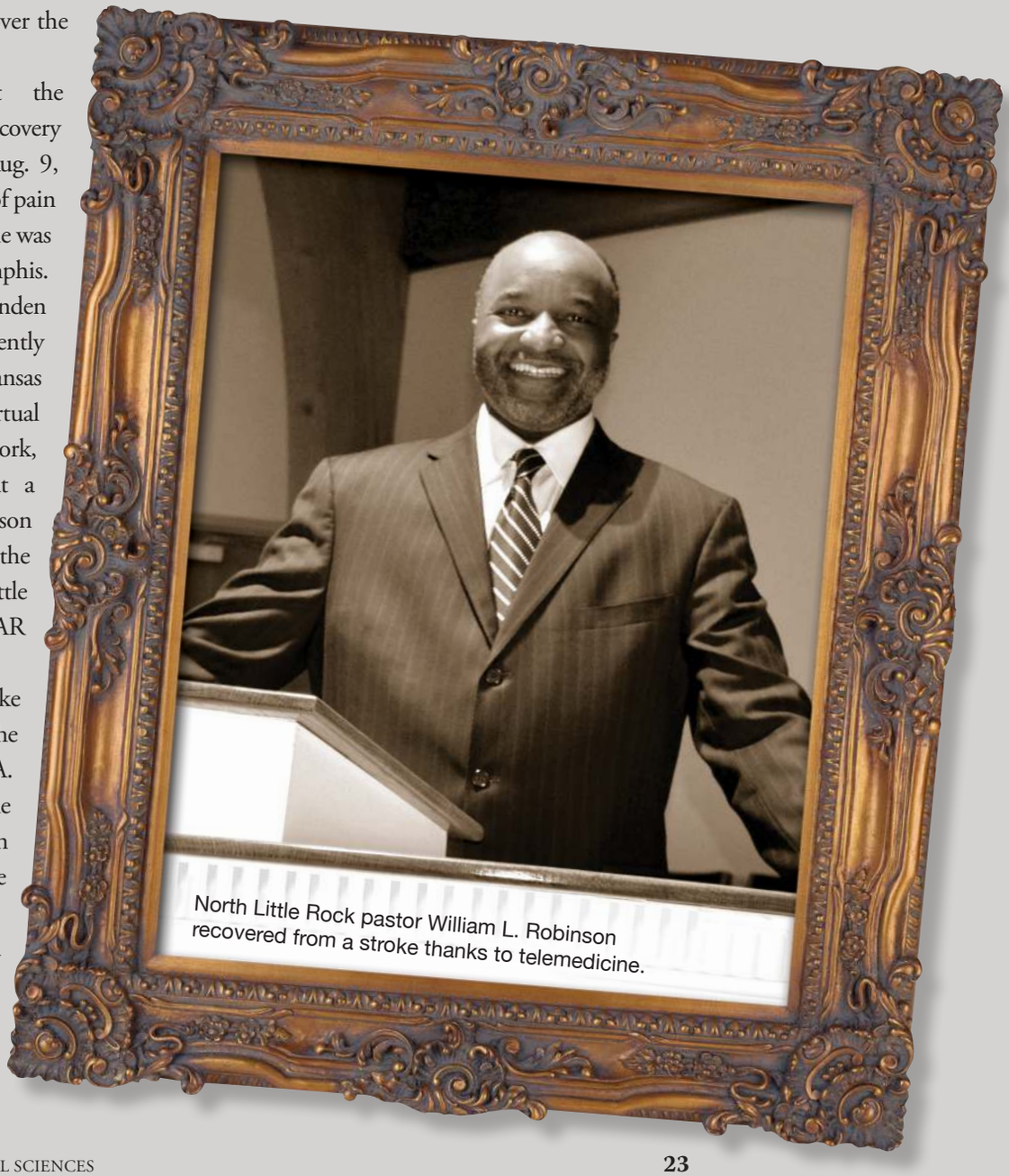
He discovered later that the groundwork for his miraculous recovery was laid just in time. On that Aug. 9, 2010, Robinson felt an explosion of pain in the back of his head and fell as he was concluding a sermon in West Memphis.

He was rushed to nearby Crittenden Regional Hospital, which only recently had joined the AR SAVES (Arkansas Stroke Assistance Through Virtual Emergency Support) network, enabling a stroke neurologist at a distant location to evaluate Robinson via telemedicine. The pastor of the First Baptist Church in North Little Rock was the hospital's first AR SAVES patient.

On the advice of a stroke neurologist, Robinson received the powerful clot-dissolving drug t-PA. Although he initially feared he would never walk again, Robinson began to notice improvement the following day.

In addition to rigorous physical therapy, Robinson improved his diet, began a regular exercise program and lost 20 pounds. Eight months after the stroke, he was able to jump rope.

"I want people to know there is life after stroke," he said. "Every chance I get, I tell them about knowing the warning signs of stroke and the miracle of t-PA. Without it, I would probably still be in a wheelchair." ❖



North Little Rock pastor William L. Robinson recovered from a stroke thanks to telemedicine.

UAMS Leads Arkansas' First Trauma System Center

By Jon Parham

AS A STATEWIDE trauma system began operation in Arkansas in 2011, UAMS took a lead role.

UAMS Medical Center is the only adult trauma center designated in the state for providing the highest level of trauma services. Also, UAMS physicians, nurses and administrators served in advisory roles to state officials and continued to guide the creation of a coordinated referral system for trauma patients.

"What is happening is the most important change to emergency care in Arkansas in a long time," said James Graham, M.D., a pediatric emergency medicine specialist at UAMS now serving as chairman of the 26-member Arkansas Trauma Advisory Council. "UAMS has really taken a leadership role in the planning and implementation for the statewide trauma system."

UAMS Medical Center is the only adult trauma center designated in the state for providing the highest level of trauma services.

Before it was established by the state Legislature in 2009, Arkansas was one of only three states without a fully functioning trauma system. Now the state is using a statewide trauma call center, a tiered designation for trauma centers based on the services they can provide trauma patients, improved communications and telemedicine technology to save lives.

Traumatic injuries have been the leading cause of death in Arkansas for adults and children ages 1 to 44. A 2008 report by the American College of Surgeons said the overall injury fatality rate in Arkansas is nearly 50 percent higher than the national average, and the injury fatality rate for motor vehicle crashes (the second most common injury mechanism in the state) is 60 percent higher than the national average. In 2005, Arkansas ranked 50th in the nation for timely trauma center accessibility.

The U.S. Centers for Disease Control has said getting to a Level 1 trauma center can lower the risk of death by 25 percent for patients with severe injuries.

The new Arkansas trauma system, expected to cost about $28 million annually, is being funded by a nearly $86 million tobacco tax increase that took effect in 2010. The increase includes a 56-cents-a-pack hike in state cigarette tax and an increase in the tax on smokeless tobacco.

Coordinated Care

From an accident scene, emergency responders will classify injuries and then coordinate care with the call center. The call center will be able to direct the ambulance to the closest trauma center with the services needed for a particular patient.

