



annual report 2011
COVERING THE STATE • RECOVERING HOPE

Introduction

For the first time in 50 years, stroke has fallen from the third- to the fourth-leading cause of death in the United States, according to the federal Centers for Disease Control and Prevention.

Education and accessibility to care are instrumental in improving the health of the state's population. This year AR SAVES (Stroke Assistance through Virtual Emergency Support) added nine sites to the network, expanding awareness, knowledge and response to stroke. The AR SAVES sites are providing rural areas virtual access to medical specialists in life-saving speed.

AR SAVES is dedicated to educating the people of Arkansas in the signs of stroke and to get help immediately. Lost minutes add up to lost brain cells. With quick response to symptoms and the increased use of clot-busting drugs, patients are



seeing dramatic recovery outcomes. The AR SAVES outreach team has worked tirelessly to educate as many Arkansans as possible to improve stroke symptom awareness and spread the crucial message of getting medical assistance immediately.

AR SAVES' goal is to add nine more sites in the coming year. I am encouraged by the results we have produced and am excited about the progress we will make. With improved initial treatment of stroke, and improved patient recovery, we are saving health care dollars, and most importantly, saving lives! So far, more than 500 Arkansans have received a consultation from an AR SAVES vascular neurologist.

Sincerely,

A handwritten signature in black ink, appearing to read "Curtis Lowery, M.D.", written over a light blue background.

Curtis Lowery, M.D.

DIRECTOR, UAMS CENTER FOR DISTANCE HEALTH
CHAIRMAN, DEPARTMENT OF OBSTETRICS & GYNECOLOGY,
COLLEGE OF MEDICINE, UNIVERSITY OF ARKANSAS
FOR MEDICAL SCIENCES

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www.uams.edu/saves



AR SAVES Builds on Success

Less than three years ago, emergency stroke treatment was available to Arkansans

in just two cities: Little Rock and Fort Smith. Today, thanks to AR SAVES (Arkansas Stroke

Assistance through Virtual Emergency Support), more than 27 communities have hospitals that offer emergency stroke care.

With high-speed video communication links to stroke neurologists at UAMS,

Fort Smith and Hot Springs, most Arkansans are less than an hour from stroke treatment. Such access is critical because use of the clot-dissolving drug called tissue plasminogen activator (t-PA) is restricted to within 4.5 hours of a stroke's onset.

In the coming year, the program is expected to add another nine community hospitals as partners and a sixth stroke neurologist will join the SAVES team, said Julie Hall-Barrow, the AR SAVES education director.

“Our goal is for the program to have enough sites to offer emergency stroke care within a 30-mile

radius of all Arkansans,” Hall-Barrow said.

The AR SAVES program is a partnership between the UAMS Center for Distance Health, the state Department of Human Services and Sparks Regional Health System in Fort Smith. The real-time video communication enables a stroke neurologist to evaluate a stroke patient to assess whether emergency room physicians should administer t-PA. Video equipment is installed at each neurologist's hospital and home, making immediate consultation possible 24 hours a day.

FAST START

The program partnered with its first hospitals in November 2008. It was an immediate hit with emergency room physicians and nurses; dramatic successes using t-PA added to the excitement about the program.

“AR SAVES proved its value quickly, as evidenced by its popularity,” said UAMS' Salah Keyrouz, M.D., a stroke neurologist and neurointensivist and the AR SAVES medical director. “It says a lot that the local emergency room physicians and nurses are willing to go through months of credentialing and four

to five weeks of training to become a partner.”

Operating in the state with the highest stroke mortality rate (based on 2007 statistics, the latest available), AR SAVES is essential. Arkansas had 1,873 stroke-related deaths, according to the national Centers for Disease Control and Prevention.

COMMUNITY BUZZ

Hall-Barrow notes that AR SAVES' effectiveness is only as good as the public's recognition of stroke symptoms and the need for emergency treatment. That's why AR SAVES has staff dedicated to working with



communities to spread the word about stroke symptoms and what to do when people see the symptoms.

In Searcy, where White County Medical Center joined the program nearly two years ago, word is getting out about how to respond to stroke, said Martin Carey, M.D., an emergency room physician there.

“Education of the public is vital, and as we have more and more success stories, the more it will become an accepted treatment,” Carey said. “We’ve had some wonderful outcomes using t-PA, which helps raise

awareness that there are things we can do to help.”

For example, in one recent case, a 25-year-old teacher

and mother of two was rushed by her husband to White County Medical Center after they realized she was having a stroke.

She received t-PA and her recovery from paralysis occurred within days. Her dramatic story resulted in publicity by local and

statewide media outlets.

But there’s plenty of community education to be

(Cont’d next page)



