

AR SAVES

2017 ANNUAL REPORT



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Roy Kitchen, MBA
Business Administrator

*On The Cover:
Throughout this report
are stroke survivors
who attribute their life
and well-being to their
local EMS and hospital
for quick action. We
thank them for telling
their stories.*

A decade ago, my team hatched an innovative idea that responded to an identifiable problem with an undeniable shortcoming: More people died of stroke in Arkansas than anywhere else in the nation. What's more, our rurality and lack of medical access directly contributed to these deaths. In effect, where you lived determined whether you lived or died. And to UAMS, the Arkansas Department of Human Services, and myriad physician champions, that sad fact was utterly unacceptable.

Not long after recognizing this problem, AR SAVES was born, and those emergency rooms that did not have access to stroke diagnosis suddenly had immediate telemedical access to neurological consultation for patients showing stroke symptoms. Those rural hospitals that could not afford to

staff a neurologist 24/7 now could care for their stroke patients like any large, tertiary hospital. The revolution was amazing. Suddenly, we started seeing stroke victims become stroke survivors, and we continue to fight against statistics to rise in the ranks for stroke survival in the nation. It is a long road, but we have saved and improved the quality of life of hundreds, perhaps thousands of patients, and to me, just one life is worth the effort.

When I was watching the news last night, a newscaster presented a story about a stroke survivor. This individual's wife recognized the signs of stroke and immediately drove her stricken husband to the hospital, where he received alteplase treatment and suffered no morbidity from a major stroke. Although the news did not mention AR SAVES, I believe that our partnership's ongoing efforts to raise awareness about signs of stroke was a deciding factor in this case and countless others, – AR SAVES not only provides enhanced access to clinical care, it also provides knowledge, and without knowledge, we can't expect our residents to recognize stroke and respond immediately. AR SAVES' life-saving mission truly affects everyone in Arkansas for now and for years to come.

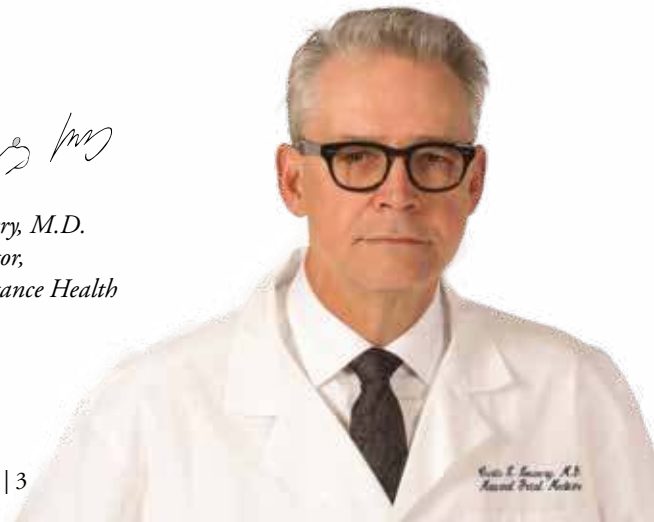
Another remarkable feat was accomplished in 2016: Now, 99 percent of Arkansans are within one hour's drive of an AR SAVES hospital and 84 percent are within a 30-minute drive. Considering time is critical in surviving a stroke, both knowledge and access are the ingredients to survival.

I cannot be prouder of my AR SAVES team, and all the lives they have affected. And, I cannot think of a greater honor than seeing those patients who received AR SAVES care going on to live fulfilling, rich lives after their strokes. With the partnership of the Arkansas Department of Human Services, and now 51 hospitals in Arkansas, we can hope to continue our life-saving mission through AR SAVES for many more years.

Respectfully



*Curtis L. Lowery, M.D.
Medical Director,
Center for Distance Health*



Survivors Of All Ages

The timeline below depicts stroke in Arkansas across the decades. Both here and across the nation, stroke is affecting younger generations more than before. You don't have to be old to have a stroke and you don't have to be young to survive a stroke.



Tara
Wright
age 45

40's

20's



Nicholas
Shelton
age 28

Thomas
Berryhill
age 50

50's

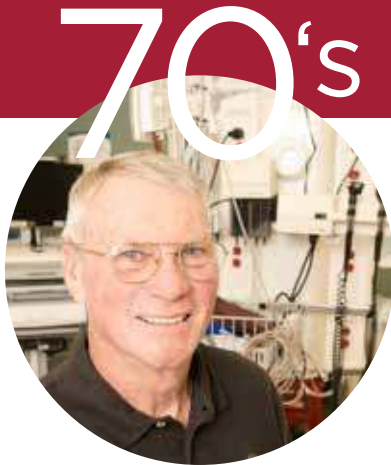




Charlotte
Reliford
age 62



James
Grasby
age 81



General
George
Crocker
age 74



Alice
Butler
age 93



Nicholas Shelton
at the AR SAVES
Annual Conference

Stroke Survivors Span the Ages

By Ben Boulden

You don't have to be old to have a stroke, and you don't have to be young to survive one.

Stroke risk may vary from person to person according to their ages and conditions of health. But despite their diverse backgrounds, almost half of Arkansans who experience a stroke increasingly share something that is improving their health outcomes — receiving care and treatment through AR SAVES.

Twenty-Something

At 27, Nicholas Shelton never expected to have a stroke. He didn't have high blood pressure or any of the other conditions seen as contributing factors, although he did smoke. Shelton was at his home in Crossett in November 2015 when it happened.

“I was talking on the phone,” he said. “I was walking back to my room and collapsed in the hallway. I lost all feeling on my left side. My left arm and left leg just

collapsed. My face felt droopy on my left side. I told the person I was on the phone with that I was having a stroke and was going to call an ambulance.”

Working together, an AR SAVES neurologist and Ashley County Medical Center Emergency Department staff ensured Shelton received the clot-busting blood thinner in less than an hour. Within another hour, Shelton had recovered motor skills and senses he had lost to stroke, temporary losses that could have been permanent ones.

“I'm thankful they were there to save my life,” Shelton said. “That's really what it was. AR SAVES and the medical center were very responsive.”

In addition to its clinical telemedicine program, AR SAVES is fully engaged in robust efforts to educate first responders, health care providers and the public about how to recognize the signs of stroke and how urgent it is to receive timely treatment.

Stroke Survivors Span the Ages

Shelton said he was able to recognize his symptoms because he had seen the Face, Arm, Speech and Time (FAST) acronym used in public health education campaigns. FAST teaches people about stroke signs like facial drooping or an uneven smile, arm numbness or weakness, and slurred speech or difficulty speaking or understanding speech. It also emphasizes time and the importance of getting to a hospital immediately.

Fast action and treatment mean Shelton has had no lasting problems from the stroke. He eventually was able to return to work.

Fifty-Something

When Thomas Berryhill of Yell County wasn't working at his full-time job in a bank, he was helping others as a volunteer fire chief in Yell County or as a member of a rescue team. On March 19, just a few weeks after turning 50, he needed some help of his own.

Two days before, Berryhill had started experiencing vomiting and nausea. By Sunday, he decided to visit an urgent care facility. He was showering before making his visit and fell. When he couldn't seem to push himself up because of paralysis on the left side of his

body, he started kicking at the door with his good leg, eventually getting the attention of his wife, Jenny.