Previously, patients may have been sent to the closest facility regardless of the type of injuries sustained. Now, depending on condition and the extent of injuries, the trauma system may route a patient past other facilities that could treat some — but not all — of the injuries.

"It's about getting the right patient to the right facility at the right time," said John Cone, M.D., a UAMS trauma surgeon and a member of the trauma council.

Immediate routing to the nearest appropriate hospital became increasingly faster for emergency responders anywhere in Arkansas with the implementation of the new statewide trauma system. At 8 a.m. on Jan. 3, the Arkansas Trauma Communications Center began taking calls from hospitals across the state. Based at Metropolitan Emergency Medical Services (MEMS) in Little Rock, the trauma system call center — staffed by a paramedic or registered nurse — streamlines the process for directing trauma patients to hospitals within the system.

"In the past, there could be six- to eight-hour delays in getting trauma patients referred to the appropriate hospital," said Jeff Tabor, program director for the trauma call center, citing logistics and other problems that could slow a transfer. "Now the average time is about 10 minutes. The new system has already made that much of an impact."

In the first seven months of operation, the call center has handled 2,674 trauma transfer calls.

By the end of 2011, Graham said, all of the about 600 ambulances operating in Arkansas will be linked up by satellite radios. This will further improve efficiency and coordination with the trauma call center.

In the first seven months of operation, the call center handled 2,674 trauma transfer calls. Of those, 471 patients have been routed to UAMS. In that period, UAMS and Arkansas Children's Hospital, where UAMS physicians provide medical care, received the most trauma transfers.

Telemedicine in Trauma Care

Another new tool in the trauma system is a statewide trauma image repository. When fully implemented by the end of 2011, all designated trauma centers will be able to electronically transmit radiography imaging of patients to other centers.

In addition to allowing more detailed consultation with specialists, the image repository will allow physicians to see computed tomography (CT) scans or X-rays for trauma patients being referred to them before the ambulance arrives.

"This will have a huge impact," said Ron Robertson, M.D., a UAMS trauma surgeon. "Treatment can be started before the patient arrives. Personnel can be called in and appropriate preparations made before the patient arrives."

If a patient arrives at a smaller hospital with a head injury, CT images can be sent to a neurosurgeon at UAMS or another higher level trauma center. Through that consultation, a quicker decision can be made about care and preparations can be made at the hospital that would receive a referred patient.

The repository also addresses issues of incompatible technology between hospitals that

had sometimes hampered efforts to share images. In addition, the system will prevent duplication of imaging procedures once a patient arrives at the hospital, Robertson said.

"This is one of the first image repositories, if not the first in terms of its statewide reach," Graham said.

The UAMS Center for Distance Health, an already recognized national leader in telemedicine, is establishing and operating the image repository for the Arkansas Department of Health, which is overseeing the trauma system.

The initial hospitals online with the trauma repository were already part of a Center for Distance Health telemedicine-based stroke care program, Arkansas SAVES.

It's Not Just Care But Also Prevention

Hospitals participating in the trauma system are designated by the Department of Health at one of four levels depending on the capability of treating traumatic injuries and resources available for trauma education and research.

UAMS Medical Center was the first and only hospital in the state to be designated Level 1 by providing the highest level of adult trauma care with specialized surgeons on duty at all times for treating the most serious and urgent cases. Arkansas Children's Hospital was the first pediatric Level 1 trauma center in the state.

Graham said he and other members of the trauma committee are continuing to make site visits to hospitals around the state working through the designation process. By the end of 2012, it is expected that more than 70 hospitals will be a part of the system, he said.

UAMS trauma services got a boost with the January 2009 opening of a hospital expansion that included a larger, more comprehensive Emergency Department featuring a general X-ray room and a CT scanner, eliminating the need to transport trauma patients for imaging.

The designation is not solely based on medical services either. Terry Collins, UAMS director of trauma services and another member of the state's trauma advisory council, noted UAMS had to demonstrate to the trauma system survey team from the Arkansas Department of Health that UAMS had injury prevention education and outreach programs as well as a program of trauma research.

"This is truly an institutionwide commitment to trauma care," Collins said.

UAMS education programs include hosting regular symposiums for health care professionals across the state on new emergency medicine techniques or refresher courses on trauma practices. A patient referral call center and extensive telemedicine network with rural hospitals are among UAMS trauma outreach efforts.

UAMS leads or participates in numerous injury prevention programs, including youth accident prevention programs, the anti-drunk driving program Prom Promise, driver safety programs for older drivers and car seat safety education. ❖

Making a Connection with Arkansas e-Link

Arkansas is on its way to becoming one of the nation's most well-connected states

By Nate Hinkel

AS A LARGELY RURAL STATE, Arkansas's need for establishing and upgrading broadband to all corners of the state was a barrier withholding life-changing technology from taking root.

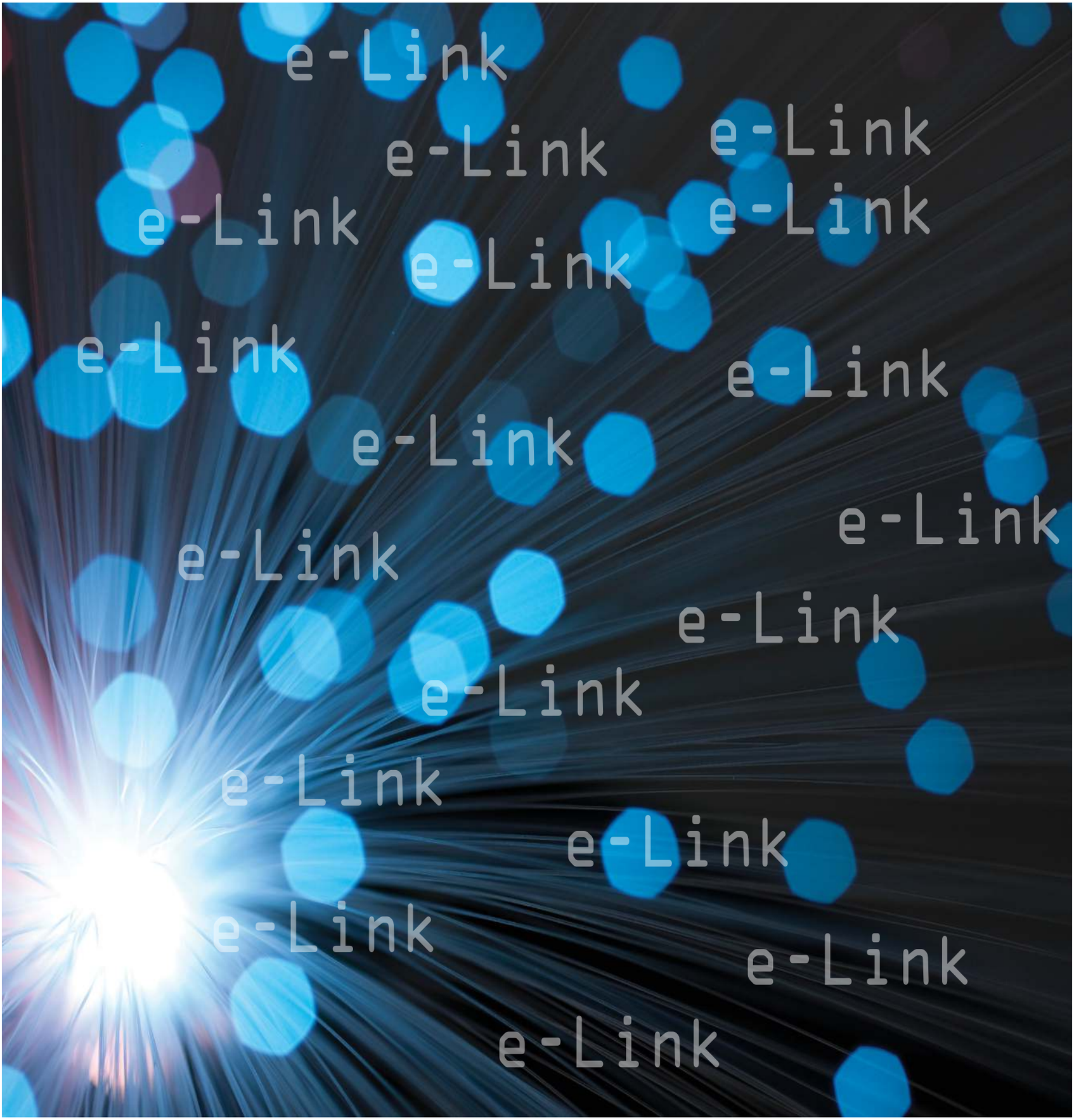
That all changed in the summer of 2010 when federal and state government officials, alongside leaders at the University of Arkansas for Medical Sciences (UAMS) and various integral state agencies, announced a $102 million federal grant to establish or upgrade broadband connections and equipment at 474 health care and education sites across the state.