Hub Sites



County	City	Facility
Pulaski	Little Rock	UAMS Medical Center
Sebastian	Fort Smith	Sparks Health System
Jefferson	Pine Bluff	Jefferson Regional Medical Center
Arkansas	Dewitt	Dewitt Hospital and Nursing Home
Ashley	Crossett	Ashley County Medical Center
Baxter	Mountain Home	Baxter Regional Medical Center
Benton	Bentonville	Northwest Medical Center
Chicot	Lake Village	Chicot Memorial Medical Center
Clark	Arkadelphia	Baptist Health Medical Center
Cleburne	Heber Springs	Baptist Health Medical Center
Columbia	Magnolia	Magnolia Regional Medical Center
Crittenden	West Memphis	Crittenden Regional Hospital
Desha	McGehee	McGehee Desha County Hospital
Greene	Paragould	Arkansas Methodist Medical Center
Howard	Nashville	Howard Memorial Hospital
Independence	Batesville	White River Medical Center
Jackson	Newport	Harris Hospital
Johnson	Clarksville	Johnson Regional Medical Center
Logan	Booneville	Booneville Community Hospital
Mississippi	Bitheville	Great River Medical Center
Ouachita	Camden	Ouachita County Medical Center
Phillips	Helena-W. Helena	Helena Regional Medical Center
Polk	Mena	Mena Regional Medical Center
Pope	Russellville	St. Mary's Regional Medical Center
Pulaski	Sherwood	St. Vincent Medical Center/North
Randolph	Pocahontas	Five Rivers Medical Center
Saline	Benton	Saline Memorial Hospital
Van Buren	Clinton	Ozark Health Medical Center
Washington	Fayetteville	Washington Regional Medical Center
White	Searcy	White County Medical Center

Spoke Sites



Hub Site

Hybrid Hub Site

Hub Site

done, Carey said. “I’m still seeing people who come in and say, ‘Well, my right arm and leg went all weak yesterday and I thought it would get better by today.’ At that point we’re outside the window of opportunity for them to receive t-PA.”

From the perspective of a hospital administrator, SAVES costs nothing, benefits the community and burnishes their hospitals’ offerings.

“This partnership gives us an opportunity to enhance the high level of quality care that residents in our region can find at Baptist Health Medical Center –

Heber Springs,” said Ed Lacy, the hospital’s vice president and administrator. The hospital became a participant in February 2011. “We’re committed to helping reduce the number of deaths and disabilities in Arkansas caused by stroke each year, and we are excited to be a part of this important initiative.”

HAPPY HOMECOMINGS

The power of the AR SAVES program has been brought home to many Arkansans, especially patients and their families. And it has the capacity for many more happy endings.

The Rev. William L. Robinson of North Little Rock, who had a stroke while preaching in West Memphis and received t-PA treatment via AR SAVES at Crittenden Regional Hospital, is grateful for his full recovery.

“I want people to know there is life after stroke,” said Robinson, who overcame paralysis as a result of his stroke. “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.”



Ticia Covington with her husband, Reagan and children

Bright Future for Young Mom



Double vision was the first symptom Ticia Covington, 25, of Searcy noticed while she was getting ready for her fifth day as a school teacher.

The mother of two called for her husband, Reagan, and asked if her eyes looked crossed. About that time her right side suddenly weakened, causing her to fall.

“Reagan picked me up and as he was talking to me he began to notice pulling of my mouth, my nose and my eye,” Ticia said. At that point, both were thinking the unthinkable: Stroke.

Fortunately for Ticia, White County Medical Center in Searcy recently partnered

with the UAMS-led AR SAVES program. The program uses a high-speed video communications system to help provide immediate, life-saving treatments to stroke patients 24 hours a day.

As participants in the program, White County Medical Center staff members are specially trained by the UAMS Center for Distance Health to determine whether to activate the link with a stroke neurologist at either UAMS or Sparks Regional Health System in Fort Smith.

In Covington’s case, the emergency room staff connected via telemedicine with Margaret Tremwel,

M.D., at Sparks. Tremwel recommended that Covington receive tissue plasminogen activator (t-PA), the powerful blood thinner. The t-PA was administered about an hour after the first symptoms.

“I didn’t know anything about the AR SAVES program, but I am so thankful it was there for me,” Ticia said.

Two hours after receiving the t-PA, Covington was flown to UAMS, where she was seen by Salah Keyrouz, M.D., a stroke neurologist and AR SAVES medical director.

“I got better by the hour,” Ticia said. “I went back to

teaching a month after the stroke; I’m fine.”

Keyrouz concluded that the likely culprit of her stroke was her birth control medicine, which Covington immediately quit taking.

Oral contraceptives nearly double the risk of stroke, according to a 2009 review article in *MedLink Neurology* by three Loyola University Health System neurologists.

“It’s a relief knowing there’s nothing genetic that could put my children at risk for stroke,” Ticia said.

**“I went
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Back in the Pulpit



“I was sad, and
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God to just have
mercy on me.”

Rev. William L. Robinson

DEPRESSED

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 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.

After Robinson arrived, the hospital connected via two-way video to Vladimir Karpitskiy, M.D., Ph.D., a stroke neurologist in Hot Springs and adjunct faculty in the UAMS College of Medicine. On Karpitskiy's recommendation, Robinson

received the powerful blood-thinning drug t-PA. It was administered less than three hours after his stroke, giving it a good chance to penetrate the clot and restore blood flow to the affected area. The drug is known to benefit patients if given within 4.5 hours of stroke symptoms.

Two hours later Robinson was taken by helicopter to UAMS where he was seen by Salah Keyrouz, M.D., a stroke neurologist and the AR SAVES medical director.

Although he initially feared he would never walk again, Robinson's spirits were lifted by prayer vigils and visits from Gov. Mike Beebe and U.S. Sen. Blanche Lincoln.

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."

"I want people to know there is life after stroke."



L-R: Jasper Fultz and Martin Carey, M.D.

Searcy Hospital Experiences Rewards of Teamwork

Preparations to join the AR SAVES program were summed up this way by White County Medical Center's Jasper Fultz: "Practice, practice, practice."

Fultz is the nurse facilitator for AR SAVES at the Searcy hospital, which partnered with the emergency stroke program in October 2009.