She noticed some obvious drooping on one side of his face, recognized it as a sign of stroke and called 911. Paramedics in an ambulance came to his home and agreed with her assessment.

"That's when they started implementing the Arkansas SAVES stroke protocols," Berryhill said. "They told me that they were taking me to St. Mary's hospital in Russellville, which is in the SAVES network."

After a video consultation at St. Mary's Regional Medical Center with an AR SAVES stroke neurologist, Berryhill received the clot-busting blood thinner and was transported by helicopter to UAMS Medical Center in Little Rock. He was able to push himself up with his left arm by the time they were airborne.

"I want to say how grateful I am for the SAVES program," Berryhill said.

Berryhill was released from the medical center after three nights and some physical therapy. He still receives physical therapy at St. Mary's and hopes to return to work this summer.



Thomas Berryhill at the
North Little Rock Strike
Out Stroke event

Stroke Survivors Span the Ages



Alice Pauline Butler with her health care team at Sparks Regional Medical Center

Ninety-something

Alice Pauline Butler, 93, was at work when her stroke happened. She was ringing out her last customer at the Walmart Supercenter she worked at in Stigler, Oklahoma.

“I was picking up a quart bottle of pop when I dropped it,” Butler said. “My customer knew me, and she said, ‘Pauline, are you alright?’ I couldn’t answer her.”

Unlike Shelton and Berryhill, she still could stand, but she couldn’t speak. Butler also had paralysis in her face, mouth and right hand.

She was transported by ambulance to Sparks Regional Medical Center in Fort Smith, an AR SAVES network hospital, and received the clot-busting blood thinner after a video consultation with Sanjeeva Onteddu, M.D., the network’s medical director.

Onteddu was even there at UAMS Medical Center an hour later when she arrived by helicopter.

She regained full function of her hand within hours, but it took about six weeks for her facial muscles to return to their healthy state. Speech therapy has helped her get back her ability to talk.

For a couple of months, she even returned to cashiering before deciding that she finally had earned the right to slow down a little at 94.

“I talk differently now, but it’s plain enough that everyone understands me,” Butler said.

“I was picking up a quart bottle of pop when I dropped it, My customer knew me, and she said, ‘Pauline, are you alright?’ I couldn’t answer her.”

Quick stroke care possible through AR SAVES telemedicine has ensured that Butler was able to make that choice voluntarily to retire. It also made it possible for Shelton to return to work and is giving Berryhill a chance at the same.

Quick Action, 911 Call Stroke Survivor

By Ben Boulden

Charlotte Reliford, 62, lived in fear of having a stroke. She had seen it debilitate one family member and take the life of another.

“My mother had a stroke and my sister had one,” Reliford, a resident of Emerson, Arkansas, said. “I had seen what stroke had done to them.”

On Feb. 1, her worst fears seemed to be on the verge of being realized, but she couldn’t even call for help. Stroke had taken her ability to speak.

It was the quick actions of emergency medical professionals, along with coworkers, and the safe, timely

treatment of stroke through AR SAVES that allowed her to escape a repeat of those earlier family tragedies.

“I want to thank whoever came up with AR SAVES,” Reliford said. “I’ve always been so afraid of having a stroke. I told one of the deacons of the church to keep taking his medicine. I had stopped taking my cholesterol medicine and aspirin. Lord, I am taking all of my medicine now.”

The day of her stroke, Reliford, a school bus driver, was talking to another driver on her bus parked outside Magnolia High School as she waited for the end of the school day to take students home.

Her fellow driver had spoken at length to her, and then noticed that she wasn't responding. When Reliford tried but failed to get up from her seat, he knew something was wrong and ran into the high school to tell the school nurse and another school official what was happening.

Reliford's next memory is of them standing over her asking questions to which she was unable to respond. Besides the loss of speech and the use of her right arm and leg, the stroke had caused the muscles on the right side of her face to droop.

Her rescuers called 911 and an ambulance swiftly arrived and transported her to Magnolia Regional Medical Center, a member of the AR SAVES network. In less than an hour, her son was there and they both consulted with an AR SAVES stroke neurologist, who recommended she receive the clot-busting medication and be transported by helicopter to UAMS.

While in flight, she was able to make vocal sounds, but they weren't intelligible. At UAMS, she underwent a thrombectomy, the surgical removal of a blood clot.

"The doctor told my son that as soon as he was pulling out that clot, my fingers and toes started wiggling," Reliford said.

After nightfall, she was able to speak clearly again.

Reliford spent the next two weeks in a rehabilitation hospital in Texarkana, Texas, receiving speech and physical therapy. Although by the end of her stay her speech had returned to normal, she continued physical therapy for another month to build up strength in her right arm and leg.

Reliford said that her leg still drags a little now and then, but she expects after another six months of doing the physical therapy exercises at home that will stop, too. Her energy level is back, and she's eager to return to work with the start of the new school year in August.

She's also equally diligent about taking all of her medications.

On the afternoon of Feb. 1, her co-workers, EMS and her family acted quickly. Calling 911 helped AR SAVES provide the treatment she needed in the time she needed it. It meant a second chance for Reliford.

"My sister and my son said AR SAVES has done an amazing job," Reliford said. "I thank them and God so much that I'm still in my right mind and can remember things. I've been able to go on with my life. I am just so thankful."



Washington Regional Presents
School of Innovation 2017

Events

Raise Awareness through Education

When the public is informed about stroke, people can be ready to take quick action to get treatment for family or themselves.

Arkansans must recognize stroke symptoms and call 911 right away for even the best trained Emergency Department staff of a community hospital to be effective in helping someone having a stroke.

AR SAVES is recognized nationally for the amount of public education it does each year. In fiscal year 2017, more than 1,500 stroke education outreach events reached over 263,850 Arkansans in communicating the importance of recognizing stroke. AR SAVES is fully engaged in robust efforts to educate everyone from children to grandparents about how to identify the signs of stroke and how urgent it is to receive timely treatment.

“To get out our message about stroke and make important personal and professional contacts in towns and cities throughout the state, we have to actually get out and engage the public,” AR SAVES director Renee Joiner said.



Augusta Elementary School Farm To You Event

“The hospitals in the program’s network are key partners not just on the clinical side but also in fulfilling our public education mission. They often are the leaders and organizers of these events, and we provide staff and other resources to support them.”

AR SAVES partners along with AR SAVES staff organized a wide variety of initiatives throughout the year to raise public awareness. Outreach efforts ranged from talking about stroke to dozens of Hispanic workers on a sweet potato farm near Wynne to stroke education for 900 people at Women’s Health Fair in Paragould.

“We have a large Hispanic population in the Wynne area, and they come here twice a year to work at our local sweet potato farm,” said Janet Perry, R.N., director of the Emergency Department and Outpatient Surgery at

CrossRidge Community Hospital in Wynne. “They were really excited that we wanted to come and speak to their employees about AR SAVES and the risk factors of stroke. Their interpreter made it very easy on us. We used the Spanish-language magnets, and I found some information in Spanish on the American Heart Association website that I printed out for us to take to them.”

