

# AR SAVES



ANNUAL  
REPORT  
2018

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Tina Benton, R.N., BSN  
Director, Center for  
Distance Health



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.*

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Ten years can come and go in what seems like a heartbeat, and in AR SAVES' first ten years, many hearts have kept beating from the program's many efforts. I am proud to reflect on how AR SAVES has grown and been refined over this past decade.

AR SAVES' 54 strategically placed sites ensure that 99% of all Arkansans are within a 60-minute drive to a stroke ready hospital and that 84% of those Arkansans live within a 30-minute drive. Since 2008, SAVES has provided nearly 5,500 telemedicine-aided emergency stroke consultations, with nearly 30% of those consultations ending in positive stroke identification and administration of needed clot-busting medication. Remarkably, AR SAVES has delivered emergency stroke care so well that it beats the door-to-needle times of both hospitals with a neurologist on site and large tele-stroke programs throughout the United States.

AR SAVES conducts the business of saving lives efficiently and with far-reaching impacts. When we launched the program ten years ago, Arkansas stood first in the nation for stroke mortality,

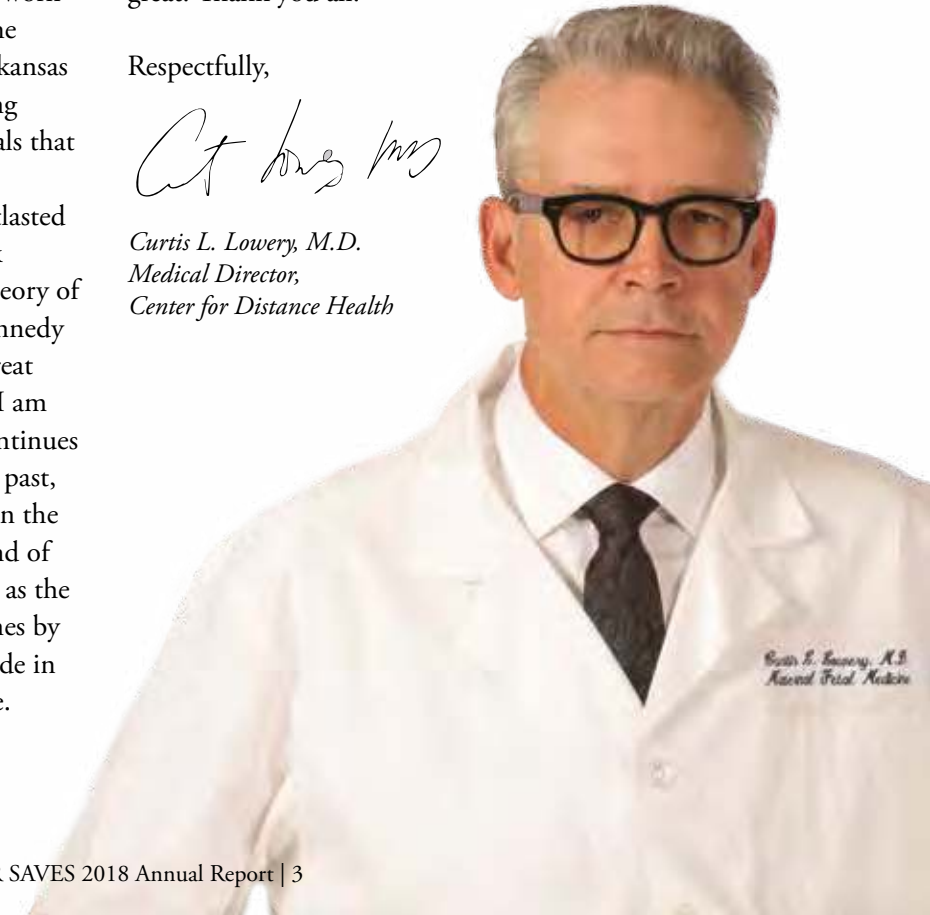
meaning that more people were dying of stroke per capita in Arkansas than anywhere in the nation. Since that time, we have dropped to number 6 in the nation, undoubtedly very much attributed to the work of AR SAVES and its many partners, including the Arkansas Department of Human Services, the Arkansas Department of Health, myriad specialists, outlying hospitals, and thousands of healthcare professionals that make the cogs of this machine turn.

At 10 years old and ticking, AR SAVES has outlasted the time in which the Beatles performed as a rock group, the time it took Einstein to develop the theory of general relativity, and the time it took John F. Kennedy to send a man to the moon. While these are all great accomplishments etched in the tomes of history, I am especially honored to be part of the effort that continues to serve patients in need today, saving lives in the past, present, and future. While we may not go down in the record books for being the most popular rock band of all time, I believe we will continue to be regarded as the reason why many families still have their loved ones by their sides. And that is something we can take pride in knowing we all have been part of making possible.

For these past 10 years, I thank everyone who has ever touched this program with their help, their humanity, and their compassion. It is you that makes this program great. Thank you all.

Respectfully,

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





Larry Guthrie

## Time seemed to have run out for Larry Guthrie, 49, on April 27, 2017

**B**ut the statewide tele-stroke network and quick responding emergency medical professionals in Bald Knob and Searcy all saved him precious time in stroke treatment and ensured that the saved time meant a saved life.

April 27 started out like any other for Larry Guthrie. After finishing his lunch at home that day, he returned at 11 a.m. to work at his job as street superintendent for the city of Bald Knob. It would be the last time that he would remember feeling well for some time to come. Minutes later, he lost his ability to speak, and co-workers called an ambulance and his daughter, Kayla Webb.

“I didn’t recognize the symptoms at first because I didn’t lose functions in my arms and legs,” Guthrie said later. “I was still

walking and could move my arms. I lost my speech. I could not talk.”

Northstar EMS paramedic Jason Pugh and EMT Tim Wisinger on seeing Guthrie in his work place immediately suspected his loss of speech was due to a stroke. They called ahead to the Unity Health – White County Medical Center in Searcy so the Emergency Department there would be ready to treat him when they arrived.

Within a day after treatment, Guthrie had recovered most of his motor functions and his breathing tube was removed. He was discharged from UAMS Medical Center four days later.

“The expectancy with basilar artery occlusion and stroke is slim to none,” Mehmet Akdol M.D.,

**“I was still walking  
and could move my  
arms. I lost my speech.  
I could not talk.”**

# Stroke Survivor Story



**12:32**  
p.m.

Pugh and Wisinger arrived at Unity with Guthrie, and Guthrie immediately received a CT scan. That scan revealed a blood clot in his brain stem in the basilar artery. The brain stem controls vital functions like breathing. Unity Health nurse Deonna Wisler and Guthrie consulted via the AR SAVES live video network with Margaret Tremwel, M.D., a stroke and neurocritical care specialist with AR SAVES.

**1:18**  
p.m.

A clot-busting medication, alteplase, was given to Guthrie under Tremwel's direction.

**2:20**  
p.m.

Guthrie arrived by helicopter air ambulance at UAMS Medical Center and was transferred to surgery. His transfer was facilitated by Benedict Tan, M.D., a UAMS stroke specialist.

**2:25**  
p.m.

Guthrie started to experience difficulty breathing, and UAMS physicians inserted a tube into his trachea so a ventilator machine could breathe for him.

**2:46**  
p.m.

Mehmet Akdol, M.D., a UAMS interventional radiologist, began surgery to remove the clot.