"Everybody knows what they're supposed to do now," said Fultz, who

has been a licensed practical nurse for 30 years. "Everyone is very comfortable with the system."

The nurses, technicians and physicians at the 26 participating AR SAVES hospitals must work quickly and seamlessly to assess a stroke patient, perform a blood test and CT scan, then connect via high-speed, two-way video with a stroke neurologist. The subsequent exam helps determine whether a patient should receive the clot-dissolving drug t-PA.

Speed is of the essence,

because t-PA is most effective the more quickly a patient receives it following the onset of stroke symptoms. Patients can receive the drug within 4.5 hours of the first signs of stroke.

Martin Carey, M.D., an emergency room physician at White County Medical Center, said the biggest initial challenges were learning the new technology and becoming comfortable working on camera.

"That's a big deal, when you're on camera and you're trying to concentrate

in a critical situation,” Carey said. “But the more you do it, the less you think about the camera so we can just focus on helping the patient.”

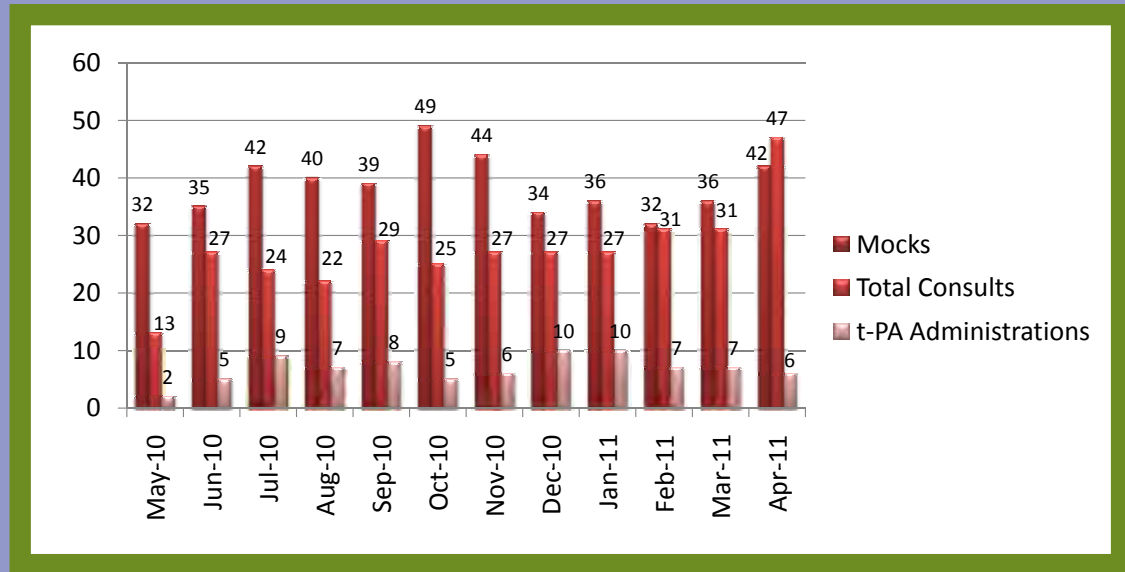
Nurses bought in to the program thanks to mock case sessions led by UAMS’ Terri Imus, R.N., the lead outreach nurse for AR SAVES. “Terri was awesome,” Fultz said. “She – and the neurologists as well – did a great job of explaining the why as well as the what.”

“We’ve also had some amazing patient outcomes, and that inspires buy-in

from everyone,” he added.

Fultz also has spearheaded stroke training of local emergency responders. When an EMT can provide information such as the time of stroke onset before arriving at the hospital, it speeds the response by emergency department staff.

“We’ve come a long way, and now we’ve got one of the finest teams in the world right here,” Fultz said.



SUCCESS IS IN THE NUMBERS

From May 2010 until April 2011, AR SAVES conducted 461 mock stroke calls with 26 different hospitals. Of these hospitals, 24 later engaged in consultation with a

neurologist 330 times. The average age of these patients who were given a stroke consultation was 63. Eighty-two of these consultations led to the administration of t-PA.

Know Your Community

Knowing the makeup of a community can improve the effectiveness of stroke education, and now a new way of raising community awareness could prove a model for future campaigns.

AR SAVES health educator Rick Washam travels the state speaking about stroke warning signs and the need for timely treatment. Public awareness about stroke is critical in a state whose residents are at the highest risk of stroke death of any in the nation. Stroke is among the leading causes of death in Arkansas and the number one cause of long-term disabilities.

“Every community is different when it comes to community outreach and it is not a one-size-fits-all approach,” he said.

Billboards and advertisements have been a main vehicle for generating community awareness about stroke. In Helena-West Helena, a \$10,380 grant from the Helena Health Foundation in 2010 allowed the opportunity to team up with the local cable TV provider for televised public service announcements.

More than 11,000 30-second commercials are being aired. A commercial about the AR SAVES program and another about recognizing the signs of a stroke have aired on channels ranging

from sports network ESPN to the Home and Garden Television Network.

In addition, the stroke education and awareness is being featured in a local community access show, “In the Community with George Bingham.” The show has included interviews with UAMS stroke expert Salah Keyrouz, M.D., local hospital staff and stroke survivors.

“That’s a powerful message, to hear from someone who has survived a stroke without disability,” Washam said.

In all, the grant is funding more than four hours of stroke awareness programming

over a 10-month period. Community surveys will measure effectiveness of the TV campaign.