"This effort will pay dividends for generations."

"In short, receiving this grant was a game-changing event that put Arkansas on the path toward becoming one of the most well-connected states in the country," said Curtis Lowery, M.D., director of the UAMS Center for Distance Health and chairman of the College of Medicine Department of Obstetrics and Gynecology. "This effort will pay dividends for generations. There's no way to figure how many lives can be saved, the number of new educational opportunities and the overall quality-of-life benefits this will bring to Arkansans."

A force of veteran and newly hired specialists along with a handful of statewide partners is in the throes of implementing the three-year project that will be completed by August 2013.

Once the network, named Arkansas e-Link, is in place, it will be one of the most sophisticated broadband networks in the country and will not discriminate between the health care and educational opportunities available in rural and urban areas.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Bottom to the Top

The $102,131,393 federal grant received by Lowery and managed by the UAMS Center for Distance Health, was one of the largest ever received by an Arkansas institution. In addition to the $102 million grant, UAMS and its partners also pledged a 20.6 percent match of $26,450,427.

The broadband grant, funded by the American Recovery and Reinvestment Act, is the second-largest federal grant for an infrastructure project. Only West Virginia, with a $126 million grant, has received a larger federal grant for broadband infrastructure.

"What makes this grant so critical to Arkansas is that our state ranks 50th in the percentage of households with a computer, 50th in percentage of households with Internet access and 46th in percentage of households with broadband access," said Debbie Green, project director of Arkansas e-Link. "Arkansas also ranks third worst in the country for early deaths. So the need is obvious, and we'll be able to vastly improve upon those statistics."

Once the network is completed, it will have the potential for expansion to nearly 4,000 additional community institutions.

Getting Connected

Work has begun to install fiber connections and upgrade bandwidth in all 75 counties and in 135 Arkansas communities, including 81 Arkansas hospitals, all two-year colleges, eight public libraries, all state human development centers, the state's trauma network, the majority of community health centers, many mental health clinics and some home health agencies.

Arkansas e-Link's team is now working alongside several partners to map the network by leasing existing broadband lines and laying new fiber throughout the state.

The two existing networks the project is expanding are the Arkansas Telehealth Network, managed by Arkansas Telehealth Oversight & Management (ATOM), and the Arkansas Research and Education Optical Network (ARE-ON) network.

ATOM is a coalition of health and information technology organizations funded by the FCC Universal Service Fund to consolidate and expand telehealth services in Arkansas. ARE-ON was established with state funding to create infrastructure for telecommunications networks for the education and research communities.

Green said a major hurdle was cleared in June as the project received federal clearance on an environmental assessment, meaning no public or private land or historical markers stand in the way of laying the network.

"That freed us up to move forward with taking bids and procuring the necessary equipment and contractors we'll need heading into the final two years of implementation," Green said. "We've reached a very exciting point of actually being able to start seeing this come together."

Highway to the Future

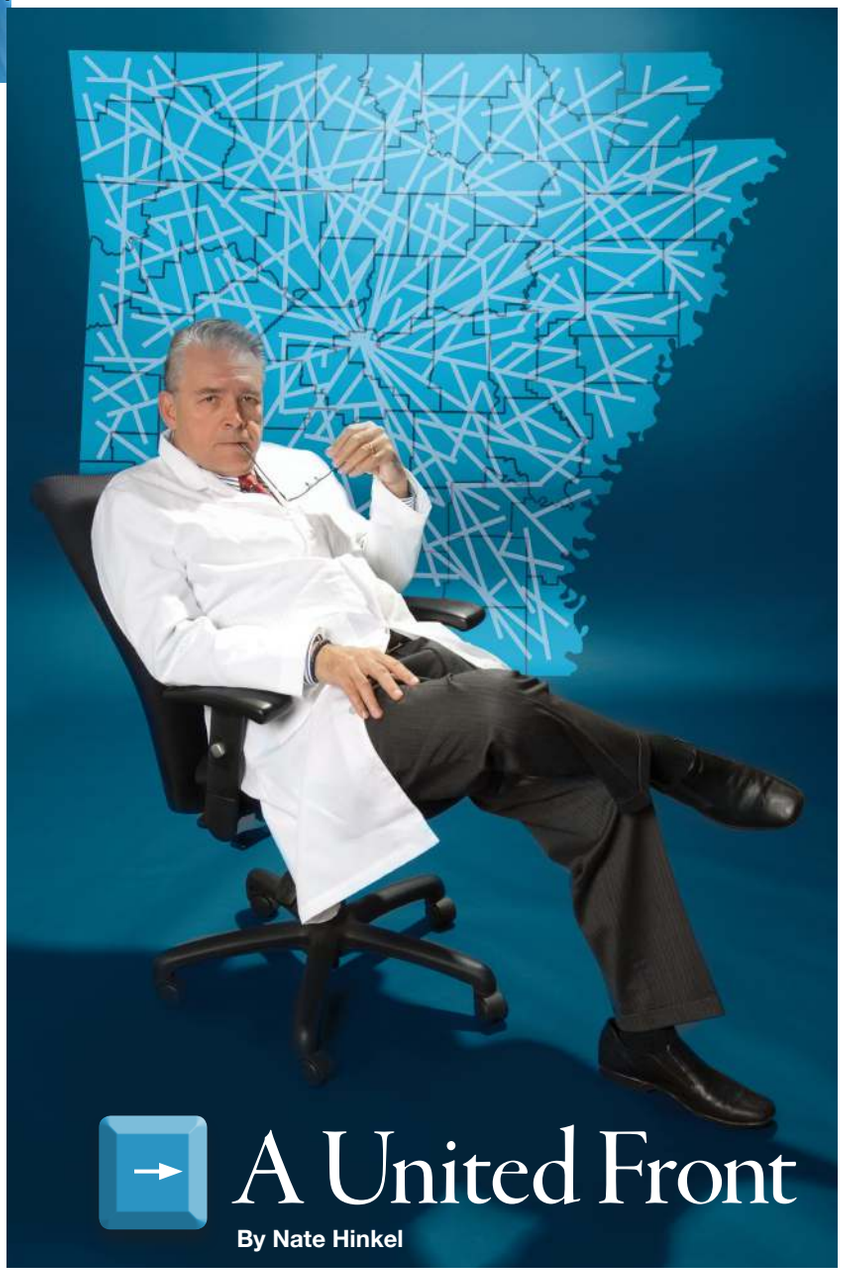
Every resident in the state will potentially benefit from new services as a result of the extended broadband Internet access in hospitals, community clinics, universities, colleges and other participating sites.

