

# 2017 STROKE REPORT



## UPSTATE

COMPREHENSIVE STROKE CENTER

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# UPSTATE

COMPREHENSIVE STROKE CENTER

## A MESSAGE FROM THE MEDICAL DIRECTOR



### Dear Esteemed Colleagues,

Stroke continues to change many people's lives but we are winning the battle. In 2014, stroke fell to the fifth leading cause of death in the US. In 2015, a new era of treating stroke became the standard of care – mechanical thrombectomy. In 2016 a number of clinical trials ventured to expand treatment windows for acute stroke management, and we continue to fight to enlarge treatment possibilities.

On behalf of Upstate University Hospital, I am pleased to present to you our clinical achievement report for 2017. As the largest neuroscience team in the region with hundreds of hospital staff, Upstate University Hospital is still the only Level 1 Comprehensive Stroke Center, the highest level of stroke certification available. Since our initial designation in 2014, our program has continued to expand and improve our services to the region. Our Telestroke network currently supports nine community hospitals throughout Northern and Central NY. Our team has

been actively engaging the public and raising awareness of Stroke and cardiovascular disease through direct education, public awareness campaigns, and numerous community events. At our recent Regional Upstate Stroke and Health Summit, we provided local healthcare providers with the opportunity to network and gain continuing medical education.

As 2016 began, we joined other Stroke centers nationally by selecting as a primary quality improvement initiative reducing time to treatment (time to intravenous thrombolysis). Through a number of concurrent projects which included: partnering with our emergency medical service (EMS) providers for prehospital notification, collaborating with our emergency department providers to send patients directly to the CT scanner from the ambulance, and reorganization of our internal processes, we were able to significantly reduce our times. In partnership with AHA Get With the Guidelines initiative, Upstate Stroke Program has been awarded the GWTG-


Gold Plus and the Target Stroke Elite Plus performance award for treating 100% of eligible patients with tPA within 60 minutes, and 87% of eligible patients within 45 minutes. Our current median treatment time is 33 minutes. We are working to reduce it further to less than 30 minutes.

Our commitment to Central New York remains. Through our collective efforts, we envision a day when stroke rarely happens. But if it does, rest assured that we are ready to treat it.

We are happy to share with you our accomplishments from this past year as well as highlight some of our current initiatives during this current year.

Sincerely,

*Julius Gene Latorre, MD, MPH  
Medical Director,  
Upstate Comprehensive Stroke Program*



*Amar Swarnkar, Director of Neuroradiology (right) and resident review a patient's CT perfusion. The window for stroke rescue therapy is now wider with the addition of innovative imaging software called RAPID DICOM that allows treatment for some strokes up to 24 hours. The software program shows changes in brain tissue perfusion and diffusion in digital images captured by computerized tomography and magnetic resonance imaging. This allows doctors to tell the precise area of the brain that is affected by the stroke, and the area still in jeopardy.*

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## UPSTATE FOCUSES ON ACADEMICS AND RESEARCH

Upstate University Hospital, as part of SUNY Upstate Medical University, is the only academic medical center in the Central New York Region and is one of the oldest medical schools in New York. This commitment to education is anchored by the four colleges:

- Medicine
- Nursing
- Health Professions
- Graduate Studies

As an academic medical center we have the opportunity to offer many of our patients participation in clinical trials. These types of research studies can help to determine whether new drugs or treatments are safe and effective. Our research focuses on diseases that affect our local community such as stroke, diabetes, and cancer.

Upstate University Hospital has long held the distinction of caring for the most seriously ill and injured patients in New York State. We serve a region that covers over one-third of our state.

### Upstate is the region's only:

- Level I Comprehensive Stroke Center
- Level I Trauma Center
- Burn Center
- Poison Control Center
- Children's Hospital

It is our mission to continue to strive to provide the best care possible and to meet or exceed the needs of our patients and our families.



## History of Upstate

When the hospital opened in 1964, it was the first hospital in Central New York to combine research, in-patient facilities and out-patient treatment. The building cost \$20,000,000 and took four years to complete.

In the 1970s Upstate made a significant commitment to the neurosciences by establishing the first dedicated neuro-intensive care unit. In 2006, furthering our commitment to neurosciences, Upstate became the first designated stroke center in Central New York.

## Research

Our neurosurgical team offers patients the most advanced skills

and technology available today. Our scientists aim to bring them even more breakthroughs tomorrow.

Brain tumors are just one of the research areas being explored by Upstate's Neurosurgery Department.

Research is at the core of academic medicine and improves health through new insights and treatments.

As the largest and longest established neurosurgery center — and as part of the region's only medical university — Upstate's faculty also bring the most advanced skills and technology to patient care.



*Upstate has an entire hospital floor dedicated to the brain.*

*Upstate is the only Level I Comprehensive Stroke Center in Central New York. The international accreditation organization (DNV) confirms Upstate provides the most advanced and highest quality stroke care in Central New York.*



## A NOTE FROM THE STROKE PROGRAM MANAGER

*Jennifer Schleier RN, BSN, CCRN, SCRN*

Our mission as the region's only Level I Comprehensive Stroke Center is to provide the highest level of care possible to stroke patients in the Central New York Region. The staff of The Stroke Program consist of multidisciplinary experts to ensure that we consistently meet and exceed national quality benchmarks in stroke care.