Washam said the National Institute of Neurological Disorders and Stroke and AR SAVES program think the TV ads may serve as a model for other communities as a more effective tool for reaching at-risk populations.

“We’ve been getting positive feedback about the shows that have aired,” he said. “We know that people are getting the message about stroke and that there is hope – but time is critical and recognizing the warning signs is important.”



UAMS physician Sara Tariq, M.D., was the spokesperson on a statewide stroke education television commercial.

“We’ve been getting positive feedback about the shows that have aired.”

Lake Village Physician Excited by SAVES Link

Viviana Suarez, M.D., felt a sense of relief when Chicot Memorial Medical Center went “live” with its AR SAVES partnership in April.

The Lake Village hospital in far southeastern Arkansas is one of the more remote AR SAVES sites in the state and serves an isolated population.

“This is exciting,” said Suarez, who completed her UAMS family medicine residency training in Pine Bluff in 2006. “We will save lives with the SAVES connection.”

Before AR SAVES, the lack of access to a

stroke neurologist was frustrating, Suarez said.

She recalls being called to the ER a couple of years ago to see a patient who was paralyzed and unable to speak. Suarez had to send the stroke patient across the Mississippi River to Greenville, Miss., where a stroke neurologist could treat her. Within a few hours of her first symptoms she received the drug called tissue plasminogen activator (t-PA), which dissolved the blood clot in her brain. The patient had a full recovery.

Suarez said the case illustrates the life saving power of t-PA and the tenuous nature of stroke treatment without AR SAVES. First, the patient

was fortunate to have had her stroke only minutes from the hospital. She was able to receive the t-PA within the 4.5-hour window of her stroke symptoms, the time threshold for patients to receive the drug. More rural patients would have been less likely to fall within that timeframe.

Also, not long after her case, Greenville lost its only stroke neurologist, Suarez said. The next closest hospital with access to a stroke neurologist is in Pine Bluff, which is 1 hour, 15 minutes away.

In most instances, Chicot Memorial is likely to see stroke patients who can’t wait for an ambulance ride to Pine Bluff.

“Losing the neurologist in Greenville was a big loss because that was our only backup for stroke patients who could receive the t-PA within that window of opportunity,” Suarez said. “The timing for SAVES couldn’t be better. Now our stroke patients have a fighting chance.”



*Viviana Suarez, M.D.
Medical Director
Chicot Memorial Medical Center*

“Now our stroke patients have a fighting chance.”

DeWitt Embraces Program

For Darren Caldwell of DeWitt Hospital and Nursing Home, the AR SAVES program is a way to improve his facility's service to its community.

The town of about 3,200 in rural southeast Arkansas does not have access to the specialists or resources of an urban area, he said. In 2009, the hospital became one of the first to join the AR SAVES program – and hospital employees embraced it.

“With that connection, we made ourselves a greater resource to our community,” said Caldwell, who is chief executive officer and hospital administrator

for the organization that includes the 25-bed hospital, a nursing home and ambulance service.

Caldwell is in his second stint at the helm of the community medical center, finding that he really enjoyed the rural setting. In all he has been at the DeWitt hospital for 14 years.

He is proud of the hospital's role as a community resource for education and healthy living. The AR SAVES program has participated in the hospital's annual health fair, and local high school students received stroke awareness education via telemedicine

to serve as ambassadors in the community.

Caldwell, who served on the Arkansas Telemedicine Oversight and Management (ATOM) Board, sees it this way: “If you care enough about the community you serve, you'll do everything you can to improve the services you can offer. AR SAVES gives DeWitt residents the best chance to survive and thrive following a stroke, so joining the program was an easy decision to make.”



*Darren Caldwell
Chief Executive Officer
DeWitt Hospital*

IT Boosts Efficiency

Information Technology groups at UAMS are finding new tools for improving the AR SAVES program.

Time-saving telemedicine technology is a critical element in its success. Video and data connections transmit information from community hospitals to stroke experts in time for lifesaving treatment to be administered. And IT specialists are constantly looking for ways to make those connections even faster.

Phillip Martin, a senior IT analyst at UAMS, says replacing laptop computers used to transmit data from carts at the bedside with

computer terminals has been a recent boost for convenience and efficiency. The terminals lack a hard drive for data storage like a laptop, he said, but still allow the needed data connection.

“Laptops had to be connected and disconnected each time so they could be safely stored when not in use,” Martin said. The terminals are secured to the carts and more convenient, he said.

By the end of 2011, the terminals are expected to be in place at almost all of the AR SAVES hospitals. Eventually all community partners will have the terminals, he said.

A past IT improvement drew praise last year in information technology circles when UAMS was ranked among the nation’s most innovative users of technology by business technology magazine InformationWeek. The virtual image repository used by the AR SAVES program was one of the projects cited as a factor in the ranking.

