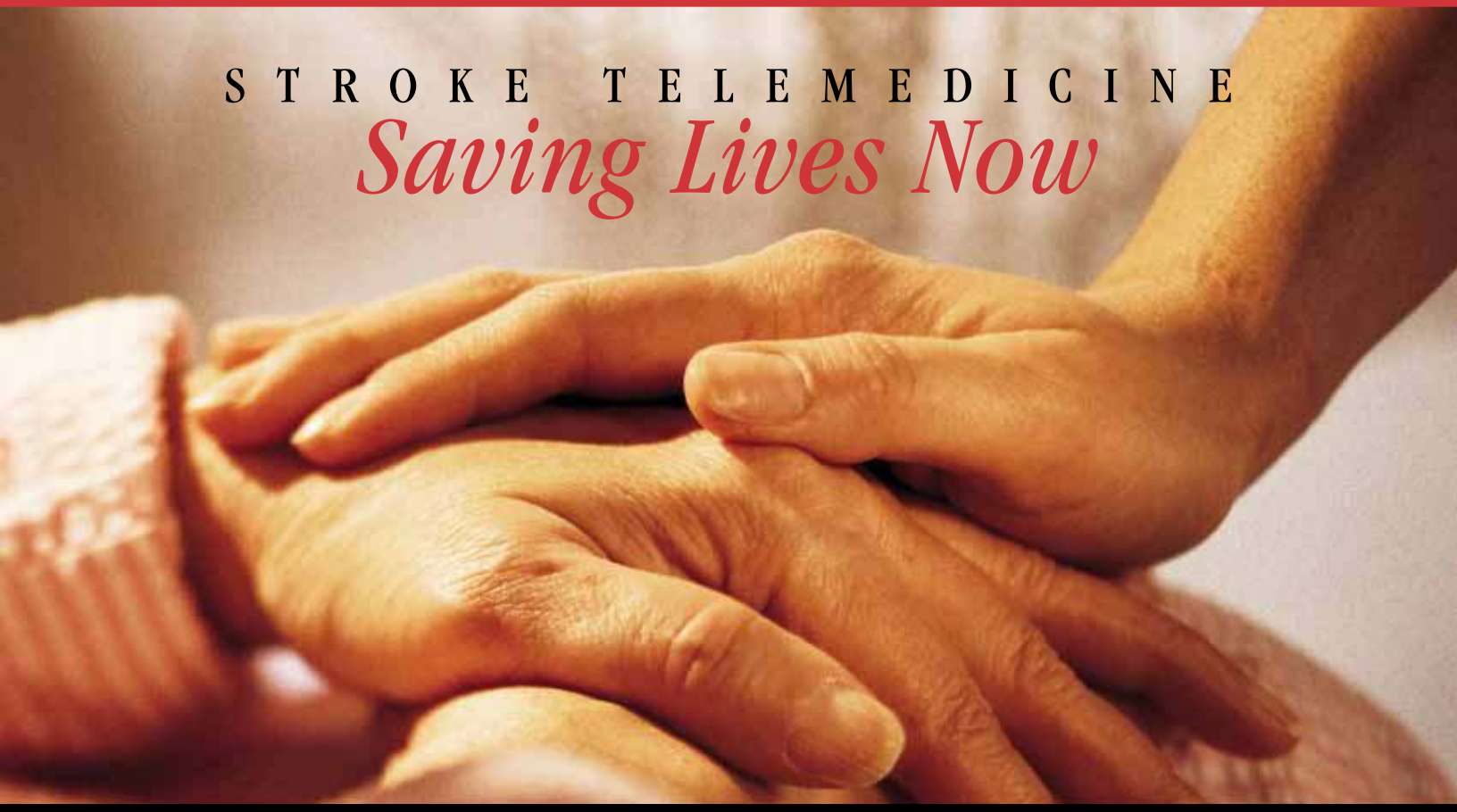
AR SAVES 2008 Annual Report

STROKE TELEMEDICINE

Saving Lives Now



AR SAVES

Stroke Assistance through Virtual Emergency Support

Morbidity and Mortality rates for strokes in Arkansas are devastatingly high. In the past year the Center for Distance Health has partnered with a number of hospitals to reduce those rates. Due to geography, demographics, poverty level and location of appropriate specialists at the tertiary care centers – it is imperative that to provide immediate access to Emergency Room physicians who need vascular neurology consults for the rural patient. Over the last year the Center for Distance Health has successfully brought specialty care to rural Arkansans, diminishing disparities, improving outcomes and saving healthcare dollars.