In 2016, Upstate's Comprehensive Stroke Center saw:

- 1489 actual and presumptive stroke patients
- 550 acute ischemic strokes
- 200 hemorrhagic strokes
- 100 TIAs
- And accepted 525 transfers from other hospitals in our region

This means we have vast experience in caring for stroke patients and their families. Our physicians and nurses are prepared and equipped to handle the most complicated of patients. We have 150 nurses who receive specialty stroke

training to care for patients in one of our three levels of care. Our focus here is patient and family centered, and approaches stroke treatment holistically.

We hold strong in our commitment to our region, our counties and our communities. We will continue to work tirelessly to educate our communities about stroke risk factors, prevention and recognition.

### **Upstate's LEVEL 1 Comprehensive Stroke Center**

Upstate was certified in 2015 as a Comprehensive Stroke Center by the DNV, marking them as the region's only level I Stroke Center.

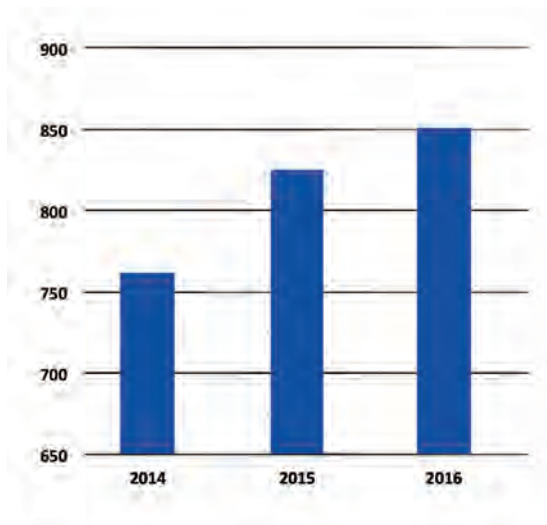
This certification demonstrates Upstate's continued commitment to stroke excellence and shows the proven resources, infrastructure and skillful processes in place. All of these

contribute to the very best in stroke care, including:

- Multidisciplinary approach that includes neurologists, neurosurgeons, interventional radiologists, and rehabilitation therapists
- Three levels of specialized care: Specialized Neuroscience floor, Neuroscience step-down, and Neuroscience Intensive Care Unit all conveniently located on our 9th floor
- Use of clot-busting tPA for ischemic stroke treatment
- Catheter based therapy for those who don't respond to clot buster medication that extends the window of treatment
- State of the art neurovascular and endovascular procedures for repair of aneurysms and other causes of hemorrhagic strokes (brain bleeds)
- Telemedicine capabilities to treat stroke patients in rural hospitals



### Number of Stroke Encounters at Upstate

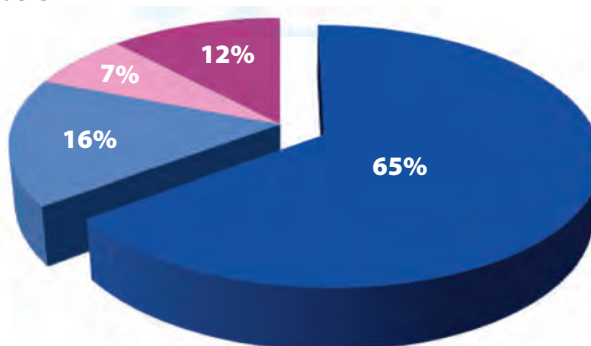


**The Highest Standards** Upstate is the only Level I Comprehensive Stroke Center in Central New York. This means Upstate has met and exceeded the highest standards for stroke care.

**Our Team is Here for You** Upstate has the largest and longest established neurosciences program in CNY. We've recently expanded our neurology and neurosurgery team.

### 2016 Upstate Stroke Volumes by Diagnosis

- AIS - Acute Ischemic Stroke
- ICH - Intracerebral Hemorrhage
- SAH - Subarachnoid Hemorrhage
- TIA - Transient Ischemic Attack





## PATIENT STORY

Rajeev Saini, MD, did not hesitate when his 81-year-old father suffered a stroke. He asked the rescue crew to take the man to Upstate University Hospital.

"I trained at Upstate. I knew they had a good stroke program," he explains.

Saini's father, Jagdish M. Saini, had a clot in his brain. He received a clot-busting medication in the emergency department. Soon after, neurosurgeon Grahame Gould, MD, inserted a collapsible stent into an artery in Saini's groin. He threaded it to the blocked blood vessel in his brain and captured the clot within the cage-like stent. Then Gould removed it from Saini's body.

The stroke Saini suffered could have paralyzed him forever, says his son, who specializes in family medicine. The Sainis

share a home in Baldwinsville. When Dr. Saini came home at lunchtime May 18, he found his father with a facial droop, unable to talk, unable to move his right arm or leg.

After Gould completed the clot retrieval, the elder Saini recovered for three nights in the hospital. He required no rehabilitation and no physical, occupational or speech therapy. The stroke left him with a slight shake in his hand and a mild difference in his gait.

Dr. Saini was impressed with the care his father received, and in the improvement he saw after Gould removed the clot. "I'm just amazed," he says. "Everybody is amazed."