**3:11**  
p.m.

Akdol extracted the clot.

**3:18**  
p.m.

Blood flow was restored to Guthrie's brain stem, and he was moved to a room in the medical center's intensive care unit.

## Complete Basilar Artery Occlusion/BRAIN STEM Stroke

### Patient Presentation

**Initial NIHSS:** 11

**Time Symptom Onset:** 1155

**Patient History:** 49-year-old fireman with history of A-fib not on anticoagulation. Pt became ataxic, drowsy, speech heavily impaired, vomiting, severe nausea. Northstar EMS brought pt from home to White County hospital in Searcy, AR

### Case Conclusion

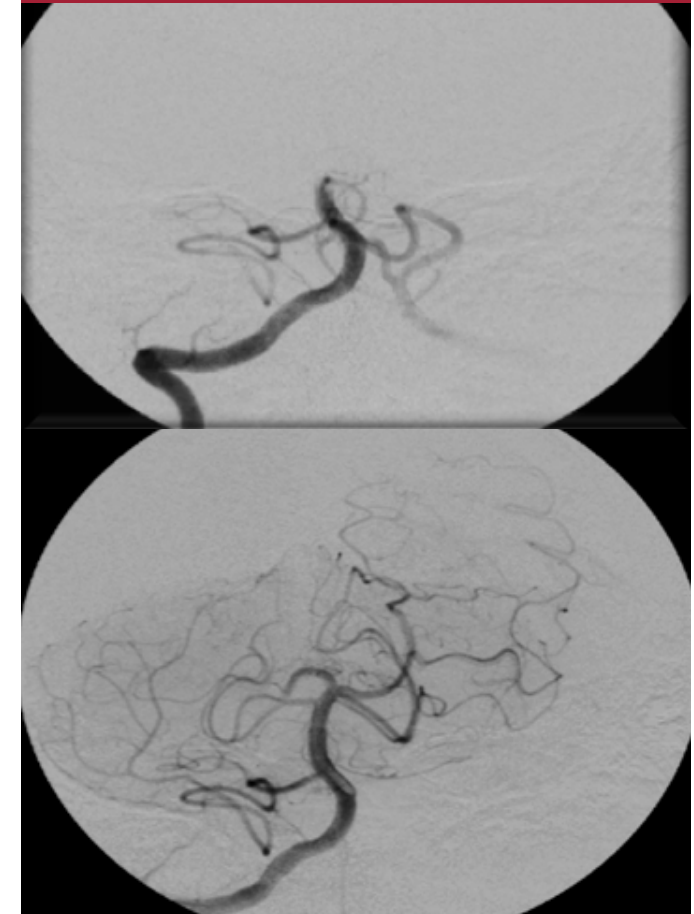
**Discharge NIHSS:** 0

**Comments:** Discharged home on day 4

### Care Team

NorthStar EMS Ground Ambulance  
Unity Health – White County Emergency Department  
CDH- AR SAVES  
Survival Flight Air Ambulance  
UAMS ED and Interventional Radiology Department

### Case Images



# Stroke Survivor Story

a UAMS interventional radiologist, said. “You expect them to pass away following one. There’s almost no hope in this type of situation. His survival was due to the quick action, and I can tell you the gears were well oiled.”

His attending physicians all credited the AR SAVES network and the speed with which all members of the care team responded, from Northstar to Unity Health Hospital to UAMS.

“In this case the credit goes to a combination of the patient’s family, rapid response, AR SAVES, Unity Health Hospital and UAMS,” Ben Tan, M.D., a UAMS Neurointensivist, said. “If one of those links was missing, he probably wouldn’t have survived. AR SAVES played a crucial role in responding to him in Searcy and transferring him to UAMS in the fastest possible way.”

By May 2017, Guthrie returned to work and has since experienced no symptoms. He said he is now more diligent about taking his blood pressure medication and monitoring his diabetes.

In addition to Tremwel, Akdol, Tan and the personnel at Unity, Guthrie said Northstar



*Stroke Survivor Larry Guthrie With Attending Medical Staff In The Stroke Ready Trauma Room Of Unity Health - White County Medical Center Searcy*

ambulance personnel also were key to his timely treatment.

“Those guys never get noticed for what they do,” Guthrie said. “I’ve been there and worked as a volunteer in an ambulance service and was a volunteer firefighter for 30 years. I know what they go through.”

On Nov. 14 accompanied by his wife, Anita and daughter, Guthrie reunited in the trauma room of the White County Medical Center with Pugh, Wissinger, Wisler and other staff at the Searcy hospital. Akdol and Tan spoke to him through an AR SAVES video connection.

Akdol complimented him on his recovery and his return to an active life. Near the end of their conversation, Akdol and Tan asked him if he was taking his medication.

After Guthrie confirmed that he was, Tan said with a smile, “Good, because I don’t want to see you again ... not on an AR SAVES monitor. We’ll see you outside, not in an ICU, not in an Emergency Room.”

“I don’t want to be there either,” Guthrie said as everyone laughed.

*Happy Birthday*

**AR SAVES**



## AR SAVES Marks Decade of Achievement

By Ben Boulden

Like the mileage rolling up on an odometer in an ambulance rushing a stroke patient to the closest hospital, the numbers associated with the AR SAVES program also tell a story of distance traveled, time saved and health care professionals giving their all.

The first number in the story of the Arkansas Stroke Assistance through Virtual Emergency Support program is 10. For 10 years, AR SAVES has used telemedicine and its network of hospitals to reduce the time it takes for a stroke patient to receive treatment with alteplase. Telemedicine also has eliminated the space that separates a stroke patient from the stroke neurologist who can diagnose and help them.

“Rural hospitals that couldn’t afford around-the-clock neurological expertise are able to care for stroke patients just like a big, metropolitan hospital,” said Tina Benton, UAMS Center for Distance Health outreach director. “It was a real radical change with stroke victims becoming

stroke survivors and the quality of life improving for thousands patients who were able to recover through AR SAVES.”

Achieving that in 2008 may have looked far off at the beginning of the AR SAVES decade. With only 3 networked hospitals in 2008, the program began as a white paper, authored by the University of Arkansas for Medical Sciences’ Center for Distance Health (CDH) and presented to Arkansas Medicaid within the Arkansas Department of Human Services (DHS).

An alliance between DHS, CDH, and the state’s critical access and rural hospitals grew from that idea and created SAVES. Arkansas Medicaid provides critical funding to maintain the program, including reimbursement of specialists’ support.

To coordinate the first calls and to conduct mock drills to train the stroke care teams at those first hospitals, one was the number needed — Terri Imus, R.N., the outreach

# AR SAVES Marks Decade of Achievement

nurse. It was Imus who prepared the professionals in the new program for patient number one.

On Nov. 12, 2008, eleven days after the official start of the program, the first consultation via live video took place between an AR SAVES stroke neurologist and the Johnson Regional Medical Center in Clarksville. A 92-year-old woman, Hilda Fritz, was treated there and after the consultation received alteplase. She regained her ability to speak and swallow shortly after.

Lacking access to these specialists, ischemic stroke victims at rural emergency rooms seldom received the life-saving medication alteplase. Clinicians without stroke expertise were reluctant to give it because if they were wrong, then a misdiagnosis and administration of the drug could possibly result in dire outcomes.

“Without the drug therapy, my mom wouldn’t have had a chance to recover,” Joseph Fritz, Hilda’s son, said in 2008. “I thought that I had lost her.”