Different approaches are used for different audiences

— booths at health fairs; presentations to schools, churches and civic groups; media interviews; guided tours of the inflatable Mega Brain model; and recognition of stroke survivors at Strike Out Stroke baseball games. AR SAVES tries to reach everyone because every Arkansan is needed to reduce the number of stroke deaths and improve health outcomes for stroke patients.



Saint Mary’s Regional Health Fair

Paragould Women's Health Fair 2017



Mena Regional MASH Camp 2016



Cabot Health and Safety Day

Clinton Health Fair 2017



Clarksville Health Fair



Baxter County Health Fair 2017

Conway High School Mega Brain Event



Woodlawn School Event



Russellville Business Expo 2016

American Heart Association
Presents Go Red for Women



*Savvy Shields
Miss Arkansas 2016
Miss America 2017*

Harmony Grove Elementary School
Mega Brain Event



Delta Memorial Hospital Mega Brain Event

Site Excellence Award



Baxter Regional Medical Center Mountain Home:

Phillipa Arnold

AR SAVES Facilitator

Mandy Pender

AR SAVES Backup Facilitator

Ron Peterson

CEO

Conway Regional Medical Center:

Amanda Irby

AR SAVES Facilitator

Meg Prince

AR SAVES Backup Facilitator

Matthew Troup

CEO



Site Excellence Award



Ashley County Medical Center Crossett:

Ramona Hill
AR SAVES Facilitator
Shawna Hawkins
AR SAVES Backup Facilitator
Phillip Gilmore
CEO

North AR Regional Medical Center Harrison:

Lauren Elliott
AR SAVES Facilitator
Erin Berry
AR SAVES Backup Facilitator
Vincent Leist
CEO



Honorable Mention



**South Mississippi County
Regional Medical Center
Osceola**

Diane Davis *AR SAVES Facilitator*
April Franks *AR SAVES Backup Facilitator*
Chris Raymer *CEO*



**Chicot Memorial Medical Center
Lake Village**

Clinton Payne *AR SAVES Facilitator*
Tara Gladden *AR SAVES Backup Facilitator*
David Mantz *CEO*

Door to Needle Award

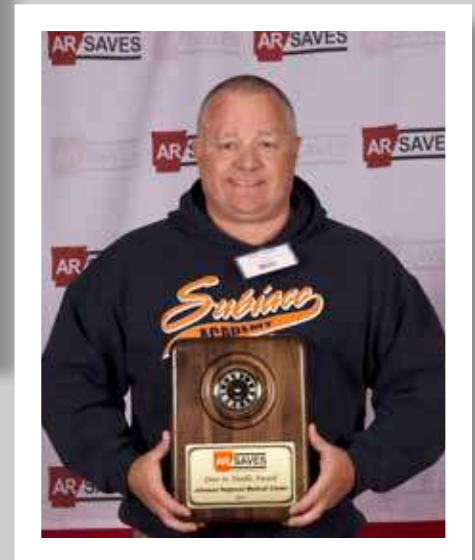


Conway Regional Medical Center:

Amanda Irby *AR SAVES Facilitator*
Meg Prince *AR SAVES Backup Facilitator*
Matthew Troup *CEO*

Johnson Regional Medical Center Clarksville

Mike Helms
AR SAVES Facilitator
Ally McDonald
AR SAVES Backup Facilitator
Michael Dorsey *CEO*



Eighth AR SAVES Annual Conference

Nicolas Bianchi, M.D., "Assessing Stroke Patients with Extreme NIHSS"



Sanjeeva Onteddu, M.D., AR SAVES Medical Director demonstrating how to assess a difficult stroke patient



A panel of experts discuss risk management issues related to telestroke

Panel of stroke survivors tell their story at the annual conference



Dinner Presentation



Margaret Tremwel, M.D., with group at Conference



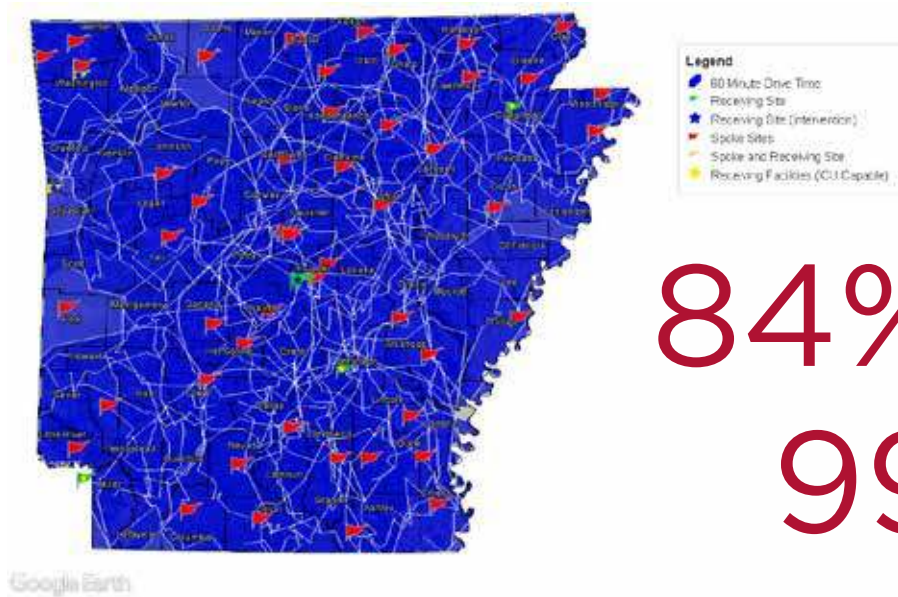
Saint Mary's Medical Center Stroke Team

AR SAVES Sites around Arkansas

Spoke Sites	FY 2016 Totals					
Facility/City	Consults	Alteplase Administration	No Treatment	Mock Stroke Trainings	# Community Events	# Community Attendees
Arkansas Methodist/Paragould	25	13	12	18	41	10524
Ashley CO MC/Crossett	15	8	7	61	45	3917
Baptist Health/Arkadelphia	16	10	6	13	35	3611
Baptist Health/Conway	18	7	11	22	15	629
Baptist Health/Heber Springs	17	5	12	13	25	7098
Baptist Health Hot Spring Co/Malvern	13	3	10	11	24	1932
Baptist Health North Little Rock	4	2	2	21	12	487
Baptist Health Stuttgart	8	4	4	13	19	1377
Baxter Reg/Mountain Home	60	16	44	23	46	13493
Bradley County MC/Warren	8	2	6	34	25	1177
Chambers Memorial/Danville	2	1	1	9	22	918
Chicot Memorial/Lake Village	8	2	6	22	23	1307
Conway Regional/Conway	52	19	33	50	34	8940
CMC/Izard Co/Calico Rock	1	0	1	22	27	7085
CrossRidge Community Hospital/Wynne	4	4	0	12	23	780
Dallas Co/Fordyce	3	0	3	20	23	31500
Delta Memorial/Dumas	4	0	4	20	26	682
DeWitt Hospital/DeWitt	6	3	3	13	23	1385
Drew County MC/Monticello	10	5	5	29	36	2201
Five Rivers MC/Pocahontas	9	4	5	12	23	1149
Fulton County Hospital/Salem	4	0	4	17	46	2489
Great River MC/Blytheville	13	2	11	34	25	3185
Unity Health Harris Hospital/Newport	5	2	3	12	52	5152
Helena Regional MC/Helena	15	1	14	13	43	9979
Howard Memorial/Nashville	8	2	6	14	30	3184