*Hesham Masoud, MD, who has expertise in endovascular surgical neuroradiology, holds a stent used to remove a clot from the brain.*

*Upstate was the first hospital in the region to employ stents for the treatment of ischemic stroke. The technology continues to evolve and improve to allow physicians the ability to restore blood flow and retrieve clots, with few complications.*

*To retrieve the blood clot, a neurosurgeon threads a catheter through the patient's blood vessels to the blocked artery in the brain. A mesh stent, deployed through the catheter, grabs the clot, which is then removed from the artery, enabling blood flow to resume. Studies have shown that patients treated with this device had higher rates of neurological function and reduced death from stroke three months after the procedure, compared to patients treated with alternate treatment.*

*Stroke survivor Jagdish M. Saini, center, with his granddaughter, Rhea, and son, Rajeev Saini, MD, who did his internal medicine residency at Upstate.*





# UPSTATE EARNS TOP ACHIEVEMENT AWARDS FOR STROKE CARE



Upstate University Hospital's care for stroke achieved high marks from the American Heart Association (AHA), which offered the recognition in conjunction with the American Stroke Association and the American College of Cardiology.

Upstate is honored with the Get With The Guidelines®-Stroke Gold Plus Achievement Award with Target: Stroke Honor Roll Elite Plus. The award recognizes the hospital's commitment to providing the most appropriate stroke treatment according to nationally recognized, research-based guidelines based on the latest scientific evidence. Upstate received the same honor last year.

Hospitals must achieve 85 percent or higher adherence to all Get With The Guidelines-Stroke achievement indicators for two or more consecutive 12-month periods and achieve 75 percent or higher compliance with five of eight Get With The Guidelines-Stroke Quality measures to receive the

Gold Plus Quality Achievement Award.

"This recognition of our stroke care is further evidence of the outstanding quality of care patients receive at Upstate," said Steven M. Scott, MPH, FACHE, interim chief executive officer of Upstate University Hospital. "The designation from the American Heart Association also recognizes the dedication and commitment of our physicians, nurses, technicians and others who ensure patient care exceeds the national standards."

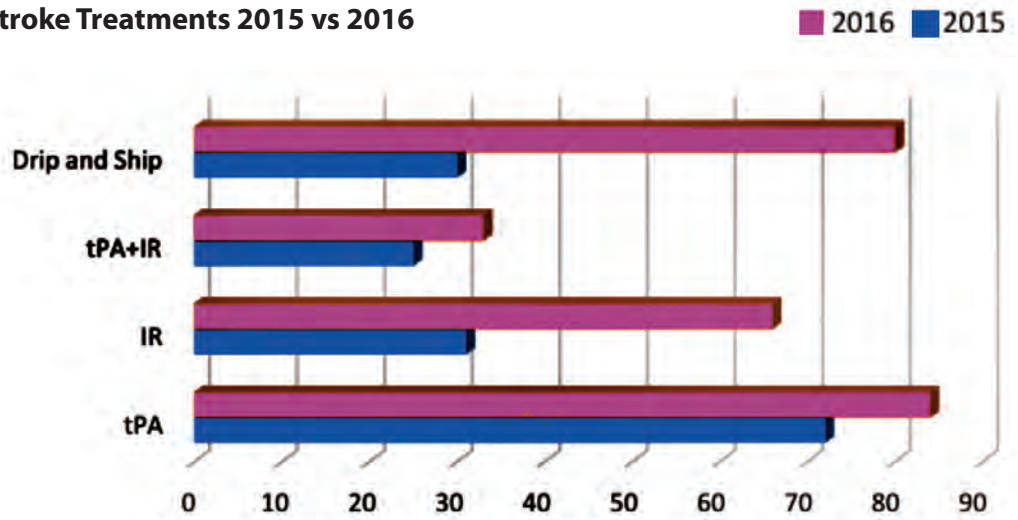
To qualify for the Target: Stroke Honor Roll Elite Plus, hospitals must meet quality measures developed to reduce the time between the patient's arrival at the hospital and treatment with the clot-buster tissue plasminogen activator, or tPA, the only drug approved by the U.S. Food and Drug Administration to treat ischemic stroke. If given intravenously in the first three hours after the start of stroke symptoms, tPA has been shown to significantly reduce the effects of

stroke and lessen the chance of permanent disability. Upstate University Hospital earned the award by meeting specific quality achievement measures for the diagnosis and treatment of stroke patients at a set level for a designated period.

These quality measures are designed to help hospital teams follow the most up-to-date, evidence-based guidelines with the goal of speeding recovery and reducing death and disability for stroke patients.

Upstate's stroke care is often honored, having received the Gold Plus Achievement Award with Target: Stroke Honor Roll Elite Plus in 2016 as well. Upstate became the only specially designated Comprehensive Stroke Center in the region, in 2015, when it met a rigorous review of its stroke treatment protocols by DNV (De Norske Veritas) Healthcare, a hospital accreditation organization.