Another stroke-associated first was not as positive. In 2012, Arkansas ranked first in the nation in stroke mortality. That ranking was caused in part by rural hospitals lacking financial resources and patient capacity to hire neurologists. Flash forward a decade, Arkansas ranks sixth, according to the Centers for Disease Control and Prevention.

The Call Center connected physicians and nurses at South Mississippi County Regional Medical Center in Osceola with an AR SAVES stroke neurologist when Leslie Bennett, 42, of Joiner was brought to the Emergency Room one Wednesday night in April 2013. His mouth was drooping and his arms and legs on one side were numb. Directed by the neurologist, the care team in Osceola treated him with alteplase, and he was transferred to UAMS Medical Center. Within 24 hours, Bennett was ready to return to his normal life.

The Osceola hospital had joined AR SAVES only a few months before in 2012. In 2018, it is one among 54 hospitals, almost five times the number of founding partners. Covering the geographic space of the state so completely means shrinking travel times

for patients and tightening communications in stroke care teams. As of 2018, 99 percent of the state’s population was within a 60-minute drive of acute stroke care through SAVES, a dramatic increase from 38.4 percent in 2009.

Studies show that 15 percent of ischemic stroke patients are treated with alteplase through the use of a telestroke delivery model. The rate of alteplase administration among patients through SAVES is 34.5 percent. In FY 2018, SAVES health educators reached over 310,000 participants through over 1,700 outreach activities. Additionally,



*Stroke Survivors Attending the 2018 Annual Stroke Conference*

distance education is offered to both providers and patients.

In 2008, Curtis Lowery, M.D., medical director of the UAMS Center for Distance Health, said with AR SAVES, “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 health care dollars for Arkansans.”

The number of Arkansas stroke patients treated with alteplase through the program is nearing 2,000, and the Call Center has six full-time staff, including nurses, paramedics and EMTs.

Since 2008, much has been accomplished. In 2018 and beyond, much remains to be done, and AR SAVES will keep reaching high and doing it and AR SAVES stands ready.

*AR SAVES Nurse Facilitators attending the 2017 Nurse Facilitator Retreat*



*AR SAVES 2018 Annual Report | 12*

# EMS

Developing strong partnerships with our EMS professionals across the state is the reason for many of the success stories we have to share. An area of focus this past year has been on EMS training programs. More than 1,600 EMS professionals were trained from July 2017 through June 2018. EMT and paramedic schools are contacting AR SAVES for education for their students as well as for refresher training needed for re-licensure.

The success with EMS stroke training is in providing it in conjunction with training at the hospital they serve. This training includes EMS as a member of the care team at the local level. Often, the EMS professionals will stay with the patient until after the CT is completed in order to assist with the continuum of care and to reduce door to needle times.

In an effort to further develop partnerships, we encouraged EMS agencies to attend our annual AR



SAVES conference by providing discounted tickets, topics of interest and recognition during our annual awards ceremony.

Six EMS agencies this year received a Certificate of Excellence Award. These six agencies were nominated by the AR SAVES site that receive their patients. Award criteria included: class attendance taught by AR SAVES service has an appointed stroke liaison for the agency and the receiving AR SAVES hospital(s) they serve; community outreach efforts; PI/QA with the hospital regarding the care of stroke patients; conference attendance; and drills with the local AR SAVES Emergency Department(s).

## EMS Certificate of Excellence Awards for this year went to:

- North Star EMS Heber Springs
- North Star EMS Searcy
- Southeast EMS (SEEMS) Drew County
- Dewitt EMS
- Pafford EMS Helena
- MEMS Faulkner County

We have a pilot project that is in the early stages of development with EMS to place telemedicine equipment in some ambulances to allow a vascular neurologist to evaluate a patient on the scene or while being transported to an AR SAVES affiliate hospital. We look forward to sharing the outcome of this pilot in next year's annual report.





# AWARDS

Each year awards for outstanding contributions to the care and treatment of stroke patients are given during the AR SAVES annual conference. This was a year of great accomplishments for our pre-hospital and hospital providers. Awards were given for Site Excellence, Honorable Mention for Site Excellence, Door to Needle Best Time, Door to Call Center Best Time, Physician Champion and EMS Champion.

This year's **Site Excellence Award** winners went to **Conway Regional Medical Center, Great River Medical Center in Blytheville and North Arkansas Regional Medical Center in Harrison**. Nominated by AR SAVES staff, the winners exceeded expectations in regard to the following selection criteria.

- Contract deliverables
- Outreach and education activities
- Frequency and timeliness of mocks
- Accuracy and timeliness of data submission
- Meetings, conference and NF retreat attendance
- Internal process changes to improve the care of stroke patients
- EMS involvement/education/performance improvement
- Site Scorecard status
- Ongoing staff education

## Site Excellence Award Winners



## Honorable Mention Awards for Site Excellence



**Honorable Mention Awards** for Site Excellence went to **National Park Medical Center in Hot Springs, Drew Memorial Hospital in Monticello, Ashley County Medical Center in Crossett, St. Mary's Regional Medical Center in Russellville, Ozark Health Medical Center in Clinton, and Baxter Regional Medical Center in Mountain Home**.

Honorable Mention recipients made great improvements in their internal processes, outreach and training during the past year as well as met all the basic requirements of an AR SAVES site.

# AWARDS

## Door To Needle Award & Door To Call Center Award

**Door To Needle Award:** The Best Door-To-Needle time was achieved in 29 minutes by **Arkansas Methodist Medical Center in Paragould.**

**Door To Call Center Award:** The Best Door-To-Call time was achieved in 7 minutes, also by **Arkansas Methodist Medical Center in Paragould.**



### PHYSICIAN CHAMPION AWARD

River Valley Medical Center CEO Vicki Andert and Nurse Facilitator Stephanie Whitson Presenting Dr. Robin Goodman with the AR SAVES Physician Champion Award



### PHYSICIAN EXCELLENCE AWARD

Unity Health Medical Center-Searcy President & CEO Steven Webb and Trauma Coordinator Jasper Fultz Presenting Dr. Martin Carey with the AR SAVES Physician Excellence Award

## Physician Champion Award & Physician Excellence Awards:

### Physician Champion Award & Physician Excellence Awards:

This award is an addition to last year's awards. Nominations were submitted by an AR SAVES Affiliate Hospital. There were two awards presented this year:

**Robin Goodman, M.D., at River Valley Medical Center in Dardanelle** won the **Physician Champion Award.**

**Martin Carey, M.D., at Unity Health – White County Medical Center in Searcy** won the **Physician Excellence Award.**

The awards honor each recipient's contributions through the use of modern technology and the use of best practices of stroke care in Arkansas. The Champion Award winner exceeds and the Excellence Award winner meets the selection criteria that included:

- Participates and is involved in the program.
- Uses the AR SAVES treatment recommendations and protocols.
- Supports and engages in the training of hospital staff and peers.
- Attends meetings, internal and external, and the AR SAVES conference.
- Engages and works closely with local EMS providers.
- Supports and advocates for the AR SAVES program to hospital administration.