Having grown up in the rural south I have some perspective of what it is like to live far from medical specialists. I am proud of what the Center for Distance Health has accomplished for our state with bridging the gap between rural Arkansans and specialists – no matter where they reside. I feel AR SAVES (Stroke Assistance through Virtual Emergency Support) demonstrates that buy-in and cooperation from the federal government, Arkansas Medicaid, our emergency colleagues, and key UAMS leaders can make a difference. All of these entities have exhibited unwavering trust, and are innovative thinkers willing to take chances beyond the norm to ensure that the AR SAVES Program, thus Arkansans are the winners.

AR SAVES capitalizes on these strategic partnerships and current telemedicine technology to deliver:

- comprehensive specialty care to patients experiencing strokes
- educational and training programs
- program evaluation and research

I look forward to conquering more challenges in the upcoming year and in years to come to deliver the final product of improved outcomes and saved healthcare dollars for Arkansans.

Respectfully,

Curtis L. Lowery, MD
Director, Center for Distance Health

"The AR SAVES program has partnered hospitals and specialists through technology and is a huge boost for improving and keeping Arkansans healthy." –ROY JEFFUS
Director
Department Human Services
Division of Medical Services

OVERVIEW

Many stroke patients that are rushed to their local hospital emergency room have a high risk of death or permanent disability. That's because emergency rooms aren't likely to be staffed by a neurologist who can diagnose the type of stroke and whether to treat it with tissue plasminogen activator (t-PA), the blood-clot dissolving agent used for ischemic stroke. Although potentially life-saving for people with an ischemic stroke, t-PA may be detrimental if the patient has a different type of stroke. The AR SAVES (Stroke Assistance through Virtual Emergency Support) program presents an innovative solution to this complex, statewide problem.

The program was launched in November 2008 by the UAMS Center for Distance Health and the Department of Human Services Division of Medical Services. This program uses a high-tech, video communications system to help provide immediate, life-saving treatment to stroke victims 24 hours a day.

The AR SAVES system relies on the ANGELS and state Health Department's hospital preparedness high-speed video network transmission lines that provide the live, video communication necessary to link an on-call neurologist with a local hospital physician who is caring for a stroke patient. The program has installed telemedicine equipment at the hospital emergency rooms staffed by the participating neurologists, and at their homes.

As part of the program, first responders in all of the partner hospitals have been trained to perform a stroke assessment so that they can alert emergency room doctors before they arrive. Emergency room doctors, nurses and ancillary personnel also have been trained as part of the program to do a more in-depth stroke assessment upon arrival. Further evaluation continues after sending the patient for a battery of tests, including a CT scan. If the CT scan indicates a stroke, the attending physician will call a special hotline that activates the AR SAVES Telestroke System. The call goes to a nurse staffing the University of Arkansas for Medical Sciences (UAMS) CDH Call Center who then links – via the video connection – the on-call neurologist with the remote emergency room physician.

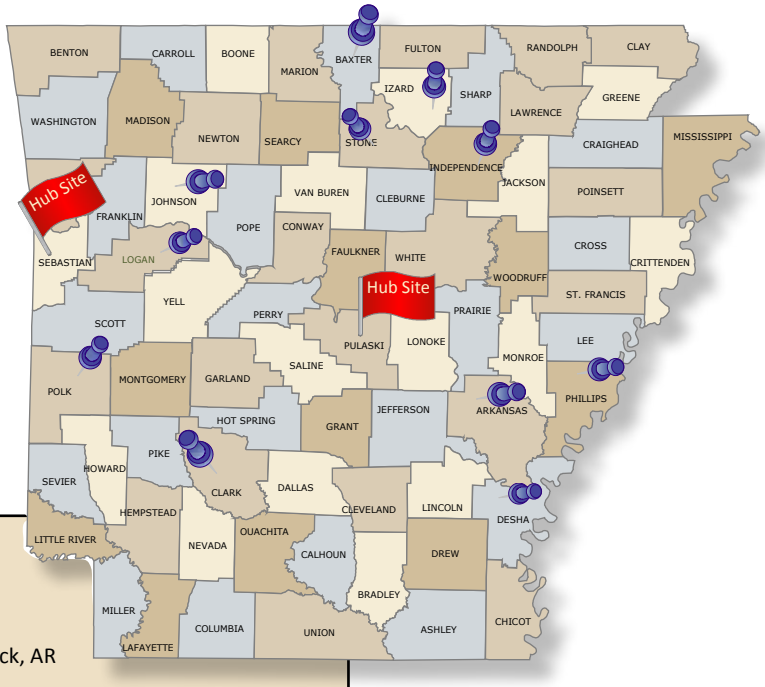
The neurologist has immediate access to lab results, the CT brain image and a real-time, high-definition video/audio connection with the emergency room physician and patient. Together they can determine the appropriate treatment, such as whether to administer t-PA and the correct dosage.