Spoke Sites	FY 2016 Totals					
Facility/City	Consults	Alteplase Administration	No Treatment	Mock Stroke Trainings	# Community Events	# Community Attendees
Johnson Reg/Clarksville	17	7	10	12	30	2953
Lawrence Memorial/Walnut Ridge	13	3	10	18	25	1758
Little River/Ashdown	1	0	1	1	0	0
Magnolia Regional MC/Magnolia	10	4	6	14	23	3656
McGehee/Desha	8	4	4	18	24	2071
Mena Regional MC/Mena	4	1	3	12	21	2179
MCSA/Eldorado	22	10	12	19	57	17469
National Park/Hot Springs	23	11	12	13	35	13372
NEA Jonesboro	36	12	24	16	25	1196
North AR Regional/Harrison	44	9	35	27	36	6960
North Metro Medical Center/Jacksonville	4	3	1	12	26	5667
Northwest MC/Bentonville	39	9	30	12	79	8845
Northwest MC/Springdale	39	5	34	12	35	3651
Ouachita CO/Camden	8	1	7	14	25	1646
Ozark Health MC/Clinton	8	5	3	12	33	5583
Piggott	5	3	2	12	34	1237
Saline Memorial/Benton	26	9	17	14	27	4313
Siloam Springs Regional Hospital	14	3	11	11	31	5669
SMC/Osceola	4	0	4	24	20	2329
Sparks/Fort Smith	4	1	3	0	0	0
St Mary's/Russellville	56	23	33	17	56	12480
Stone Co MC/Mt. View	8	2	6	13	20	685
Washington Reg/Fayetteville	9	4	5	12	25	2778
Unity Health White County MC/Searcy	54	15	39	15	25	1834
White River MC/Batesville	33	9	24	24	31	17530
White River/Cherokee Village	9	6	3	13	24	13808
Total	826	274	552	895	1510	263850

60 Minute Drive Time



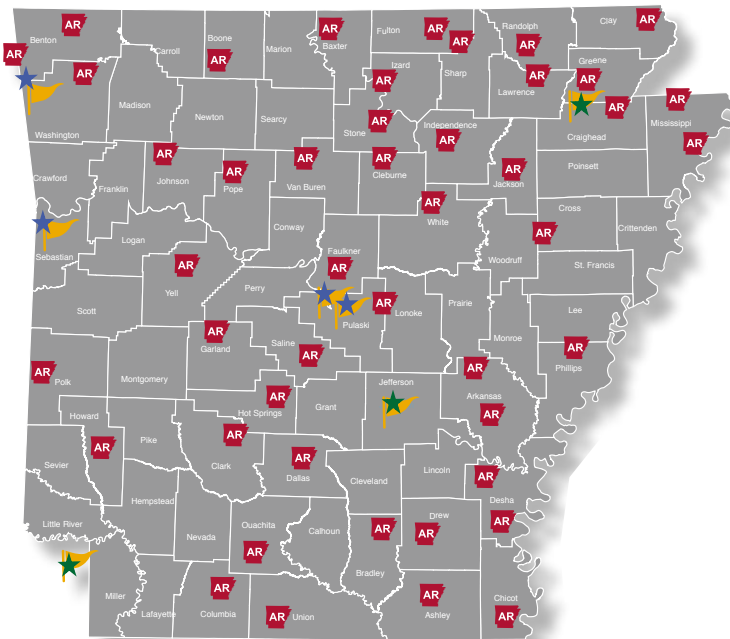
84% of all Arkansans are within a 30 minute drive of an AR SAVES stroke hospital and

99% are within a 60 minute drive

AR SAVES has adopted **BE FAST** as the **BEST** algorithm to identify persons having an acute stroke. In a large study, the current FAST algorithm missed up to 14% of stroke patients.

BE FAST:
Balance, **E**ye, **F**ace, **A**rm, **S**peech, **T**ime

AR SAVES Sites FY 2017



AR SAVES Sites

★ Receiving Sites (INTERVENTION)

- UAMS Medical Center
- Baptist Health Medical Center
- Washington Regional Medical Center
- Sparks Regional Medical Center

★ Receiving Facilities (ICU CAPABLE)

- Wadley Regional Medical Center
- Jefferson Regional Medical Center
- St. Bernard's Medical Center

Name	City	County
Little Rock	Little Rock	Pulaski
Fayetteville	Fayetteville	Pulaski
Fort Smith	Fort Smith	Sebastian
Texarkana, TX	Texarkana, TX	Jefferson
Pine Bluff	Pine Bluff	Craighead
Jonesboro	Jonesboro	Craighead

Name

Baptist Health Medical Center
 White River Medical Center
 Saline Memorial Hospital
 Northwest Medical Center
 Siloam Springs Regional Hospital
 Great River Medical Center
 Community Medical Center of Izard County
 Ouachita County Medical Center
 White River Medical Complex
 Johnson Regional Medical Center
 Ozark Health Medical Center
 Baptist Health Medical Center
 Conway Regional Medical Center
 Ashley County Medical Center
 Chambers Memorial Hospital
 Dewitt Hospital and Nursing Home
 Delta Memorial Hospital
 Medical Center of South Arkansas
 Washington Regional Medical Center
 Dallas County Medical Center
 Sparks Regional Medical Center
 North Arkansas Regional Medical Center
 Baptist Health Medical Center – Heber Springs
 Helena Regional Medical Center
 National Park Medical Center
 North Metro Medical Center
 NEA Jonesboro
 Chicot Memorial Medical Center
 Baptist Health Medical Center – Hot Spring County
 Magnolia Regional Medical Center
 McGehee Desha County Hospital
 Mena Regional Medical Center
 Drew Memorial Hospital
 Baxter Regional Medical Center
 Stone County Medical Center
 Howard Memorial Hospital
 Unity Health-Harris Hospital
 Baptist Health North Little Rock
 South Mississippi County Regional Hospital
 Arkansas Methodist Medical Center
 Piggott Community Hospital
 Five Rivers Medical Center
 St. Mary's Regional Medical Center
 Fulton County Hospital
 Unity Health- White County Medical Center
 Northwest Medical Center
 Baptist Health Medical Center – Stuttgart
 Lawrence Memorial Hospital
 Bradley County Medical Center
 CrossRidge Community Hospital