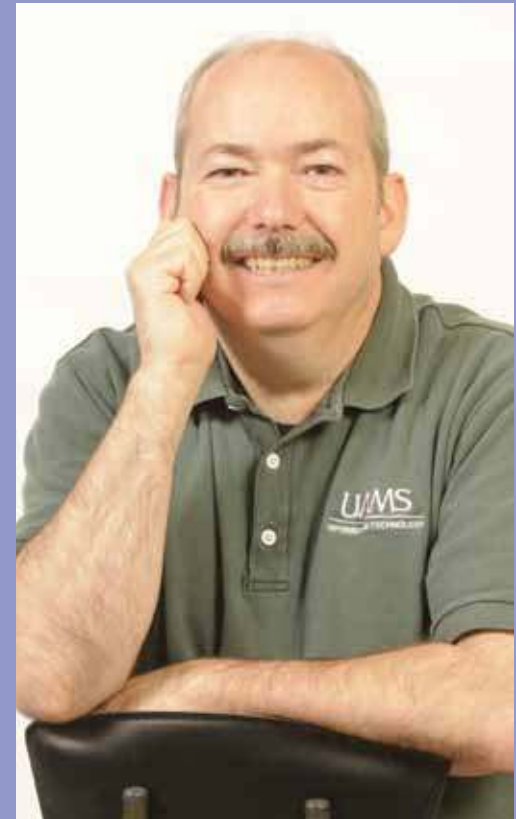
The Virtual PACS Image Repository, created by UAMS software developers, set up a secure, virtual network for AR SAVES hospitals to send CT images to UAMS for consultation. Previously, Martin said, stroke physicians at UAMS had

to access the images from links on their desktop computers with different user ID and passwords for each hospital.

“It was too cumbersome and sometimes confusing for the physicians to maintain all of those passwords,” Martin said.

The image repository hosts all CT images in one place and makes them available via secure Web browser for consultation.

“This system was set up by our developers and is another example of where we saw a problem and were able to develop a solution,” Martin said.



*Phillip Martin
Senior IT Analyst
University of Arkansas for Medical Sciences*

Team



Jody Carter, MS, CEM, NREMT-P is one of two health educators for the AR SAVES program. Traveling extensively around southern Arkansas, he disseminates educational materials, makes presentations, attends health fairs and collaborates with hospitals in reaching out to their populations to spread the message of stroke symptoms and the importance of calling 911 immediately.

Carter is also a paramedic at Saline Memorial Hospital. He earned a Bachelor of Science in chemistry from Henderson State University, and a Master of Science in emergency management from Jacksonville State University and is one of only two Certified Emergency Managers in Arkansas.



David Fletcher is the evaluation director for the Center for Distance Health, where he evaluates the efficacy and efficiency of distance health programs by examining UAMS data and Medicaid claims.

Before joining UAMS in 2005, he worked for more than 10 years in financial analysis in the health care industry, including at Walmart building a third-party billing system for their Vision Centers and for Electronic Data Systems, and examining recipient and expenditure data of the Arkansas Medicaid program.

Fletcher received a Bachelor of Science in economics and finance and Bachelor of Science in management and marketing from Arkansas Tech University, and an M.B.A. from the University of Arkansas at Little Rock.



Julie Hall-Barrow, Ed.D., is the director of education for the Center for Distance Health, where she provides oversight of the educational programs and provides training, communications and resources to networks across the state.

Also, she coordinates pediatric telemedicine activities at Arkansas Children's Hospital and UAMS and is the lead project director for AR SAVES. She received a doctorate in higher education from the University of Arkansas at Little Rock. She has published in peer-reviewed journals in the areas of health promotion, wellness and telemedicine. Hall-Barrow is also a member of the Delta State Stroke Network and the statewide Cardiovascular Committee.



Sami I. Harik, M.D., is a professor of neurology and former Department of Neurology chairman in the UAMS College of Medicine. He is one of three on-call neurologists in the AR SAVES program.

Harik received a medical degree from the American University of Beirut, School of Medicine in 1965. After postdoctoral training, he served as an assistant professor of medicine and attending neurologist at the American University Medical Center in Beirut, associate professor of neurology at the University of Miami, and professor of neurology and vice chairman of the Department of Neurology at Case Western Reserve University, School of Medicine, in Cleveland, Ohio. He joined UAMS in 1991.



Archana Hinduja, M.D., is an assistant professor of neurology in the UAMS College of Medicine and is one of the on-call neurologists for the AR SAVES program. She received her medical degree from Coimbatore Medical College in Coimbatore, India.

She served a residency in neurology at Seton Hall School of Graduate Medical Education with New Jersey Neuroscience Institute at Edison, NJ. She also completed a fellowship in Neurocritical care at the Cleveland Clinic Foundation in Cleveland, Ohio.

Hinduja is a member of the American Academy of Neurology, Neurocritical Care Society, and of the Society of Critical Care Medicine.



Terri Imus, R.N., is the lead outreach nurse for AR SAVES. She is an experienced registered nurse specializing in telemedicine and outreach in distance health. She has 15 years experience in high-risk obstetrics, adult critical care, post-anesthesia care and telemedicine.

Imus educates the public as well as health care providers in basic life support, maternal-fetal monitoring and hands-on training in the use of telemedicine equipment. She also provides community and professional education in the areas of stroke, telemedicine and high-risk obstetrics.

She became a licensed registered nurse in 1988. She is certified in critical care and received a Legal Nurse Consultant diploma in 2001.



Vladimir Karpitskiy, M.D., Ph.D., joined AR SAVES in 2009 as an on-call neurologist. He is board certified in adult neurology, neuromuscular medicine and vascular neurology. He opened a private practice in 2003 in Hot Springs, where he still practices.

Karpitskiy obtained his medical degree and a doctorate at the Crimea Medical School. Before immigrating to the United States, he was a professor of medicine in the USSR. He completed a neurology residency at Washington University Medical School Medical Center in St. Louis in 2003.



Salah G. Keyrouz, M.D., is the AR SAVES medical director and spearheaded an effort that led to primary stroke certification of UAMS. He is creating and leading a neurology and neurosurgery intensive care unit service.