UAMS on-call neurologists are: Salah Keyrouz, M.D., the AR SAVES medical director; James Schmidley, M.D., professor of neurology at UAMS; and Margaret Tremwel, M.D., a neurologist at Sparks Regional Health System in Fort Smith.

The state-wide partnership includes the UAMS Center for Distance Health, the state Health Department, Sparks Regional Health System in Fort Smith, Booneville Community Hospital, Johnson Regional Medical Center, Mena Regional Health System, McGehee-Desha County Hospital, White River Medical Center, Baxter Regional Medical Center, Helena Regional Medical Center, Baptist Medical Health Center - Arkadelphia and DeWitt Hospital.

Participants

The statewide telestroke care program includes two hub sites and nine spoke. Spoke sites are rural hospitals providing onsite care of acute stroke patients using telemedicine technology for neurology consults to participating regional medical centers or hub sites. Hub sites are regional medical centers providing 24/7 support for neurology consultation and intensive care transport of patients receiving treatment at participating rural hospitals for spoke sites. This hub and spoke model will allow for multiple sites to provide expert care to other areas of the state.



Hub Sites

Central Arkansas
UAMS Medical Center, Pulaski County, Little Rock, AR
Arkansas River Valley
Sparks Health System, Sebastian County, Fort Smith, AR

Spoke Sites

Arkansas River Valley
Johnson Regional Medical Center, Johnson County, Clarksville, AR
Western Arkansas
Mena Regional Medical Center, Polk County, Mena, AR
Booneville Community Hospital, Logan County, Booneville, AR
Southwestern Arkansas
Baptist Health, Clark County, Arkadelphia, AR
Mississippi Delta
Helena Regional Medical Center, Phillips County, Helena-West Helena, Arkansas
McGehee Desha County Hospital, Desha County, McGehee, Arkansas
DeWitt Hospital, Arkansas County, DeWitt, Arkansas
North Central Arkansas
Baxter Regional Medical Center, Baxter County, Mountain Home, Arkansas
White River Medical Center, Independence County, Batesville, Arkansas

Technology

"Information Technology support is critical to the success of any telemedicine program," said Eric McKenney, AR SAVES video conference support manager. The mobile monitors, the hardware, the software all play a crucial role in the delivery of care to stroke patients."

A major component of the information technology is the mobile monitor, the ISI MD-Stroke. This monitor is designed to enable emergency department professional to interact and collaborate with neurologists by utilizing HD video conferencing and visual communications, regardless of the distance between locations.

Each unit comes equipped with the following features:

- HD Pan-Tilt-Zoom Camera
- 22" High Resolution Display with Integrated Speakers
- Convenient Rear Storage Bin & Handle
- Omni-Directional Microphone
- Integrated VGA+Audio Cable for Sharing Laptop Presentations
- Digital Stethoscope with Separate Volume Control
- Integrated ENT Otoscope & Dermscope with Single Light Source
- Retractable Power & Network Cables
- Adjustable Height Settings
- Back-up Power System for Increased Mobility

Team

David Fletcher is the program 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 information.

Fletcher joined UAMS in October 2005 and has worked for more than 10 years in financial analysis in the health care industry, including two years at the WalMart corporate office working to design and build a third party billing system for their Vision Centers. He then worked five years for Electronic Data Systems, the fiscal agent for the Arkansas Medicaid program, as a financial analyst examining recipient and expenditure data.

As a double major, he received a Bachelor of Science in Economics and Finance and Bachelor of Science Management and Marketing from Arkansas Tech University. He earned his M.B.A. from the University of Arkansas at Little Rock.

Salah G. Keyrouz, M.D., is the AR SAVES medical director and is spearheading an effort that will lead to primary stroke certification of UAMS. He is also working on creating and leading a neurology and neurosurgery intensive care unit service that will tend to the complex needs of such critically-ill patients.

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.

Dr. Keyrouz sits on the Arkansas Acute Stroke Task Force, a legislature mandated committee whose job is to evaluate the status of stroke prevention and care in the state, identify opportunities for improvement and recommend action. He is also a member of the Delta State Stroke Network (DSSN), and a fellow of the American Heart Association.

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.