Once the network is completed, it will have the potential for expansion to nearly 4,000 additional community institutions. Those include 1,072 K-12 public schools, 29 charter schools, 305 private schools, 412 long-term care facilities, 758 provider clinics, 231 public libraries, 203 licensed ambulance services, 264 police departments, 575 fire departments and 77 offices of emergency management.

"With broadband Internet connecting virtually all of the state's health care institutions, it will give Arkansas the unique ability to use specialists to improve efficiency and improve medical outcomes for patients," Lowery said.

It also will benefit research, education and public safety and have a profound effect on the state's economy, with nearly 60,000 two-year college students and 50,000 workforce trainees reaping added efficiency and technological advances.

"Lives will be saved and new educational opportunities will be added," Lowery said. "A better prepared workforce and more stable economy will be grown. But most of all, Arkansans can be proud to live in one of the nation's most connected states." ❖



A United Front

By Nate Hinkel

Curtis Lowery, M.D., says the ATN laid the groundwork for a statewide telehealth system.

WHEN THE ARKANSAS Telehealth Network (ATN) was awarded $4.2 million in FCC support in late 2007, it allowed the state's health care organizations to begin planning for the future.

ATN, overseen by Arkansas Telehealth Oversight & Management (ATOM), united Arkansas's major health care service organizations and stakeholders to build the framework for a fully connected, tactically expanded, and efficiently managed statewide telehealth system. The united front included state agencies, nonprofit hospitals, private hospitals, rural clinics, community and mental health agencies and a number of others interested in delivering telemedicine services to their rural patient population.

"That effort leveraged the state's current telemedicine resources to create a network that benefits everyone in Arkansas seeking medical care or desiring medical education," said Curtis Lowery, M.D., director of the UAMS Center for Distance Health.

Work quickly began on consolidating the state's existing telehealth networks, which encompassed 174 existing sites; updating and expanding the statewide network to improve rural access, connecting to Internet2 and nearly 200 miles of dark fiber; and scheduling and managing the needs of the network through a centralized system.

The ATN naturally was boosted and has successfully integrated efforts when the $102-million federal broadband grant was announced in summer 2010.

"The goal all along was to have better and more efficient connectivity throughout the state to better treat Arkansans," Lowery said. "We would not have been able to get the big grant or be organized enough to implement it had we not laid the groundwork with the ATN in 2007."

In early stages of completion, the ATN has successfully revolutionized the state's trauma network and is working toward facilitating geriatrician support directly into nursing homes, where seniors can seek the ongoing care they need, reducing unnecessary transports for geriatric care that can be provided through interactive video. ❖

LearnTelehealth.org is a grant-funded website managed by UAMS that provides training in telemedicine.

Hitting the caBIG Time

UAMS is a national leader in cancer research data system

By Susan Van Dusen

WOULD IMPROVING communication between scientists and physicians around the world lead to quicker advances in cancer research?

That's what developers of the cancer Biomedical Informatics Grid (caBIG) are banking on.

Deemed the "World Wide Web of cancer research," caBIG (pronounced c-a-big) was created by the National Cancer Institute (NCI) in 2004 as a virtual information network enabling researchers and physicians to more easily share data and knowledge. Its primary goal is to accelerate progress in cancer research and treatment.

"We've seen the benefits of caBIG since its very beginning. Our ability to manage and share data has greatly improved with the addition of caBIG components," said Laura Hutchins, M.D., director of clinical research at the UAMS Winthrop P. Rockefeller Cancer Institute. Hutchins also is a professor and division director in the Division of Hematology/Oncology in the UAMS College of Medicine.

In 2007, Hutchins received an NCI grant of more than $120,000 allowing the Cancer Institute to participate in its caBIG initiative. Early proponents of the program included Cheryl Lane, director of research and development systems for UAMS Information Technology, and Shirley Gray, Cancer Institute administrator.

Since that time, the university has been recognized as a pioneer in the effort, forging the way nationally in many of the initiative's areas. The caBIG effort at UAMS is led by Umit Topaloglu, Ph.D., assistant professor of biomedical informatics and assistant director of information technology research.

"It's an honor to be recognized for what we've achieved at UAMS, but it's more important to understand that the software we are developing can be used by other organizations to progress this effort across the country and around the world," Topaloglu said.

All of caBIG's software is open source and available free of charge to organizations engaged in cancer research, enabling widespread access to tools, data and infrastructure for the cancer and biomedical research communities.

The UAMS Cancer Institute became the first cancer center in the country to implement a suite of eight software components — including

five caBIG components and three developed at UAMS — designed to handle data for clinical trials in an efficient format.

The UAMS Information Technology Research Team also has partnered with the Cancer Institute and the UAMS Tissue Procurement Facility to develop and implement numerous open-source clinical research and biospecimen tools to support clinical research studies.

The teams have migrated the UAMS Tissue Procurement Facility to the caBIG caTISSUE software, a biospecimen identification and tracking software, and have customized and implemented participant registration software, a patient study calendar and study management software, among other programs.

"Our success with the initiative has led to us being contacted by several institutions in the United States, Pakistan and the Netherlands.," Topaloglu said.

Among the institutions UAMS is consulting with are the University of Rochester, Indiana University, Lehigh Valley Health Network and the Louisiana Cancer Research Consortium. Leaders at UAMS also are spearheading the use of caBIG tools in the National Children's Study, a large research project studying children's health and development.

National recognition for UAMS' caBIG efforts includes the NCI's 2009 Delivering Results Award designated for a project that addresses specific research questions using caBIG applications, caGrid and data available for sharing.

The university also received a Top 10 ranking in the 2010 Healthcare Informatics Innovator Awards presented by the Health Care Information and Management Systems Society (HIMSS) for its caBIG efforts and was ranked No. 23 in the 2009 InformationWeek 500 list. ❖

"Our success with the initiative has led to us being contacted by several institutions in the United States, Pakistan and the Netherlands."