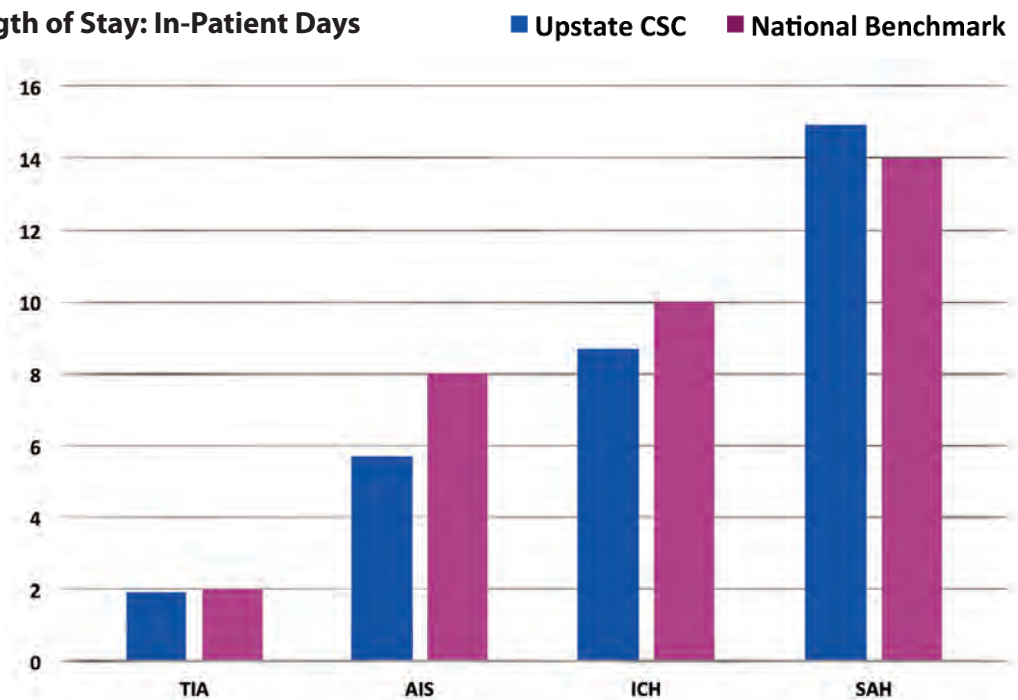
### Upstate Stroke Treatments 2015 vs 2016



Total Number of Cases Treated with IV tPA, Mechanical Endovascular Reperfusion (MER), both tPA and MER or tPA at outside hospital transferred to Upstate.

**Drip and ship:** patients who receive tPA at an outside hospital who are then transferred to Upstate.

### 2016 Length of Stay: In-Patient Days





# STROKE QUALITY AND OUTCOME MEASURES

The Upstate Comprehensive Stroke Center (CSC) has consistently exceeded national averages in stroke quality measures over the past three years. Our experience, program growth and implementation of key process improvement initiatives has resulted in faster imaging, diagnosis and treatment of stroke than ever before. We have established a wider map of patient referrals, refined relationships with our EMS providers and supported consistent stroke education for our nursing units and our regional communities.

These results speak to Upstate CSC's ability to honestly look at current processes and implement improvements that impact the quality of the stroke care we provide. This in turn improves outcomes; however, quality standards and data only drive one aspect of stroke care. What matters most are the outcomes of our stroke

patients. The piece that truly drives us in our daily work is when our stroke patients leave Upstate and tell others that it was our care, compassion and expertise that allowed them to face a stroke and come out the other side.

To achieve this level of excellence, an organization must continually evaluate its performance. As neuroscience trained nurses who work daily reviewing our stroke cases and preparing data, we analyze and constructively question our findings, communicate with team members across all departments, identify areas for improvement and reevaluate the outcomes. As an academic medical center there is an expectation of excellence. Thankfully we have strong support of quality projects both from our hospital culture and administration.

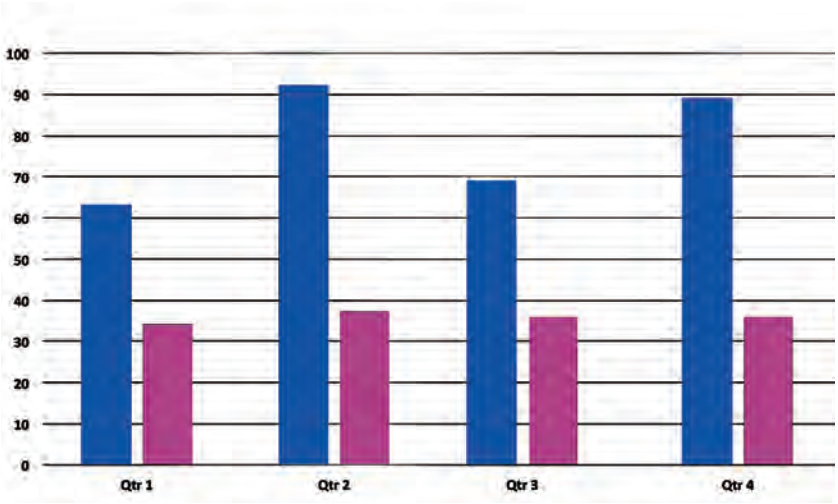
*Michelle F Vallelunga, MS, RN CNRN,  
SCRN, Data Coordinator*