Keyrouz joined the UAMS Neurology Department in July 2007. He completed neurology residency training at UAMS, and joined Washington University in St. Louis for a fellowship in neurocritical care. He is a certified neurointensivist and board-certified stroke neurologist.

Keyrouz sits on the Arkansas Acute Stroke Task Force, which evaluates the status of stroke prevention and care in the state. He is also a member of the Delta State Stroke Network and a fellow of the American Heart Association.



Delbert C. McCutchen, RN/EMT-A, is an outreach nurse for AR SAVES. He has an extensive background in EMS and Emergency nursing. He helps to provide support and education to the AR SAVES distant sites through person-to-person visits, interactive video training and continuing education. He also provides education to EMS services in and around those distant sites.

McCutchen has 16 years experience as an EMT. He received his AAS in nursing at North Arkansas College and is a certified instructor in CPR, ACLS, PALS and TNCC. He is a professional member of the American Heart Association and a member of the Emergency Nurses Association.



Tammy Northcutt, R.N., is assistant manager of the ANGELS Call Center. She is the lead triage nurse for AR SAVES, which entails coordinating the training of the triage nurses to facilitate the telestroke calls, including interactive video, documentation of the consults, and mock calls between the emergency room distant sites, the call center triage nurse and the neurologist. She also collects data of all stroke calls.

Northcutt received her L.P.N. from Baptist Health School of Practical Nursing and earned an associate degree in registered nursing from the University of Arkansas at Little Rock. She is certified by the American Heart Association in CPR and holds a NIH Stroke Scale Certification.



Stacy Pitsch, BSN, RNC-nic, is an outreach nurse for AR SAVES who provides clinical training and education for the AR SAVES sites. She is responsible for the performance of six of the sites, reviewing all calls and providing QI reporting on these calls. Her experience is in high-risk labor and delivery and neonatal intensive care.

Pitsch received a diploma of nursing from Baptist Health Schools of Nursing in 2000 and a Bachelor of Science in Nursing at the University of Arkansas at Little Rock. She is pursuing a master's degree in the nurse practitioner program at UAMS. Stacy is also ANCC certified in her specialty field.



Margaret Tremwell, M.D., is an on-call neurologist with the AR SAVES program. She received her medical degree from the University of Florida, College of Medicine in Gainesville, Fla., where she also completed her residency. She completed a fellowship in cerebrovascular disease and stroke at the University of California, Los Angeles.

Tremwell is board certified in neurology and vascular neurology by the American Board of Psychiatry and Neurology. She is a member of the American Academy of Neurology and the American Medical Association



Debra Johnson, R.N., B.S.N., has 15 years experience in the field of neurology. She works closely with the neurology physicians specializing in stroke and with communities outside Little Rock on the AR SAVES project. Johnson follows the patient from the initial call through the three-month review examination. She also works with the nurse facilitators in the rural hospitals to coordinate ongoing training through mock calls and to ensure that all telemedicine units are running smoothly.



Rick Washam, B.S.E., M.A.T., M.Ed, is the health educator for the AR SAVES program. He educates the public on the warning signs of stroke and the need to identify stroke as a medical emergency. Washam facilitates the planning and organizing of AR SAVES stroke health education programs for group and community needs. He develops and maintains cooperation between public, civic, professional and voluntary agencies as well as prepares and disseminates stroke educational and informational materials throughout these communities.

Washam received a Bachelor of Science in education, health education and biology from the University of Central Arkansas, a Master of Arts in teaching from Harding University and a Master of Education from Harding University.



Loretta Williams, R.N., is the assistant outreach nurse for AR SAVES. She has an extensive background in rehabilitation nursing. She provides support to the AR SAVES distant sites through person-to-person visits, interactive video training and continuing education. She collects and reports data to the Center of Distance Health.

Williams received a Diploma of Nursing from Baptist Health School of Nursing, and NIH Stroke Certification from the American Heart Association. She is a participant of the Silent/Clinical Disease Workgroup at the Arkansas Department of Health - Heart Disease and Stroke Prevention Section.



Administrative Staff

Tina Benton, B.S.N., is program director of the Antenatal & Neonatal Guidelines and Education Learning System (ANGELS) in the Department of Obstetrics and Gynecology at UAMS, and the clinical division director and operations manager of the Center for Distance Health.

Benton helped develop ANGELS in 2003 after 12 years as a perinatal outreach nurse in the Department of Obstetrics and Gynecology's Division of Maternal-Fetal Medicine. She received a Bachelor of Science in nursing at Henderson State University. She has presented posters at several telemedicine meetings in the United States and is a long-standing member of the Association of Women's Health, Obstetric and Neonatal Nurses.

Roy Kitchen, B.S., M.S., is the business administrator for the Center of Distance Health and the deputy administrator for the Department of OB/GYN. He develops and oversees day-to-day administration of the center, training and technical assistance, and programs. He works with grants and assists with negotiations of contracts, including development of new business proposals, affiliation agreements, memorandums of understanding and preparation of cost analysis and financial impact.

Kitchen received a Bachelor of Science in business administration and Master of Science in operations management both from the University of Arkansas, Fayetteville. He joined UAMS in 2002 as administrator in the Division of Cardiovascular Medicine before moving to the Center for Distance Health in 2006.