UAMS' Gail Douglas; Laura Hutchins, M.D.; Cheryl Lane; and Umit Topaloglu, Ph.D., accepted the Delivering Results Award from the National Cancer Institute for development and use of caBIG technologies.


UAMS

Technology Promotes Collaboration in Lab, Classroom, at Bedside

By Jon Parham

INFORMATION is a tool just as valuable to a researcher, physician or instructor as a lab, stethoscope or classroom.

Technology that allows seamless sharing of information and resources is not only efficient but aids UAMS in accomplishing its health care mission, said David Miller, UAMS chief information officer. This can range from students accessing the Blackboard application for lecture notes or test taking to physicians getting the latest information in an electronic medical record on an outpatient now being admitted to the hospital.

"We want to create a technology infrastructure to enable communications across our academic, patient care and research operations in a meaningful way," Miller said. "The point is to consolidate the information and make it easily accessible for those who need it regardless of the setting: research lab, patient bedside or classroom."

Blackboard Learn is a Web-based classroom learning management system. Almost all classes offered in all five UAMS colleges and the Graduate School use Blackboard as a repository for class syllabi, schedules, grade distribution, curriculum information, handouts, videos and presentations. Resident physicians use the system to access education resources at their convenience.

Tests also are administered using Blackboard at four testing labs on campus, said Steve Boone, Ph.D., UAMS director of educational development. This allows up to 200 students to take a test at the same time and these tests can be automatically graded Wimba Classroom, a virtual classroom application that includes a Web chat, an electronic whiteboard and real-time lecture recording functions, further connects students taking courses off campus to their instructors. "Wimba Classroom works in conjunction with Blackboard Learn as a complete classroom resource for our students," Boone said.

TurningPoint, an audience response system, is used in many classes for real time student polling.

In campus research labs, UAMS is working toward an enterprise data warehouse to give its scientists access to HIPAA-compliant clinical data from electronic medical records. A key initiative of the UAMS Translational Research Institute, the data warehouse will provide another tool for researchers striving to turn basic science discoveries into new medical treatments.

An enterprise data warehouse provides clinicians and researchers a convenient data resource. Cheryl Lane, assistant vice chancellor for academic, research and enterprise systems, said the data warehouse offers UAMS clinicians a tool unlike any they have had before with an ability to provide trending information and track illness-specific data.

UAMS began shifting its patient medical records from paper to an electronic record in the late 1990s. As much as 90 percent of patient information is handled electronically now, said Jeri Garland, director of electronic medical records services. That percentage goes up to 100 percent for patient order entry and inpatient nursing documentation.

Garland said the focus now is to continue improving record systems used by UAMS inpatient and outpatient operations to minimize redundancy – whether it is getting patient information or patient testing – and improve workflow. From the clinics to the hospital, the electronic medical record provides a mechanism to share needed patient information in a secure and convenient way.

The electronic records system offers a patient report that follows that patient through shift changes, clinics and hospital units as well as the various physicians, nurses and others on the care team. ❖

Almost all classes offered in all five UAMS colleges and the Graduate School use Blackboard as a repository for class syllabi, schedules, grade distribution, curriculum information, handouts, videos and presentations.

Speeding Bench to Bedside

The newest UAMS institute takes aim

By David Robinson

MEDICAL RESEARCHERS have long dreamed of finding a shortcut through the "valley of death," the decade-plus period between discovery and approval of new therapeutics.

Academic medical centers such as the University of Arkansas for Medical Sciences (UAMS) are working to make this dream a reality. UAMS recently launched the Translational Research Institute, which developed from the Center for Clinical and Translational Research.

The Center for Clinical and Translational Research was established at UAMS in May 2008 and subsequently received a $20 million federal Clinical and Translational Science Award in 2009. As part of that grant, the institute is collaborating with other institutions and employing the latest communications technology to help streamline drug development.

As part of that grant, the institute is collaborating with other institutions and employing the latest communications technology to help streamline drug development.

The institute is directed by Curtis Lowery, M.D., chair of the College of Medicine's Department of Obstetrics and Gynecology and director of the Center for Distance Health, with the day-to-day operations overseen by Executive Director Lisa Jackson, a lawyer and registered nurse.

One of the biggest impediments to advanced drug development is the inability to recruit enough participants in clinical trials. Sufficient pools of demographically diverse clinical trial subjects are critical to approval from the Food and Drug Administration (FDA).

"Clinical trials are the most time consuming and expensive part of the drug development processes," Jackson said. "Patients are suffering while researchers try to navigate through the valley of death with their drug. One way we could


Rick Edmondson, Ph.D.
Myeloma Institute for
Research and Therapy

reduce the timeframe is by recruiting appropriate numbers of research subjects into clinical trials."

Satellite Clinics

The Institute is helping researchers tap into new populations of research participants by utilizing the telemedicine systems at six UAMS satellite family medical clinics around Arkansas. Nurses at the UAMS Clinical Research Center will use interactive video connection to recruit research volunteers who receive their medical care from one of the six UAMS satellite clinics.

Research Partnerships/Collaborations

The Institute also expects to increase clinical trial participation by breaking down barriers to forming collaborations with other research institutions. The institute is currently working to overcome various legal and other hurdles so that UAMS can partner with the University of California at San Francisco on a clinical trial of an investigational breast cancer drug. Once these challenges are overcome, the drug study will benefit from the combined participant population from Arkansas and California.

Jackson said she is determined to remedy situations in which a scientist makes a discovery, publishes a paper, and then the discovery is put on a shelf.

NCTR Partnership

Jackson believes that clinical trials could also benefit from better design, which is why the institute partnered with the National Center for Toxicological Research (NCTR), an FDA research facility near Redfield, Arkansas. "We are putting things in place to develop a curriculum for regulatory science that focuses on the process of moving drugs and devices through the FDA pipeline," she said. "We want it to help us improve our study designs in order to make better and safer trials that produce solid results at the end."

The regulatory science degree will be offered by the UAMS College of Public Health.

Shared Resources

The institute is also streamlining research at UAMS by developing an enterprise data warehouse to facilitate the use of rich clinical data for research purposes.

While medical data and tissue samples will remain heavily guarded, the new system will allow researchers to quickly access data that has been stripped of patient identifiers.

"The data warehouse and accompanying tissue bank will create a treasure trove of information for potential studies that will be available to all UAMS researchers," Jackson said. "The mere development of these two items will remove major barriers to research at UAMS. Our goal is to have shared resources for researchers on campus, clinicians, and the community at large."

The Institute is committed to ensuring that UAMS gets the biggest bang for its institutional investments. Through its pilot funding program, the institute selectively awards grants to faculty researchers with the most promising ideas. The institute also is working to put mechanisms in place to ensure that discoveries made at UAMS can easily be transferred from the lab to the patient bedside.

Jackson said she is determined to remedy situations in which a scientist makes a discovery, publishes a paper, and then the discovery is put on a shelf.