City

Arkadelphia
 Batesville
 Benton
 Bentonville
 Siloam Springs
 Blytheville
 Calico Rock
 Camden
 Cherokee Village
 Clarksville
 Clinton
 Conway
 Conway
 Crossett
 Danville
 DeWitt
 Dumas
 El Dorado
 Fayetteville
 Fordyce
 Fort Smith
 Harrison
 Heber Springs
 Helena
 Hot Springs
 Jacksonville
 Jonesboro
 Lake Village
 Malvern
 Magnolia
 McGehee
 Mena
 Monticello
 Mountain Home
 Mountain View
 Nashville
 Newport
 North Little Rock
 Osceola
 Paragould
 Piggott
 Pochontas
 Russellville
 Salem
 Searcy
 Springdale
 Stuttgart
 Walnut Ridge
 Warren
 Wynne

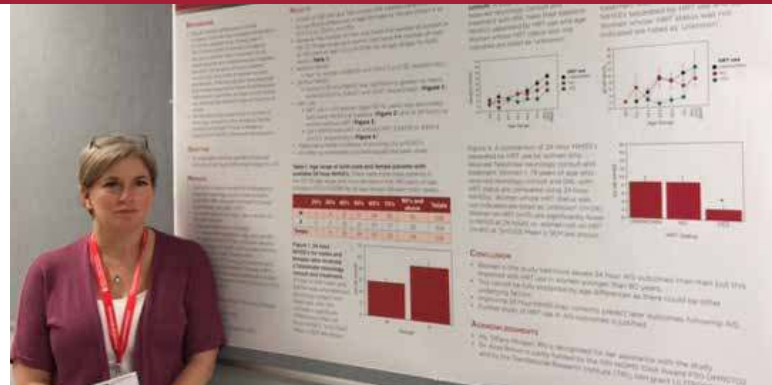
County

Clark
 Independence
 Saline
 Benton
 Benton
 Benton
 Mississippi
 Izard
 Ouachita
 Sharp
 Johnson
 Van Buren
 Faulkner
 Faulkner
 Ashley
 Yell
 Arkansas
 Desha
 Union
 Washington
 Dallas
 Sebastian
 Boone
 Cleburne
 Phillips
 Garland
 Pulaski
 Craighead
 Chicot
 Hot Spring
 Columbia
 Desha
 Polk
 Drew
 Baxter
 Stone
 Howard
 Jackson
 Pulaski
 Mississippi
 Greene
 Clay
 Randolph
 Pope
 Fulton
 White
 Washington
 Arkansas
 Lawrence
 Bradley
 Cross

Using Data to Drive AR SAVES Priorities!

This past year AR SAVES implemented a Program Evaluation and Research Committee made up of subject matter experts. Committee meetings are held monthly where in-depth reviews of AR SAVES data is used to evaluate the program against state, regional and national data on Stroke Quality Measures. These meetings are used to review treatment rates, educational outreach efforts, treatment time targets, patient outcomes and neurology consult time. Data review goals are to increase overall treatment rates for the program, and to form strategic plans for improving time targets.

In addition to program evaluation, we are educating the scientific community by adding to the literature available regarding stroke treatment. For example, we found that paramedics trained to recognize stroke and provide early pre-notification of Code Stroke to the receiving ED saves valuable minutes towards door-to-CT and treatment time. An early evaluation of pre-hospital stroke recognition



Aliza Brown, Ph.D., with ISC and QCOR posters

was done in a large urban area in Arkansas and presented at the 2017 International Stroke Conference meeting in Houston, Texas. The results indicated that accurate stroke recognition by pre-hospital providers occurs 54.2 percent of the time.

Another review of 2015 data indicated there are gender related differences in baseline deficits and outcomes following a stroke. Younger women (younger than 79 years of age) treated with hormone replacement therapy had fewer disabilities and better outcomes following alteplase treatment. Data from 2016 strengthened this observation. Our analysis was recently presented at the national 2017 American Heart Association, Quality of Care and Outcomes Research meeting in Arlington, Virginia.

Clinical Excellence

One of the best ways to ensure that stroke patients in Arkansas receive the most efficient care possible is to equip health care professionals with the necessary knowledge and skills.

Over the past year, the AR SAVES team has worked hard to unify and restructure all training processes, provide ongoing refresher training, and build a program to offer certification, recognition and continuing education credit for nurses choosing to take their AR SAVES training a step further.

Initial new site training has been streamlined for new spoke sites to focus on stroke education, AR SAVES program history, and AR SAVES protocols and procedures, as well as education on the use of telemedicine equipment.

Refresher training courses have been developed to ensure that care providers receive ongoing training and support to perform their role with confidence and proficiency. National Institute of Health Stroke Scale (NIHSS)

refresher training digs deep to promote understanding of the challenges and overcome barriers in performing the exam in the telemedicine setting. This training includes a review of safe and expeditious administration of the clot-busting drug alteplase as well as a review of telemedicine equipment.

Finally, the team is proud to introduce the “AR SAVES Stroke Champion Program.” This program offers certification and recognition to nurses choosing to make clinical excellence their personal goal in the care of stroke patients with the AR SAVES program.

Nurses participating in the yearly in-depth competency and skills evaluation will be granted certification as AR SAVES Stroke Champions and will be recognized among their peers and within the AR SAVES program, their local hospital and their community. They will also receive special t-shirts, badge buddies and other items to make their patients aware that the nurse providing their care is



One of our outreach nurses, Suzanne White, teaches at North Metro Medical Center

committed to providing excellence in stroke care. CE credit for nurses will be offered.

The Stroke Champion certification will require nurses to pass a written exam covering AR SAVES consents, protocols and procedures. Certification also requires successful

completion of skills evaluation check-offs on the procedure for completing the NIH Stroke Scale Exam, alteplase reconstitution and preferred administration procedure for AR SAVES, and telemedicine equipment troubleshooting, care and use.

A recent study conducted by UAMS proves that patients arriving by ambulance versus by a private vehicle have significantly decreased the time to getting a CT scan.

Contributing to this time savings are early recognition of symptoms, pre-hospital treatment protocols, emergency transport and early notification to the hospital. Since stroke causes brain loss of 32,000 neurons per second, that time savings can mean the difference in our patients leaving the hospital with no assistance or leaving in a wheelchair.

This year the AR SAVES team has trained more than 2400 EMS professionals across the state by conducting inservice training at their service locations and conferences. We will continue this effort of reaching EMS professionals by providing training as well as promoting the updated stroke education for EMS on the UAMS website at learnondemand.org/arsaves.aspx

A new initiative this year combines emergency department nurse refresher training with the training of emergency medical professionals. Drew County Medical Center in Monticello was one of the first hospitals to combine the training. Since the training they have met the American Heart Association's time target for administering treatment in less than 60 minutes!



A great team effort! Drew County Medical Center ED staff with the Southeast EMS medics.

“These changes from doing what we have always done resulted in an immediate improvement in our door to needle time. By working with EMS as a part of our stroke team, we have met the goal of door-to-needle time in 60 minutes and have even provided treatment within 34 minutes of patient arrival! The partnership we have with AR SAVES is making a difference in our community!” said Kristen Smith, R.N., AR SAVES.

Stroke was the third leading cause of death in Arkansas behind heart disease and cancer in 2014, according to the Centers for Disease Control and Prevention. Currently, Arkansas ranks sixth in the nation for stroke death, and in an average year, nearly 8,000 Arkansans have strokes, according to the Arkansas Department of Health.