## Community Events

# BE FAST



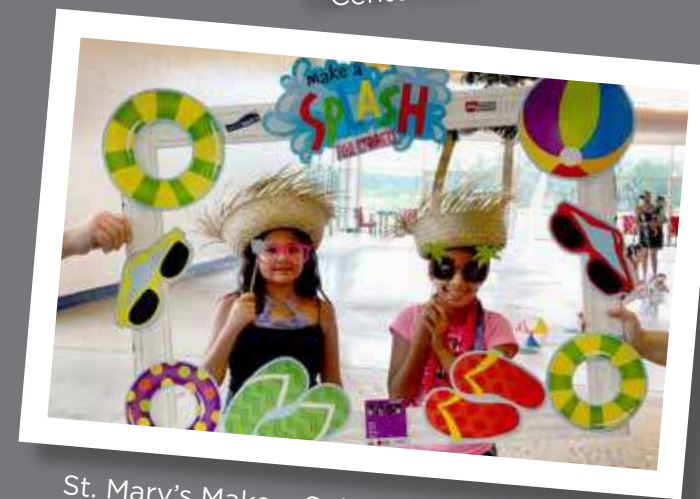
North Arkansas Regional Medical Center's 2017 Health Fair

AR SAVES' decade-long, sustained campaign to raise public awareness of stroke has reached a critical mass.

Strong evidence for it can be found in the fact that the program's public awareness efforts are stimulating members of its target audience to become educators and event organizers themselves.

Tim Tanner, a registered nurse at St. Mary's Regional Medical Center in Russellville, was returning home from an Arkansas Travelers baseball game and Strike Out Stroke event in North Little Rock when he had an idea — turn the grand opening of the Russellville Aquatic Center into a Make a Splash for Stroke Day.

Working with the local Recreation and Parks Department and AR SAVES, Tanner made it happen.



St. Mary's Make a Splash for Stroke Day



Stroke Education at Huntsville Elementary School

Swimmers and other attendees didn't have to pay admission to enter, educational materials were distributed and a target audience was reached — young people.

"Strokes don't just happen to older people," Tanner said. "I found this out when I went to a pediatrics stroke awareness event. It can happen to babies."

Through outreach, advertising, presentations and even a giant inflatable model of the human brain, AR SAVES has worked to raise public awareness of stroke symptoms, risk and the need for timely treatment.

AR SAVES is recognized nationally for the amount of public education it does each year. The program won the 2017 National Stroke Association Voter's Choice RAISE Award, recognizing a person or organization for community outreach.

In fiscal year 2018, more than 1700 and reached over 310,000 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.

"Educating the public isn't a one-time effort and you're done," AR SAVES Director Renee Joiner said. "It has taken 10 years of continued, long-term work by our partners and everyone in the program. We've made tremendous progress, but we won't and can't rest. Even people already



Helena Regional Medical Center's 2018 Alzheimer's Walk

educated in stroke need to be reminded and to have those lessons reinforced."

Volunteers along with staff from UAMS and AR SAVES partners organized a wide variety of initiatives throughout the year to raise public awareness. Outreach efforts ranged from Tackle Stroke events during high school football season to a Hispanic health fair staffed with an interpreter.

Each community requires a different communications method — 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 works to connect to every Arkansan and inspire them to be like Tim Tanner and other AR SAVES Nurse Facilitators across the state to teach other Arkansans. By not just educating but also turning the public into educators themselves, AR SAVES and the state will succeed in continuing to reduce the number of stroke deaths and improve health outcomes for stroke patients.



Helena Regional Medical Center's 2018 Alzheimer's Walk and Fair



St. Mary's Regional Medical Center's Tackle Stroke Night

Volunteer Stroke Educators at Dickey-Stephen's 2018 Strike Out Stroke Night



Dr. Krishna Nalleballe delivering the first pitch at Strike Out Stroke Night



Stroke Survivor Linda Williamson pitching at Strike Out Stroke Event



2018 Dickey-Stephen's Strike Out Stroke Night Survivors with Star War's Fans.



2018 Miss Fort Smith Attending the Northwest Strike Out Stroke Night



Stroke Survivor Thomas Berryhill pitching at Strike Out Stroke Event



Stroke Survivor Tara Wright and her son at Strike Out Stroke

2018 American Heart Association's Heart Walk



AR SAVES Participating in the 2018 Heart Walk



St. Mary's Regional Medical Center Community Education Event



McGehee-Desha Co. Hospital Community Education Event



Superheros with AR SAVES at the 2018 Heart Walk



Walnut Ridge Mega Brain Event



McGehee-Desha Co. Hospital AR SAVES Stroke Education Booth



A panel of AR SAVES stroke survivors discuss their experiences during the Telestroke Conference in May in Hot Springs as a slide show behind them illustrates their stories and the history of the program.



Greg Brown Speaking On The Need For EMS Integration

## Conference Highlights: A Decade of Telemedicine Achievements, Past, Present and Future

**291** health care professionals gathered in Hot Springs for the annual Telestroke Conference held May 22-24, as AR SAVES celebrated its 10th anniversary.

UAMS' Renee Joiner, B.S.N., AR SAVES director, told attendees that in the first few months, there were 35 consultations via the telemedicine network and three patients received alteplase. Only about 38.4 percent of Arkansans were within a 60-minute drive of a stroke-ready hospital at that time. Today, there are 54 hospitals in the AR SAVES network and 99 percent of residents are within a 60-minute drive to a stroke-ready hospital that is an AR SAVES partner.

As impressive as the growth and development has been, Joiner said, "We need to make sure we keep the individual patients in mind when we do this. You start talking about numbers, and it's real easy for them to become numbers. We've got to remember that every number represents a story."

She recounted one of those stories she was told recently. "A visitor from Michigan had a stroke while he was here visiting family," Joiner said. "He came up to me and said,

"Thank, God, I had my stroke here instead of Michigan." He said he would not have been able to get this kind of care there. We are very, very fortunate. All of you are the ones who proved that this concept could work. Without you believing in the program and making it work, we wouldn't be here today to talk about it. Thank you for that."

An 'Ask the Experts' panel discussion featured Jennifer Smith, J.D., R.N., associate general counsel with the UAMS Office of the General Counsel; Sanjeeva Onteddu, M.D., assistant professor in the UAMS College of Medicine Department of Neurology and medical director of AR SAVES and the UAMS stroke programs; Richard Nelson, M.D., medical director for the Emergency Department at Baptist Health Medical Center in Heber Springs; and Amanda Irby, B.S.N., director of the Emergency



J.D. Day, M.D., speaks to the conference audience about hemorrhagic stroke.

Department at Conway Regional Medical Center and an AR SAVES nurse facilitator.

Smith highlighted changes in state telemedicine law enacted in 2017, including a mandate that a physician providing a telemedicine consultation be licensed to

practice in the same state as their patient. Also, insurance companies are required to reimburse for the service via telemedicine as long as it's comparable to what the patient would have received in person.



Conference attendees prepare to participate in a game that tests their stroke knowledge. Participants raised letter cards to give their answers to multiple choice questions.

# Ninth AR SAVES Annual Conference

Irby explained that to expedite the process nurses can utilize written protocols “We have protocols for a reason. Many ERs have one provider and if that provider is tied up putting 16 sutures in a three-year-old’s head, or with a cold or whatever, you’re delaying that stroke patient’s care if you wait.”

Other featured speakers at the conference included Igor Rybinnik, M.D., a New Jersey-based neurologist; J.D. Day, M.D., chair of the UAMS College of Medicine

Department of Neurosurgery; Greg Brown, Arkansas Department of Health chief of the Trauma, Public Health Preparedness/Emergency Response and Emergency Medical Services Branch; and Prabhat Hebbar, M.D., a clinical cardiac electrophysiologist in North Little Rock.