Becky Pillert is the administrative coordinator for the AR SAVES program. She oversees contracts and credentialing for all sites around Arkansas. Pillert has 33 years of experience with UAMS serving in several capacities. She is pursuing a bachelor's degree in liberal arts at the University of Arkansas at Little Rock.

Pillert also serves as administrative support for the pediatric section educational programs of the Center for Distance Health.

Leadership

Acknowledgements

Amy Abdella — As a program manager for the Center for Distance Health and ANGELS, Amy assists with AR SAVES, for which she provides marketing support and coordinates material deadlines for the team.

UAMS Center for Distance Health Video Department — The CDH Video team provides all technical assistance for video conferencing equipment and all of the AR SAVES sites and consulting physicians.

Presentations

Access of Rural Hospitals to Acute Stroke Care through Telemedicine: The Structure of the Arkansas SAVES (Stroke Assistance through Virtual Emergency Support) Telestroke Program. Salah G. Keyrouz, and the AR SAVES group. International Stroke Conference 2011, Los Angeles

Improving Door to Needle Times in a Statewide Publicly Funded Telestroke Program. Terri L. Imus, Loretta Williams, Julie C. Hall-Barrow, Tammy L. Northcutt, Debra M. Johnson. International Stroke Conference 2011, Los Angeles (poster)

Impact of Number of Consultations on Different Time Parameters in Spoke Hospitals in a Statewide Telestroke Program. Bappaditya Ray, Shadi Yaghi, Salah G. Keyrouz, and the AR SAVES group. American Academy of Neurology 63rd annual meeting, Honolulu, April 2011 (poster)

Conversion Disorder Mimicking Acute Stroke in a Statewide Telestroke Program: Experience and Challenges in Diagnosis. Salah G. Keyrouz, and the AR SAVES group. American Academy of Neurology 63rd annual meeting, Honolulu, April 2011 (poster)

Comparison of Post-Thrombolysis Care of Acute Stroke in Hub versus Spoke Hospitals of a Statewide Telestroke Program. Shadi Yaghi, Eugene Achi, Salah G Keyrouz, and the AR SAVES group. American Academy of Neurology 63rd annual meeting, Honolulu, April 2011 (poster)

Efficiency of Intravenous Thrombolysis in Telestroke Program vs. Tertiary Care Center. Shadi Yaghi, Bappaditya Ray, Salah G. Keyrouz, and the AR SAVES group. American Academy of Neurology 63rd annual meeting, Honolulu, April 2011 (Scientific platform)

AR SAVES at Work

PARTNERS FOR SUCCESS: The Center for Distance Health appreciates the collaboration and guidance for AR SAVES from the Arkansas Department of Human Services, Division of Medical Services.



Eugene Gessow
Division Director, Division of
Medical Services AR DHS



Sheena Olson
Assistant Director, Division of
Medical Services AR DHS



AR SAVES team member Richard Washam (right) receives a \$10,380 check from the Helena Health Foundation for educational media.



(Left) Julie Hall-Barrow, Salah Keyrouz, M.D. and Margo Warren at the Know Stroke in the Community: An NIH/CDC Partnership training in October



(Above) AR SAVES neurologist Margaret Tremwell, M.D., shares a moment with stroke survivor Jim Sack from Mountain Home.



Stroke survivor Iva Sikes of Mena with great-granddaughter.



(Above) Stroke survivors Marcia Griffith from Paragould (2nd from left) and Jim Sack from Mountain Home (3rd from left) and spouses enjoy themselves at the Strike Out Stroke event at the Naturals baseball game in May 2011.



(Left) Lamar High School students distribute stroke education materials at the National EAST Conference in Hot Springs.



Mena middle school students create community stroke education materials.



(Above) Margaret Tremwell, M.D. makes an impressive entrance at the Strike Out Stroke event.