Despite these numbers, only eight hospitals in Arkansas have stroke neurologists on staff to treat a patient experiencing stroke symptoms. This means that before the creation of AR SAVES, in some areas of Arkansas a patient would have to drive over two hours to reach a facility with a stroke neurologist.

AR SAVES has provided care to patients at 51 hospitals in the state that would not normally be able to provide specialist care for a stroke patient. AR SAVES plans to add hospitals to that number.

The AR SAVES Call Center provides a one-call service to hospitals statewide to deliver treatment for stroke patients. Staff provide on-going training to



AR SAVES Call Center Staff

hospitals through mocks and consultation regarding patient safety and documenting care. They also assist with immediate acceptance for transfer for additional treatment.

The AR SAVES Call Center has facilitated care to 826 patients with stroke symptoms and conducted 895 mock call trainings with AR SAVES hospitals. No other system for stroke care has a call center to facilitate comprehensive coordinated care on a statewide basis.

AR SAVES Overview

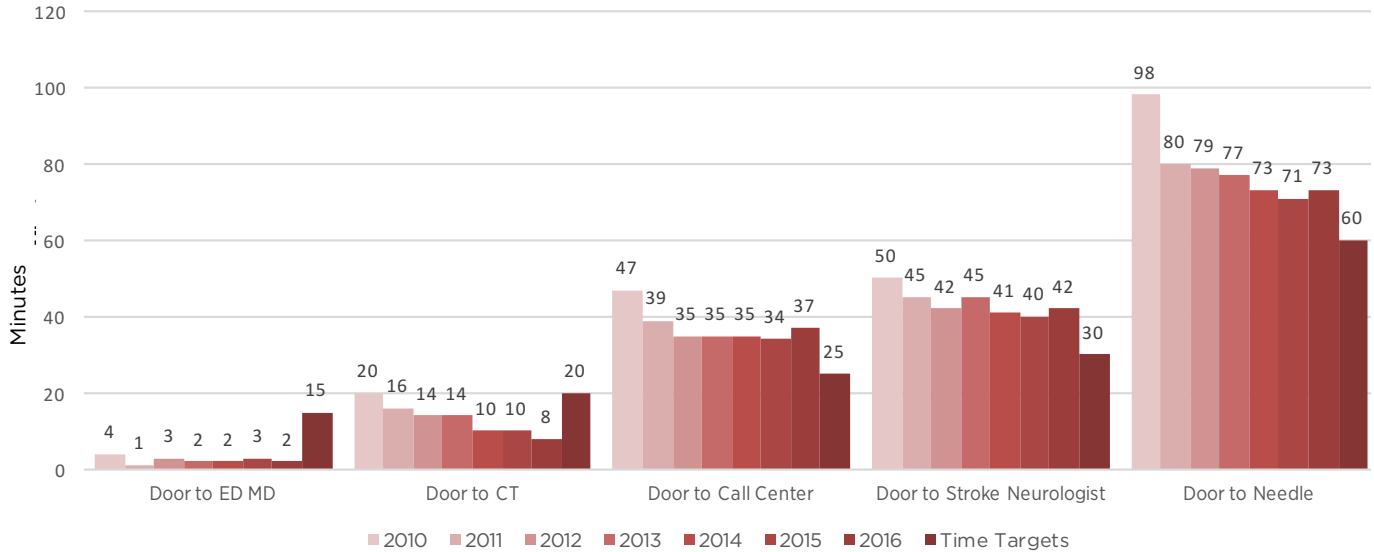
Studies show that about 5 percent of ischemic stroke patients are treated with alteplase through traditional delivery models (assessment in the emergency department with a neurologist on-site) as compared to 15 percent of those whose care is provided through the use of a telestroke delivery model. The rate of alteplase administration among patients through the AR SAVES program is 33 percent. Our success is due to partnerships with the 51 AR SAVES hospital Emergency Department staff, our AR SAVES Call Center staff, our contract vascular neurologists, the AR SAVES video support staff and the AR SAVES program staff. These partnerships provide a system of care that is built on standardized training and treatment protocols as well as a single point of entry for all stroke patients seen through the AR SAVES Program.

AR SAVES continues to update program treatment guidelines to reflect recommendations published by the American Heart Association/American Stroke Association (AHA). In addition, we now have a system in place to quickly recognize patients who qualify for advanced neuro interventional procedures.

Door-to-Needle (DTN) times are used to determine performance of each spoke site. Currently, AR SAVES sites meet the AHA guideline of DTN within 60 minutes 26.3 percent of the time. This is better than the average for the state, which is 22.2 percent, better than 13 percent of other large telestroke programs in the nation and compares to other hospitals nationally that have a neurologist on-site which is 26.6 percent. AR SAVES exceeds the AHA recommended door to CT time target by 12 minutes. This is due to pre-hospital notification of “code stroke” and bypassing the ED by transporting potential stroke patients straight to the CT. Without the CT, neurologists cannot make a recommendation for treatment.

We have now given alteplase to over 1,350 patients with incredible results. Eighty-three percent of all AR SAVES patients treated with alteplase resulted in a decrease in their deficits and 24 percent resulted in a complete recovery. Throughout this report are stroke survivors who attribute their life and well-being to AR SAVES. We thank them for telling their stories.

Golden Hour Core Measures

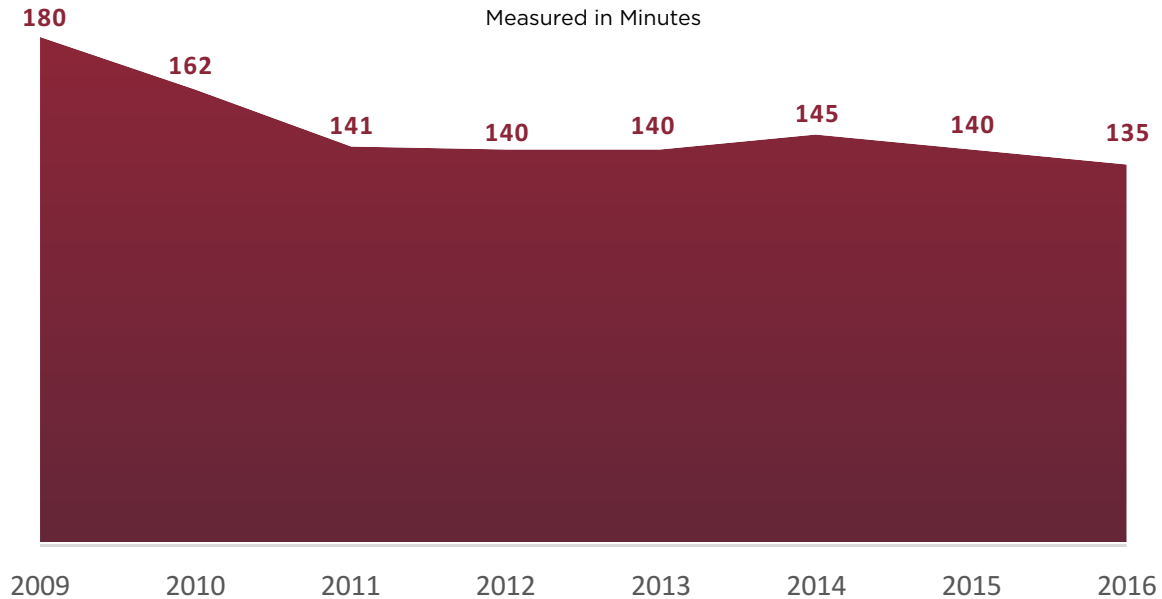


AR SAVES sites meet **26.3%** of the time for a Door to Needle time of 60 mins. the AHA guideline

This is better than the state average of **22.2%**, better than other telestroke programs at 13% and compares to traditional models with a neurologist on site at 26.6%.