Other session topics were telehealth etiquette, hemorrhagic stroke, acute management and commonly misdiagnosed symptoms and other aspects of stroke care.



2018 Annual Stroke Conference Survivors Panel



Dr. Sanjeeva Onteddu Speaking During The Expert Panel Session

AR SAVES Team Preparing For The 2018 Annual Stroke Conference



Robert Fuquay Speaking During The Stroke Survivors Panel



NIH Exam Demonstration Skills Station During The Pre-Conference Nurse Facilitator Workshop



Alteplase Race During The Pre-Conference Nurse Facilitator Workshop

## AR SAVES Sites around Arkansas

Spoke Sites	FY 2018 Totals					
Facility / City	Consults	Alteplase Administration	No Treatment	Mock Stroke Training	# Community Events	# Community Attendees
Arkansas Methodist/Paragould	26	12	14	17	53	4976
Ashley CO MC/Crossett	20	6	14	57	47	5099
Baptist Health /Arkadelphia	19	10	9	16	35	3678
Baptist Health / Conway	49	19	30	10	27	3013
Baptist Health /Heber Springs	23	5	18	19	40	12148
Baptist Health Hot Spring Co/Malvern	12	6	6	16	33	9235
Baptist Health Little Rock	0	0	0	0	0	0
Baptist Health North Little Rock	11	5	6	14	24	2815
Baptist Health Stuttgart	8	5	3	13	26	1516
Baxter Reg/Mountain Home	87	40	47	29	41	6301
Bradley County MC/Warren	18	7	11	23	30	655
Chambers Memorial / Danville	7	2	5	12	25	1171
CHI St. Vincent / Hot Springs	92	35	57	31	34	33710
Chicot Memorial/Lake Village	6	4	2	20	24	1089
Conway Regional/Conway	68	29	39	129	32	7007
CMC/Izard Co/Calico Rock	3	2	1	21	25	3977
CrossRidge Community Hospital/Wynne	6	3	3	13	36	3162
Dallas Co/Fordyce	9	1	8	25	36	4051
Delta Memorial/Dumas	4	2	2	22	24	655
DeWitt Hospital/DeWitt	6	3	3	13	28	1430
Drew County MC/Monticello	12	4	8	30	41	4086
Five Rivers MC/Pocahontas	13	2	11	15	27	1500
Fulton County Hospital /Salem	6	2	4	17	40	2085
Great River MC/Blytheville	15	0	15	39	31	9983
Unity Health Harris Hospital/Newport	10	5	5	16	55	3383
Helena Regional MC/ Helena	20	7	13	13	30	1968
Howard Memorial /Nashville	10	5	5	19	27	1122

Spoke Sites	FY 2018 Totals					
Johnson Reg/Clarksville	17	5	12	12	27	2674
Lawrence Memorial/Walnut Ridge	15	3	12	24	31	1733
Little River / Ashdown	4	0	4	31	22	1143
Magnolia Regional MC/ Magnolia	7	4	3	12	27	4028
McGehee/Desha	2	1	1	17	27	6650
Mena Regional MC/ Mena	18	8	10	16	34	31310
MCSA/Eldorado	28	8	20	24	49	12944
National Park/Hot Springs	34	13	21	16	45	14384
NEA Jonesboro	66	17	49	19	32	1291
North AR Regional /Harrison	30	12	18	40	38	20252
North Metro MC/Jacksonville	13	3	10	16	39	3114
Northwest MC/Bentonville	28	6	22	12	64	6107
Northwest MC/Springdale	48	14	34	12	43	5651
Ouachita CO/Camden	15	5	10	21	27	2073
Ozark Health MC/Clinton	6	1	5	12	34	10247
Piggott	7	0	7	20	32	1628
River Valley MC /Dardanelle	9	4	5	27	25	3944
Saline Memorial/Benton	30	11	19	12	38	1578
Siloam Springs Regional Hospital	25	9	16	12	37	4810
SMC/Osceola	7	1	6	26	25	1940
Sparks / Fort Smith	13	4	9	14	24	1482
St Mary's/Russellville	72	22	50	23	58	21046
Stone Co MC/ Mt. View	10	4	6	13	24	1305
Wadley / Hope	1	0	1	16	10	669
Washington Reg/Fayetteville	0	0	0	11	35	3530
Unity Health White County MC/Searcy	53	14	39	15	31	5220
White River MC/Batesville	39	16	23	28	25	10055
White River / Cherokee Village	5	2	3	12	24	3080
<b>Total</b>	<b>1162</b>	<b>408</b>	<b>754</b>	<b>1162</b>	<b>1798</b>	<b>313703</b>



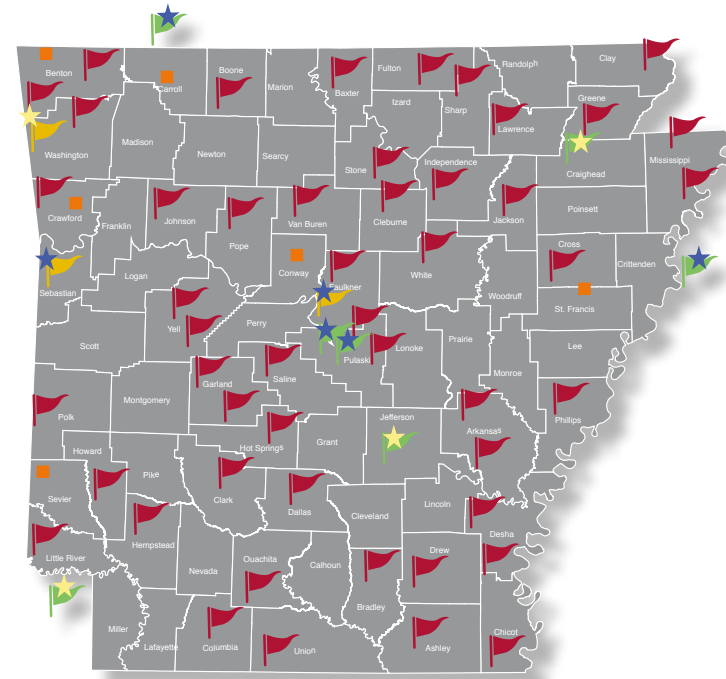
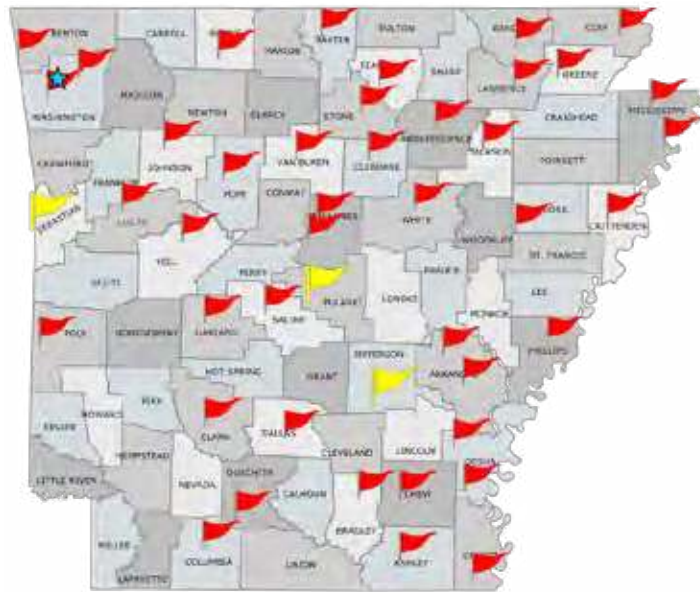
# THEN: AR SAVES MAPS