*Patricia Veinot, RN, BSN  
Data Coordinator*

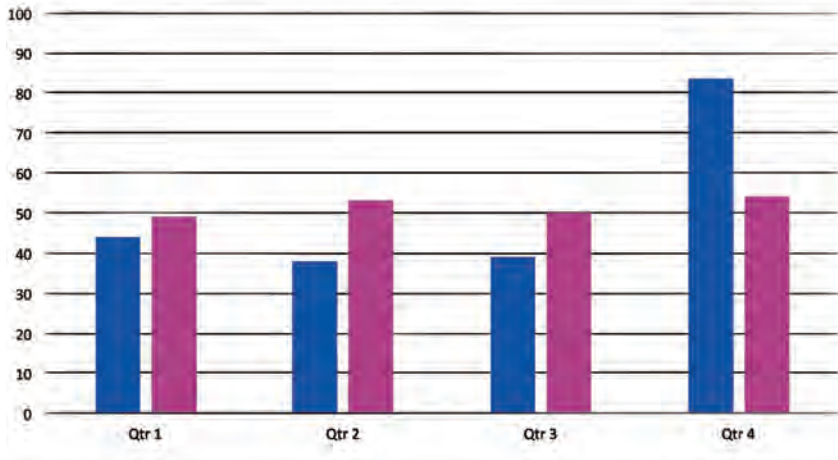


■ Upstate ■ National

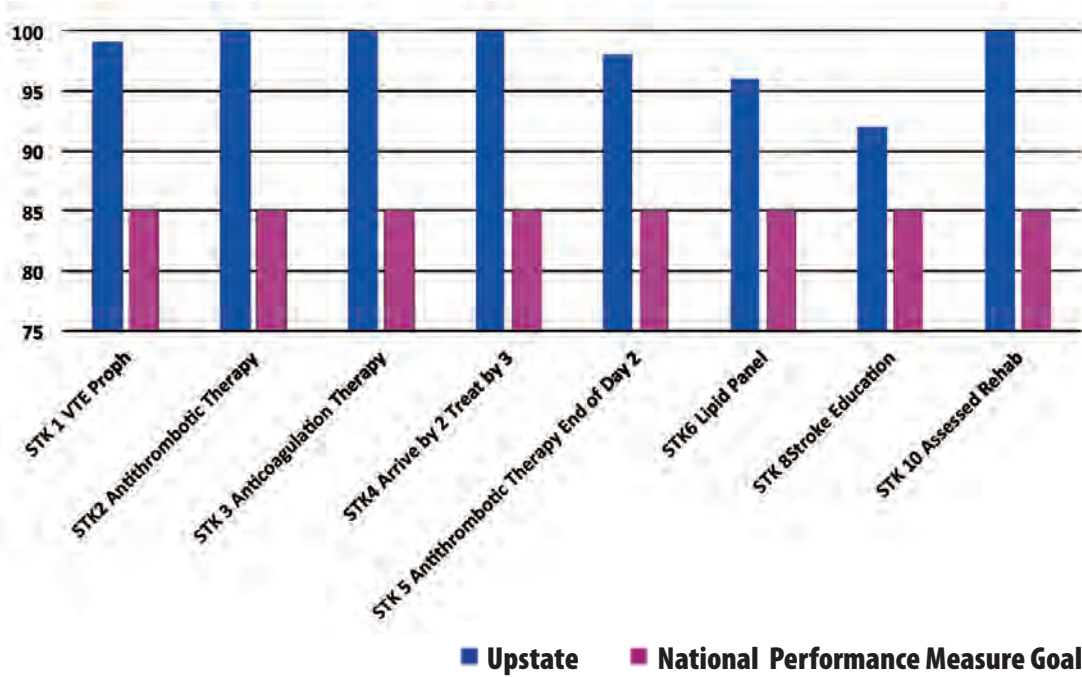
**Percentage of Patients with Arrival to Stroke Treatment in < 45 Minutes**