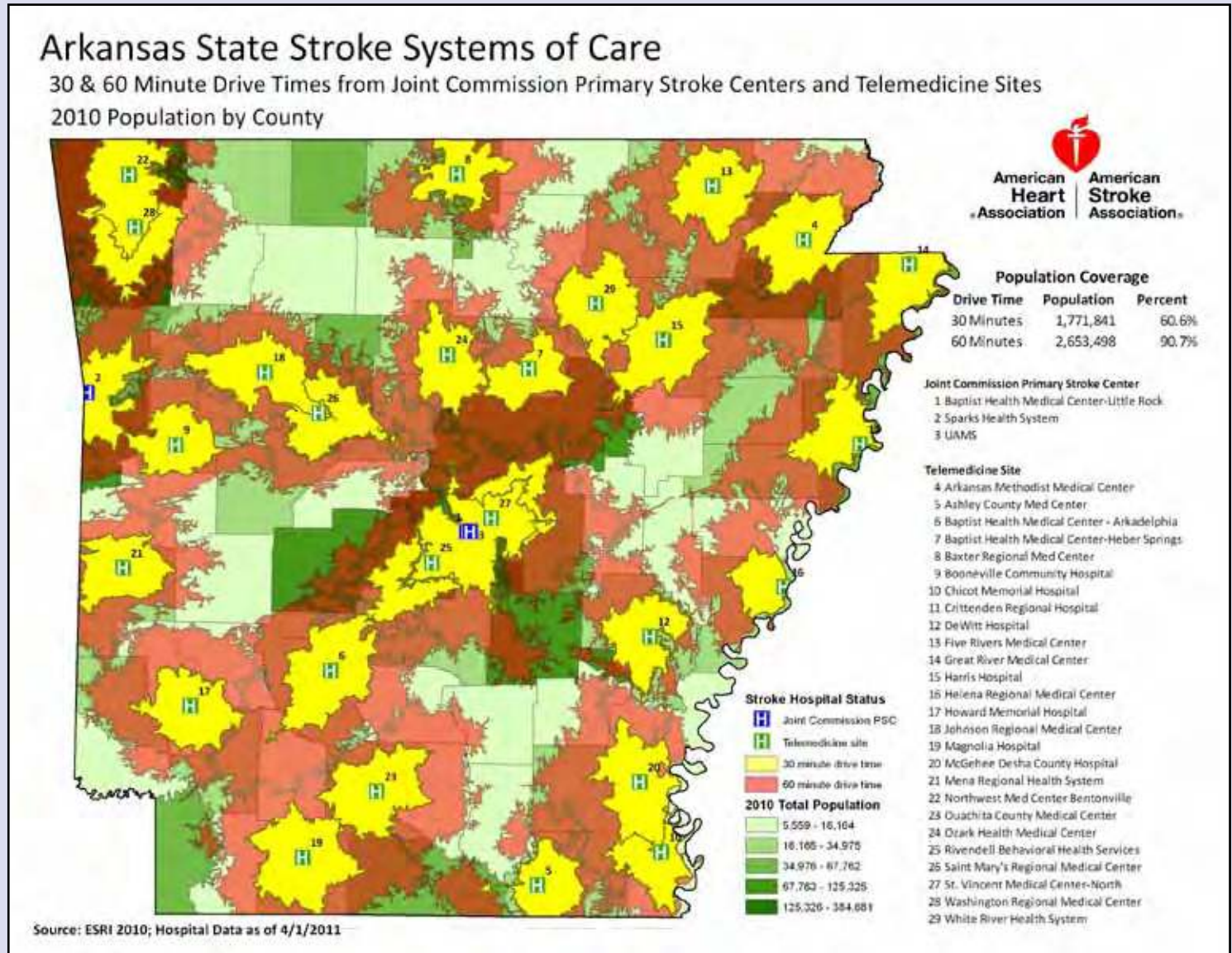


(Above) Rick Washam instructs during a Community Education Activity at the annual stroke conference.

Drive Times to Acute Stroke Care

In August 2009, with two certified primary stroke centers in Arkansas, only 38.4 percent of the state population was within a 60-minute drive in an ambulance from a hospital equipped to provide acute stroke care.

By June 2011, with three certified primary stroke centers and 26 other hospitals connected through AR SAVES, more than 90 percent of the state population is within a 60-minute drive of acute stroke care (*see map*).



Courtesy of the American Heart Association

From the Medical Director

As health care professionals accept and embrace the role of telemedicine in delivering care, especially in rural areas, we are witnessing more telestroke networks emerging in the United States and elsewhere. AR SAVES has continued progress and improvement since its creation in 2008. This past year this progress was highlighted on the clinical, logistical and technological, educational and outreach activities, and research fronts.

The program is delivering care to more Arkansans than ever before. By the fiscal year ending June 30, 2011, 29 hospitals, including two hubs, have connected through the statewide network. We performed more than 400 consultations, and administered intravenous t-PA to more than 100 stroke patients. Many patients are staying in spoke hospitals, but some with more complex needs transfer to a hub hospital. We organized a “stroke pathway” process to mobilize multidisciplinary teams needed to care for complex stroke patients.

In April, UAMS achieved Primary Stroke Center certification, and now both hubs possess this designation.

Our consultation process was simplified by the creation of an image repository in which brain CAT scans are loaded for review. This ingenious method could be a platform used across the state; it simplifies and optimizes communication among health care professionals and cuts the cost of health care delivery by precluding repeating imaging upon transferring patients between institutions.

The program furthered its educational activities to health care professionals and rural communities by partnering with the NIH “Know Stroke in your Community” program. The program trains lay people to educate the public. This was the first time the program was broadcast through live videoconferencing to AR SAVES partner institutions.

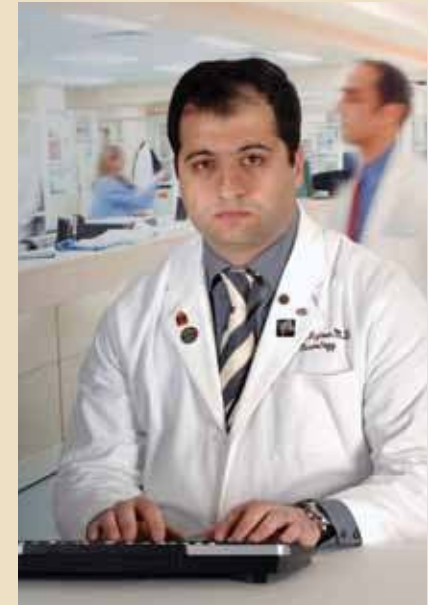
We had more than six scientific posters and platform presentations accepted at national and international meetings. And we successfully organized the first AR SAVES Stroke conference, held on Mount Magazine.

AR SAVES continues to thrive, and as we tend to more Arkansans with stroke in more communities across the state, improving and making our processes more efficient is vital. We should not forget that our goal is to eradicate this disease through education and prevention. However, until we achieve this goal, we should not settle for suboptimal outcome and disability in stroke patients.

Respectfully,



Salah Keyrouz, M.D.
Medical Director AR SAVES
Assistant Professor of Neurology
College of Medicine
University of Arkansas for Medical Sciences





www.uams.edu/saves