# NOW: AR SAVES Sites FY 2018

## AR SAVES Sites FY 2008



## AR SAVES Sites FY 2012

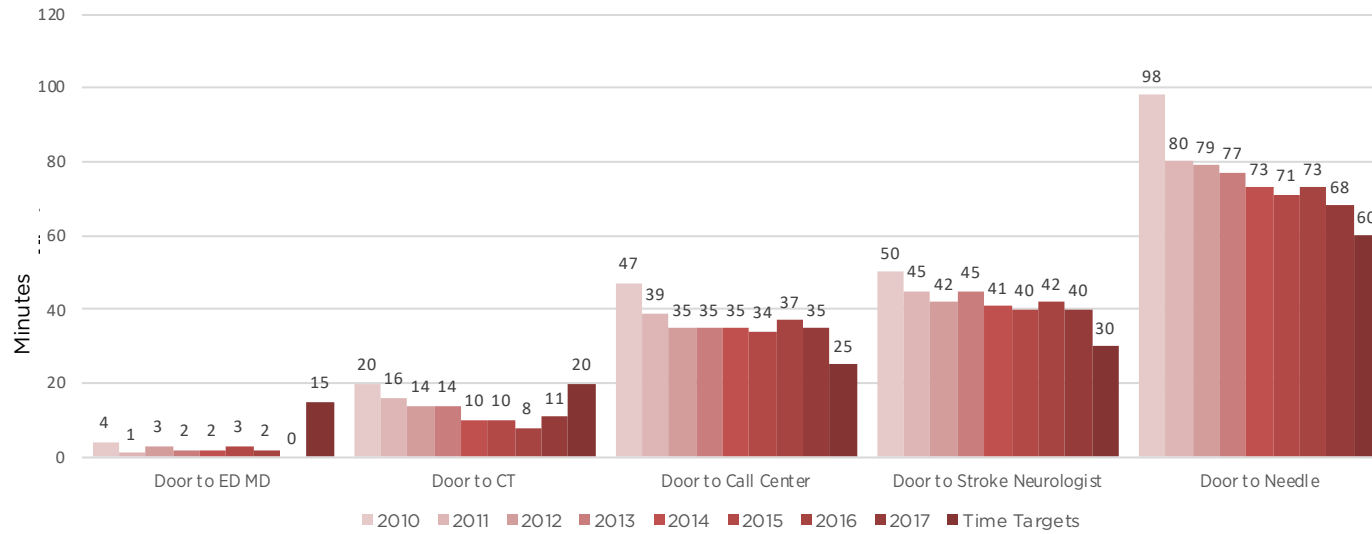


▲ AR SAVES sites  
 ★ Spoke & Receiving Site  
 ★ Receiving Site  
 ■ New Upcoming Sites

Name	City	County
<span style="color: blue;">★</span> <b>Receiving Sites (INTERVENTION &amp; ICU CAPABLE)</b>		
<span style="color: green;">★</span> UAMS Medical Center	Little Rock	Pulaski
<span style="color: green;">★</span> Baptist Health Medical Center	Little Rock	Pulaski
<span style="color: green;">★</span> Cox Health	Springfield	Missouri
<span style="color: green;">★</span> Methodist University Hospital	Memphis	Tennessee
<span style="color: green;">★</span> Sparks	Fort Smith	Sebastian
<span style="color: yellow;">★</span> Washington Regional Medical Center	Fayetteville	Washington
<span style="color: orange;">★</span> <b>Receiving Facilities (ICU CAPABLE)</b>		
<span style="color: green;">★</span> Jefferson Regional Medical Center	Pine Bluff	Jefferson
<span style="color: yellow;">★</span> Conway Regional Medical Center	Conway	Faulkner
<span style="color: green;">★</span> Wadley Regional Medical Center	Texarkana	Texas
<span style="color: green;">★</span> St. Bernard's Regional Medical Center	Jonesboro	Craighead

Name	City	County
Arkansas Methodist Medical Center	Paragould	Greene
Ashley County Medical Center	Crossett	Ashley
Baptist Health Medical Center-Arkadelphia	Arkadelphia	Clark
Baptist Health Medical Center-Conway	Conway	Faulkner
Baptist Health Medical Center-Heber Springs	Heber Springs	Cleburne
Baptist Health Medical Center-Hot Spring County	Malvern	Hot Spring
Baptist Health Medical Center-North Little Rock	North Little Rock	Pulaski
Baptist Health Medical Center-Stuttgart	Stuttgart	Arkansas
Baxter Regional Medical Center	Mountain Home	Baxter
Bradley County Medical Center	Warren	Bradley
CHI St. Vincent Hot Springs	Hot Springs	Garland
CHI St. Vincent Morrilton	Morrilton	Conway
Chicot Memorial Medical Center	Lake Village	Chicot
Community Medical Center of Izard County	Calico Rock	Izard
Conway Regional Health System	Conway	Faulkner
CrossRidge Community Hospital	Wynne	Cross
Dallas County Medical Center	Fordyce	Dallas
Delta Memorial Hospital	Dumas	Desha
DeWitt Hospital	DeWitt	Arkansas
DeQueen Medical Center	DeQueen	Sevier
Drew Memorial Hospital	Monticello	Drew
Eureka Springs Hospital	Eureka Springs	Carroll
Five Rivers Medical Center	Pocahontas	Randolph
Forrest City Medical Center	Forrest City	St. Francis
Fulton County Hospital	Salem	Fulton
Great River Medical Center	Blytheville	Mississippi
Helena Regional Medical Center	Helena	Phillips
Howard Memorial Hospital	Nashville	Howard
Jefferson Regional Medical Center	Pine Bluff	Jefferson
John Ed. Chambers Memorial Hospital	Danville	Yell
Johnson Regional Medical Center	Clarksville	Johnson
Lawrence Memorial Hospital	Walnut Ridge	Lawrence
Little River Memorial Hospital	Ashdown	Little River
Magnolia Regional Medical Center	Magnolia	Columbia
McGehee Hospital	McGehee	Desha
Medical Center of South Arkansas	El Dorado	Union
Mena Regional Health System	Mena	Polk
National Park Medical Center	Hot Springs	Garland
North Arkansas Regional Medical Center	Harrison	Boone
North Metro Medical Center	Jacksonville	Pulaski
Northwest Medical Center Bentonville	Bentonville	Benton
Northwest Medical Center Springdale	Springdale	Washington
Ouachita County Medical Center	Camden	Ouachita
Ozark Community Hospital	Gravette	Benton
Ozark Health Medical Center	Clinton	Van Buren
Piggott Community Hospital	Piggott	Clay
River Valley Medical Center	Dardanelle	Yell
Saint Mary's Regional Medical Center	Russellville	Pope
Saline Memorial Hospital	Benton	Saline
Siloam Springs Regional Hospital	Siloam Springs	Benton
SMC Regional Medical Center(South Mississippi County)	Osceola	Mississippi
Sparks Van Buren	Van Buren	Crawford
Sparks Regional Medical Center	Ft. Smith	Sebastian
Stone County Medical Center	Mountain View	Stone
Unity Health Harris Hospital	Newport	Jackson
Unity Health White County Hospital	Searcy	White
Washington Regional Medical System	Fayetteville	Washington
White River Health System	Cherokee Village	Sharp