In addition, she coordinates pediatric telemedicine activities at Arkansas Children's Hospital and the University of Arkansas for Medical Sciences and is the lead project director for AR SAVES. She received her 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. Dr. Hall-Barrow is also a member of the Delta State Stroke Network (DSSN) and the state-wide Cardiovascular Committee.

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 an extensive nursing background with 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 usage of telemedicine equipment. She also provides community and professional education in the areas of stroke, telemedicine, and high-risk obstetrics.

She received an associate science of nursing and went on to become a licensed registered nurse in 1988. She is certified in critical care and received a Legal Nurse Consultant diploma in 2001.

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' practice calls between the emergency room distant sites, the call center triage nurse and the neurologist. As assistant manager, she also collects data of all stroke calls for a monthly report.

Northcutt received her L.P.N. from Baptist Health School of Practical Nursing. She went on to earn 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.

Team

James W. Schmidley, M.D., is a professor and vice chairman of the Department of Neurology in the UAMS College of Medicine and is one of three on-call neurologist in the AR SAVES program. He received his medical degree from the University of Virginia, School of Medicine. He completed his residency at the University of California Hospital, San Francisco. He is board certified in both neurology and vascular neurology.

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.

Dr. Tremwell is board certified in neurology and vascular neurology by the American Board of Psychiatry and Neurology. She is also 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 (acute) through the three-month (post t-PA) review examination. She also works with the nurse facilitators in the rural hospitals to coordinate ongoing training through mocks and to ensure that all telemedicine units are running smoothly.

Administrative Staff

Roy Kitchen is currently 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, programs; awarded grants, assists with negotiations of contracts including: development of new business proposals, affiliation agreements, memorandums of understanding and preparation of cost analysis and financial impact. He is also a professor at the University of Central Arkansas, where he has taught sales and marketing since 2001.

Kitchen received his bachelor's in business administration and master's in operations management both from the University of Arkansas, Fayetteville. He has been speaking publicly for more than 15 years and has the ability to motivate and inspire. He has been employed at UAMS for six and half years. He started working in the Division of Cardiovascular Medicine as the division administrator in 2002. He then had the opportunity to transfer to the Center for Distance Health in 2006 and assist in building the foundation of this new Center.

Tina Benton is the program director of 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 assisted in the development of ANGELS in 2003 after 12 years of service in the Department of Obstetrics and Gynecology's Division of Maternal-Fetal Medicine as a perinatal outreach nurse. Along with UAMS' Ann Bynum, Tina Benton accepted the American Telemedicine Association's Innovation Award for the ANGELS program in 2007. The program was also is a finalist in the 2007 Innovations in American Government Awards by the Ash Institute for Democratic Governance and Innovation at Harvard University's John F. Kennedy School of Government.

Benton received a bachelor of science in Nursing at Henderson State University. She has presented posters at several telemedicine-associated meetings in the United States and is a long-standing member of the Association of Women's Health, Obstetric and Neonatal Nurses.

Acknowledgments

Rebecca Pillert – As administrative assistant for Center for Distance Health, Pillert coordinates the administrative communications for AR SAVES partners.

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.

AR SAVES Compliments Other Telemedicine Programs

AR SAVES is the latest in the Center for Distance Health program. Launched in 2006 the Center for Distance Health program allows UAMS to more effectively and efficiently respond to increasing demands for dynamic contemporary health care.

"AR SAVES is a vital piece to the puzzle in providing health care to rural areas of Arkansas that would otherwise lack the capability to care for stroke patients," said Curtis Lowery, M.D. director of the Center for Distance Health. "Time is imperative, by linking physicians and emergency medical staff with an on-call neurologist, victims of stroke are able to receive immediate care."

"An important part of UAMS' mission is reaching out to rural areas of the state and helping local physicians identify patients with stroke and improve the patients' outcomes," said Salah Keyrouz, M.D., the AR SAVES medical director and assistant professor of neurology at UAMS.

The need for AR SAVES is evident. The most recent statistics from the National Centers for Disease Control and Prevention show that Arkansas had 1,847 stroke-related deaths in 2005, which dwarfs Arkansas' other major causes of death. Arkansas ranks third highest among all states in stroke deaths, with 61 per 100,000 residents. Only Alabama and Tennessee had a higher number. The nationwide direct and indirect cost of medical and institutional care of permanently disabled stroke victims was $57.9 billion in 2006.

"The AR SAVES program will save lives and money because if stroke patients get the treatment they need within three hours, they have a much greater chance of living without a major, costly disability," said Julie Hall-Barrow, Ed.D., education director for the UAMS Center for Distance Health.