"By having a central place like the Translational Research Institute, we can bring disparate parties together to get the discovery out of our academic center and into the community where it can have real impact," she said.

The Translational Research Institute is UAMS' seventh institute, and joins the Winthrop P. Rockefeller Cancer Institute, the Jackson T. Stephens Spine & Neurosciences Institute, the Myeloma Institute for Research and Therapy, the Harvey & Bernice Jones Eye Institute, the Psychiatric Research Institute, and the Donald W. Reynolds Institute on Aging. ❖

UAMS BioVentures

UAMS Business Incubator Uses Distance Technology

By David Robinson

WHEN UAMS BIOVENTURES hosted its fifth Private Equity Roundtable this year, the venue wasn't limited to a conference room in Little Rock.

Though venture capitalists from seven states flew in for the event, those who couldn't make the roundtable were not left out. They were able to take part as it was live-streamed over the Internet.

The live streaming was a first for the conference, which seeks to connect investors with discoveries and innovations at UAMS. During the conference, 15-20 of UAMS' most promising BioVentures startup companies and discoveries are presented to an invited group of venture capitalists.

"This year those presentations were streamed live to the rest of the world," said Mike Douglas, Ph.D., director of UAMS BioVentures.

In addition, brief videos were made with each presenter giving a condensed version of their presentations. The videos were placed on youtube.com and linked to the UAMS BioVentures website at www.uams.edu/bioventures.

"The videos allowed investigators to explain their technology and attempt to persuade investors why it's a world beater," Douglas said.

The live-streaming and individual videos were funded by a federal grant and in partnership with Arkansas Capital Corporation and Connect Arkansas.

"This is a case where communications technology gives our scientists much broader exposure to the market and hopefully this will pay off for everyone," Douglas said. Venture capital is essential for funding additional research needed to refine discoveries for marketing.

Douglas noted that communications technology also is a central component of UAMS ANGELS, a UAMS BioVentures client, and it will soon come into play for Balm Innovations LLC, a UAMS BioVentures startup company.

The skin cream Omnibalm was marketed with help from UAMS BioVentures.

ANGELS, (Antenatal and Neonatal Guidelines and Education Learning System) uses telemedicine extensively to make its maternal-fetal medicine and neonatal medicine expertise available in distant hospitals. UAMS BioVentures recently worked with ANGELS to copyright Angel Eye, a new camera system that allows distant family members to see their newborns in the UAMS neonatal intensive care unit (NICU) via the Internet.

The camera system, which is built into the NICU Isolettes was designed by ANGELS staff. More than 30 institutions across the country have inquired about using the system, and ANGELS is developing a plan for marketing it.

Balm Innovations, which markets Omnibalm, a tea tree oil-based skin cream, soon will begin working with UAMS researchers to study Omnibalm as a treatment for diabetic foot ulcers. The study will involve telemedicine, with patients in at least one distant location using the product. ❖

UAMS BioVentures, established in 1997, is one of only two university-based incubators in the United States, providing laboratory and office space to startup companies created as a result of a discovery.

UAMS Establishes Tri-state Telehealth Training Center

By Susan Van Dusen

FOR PEOPLE who live just a few miles from their health care provider, going to the doctor doesn't present much of a challenge.

But for those residing in rural areas of the United States, the very act of getting to a physician's office or major health care facility is one of the biggest obstacles to receiving quality care.

To address the issue of access to health care, UAMS in 2006 founded its Center for Distance Health as a centralized location to integrate the university's clinical and educational telehealth services. Telehealth (also called telemedicine) refers to the use of high-speed, two-way interactive video that connects doctors and patients from distant locations.

"Telehealth has made it possible for us to expand our health care services in ways previously unheard of. By allowing physicians in rural communities to consult in real-time with specialists at UAMS, the lives and health outcomes of countless Arkansans have been positively impacted," said Curtis Lowery, M.D., chairman of the Department of Obstetrics and Gynecology in the UAMS College of Medicine and director of the center.

"We're excited to play a lead role in this effort."

A boost to this already successful effort came in September 2010 when the Center for Distance Health was designated as one of four new Regional Telehealth Resource Centers in the United States, serving Arkansas, Mississippi and Tennessee.

Called the South Central Telehealth Resource Center, it is funded for three years with $979,416 from the U.S. Department of Health and Human Services Health Resources and Services Administration.

"This funding has allowed us to establish and operate a regional resource center that provides hands-on technical assistance and interactive training in the three-state region," Lowery said.

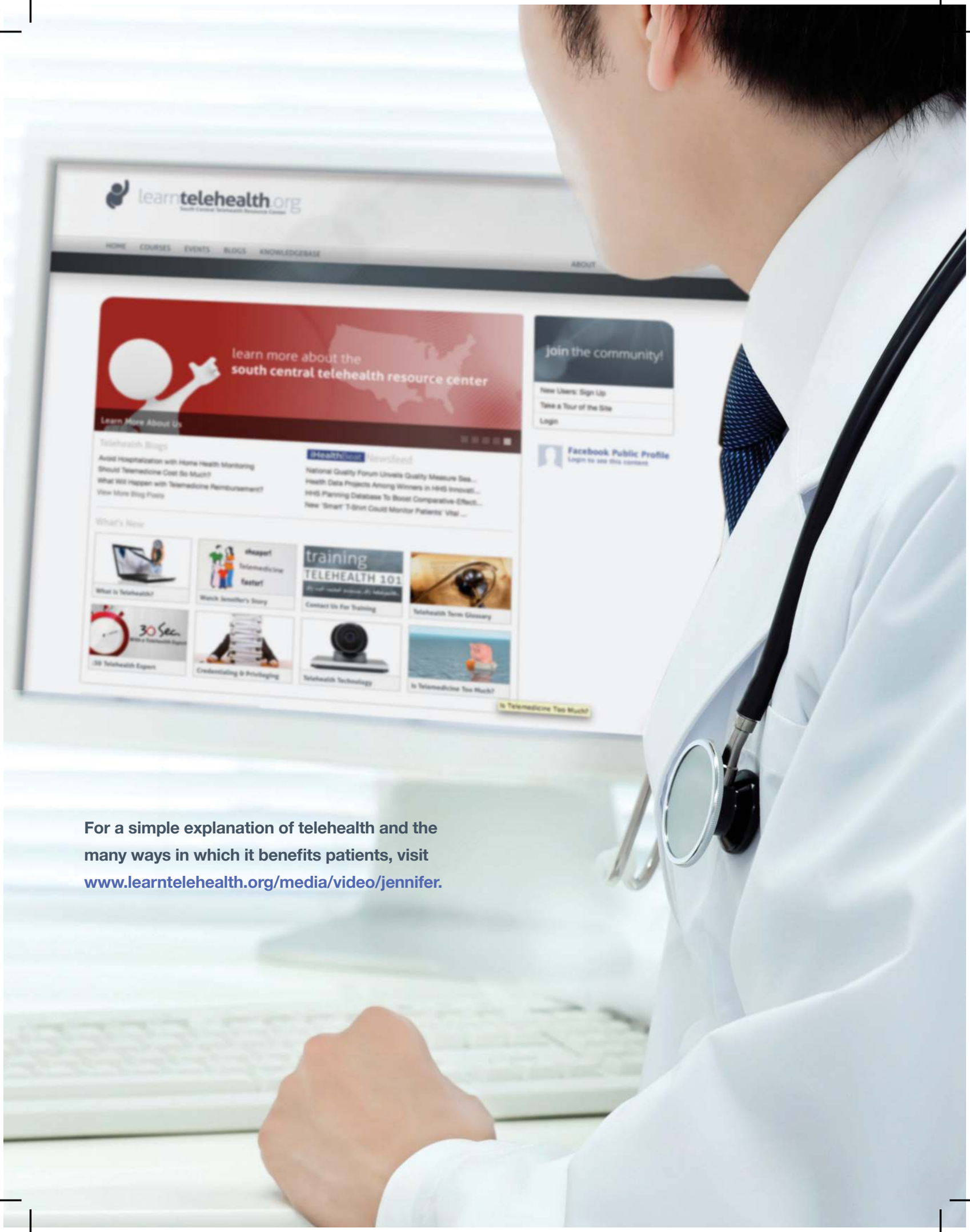
UAMS was selected for the funding due to its longstanding track record and expertise in providing technical assistance in the development of innovative, cost-effective telehealth programs for rural and medically underserved areas in Arkansas. The Center for Distance Health manages the statewide telehealth network with more than 500 video conferencing units in clinics and hospitals.