AR SAVES exceeds the AHA time target of Door to CT within **20** minutes by **12** minutes!

Median Onset of Symptoms to Alteplase

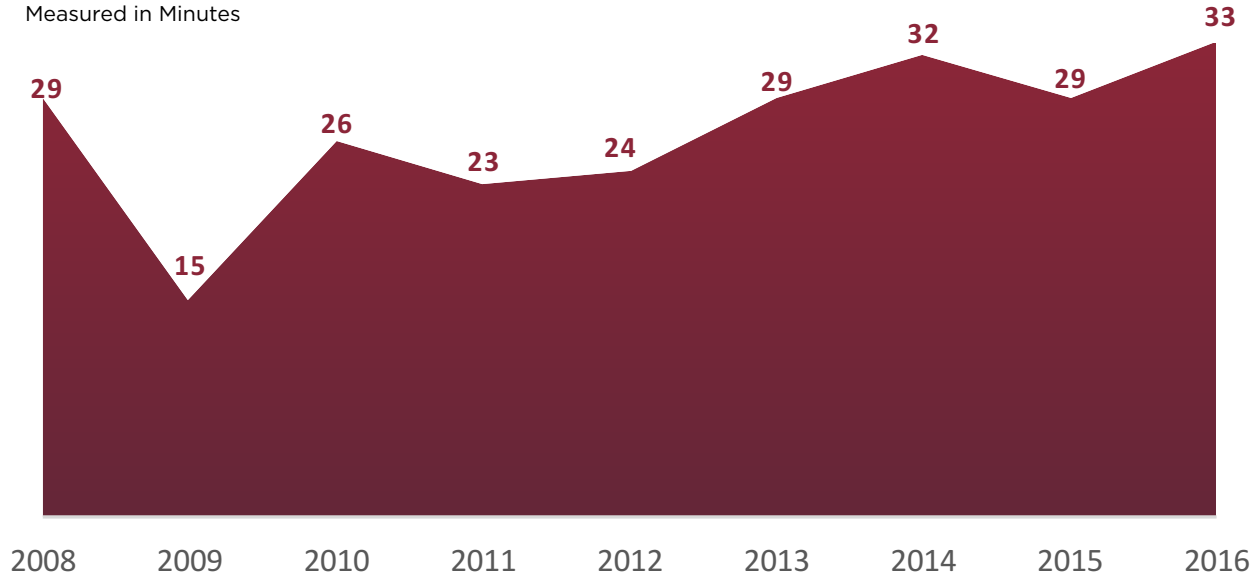


“We have evidence that links community awareness and outreach to the number of stroke patients presenting to the ED in time for treatment.”

Sanjeeva Onteddu, M.D., AR SAVES Medical Director

Percent Alteplase Administered

Measured in Minutes



Overall, rates of alteplase administration are from 2-10% of strokes treated in traditional medical settings. Hospitals using telemedicine report alteplase rates at around

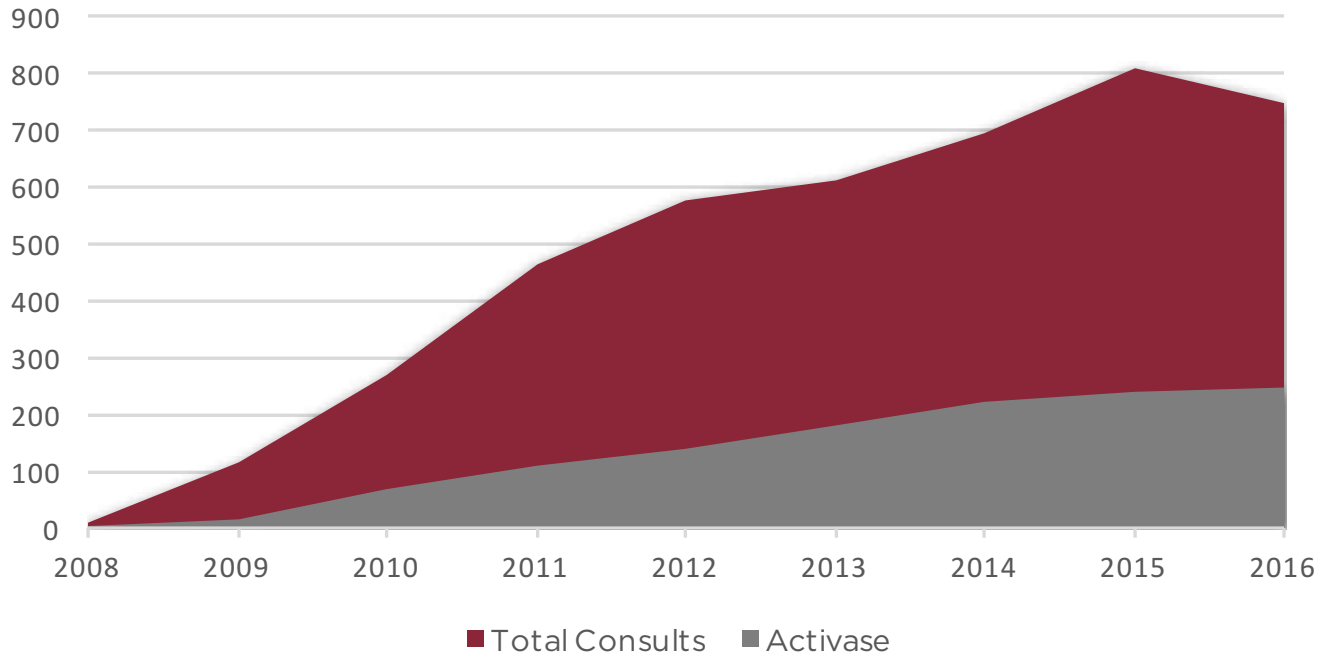
15%

We are excited to report that AR SAVES treatment of all consults for FY 2016 is

33.2%

which is an improvement from last year.

Total Consults / Total Alteplase



Minimal deficits are the most common cause of not being treated for suspected strokes. Last year, arrival to the ED after the time window for treatment was the most common cause of not being treated.

In FY 2017, AR SAVES had **744** consults, which resulted in **247** patients treated

Strike Out Stroke Nights

Strike Out Stroke became a three-game series in 2017, adding University of Arkansas at Little Rock Trojans baseball to the roster alongside game nights at Arvest Park in Springdale in April and at Dickey-Stephens Park in North Little Rock in June.