The AR Saves team provides intensive training to program participants. AR SAVES outreach nurse, Terri Imus, along with a neurologist and a drug manufacturer representative conduct a series of educational programs that include mock stroke calls. The training lasts approximately three to four hours and covers the clinical and technical aspects of an actual stroke call. These mock stroke calls aim to increase their capacity to handle an actual stroke call when it occurs.

Dr. Salah Keyrouz, the AR SAVES medical director and assistant professor of neurology at UAMS reviews CT images online.

John E. Heard, Chief Executive Officer, McGehee-Desha County Hospital

"McGehee-Desha County Hospital is a rural Critical Access Hospital, located in McGehee, Ark. Our hospital has converted to electronic health records and we are continually expanding our electronic capabilities. So, when our hospital found out about the AR SAVES program through UAMS, this was the perfect opportunity for our facility to work with a "world class" university and help expand its presence in the state.

Arkansas has one of the highest stroke rates in the nation and AR SAVES provides our hospital and our community the peace of mind to know that we have the ability to contact a stroke specialist anytime day or night, 365 days a year. The program has helped our hospital and diagnosed several patients through our emergency department since the go-live day in January 2009. This is an exciting time in health care with the many new technologies available, and we look forward to working with UAMS on other projects to create a healthier Arkansas in the near future."

Training

The AR Saves team provides intensive training to program participants. AR SAVES outreach nurse, Terri Imus, along with a neurologist and a drug manufacturer representative conduct a series of educational programs that include mock stroke calls. The training lasts approximately three to four hours and covers the clinical and technical aspects of an actual stroke call.

"I feel so much more capable and competent since the training and support received via UAMS AR SAVES program. As with any new skill, the more you learn, become familiar and practice, the more comfortable you feel. The staff of AR SAVES is very knowledgeable and willing to help any time we call. I know my other staff members share my sentiments as well."

– Carol Allen, R.N., emergency room nurse manager
Mena Regional Health System

"The telestroke system supplements our resources here at Mena Regional Emergency Department and allows to provide area residents with 24-hour a day coverage," said Dr. Bill McCourtney.

During the sessions, the emergency medical systems staff is trained to perform a stroke assessment using the (LAPSS) Los Angeles Pre-hospital Stroke Scale, in order to alert emergency room doctors before they arrive. Emergency room doctors and nurses also have been trained as part of the program to do a more in-depth stroke assessment upon arrival utilizing the National Institutes of Health Stroke Scale.

As part of AR SAVES training, all participants are required to participate in the free CME/CE-certified online training program to learn or review how to administer the NIH Stroke Scale for acute stroke assessment. The training was developed by the American Stroke Association, in conjunction with the American Academy of Neurology and the National Institute of Neurological Disorders and Stroke.

"The AR SAVES staff and program has provided much needed educational information for us to provide to the community to increase their awarenes. This can only help to promote a decrease in lingering disability in those stroke victims that get to us quickly and that qualify for the t-PA therapy."

– Terri Stumbaugh, R.N.

Communities benefit from AR SAVES network

• November 12, 2008, eleven days after the launch of AR SAVES, a Clarksville resident was rushed to the Johnson Regional Medical Center where the attending physician called an AR SAVES on-call neurologist. Within minutes the on-call neurologist had access to the hospital's lab results, a high resolution CT brain image and a real-time, high-definition video/audio connection with the ER physician and the patient. Dr. Keyrouz confirmed the diagnosis and the t-PA was used.

• December 3, 2008, a patient loses the use of her entire left side and is rushed to the Mena Regional Emergency Department. Carol Allen, R.N., and Bill McCourtney, M.D., contacted an on-call neurologist through AR SAVES who went over her test results via teleconference. The patient was amazed by the efficiency of the medical staff, commenting that it was as if they had rehearsed a dozen times. "The AR SAVES program enabled our emergency staff to assess and treat the patient within the three hour mark," said McCourtney.

t-PA is the 3-hour miracle

t-PA is a tissue plasminogen activator produced by recombinant DNA technology. t-PA stimulates the body's own clot-dissolving mechanism by activating plasminogen, a naturally occurring substance secreted by endothelial cells in response to injury to the artery walls that contributes to clot formation. The effectiveness of t-PA is greatest when the drug is given within three hours of ischemic stroke symptoms.