## Golden Hour Core Measures

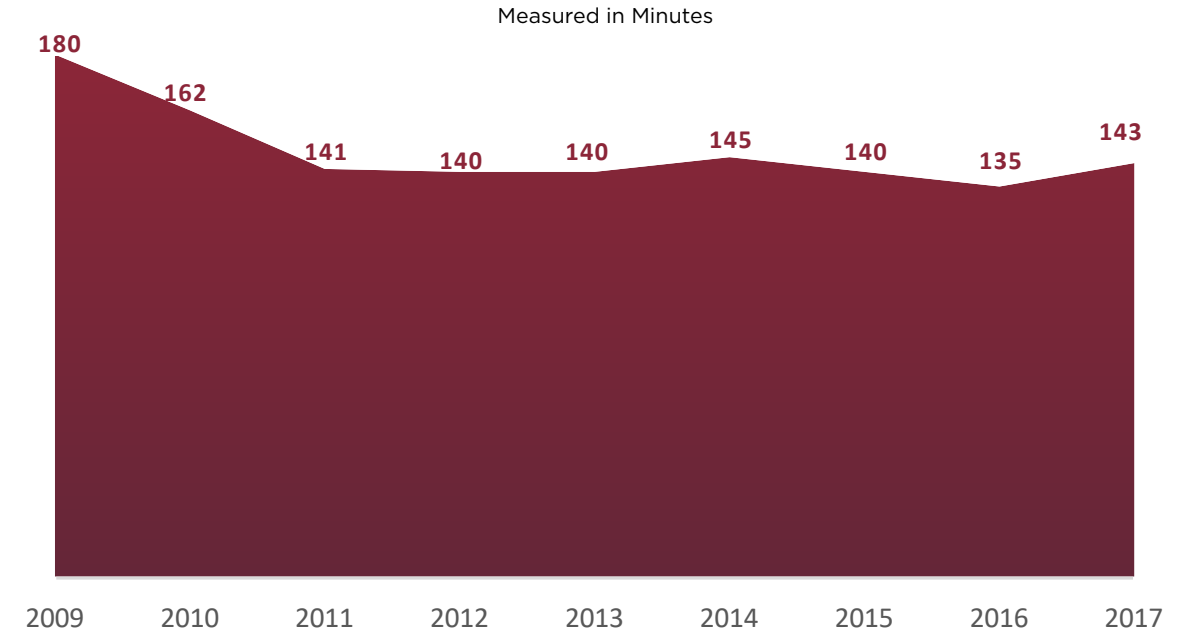


Patients arriving by EMS vs. private vehicle decreased the door to CT time by **4.7 minutes!**

EMS alerting the receiving ED with a code stroke decreased the door to CT time by **11.4 minutes!**

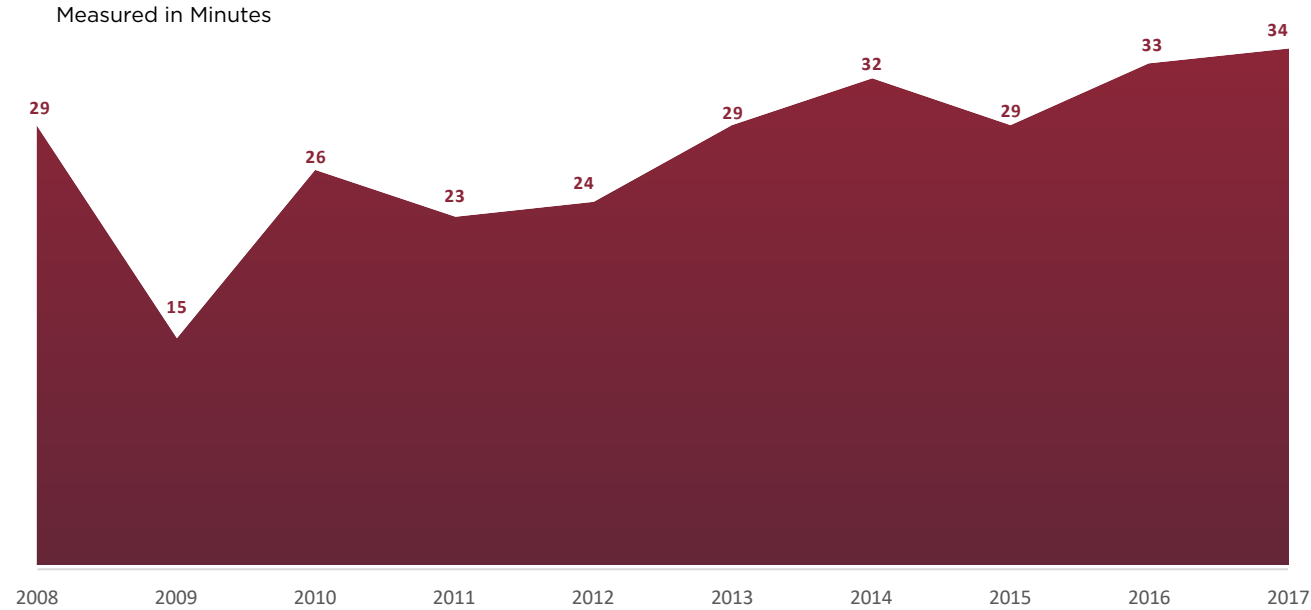
EMS alerting the receiving ED of a code stroke decreased the door to needle time by **29 minutes!**

## Median Onset of Symptoms to Alteplase



**37%** of patients treated with alteplase received treatment within **60 minutes** of arrival at the hospital ED.

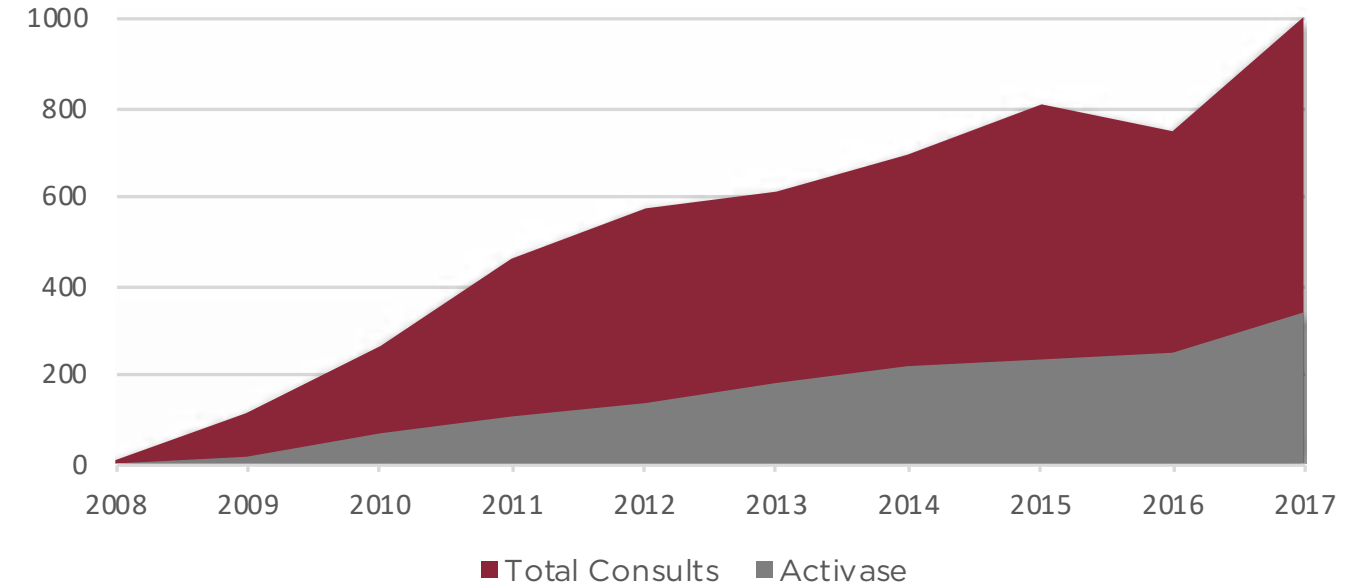
## Percent Alteplase Administered



In CY 2017 **34.2%** of all patients receiving care at an AR SAVES hospital were treated with alteplase!