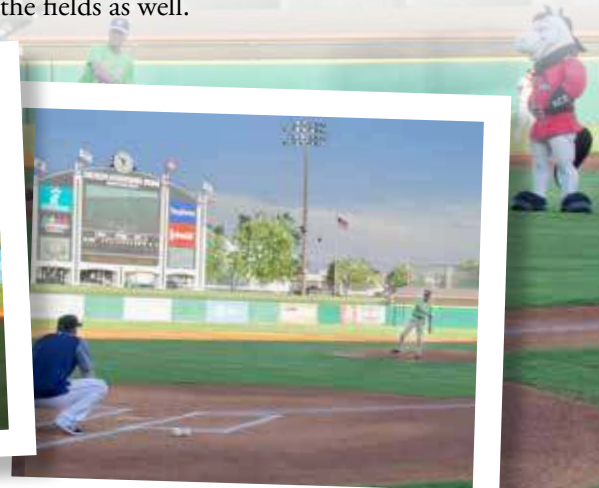
It was the seventh year AR SAVES organized Strike Out Stroke nights at the parks to raise awareness of stroke and to educate the public about stroke symptoms and risk.

Mega Brain for the second year in a row continued to wow visitors at two of the AR SAVES Strike Out Stroke games. Hundreds of people at the Little Rock Trojans and Arkansas Travelers games walked through the anatomically correct, inflatable model of the human brain.

Before the Springdale game on April 6, a helicopter brought stroke neurologist Margaret Tremwel, M.D. to Arvest Park to deliver baseballs for the game's first-pitch ceremony, all strikes against stroke. In North Little Rock on June 6, another helicopter transported Sanjeeva Reddy Onteddu, AR SAVES Medical Director to Dickey Stephens Park to do the same thing.

AR SAVES stroke survivors were honored at all the games serving as a reminder to others that getting to the hospital quickly can prevent stroke death and disability.

Stroke survivors at the ballparks threw first strikes before the baseball games, and other stroke survivors were recognized on the fields as well.





Directors



Renee Joiner, R.N., BSN
AR SAVES Director



Sanjeeva Onteddu, M.D.
AR SAVES Medical
Director



Conelia Williamson,
Program Manager



Sarah Eastham
Program Coordinator



Phillip Martin

Administration

Video Support

Outreach R.N.s



Marzella Backus, R.N.,
B.S.N., CEN



Deb Johnson, R.N.



Tiffany Morgan, R.N.



Tim Vandiver, NRP,
R.N.



Suzanne White, R.N.



David Wollard, B.S.N.,
R.N.

In 2017, AR SAVES had over **1,500** outreach events and reached over **263,850**

Arkansans with education on how to recognize the signs and symptoms of stroke and the urgency to call 911

Call Center



Calvin Duncan, NRP,
BS-EMS
Call Center Supervisor



Jackie Collins, LPN



Christine Fells, A-EMT



Darius Hall, NRP



Jacqueline Jurcik, EMT

Program Evaluator



Aliza Brown, Ph.D.

Community Educator



Olivia Wilson, M.S.,
CHES

Since the beginning, AR
SAVES has provided over

4,750

consults and has
treated over

1,380

patients

From the Medical Director



AR^{SAVES} program uses alteplase, the clot-busting drug, to treat close to half of the acute strokes of Arkansans. American Heart / American Stroke Association has published guidelines for telestroke programs, and AR

SAVES has already incorporated most of them into the stroke care it provides. We are part of the Arkansas Stroke Task Force and, given the importance of the program, we strive hard to be exemplary in tackling stroke in the state.

As we complete one more year, the number of patients treated through AR SAVES continues to grow. We keep improving in almost all of our measures, but one key time target which we still want to reach is a door-to-needle time of less than 60 minutes in about 80 percent of patients.

We have started a research and evaluation committee, which is focusing on ways we can improve our program. This includes identifying areas

of improvement for spoke hospitals, the call center and physicians.

As new stroke studies are published, we have to change our protocols. One such group of patients who are being studied is patients with large vessel occlusion. Several studies have shown improvement when this group of patients receives the clot removal treatment called thrombectomy. We are revising our protocols and educating clinicians to patients like these, who, if not helped, will have devastating strokes.

This year, we also are happy to have hired Krishna Nalleballe, M.D., who is a trained vascular neurologist. He joined UAMS in July. As we move forward we are trying to make this a program for Arkansans by Arkansans.

Congratulations to the AR SAVES family.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sanjeeva Reddy Onteddu'. The signature is fluid and cursive, with a long horizontal stroke at the end.

Sanjeeva Reddy Onteddu, M.D.
Medical Director, AR SAVES Telestroke Program

Message from the Director



“Where you live should not determine whether you live, or whether you die.” – Bono

This has long been the motto of the UAMS Center for Distance Health, and it could not be more relevant to the AR SAVES program. We are making a difference in the

lives of patients across the state and especially in areas where access to stroke care would not be available otherwise. This issue emphasizes the benchmarks of our program this past year.

The focus of our educational efforts this year has been clinical excellence. Refresher training for AR SAVES hospitals to include EMS providers has made a difference in our ability to provide the coordinated urgent care needed for the timely treatment of our stroke patients. Our community outreach messages this year have even more emphasis on the need to call 911.

With the development of the AR SAVES Program Evaluation and Research Committee led by Sanjeeva Onteddu, M.D., AR SAVES medical director and Aliza Brown, Ph.D., AR SAVES program evaluator, the FY 18

Program Goals were developed using data to identify areas for improvement. You will notice that each article in this edition has evidence to support the impact of our initiatives thanks to the work of this committee.

We look forward to our continued partnership with Arkansas Medicaid, our 51 spoke sites, the Arkansas Acute Stroke Care Task Force, our receiving hospitals and our community partners in 2018. Together we can make a difference in the lives of our stroke patients and their families in every corner of the state because “where you live should not determine whether you live, or whether you die.”

Respectfully

A handwritten signature in black ink that reads "Renee Joiner". The signature is written in a cursive, flowing style.

Renee Joiner
AR SAVES Director

FY 2018 AR SAVES Goals

- ≡ Continue to improve treatment for stroke patients through efforts to decrease door-to-call center times in AR SAVES hospitals. As evidenced on page 36, this is the time target that has the most opportunity for improvement.
- ≡ Increase treatment rates in stroke patients through education of Emergency Department physicians, nurses and first responders of the risk and benefits of alteplase treatment and of treatment exclusion criteria.
- ≡ Include local EMS in refresher training with AR SAVES hospitals and offer a Stroke Champion Certification course for ED nurses.
- ≡ Add five additional AR SAVES hospitals, bringing the total to 56.
- ≡ Prioritize active community events over passive community events. Evidence shows that events where hospital staff interact with the community lead to an increase in patients getting to the ED in time for treatment.
- ≡ Implement a provider satisfaction survey. This is a recommended core measure by the American Heart Association.





Stroke kills over **1,200**

people each year in Arkansas and is a leading cause of serious, long-term disability. The outcome depends in large part on how and when the patient is treated.

83%

of all AR SAVES patients treated in Calendar Year 2016 with alteplase resulted in a decrease in their deficits and

24% resulted in a

**COMPLETE
RECOVERY.**



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