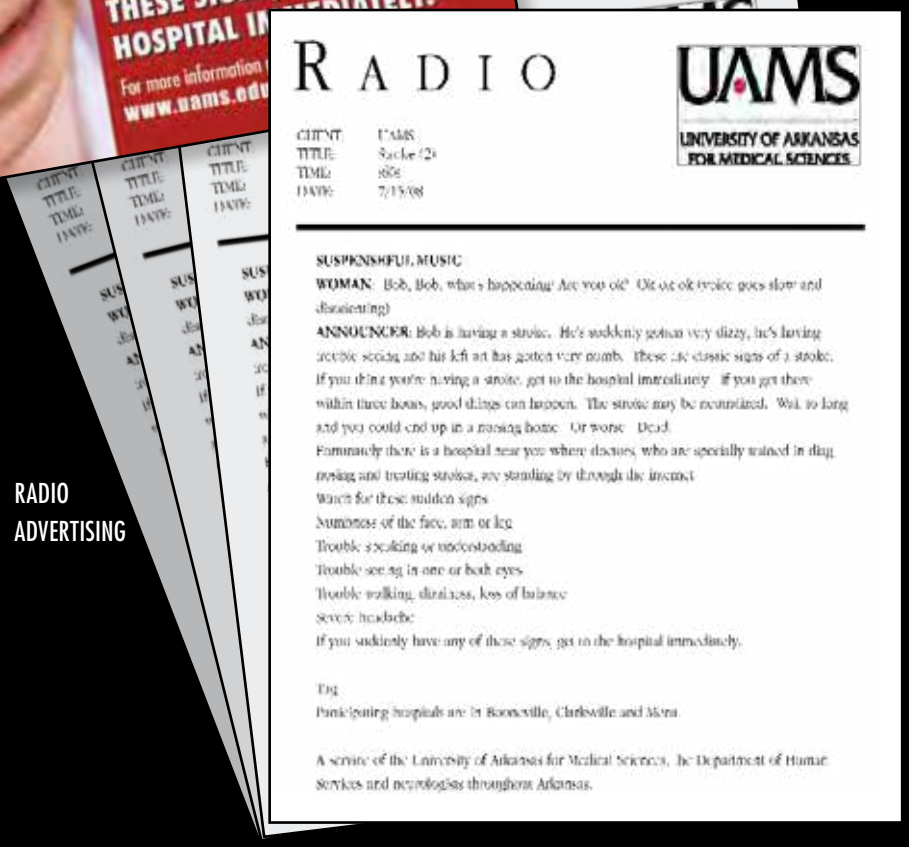
MEDIA

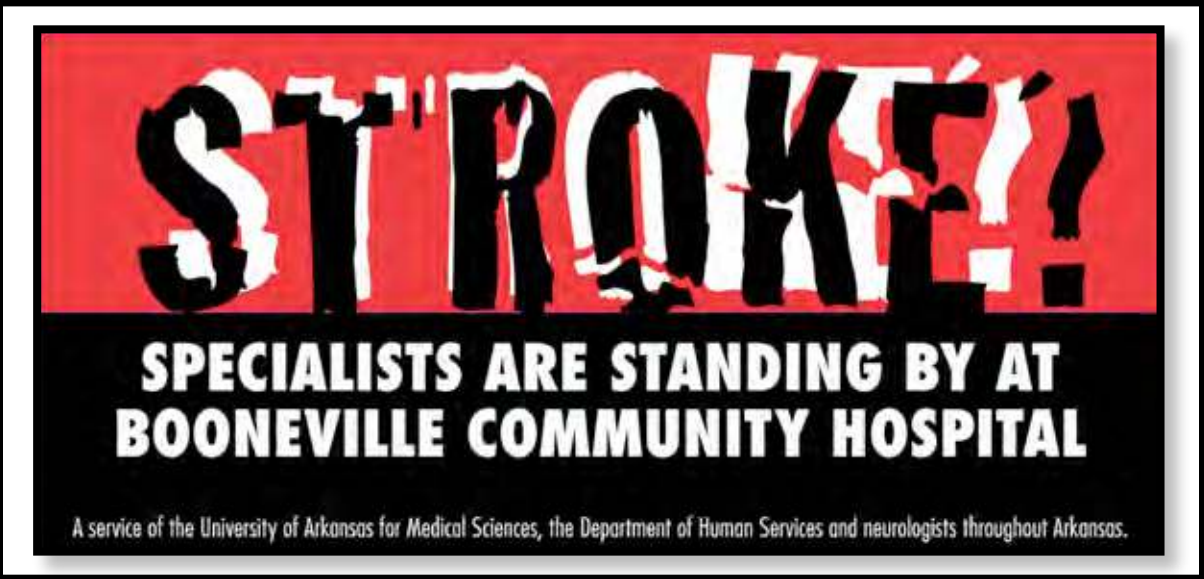
A public communications program was utilized to raise awareness about stroke prevention, symptom recognition and to spread hope about stroke recovery. Newspaper, outdoor billboard and radio advertising were seen throughout areas in which AR SAVES operates. The initial media schedule for each area included a two month of billboards and an eight week radio schedule using sixty second commercials. Four additional months of billboards are planned to maintain awareness in each area. Refrigerator magnets and hand out cards with symptoms were produced and distributed at health fairs and other public events in each area. Newspaper ads ran during the month of May to coincide with National Stroke Awareness Month.