This is up from **33.2%** last year and **29%** the year before.

## Total Consults / Total Alteplase



Almost **70%** of AR SAVES patients were completely recovered or recovered with slight deficits!



*Left to Right:*

**Erin Pace, B.S. CHES**  
Community Health Educator

**Calvin Duncan, B.S. EMS, NRP**  
Call Center Supervisor

**Olivia Wilson, M.S. CHES**  
Community Health Educator

**Suzanne White, R.N.**  
Outreach Nurse

**Conelia Williamson**  
Program Manager

**Renee Joiner, B.S.N. R.N.**  
AR SAVES Director

**Tiffany Morgan, B.S.N. R.N.**  
Outreach Nurse

**Robin Banks, R.N.**  
Outreach Nurse

**Jennifer McCurry, R.N.**  
Outreach Nurse

**Tim Vandiver, R.N. NRP**  
Outreach Nurse

**Marzella Backus, M.S.N. R.N. CEN**  
Outreach Nurse

**Sarah Eastham, B.A.**  
Program Coordinator



**AR SAVES** has been serving Arkansans for 10 years. During this period, more than a 1,300 stroke patients have been treated with thrombolytics and several thousand patients have been seen in the program. We are happy to report that there is no difference in the rates of

symptomatic intracerebral hemorrhage for patients seen in the AR SAVES program compared to traditional patients seen at UAMS. The program has an agreement with five hospitals across the state to perform thrombectomies for up to 24 hours in a select group of patients. AR SAVES is able to direct care for these stroke patients to the nearest, most capable hospitals in the state, delivering treatment more quickly to improve their chances of recovery while keeping them closer to home.

Given the significant impact on the stroke care in the state, we are in a unique position to be a leader in stroke care. We also are working on projects like seeing patients in ambulances to decrease door-to-treatment times. Other projects include taking care of post-alteplase patients in the spoke sites through telemedicine with our neurologists. Even though there has been a lot of

improvement and progress, we are treating only about 10 percent of stroke patients. There is a significant opportunity for education in the state of Arkansas. All the future projects and expansion keep in mind our primary commitment “to treat acute stroke patients in Arkansas in a timely and efficient manner.”

Sincerely,

A handwritten signature in black ink, appearing to read "Sanjeeva Reddy".

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



It has been a decade since a vision, a group of dedicated individuals, and a state where mortality from stroke was highest in the nation all came together to create a unique program that is the envy of many states. AR SAVES was and remains unique because of its statewide reach and its funding mechanism, one that exemplifies how tax-payer dollars can help run a proficient operation and make a huge difference at a public health level.

I was privileged to be one of those individuals who saw the birth of AR SAVES, and accompanied its growth into the network of hospitals it is today. Ten years later and with more than fifty hospitals across the state, AR SAVES is helping treat acute ischemic stroke victims that would have otherwise gone untreated and succumb to the devastating disabilities brought on by stroke.

My departure from Arkansas in 2012 was bitter sweet; bitter because I left behind, though in very good and capable hands, a successful program that many, including myself would like to emulate. As we attempt to create a similar telestroke program at my current institution, I often find myself thinking of what made AR SAVES successful.

As we try to put these pieces together, I realize that the task at hand is not easy, further deepening my appreciation of the work that went on to create and sustain AR SAVES.

As the landscape of acute stroke management changes at a dizzying pace, and timely thrombectomy proving more beneficial to patients' outcome, AR SAVES is taking on an even more important role of “matching patient to therapy”, therapy that often times can only be provided at a handful of institutions.

I hope to see the program evolve to cover a larger population, in the state or beyond, and offer teleconsultative services for a gamut of acute and emergency neurological and neurosurgical conditions, all while remaining an example of a telemedicine service to learn from.

A handwritten signature in black ink, appearing to read "Salah G. Keyrouz".

Salah G. Keyrouz, MD, FAHA  
*Associate Professor of Neurology  
Medical Director, Neurology and Neurosurgery Intensive Care Unit  
Director of Telestroke  
Washington University in Saint Louis  
Barnes-Jewish Hospital*



This has been a year of miracles for AR SAVES. Each of our 54 sites have a miraculous story to tell, and this year's survivor feature story is just one of many that resonates AR SAVES' commitment to where you live should not determine whether you live or die. These miracles are made possible by partnerships forged by the University of Arkansas for Medical Sciences, Arkansas Division of Medicaid Services, 54 spoke hospitals, five regional receiving hospitals, and collaboration with the Arkansas Department of Health and the Arkansas Stroke Task Force. But, the vehicle by which these miracles are delivered is driven by the local Emergency Medical Services and hospital emergency department nurses and physicians within our vast, growing statewide network.

**Statement from a stroke survivor**

I'm curious. Do you ever do anything to recognize the various team members that play a part in the AR Saves program? All I did was refuse to die until the doctors intervened.

What about the paramedics, ER staff, nurses, flight crew, ICU staff and everyone else? Those men and women are the rock stars of the program. I'm just the

lucky recipient of their talents. I would hate for those people to ever be taken for granted. They are very special to me. They are the reason I can say:

**Thank you and Merry Christmas,**

*Tom Berryhill*

This report honors those "rock stars" and all they have done for the people of Arkansas and all that they continue to do, oftentimes selflessly in the effort to improve and save the lives of our state's friends, family, neighbors, and loved ones. While we cherish each life improved and saved by AR SAVES, I want to take a moment to bow to those who work day and night to make these little miracles happen – Those miracles may be all in a day's work to us, but they mean the world to that person who can keep living his or her life because of your efforts. Thank you to everyone on the ground, in the trenches, and on the front lines of our life-changing program. I look forward to another 10 years of miracles.

Respectfully,

Renee Joiner  
AR SAVES Director of Operations



- Increase the number of AR SAVES stroke patients who receive care in their community hospital by adding additional spoke sites and increasing the number of vascular neurologists available for AR SAVES calls.
- Increase the number of Arkansans who know the signs and symptoms of stroke and know to call 911 through support of community events and targeted educational interventions to high risk populations.
- Continue to strive for clinical excellence by providing an advanced nurse stroke certification course, nurse stroke refresher course and combining on-site hospital training with local EMS.
- Continue to improve treatment for stroke patients through efforts to decrease door-to-needle times in AR SAVES hospitals using new innovation and technology.



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