**Percentage of Patients with Arrival to Start of Stroke Rescue Therapy in < 90 Minutes**



**2016 Stroke Core Quality Measures (%)**

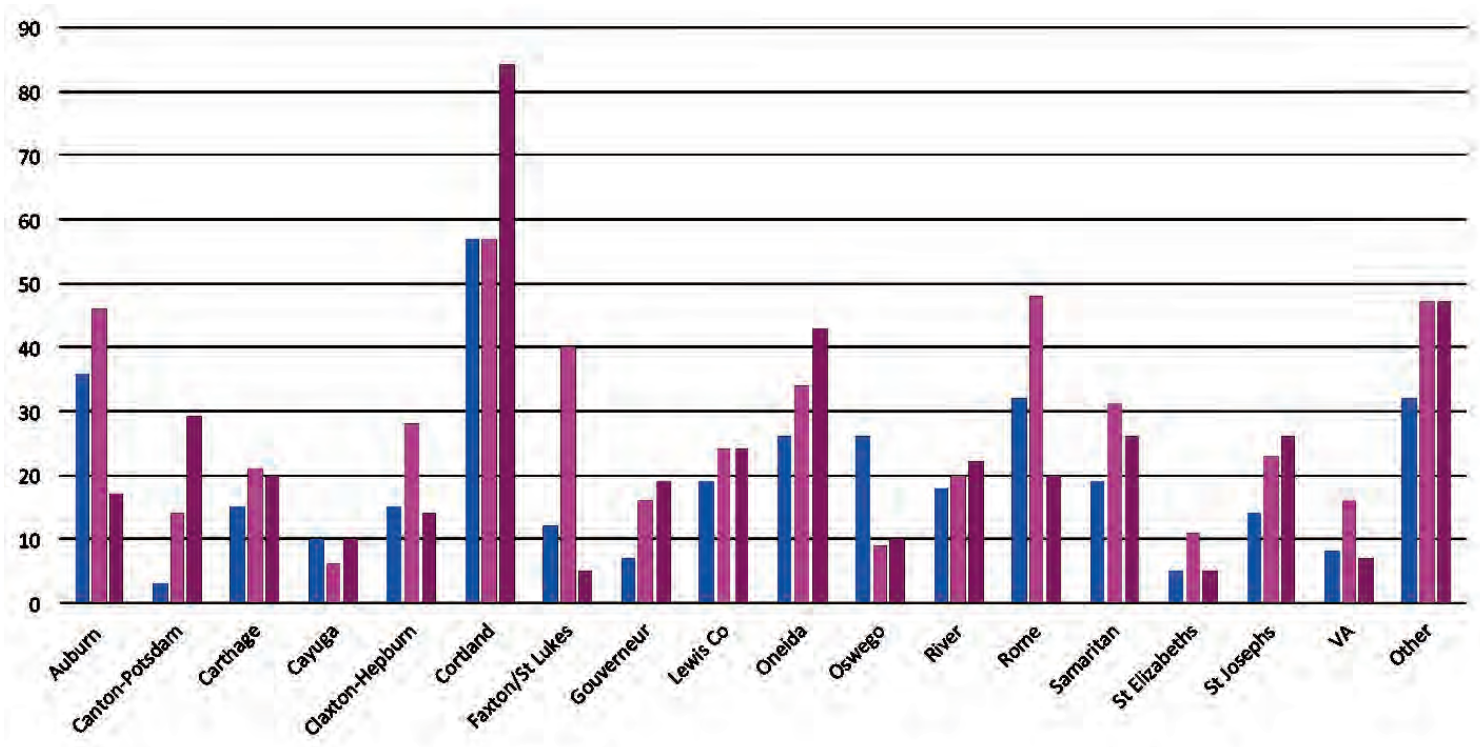


■ Upstate ■ National Performance Measure Goal



2015/2016/2017 Patients Transferred to Upstate

■ 2015 ■ 2016 ■ 2017



## PATIENT STORY

# EXTENDING EXPERTISE

## STROKE NEUROLOGISTS CARE FOR PATIENTS IN REMOTE AREAS

### A headache that wouldn't stop.

Mary Green, 49, is a licensed practical nurse who has worked for 30 years at River Hospital in Alexandria Bay. She was supposed to work there Oct. 25, but at 5:15 a.m. she remained sound asleep, snoring. Her husband, Marshall Green, tried to wake her up, twice.

When he realized she was unresponsive, he called for their son, Dustin, to help while they waited for the ambulance. They thought she might have overdosed on her medication.

The day before, Green had a headache that wouldn't stop. She remembers going to bed early. That's all she remembers. "I don't remember

anything for about 38 days. I kind of lost a month of my life."

Her husband kept notes for her. At River Hospital, the doctors consulted with Upstate neurologist Elwaleed El Nour, MD, via Telestroke. His assessment allowed for a quick decision that Green needed prompt transport by helicopter for expert care in Syracuse.

At Upstate, Green immediately underwent an angiogram, showing the blood flow — and the blockages — in the vessels of her brain. She had what is called a bilateral occipital stroke, affecting the lower back part of her brain. This region controls vision, coordination and balance, among other essential functions.

Green spent 38 days in Upstate's specialized neuroscience intensive care unit for patients with neurological problems. Medications helped her recover from her stroke. After she was stabilized, she was transferred to Upstate's physical medicine and rehabilitation unit.

She went home Dec. 13. She continues to see neurologist Carmen Martinez, MD, who is trying to determine why Green had a stroke — although the reasons remain unknown for some stroke patients.

Green is not back to work yet. She can't drive, but she can walk, and she's hopeful her vision will continue to improve. She considers herself "a very fortunate, lucky lady."

*Mary Green and her husband, Marshall.*



# WORKING WITH EMS FOR IMPROVED STROKE OUTCOMES

The stroke chain of survival starts with EMS and first responders. It is for this reason that we actively engage our EMS agencies in helping us to achieve our stroke quality goals. We rely on input from our region's EMS providers to assist us in creating internal processes that will improve the efficiency of our care once the patient reaches the hospital.

One quality measure that we are particularly focused on is pre-notification of an incoming stroke patient to our ED by EMS. This is a measure that is evaluated both nationally and state wide. We are continuously looking at means in which we can improve our percentages of pre-notification as well as improving the quality of the notification call itself.

The highest quality calls containing valuable information, including the patient's "last seen normal" and the findings of their stroke assessment tools (Cincinnati Pre-hospital Stroke Scale-CPSS), will allow for the physician receiving the call to activate the stroke team prior to the patient arriving in the emergency department. This pre-arrival activation allows for the patient to move through the system much faster by alerting pertinent departments that there is an in-bound stroke patient. This decreases the time it takes to obtain critical imaging and ultimately the time it takes to begin stroke treatments.

Since faster treatment times translate to better patient outcomes, the EMS pre-notification measure has been the main focus of the EMS Stroke Quality Committee.

The EMS Stroke Quality Committee has representation from many of the providers within our region and it has recently expanded to include regional EMS leadership. Through the active participation of these EMS agencies, the group was able to identify barriers to stroke pre-notification and create strategies to improve the measure.

One barrier that was identified was a knowledge gap related to the requirement of stroke pre-notification along with the chain of events that occurred on the hospital side once EMS pre-notification was received. Educational materials were developed and approved by the EMS agency representatives to go out to providers across the region.

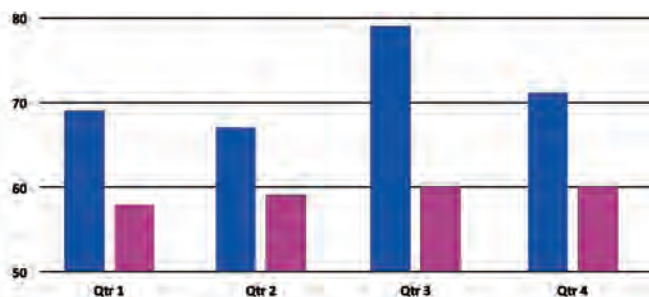
This education highlighted pre-notification requirement along with the necessary content of the call in order to activate the stroke team prior to the patient's arrival in the emergency department. The success of this work group is evident by the data presented in the pre-notification and stroke team activation graphs.