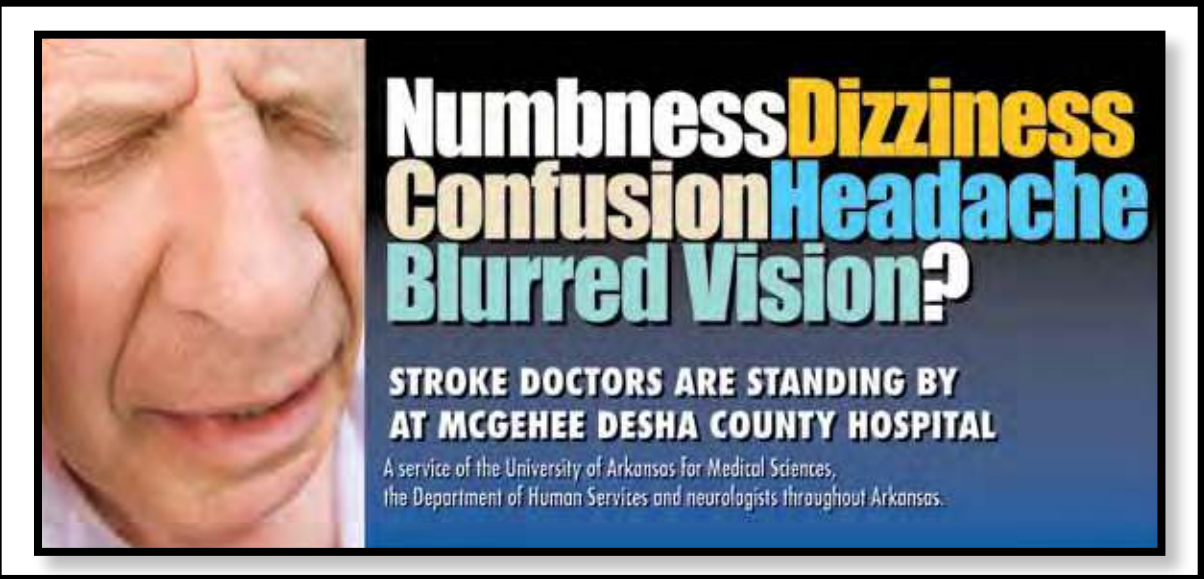
NEWSPAPER ADVERTISING

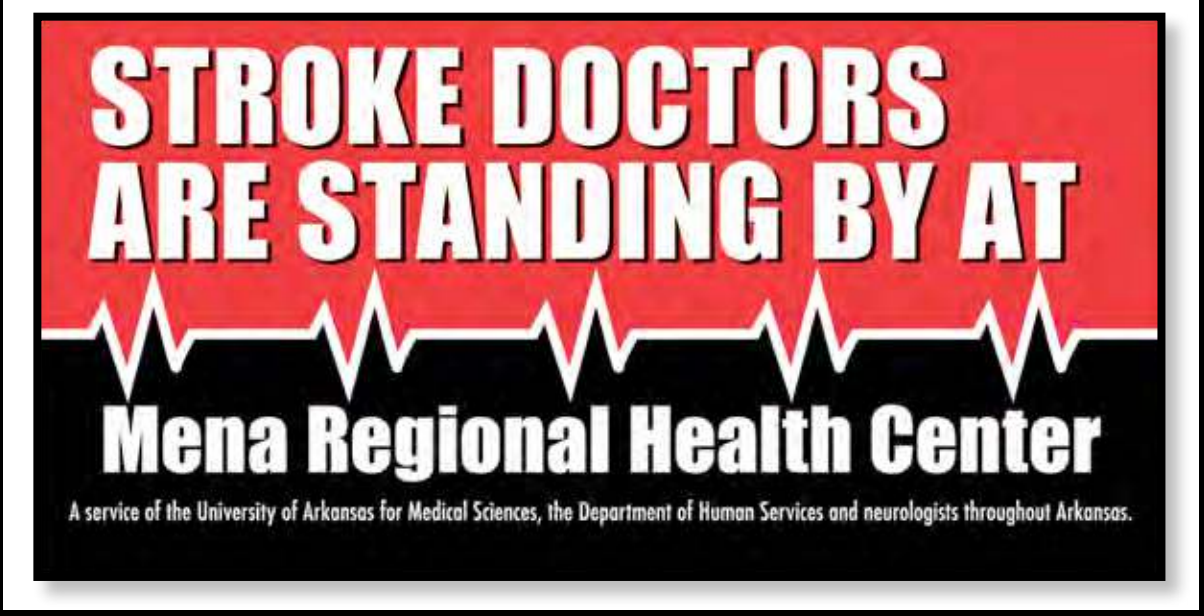
INFORMATIONAL CARD

RADIO ADVERTISING









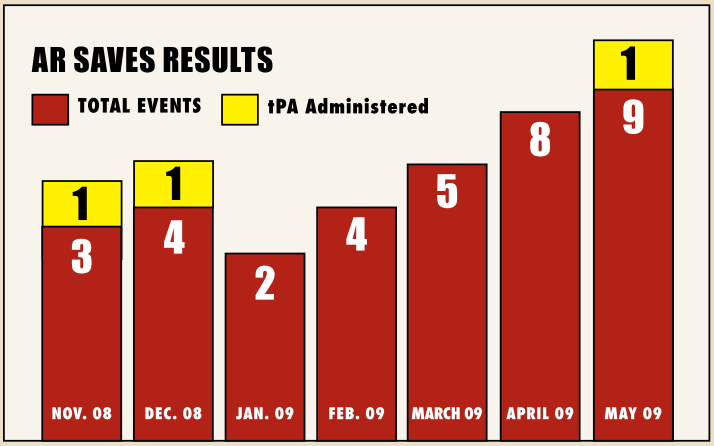
OUTDOOR BILLBOARD ADVERTISING

AR SAVES...Next Steps

Over the next year AR SAVES will work with an additional 9 hospitals to provide 24 hour coverage for acute stroke care. To provide health care workers with additional training, the AR SAVES program has hired Loretta Williams, R.N. to tackle all continuing education statewide. In addition, we have hired Rick Washam, M.S. (CDH Health Educator) to work with each hospital to develop a grass roots public health education campaign focusing on the signs and symptoms of stroke. This campaign will not only make people aware of stroke symptoms but how important it is for them to get to the emergency room as soon as those symptoms start. Stroke can be treated and the effects from strokes can be lessened when treated in time and that is the message that we will be spreading.

Loretta Williams, R.N.

Rick Washam, M.S.



Since November 2008 until May 2009 a total of 35 consults have been completed using the AR SAVES telemedicine program. Three patients qualified for the use of tPA and are currently being followed to determine outcomes related to morbidity and mortality.

STROKE FAST FACTS

- TOTAL COST OF STROKE TO THE UNITED STATES: estimated at about $43 billion per year