Other recipients of the award are the Georgia Partnership for Telehealth, the University of Hawaii and the University of Kansas.

The South Central Telehealth Resource Center functions primarily through a new website that works in partnership with the Center for Distance Health's Training Center based at UAMS. The website, www.learntelehealth.org, targets health care and health education groups that have an interest in using telehealth.

"The website is free, and it offers easy-to-navigate tutorials, a social network and other interactive features for anyone interested in learning how to incorporate telemedicine into their health practices," said Adam Rule, director of the South Central Telehealth Resource Center.

"We are grateful for this opportunity to serve as a resource center for our neighboring states," Lowery said. "Our experience at UAMS has taught us that telehealth is the most efficient way to get expert care to people in medically underserved areas, and we're excited to play a lead role in this effort." ❖



For a simple explanation of telehealth and the many ways in which it benefits patients, visit www.learntelehealth.org/media/video/jennifer.

UAMS Goes Global with Interactive Videoconferencing

By David Robinson

IN RECENT YEARS, educational institutions on every continent but Antarctica have established interactive video connections with UAMS.

Many institutions are connecting with UAMS to learn about the ANGELS (Antenatal and Neonatal Guidelines Education and Learning System) standards for treating high-risk obstetrics patients and very-low-birth-weight neonates. Others are connecting with UAMS to learn how to incorporate the video conferencing technology at their institution.

In addition to its numerous interactive video connections with institutions across the United States, UAMS has linked with China, Australia, New Zealand, Russia, Iraq, Germany, Costa Rica, Argentina, Canada, Saudi Arabia and Ecuador.

"Video conferencing allows UAMS to develop strong collaborations with international educational institutions," Lowery said. "The goal is to reach the point where we can share advancements in education, research and clinical service among all of our peers in every discipline."

Lawrence Cornett, Ph.D., executive associate dean for research in the College of Medicine and the UAMS vice chancellor for research, agrees that more robust collaborative relationships are always a positive development, whether at the state, national or international level.

Earlier this year, UAMS signed a memorandum of understanding with the University of Hyderabad in India. Under the agreement, coordinated by UAMS' Hari Eswaran, Ph.D., the universities will develop a joint educational and research program to encourage the advancement of science and medical education systems and specialty expertise at both institutions.

"Establishing international collaborations like the one with the University of Hyderabad will enable UAMS students and scientists to increase their competitiveness for grants from federal agencies that support collaborative international science projects," Cornett said. "Similarly, University of Hyderabad students and scientists will have additional opportunities for awards from agencies in India that support joint India-U.S. projects." ❖

"We're developing stronger collaborations between UAMS and these international schools."

Child Mental Health Turns to Telemedicine

Concern about a shortage of mental health professionals to assist with children's issues has led UAMS to turn to telemedicine.

Psychiatric Telehealth, Liaison and Consults, or Psych TLC for short, began in August 2009 and is bringing hope to children with mental illness, their families, their physicians and their communities. The program is a partnership between the UAMS Psychiatric Research Institute and the state Department of Human Services.

It provides physicians throughout Arkansas enhanced access to child and adolescent mental health expertise by offering free telephone and/or tele-video consultation for psychopharmacologic and/or diagnostic consultation to physicians caring for children and adolescents experiencing emotional and behavioral disorders and their families.

Physicians may call the Psych TLC Call Center toll free 24 hours a day, seven days a week and receive consultation from a child and adolescent psychiatrist within 15 minutes.

The program also oversees follow-up care for children ages 2 to 12 discharged from the Psychiatric Research Institute's child diagnostic unit.

In addition, the Psych TLC program provides primary care physicians with training and continuing medical education. Regional roundtables and interactive video teleconferences are available to provide education on evidence-based treatment guidelines.

Distance Education Allows Dental Hygiene Partnership

Five students became the first to graduate the UAMS dental hygiene program hosted at Arkansas State University Mountain Home in May 2011.

The distant location for the dental hygiene program started in 2009 following a regional needs assessment by the Department of Dental Hygiene in the UAMS College of Health Related Professions. The classroom portion is hosted on the Arkansas State University campus, where students are taught via real-time interactive video by dental hygiene faculty on the UAMS campus three hours away in Little Rock.

UAMS faculty members in Mountain Home provide laboratory and clinical instruction. The Mountain Home Christian Clinic allows use of their facility for the clinical portion.

Students in Mountain Home receive the same classroom instruction from the same faculty at the same time as the students on the Little Rock campus, said Susan Long, Ed.D., professor and chairman of the Department of Dental Hygiene.

"A lot of students probably wouldn't have gone into the program without the location closer to home," said Nancy Smith, M.Ed., an assistant professor in the UAMS dental hygiene program who works at the Mountain Home facility.

Smith noted that students were not just coming from the Mountain Home area but from across the mostly rural north Arkansas region.

Cardiologist Ibrahim Fahdi, M.D.

PRACTICING TELECARDIOLOGY

A confluence of telemedicine, cardiology and high-risk pregnancy expertise is offering a new way to provide care for pregnant women with heart problems so they do not have to leave their hometown.

The ANGELS Heart Clinic took flight in early 2011 as a collaboration of physicians in the Center for Distance Health with the Division of Cardiovascular Medicine and high-risk pregnancy program of the Department of Obstetrics/Gynocology, both in the College of Medicine. The clinic allows pregnant women with heart disease or at high risk for it to be seen by cardiovascular specialists at UAMS via telemedicine.

Ibrahim Fahdi, M.D., director of cardiac telemedicine in the Division of Cardiovascular Medicine, who has used telemedicine to see patients at distant locations in recent years, believes "telecardiology" is cost effective and efficient.