## How does EMS partnership and involvement affect our Patients?

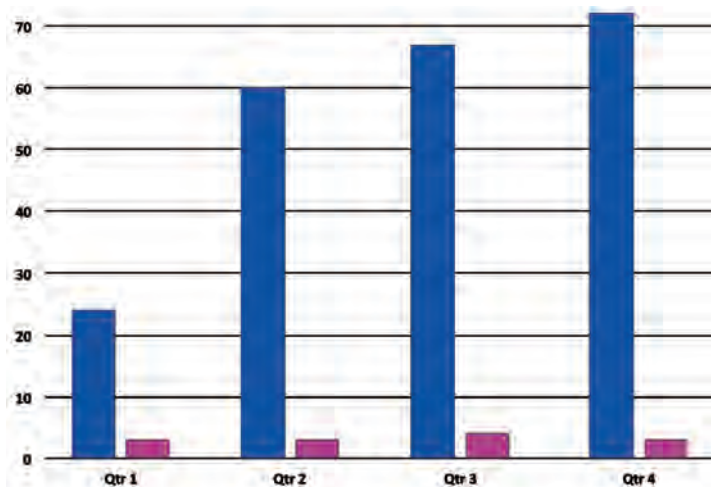
Our EMS educational materials also included information on identification of strokes in the field in order to prompt a hospital pre-notification. EMS uses a basic stroke scale in their assessment that is likely to catch about 85% of strokes. Our education included additional pieces to the assessment to increase the likelihood of identifying a stroke to greater than 85% AND to identify those strokes that are more severe in nature. This information is extremely valuable for our emergency and stroke physicians to know before the patient arrives. Every minute counts when it comes to stroke treatment so having knowledge of the incoming patient along with the potential stroke severity impacts our outcomes and improves the patient's likelihood of functional recovery.

The work of the EMS quality group has allowed us to achieve the fastest treatment times that our hospital has ever seen and to implement stroke processes that are truly cutting edge. As the landscape of stroke continues to quickly evolve, this foundation work will be of even greater value.

**2016 EMS Stroke Pre-notification**



**Stroke Team Activated Prior to Arrival**



■ Upstate ■ National





# STROKE CARE BEYOND HOSPITAL WALLS

Upstate Comprehensive Stroke Center works with over 150 EMS agencies and fire companies throughout our region. We also accept stroke transfer requests from 45 hospitals in our region. As Upstate's Outreach Coordinator for the Stroke Program, I have the opportunity to enhance relationships with our referring hospitals and EMS providers. Our program provides stroke education through the use of lectures, discussions, case reviews and real time feedback to our region's first responders as well as non-stroke designated community hospitals. These educational sessions include the most up-to-date, evidence based stroke protocols, clinical trials and changes in stroke treatment. My goal is to ensure that a patient who suffers a stroke anywhere in this region will have access to the same expert care as if they were being treated at Upstate.

High quality regional stroke care remains a main focus of the Stroke

Program at Upstate. The recently developed EMS Stroke Quality Committee focuses on bridging the gap between first responders and our stroke center. This group has been recognized as an innovative approach to improving healthcare collaboration by linking first responders to stroke center quality measures. This further enhances inter-professional communication and allows for process improvement initiatives which are developed and implemented by a true team approach.

It takes a team to care for stroke patients and I am happy to be a part of that team. I have a passion for stroke that has been engrained in me from personal experiences. I have had family members that have suffered the devastating effects of stroke. It is from these personal experiences that feed my passion for community stroke education. Through community stroke education, lectures, discussion and

health fairs we are able to teach stroke risk factors and recognition of stroke signs and symptoms to the communities around us.

I look forward to continuing this mission over the next year.

*Josh Onyan, RN,  
BSN, SCRN  
Stroke Program  
Outreach  
Coordinator*



# COMMITMENT TO OUR COMMUNITY AND REGION



## A message from Dr. Hesham Masoud, Telestroke Network Medical Director

The Upstate Telestroke Network has allowed the region's hospitals the ability to better serve their community's stroke needs by providing the most advanced stroke care in a timely fashion through videoconferencing. We are able to minimize delays to therapy with instant specialist consultations provided remotely. As our network has grown, we have impacted stroke care by assisting ED providers in initiating local acute stroke therapy and identifying patients that would benefit from transfer for more advanced stroke services.