- DIRECT COSTS FOR MEDICAL CARE AND THERAPY: estimated at about $28 billion per year
- INDIRECT COSTS FROM LOST PRODUCTIVITY AND OTHER FACTORS: estimated at about $15 billion per year
- AVERAGE COST OF CARE FOR A PATIENT UP TO 90 DAYS AFTER A STROKE: $15,000
- FOR 10 PERCENT OF PATIENTS, COST OF CARE FOR THE FIRST 90 DAYS AFTER A STROKE: $35,000
- PERCENTAGE OF DIRECT COST OF CARE FOR THE FIRST 90 DAYS:
  - Initial hospitalization = 43 percent
  - Rehabilitation = 16 percent
  - Physician costs = 14 percent
  - Hospital readmission = 14 percent
  - Medications and other expenses = 13 percent
- The cost of t-PA treatment increases hospital costs for patients when they are first admitted. However, because t-PA shortens hospital stays and decreases long-term disabilities, there is a net savings. For 1,000 t-PA patients, the researchers estimate an initial increase in hospital costs of $1.7 million, but an eventual savings of $4.8 million in nursing home care costs and $1.3 million in rehabilitation costs. The overall impact is a net decrease of more than $4 million to the health care system for every 1,000 patients treated.

UAMS telemedicine treatment for Iva Sikes, visiting with her granddaughter Tyra Hobson, meant a complete recovery from a major stroke.
Photo courtesy of Arkansas Democrat-Gazette

AR SAVES
Stroke Assistance through Virtual Emergency Support