"Telemedicine allows us to consult on high-risk patients who will not have to leave their hometown to have access to specialty care," he said.

Telemedicine does not replace traditional care for patients, but instead supplements it and offers hometown physicians options for getting the best care for their patients, Fahdi said.

UAMS Electronic Records Systems Pay Off

Upgrades in electronic health record technology have improved quality and efficiency of patient care. Now meeting federal incentives for its records systems could pay off literally for UAMS.

The 2009 federal stimulus act included financial incentives through the Medicare and Medicaid programs for demonstrating "meaningful use" of electronic health records. That allowed UAMS recently to upgrade its inpatient and outpatient records systems to versions certified for meeting those standards.

UAMS could receive about $3 million by meeting the first guidelines by 2012. As much as $8 million could be earned by achieving all three of the federal meaningful use stages by 2015.

The standards call for electronic records systems to be used in ways that show improvements in the quality of care. This can include allowing for electronic prescribing and ordering, automatic notifications for patient drug allergies or interaction warnings and ease of record access by caregivers in any unit of the hospital.

"The standards are more an operational objective than merely having the technology," said Jeri Garland, UAMS director of inpatient electronic records services.

"It's a true partnership between information technology and the clinician to provide the tools that support the workflow of patient care."

Public Health Data Available Online

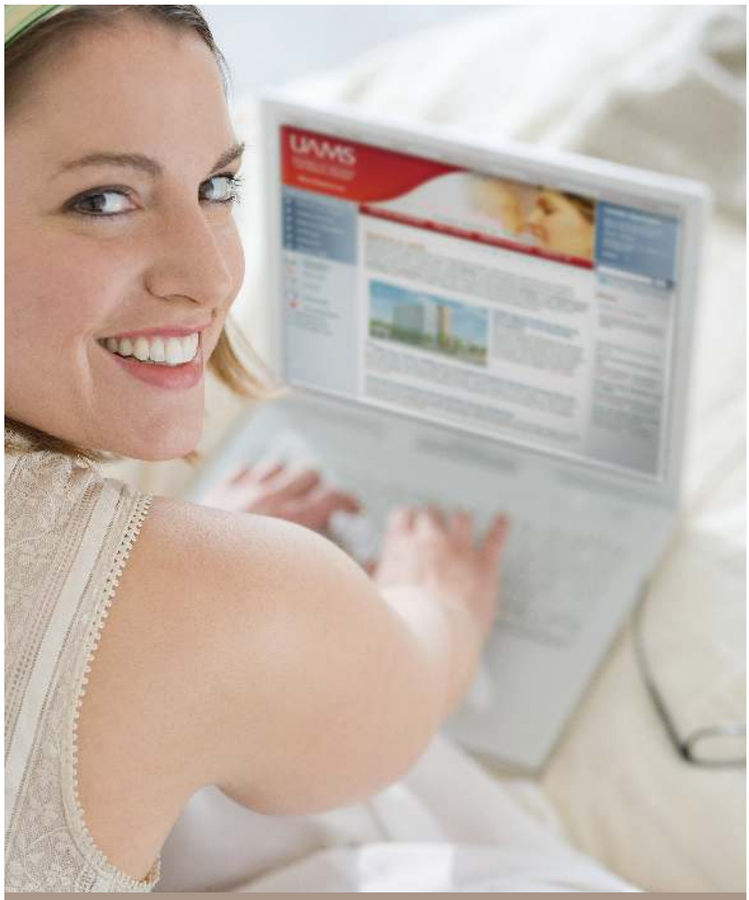
The Fay W. Boozman College of Public Health made key public health information specific to all 75 Arkansas counties easier to access with a website that holds a wealth of valuable statistics and research.

The Public Health in Arkansas Community Search (PHACS) site takes available public health-related information and presents it in an easy-to-use way to all Arkansans. It can be found at www.uams.edu/phacs. A Spanish version is at www.uams.edu/phacs/espanol.

"The site is a one-stop source for Arkansans looking for community specific health data," said Jim Raczynski, Ph.D., dean of the College of Public Health. "The website is designed for community-based organizations and citizens looking to take charge of health outcomes and risks in their communities."

Research categories include demographics, social environment, access to health care, behavior risks, preventive care and screenings, and health outcomes and mortality rates.

The website was developed in partnership with the Arkansas Center for Health Disparities, the Arkansas Prevention Research Center, the Arkansas Minority Health Commission and the UAMS Translational Research Institute.



Portal Gives Patients Access

UAMS patients can now coordinate their health care needs at any time with a just a few keystrokes and clicks of the mouse using the patient care tools on the www.uamshealth.com website.

The myUAMShealth portal of the UAMS website allows patients to request appointments, refill prescriptions, see lab results, send secure messages to their physician and pay their hospital bills online, 24 hours a day, 7 days a week.

"Patients value convenience in addition to excellent medical care, and myUAMShealth makes it easier than ever to do business with UAMS," said Lannie Byrd, UAMS Web director. "Using the patient portal, we provide care in partnership with our patients and their families."

The portal launched with prescription refills in July 2009, and there are now more than 9,000 registered users. The most popular service is lab results, with an average of 2,200 lab results viewed a month.

In order to protect the privacy of patient information, patients are required to register with a signed paper form presented in person or faxed to their clinic for access to lab results. Other features are available with a simple online registration.

Curtis Lowery, M.D., pioneered the use of telemedicine at UAMS.

Where You Live Shouldn't Matter

By Nate Hinkel

CURTIS LOWERY, M.D., has become the face of telemedicine efforts at UAMS and beyond.

His mantra, "Where you live shouldn't determine whether you live or die," is well known to anyone who has worked with him or heard him speak. He has dedicated his career at UAMS to the cause, and in return, rural Arkansans have reaped the benefits and lived more fruitful lives.

As a maternal-fetal medicine specialist, Lowery in 2003 put UAMS' telemedicine program on the national radar. He was the creator of ANGELS (Antenatal and Neonatal Guidelines, Education and Learning System), which uses telemedicine technology to connect UAMS' maternal-fetal specialists with high-risk pregnancy patients and their doctors in rural areas.

The innovative program has won multiple national awards and was the springboard for UAMS to become a model for telemedicine. As a result, hospitals and other health care providers from inside and outside Arkansas – even other countries – have been contacting UAMS to ask for telemedicine advice and training.

In addition to high-risk pregnancy patients, UAMS' specialists today are using telemedicine to serve patients with strokes, seizures, geriatric issues, trauma and newborns who need special medical attention.

When "virtual" physician house calls become routine in the years to come, UAMS is likely to be leading the way.

"This is evolving very rapidly, and doctors as well as patients need to know how to use this technology," Lowery said. "I would envision in the not-too-distant future that many of these systems will be in many people's homes. So you won't go to the doctor, your doctor will virtually come see you in your house. This is the way things are going to go; there's no stopping it."

And so, thanks to Lowery, no matter where patients live, location is becoming a far less important factor in determining whether they live or die. ❖

As a maternal-fetal medicine specialist, Lowery in 2003 put UAMS' telemedicine program on the national radar.

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