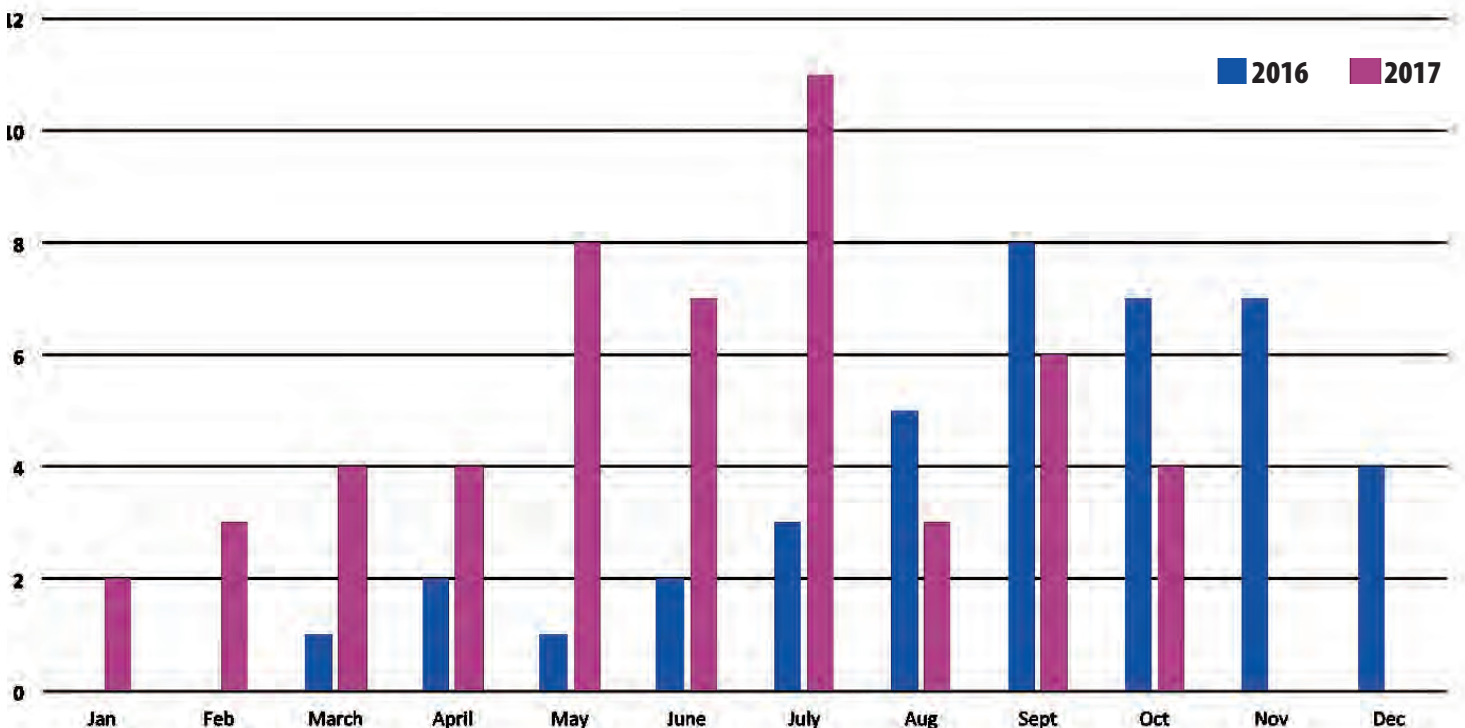
Since its inception in 2015, the network has yielded an IV tPA delivery rate of 39% and transfers in 65% of the consultations completed, representing a previously unmet and growing need for stroke specialty care. Looking to the future we

strive to strengthen our current partnerships and expand the network to include all underserved areas in Central NY. Our team provides ongoing education and quality improvement of our current delivery of Telestroke care. Our mission is to continue to lead the region with the most advanced services available focused solely on achieving the best outcomes for all stroke patients in Central NY.

Through partnerships with Ft Drum Regional Health Planning Organization and EMS agencies, Upstate is ensuring the most reliable stroke care, anywhere. The Upstate Telestroke Network has begun to make a great impact on the large geographical area that we serve. The Stroke Program has partnered with numerous hospitals with the common goal of providing expert stroke care, despite geographical limitation.

*Hesham Masoud, MD, Assistant Professor of Neurology, Neurosurgery and Radiology*

## 2016/2017 Telestroke Consults



## PATIENT STORY



*Debra Ezell and her daughter, Amanda Peer.*



*The Upstate Telestroke network includes eleven outlying hospitals:*

*Canton-Potsdam Hospital*

*Carthage Area Hospital*

*Claxton-Hepburn Medical Center*

*Clifton-Fine Hospital*

*Cortland Regional Medical Center*

*Gouverneur Hospital*

*Lewis County General Hospital*

*River Hospital*

*Rome Memorial Hospital*

*Samaritan Medical Center*

*Upstate University Hospital,  
Community Campus*

### **A hand that went numb.**

Amanda Peer, 33, lay in her hospital bed Sunday, March 12, the day after her stroke. She watched doctors walk by her room. Then she saw him. "Mom! That's the guy who was in the car."

That guy was neurologist Gene Latorre, MD, medical director of Upstate's Comprehensive Stroke Center.

The car he was in was his own. Thanks to telestroke technology, Latorre was in the back seat on his laptop computer, with his wife at the wheel, conferring by video with Peer's doctors at Samaritan Medical Center in Watertown.

Shortly before, Peer had been talking on the phone with her mother, Debra Ezell, who lives next door. She placed fish sticks in the oven, and her right hand went numb. She collapsed onto a fold-out bed in the adjacent room. Ezell came running when she got no response over the phone.

"My words weren't coming to me," Peer recalls. "I couldn't think of the words I was trying to say."

She was in and out of awareness. She remembers seeing Latorre on a monitor doing an assessment. Peer thought she lifted both feet when he asked, although only the left one moved. One minute she heard people talking about transferring her to Syracuse. The next, she was in Syracuse, and family members were pouring into her room.

Peer received a dose of clot-busting medication called tPA before she arrived at Upstate. A scan revealed six clots in her brain. Upstate's neurointerventionalist and stroke neurologist Hesham Masoud, MD, used a specialized clot retrieval device to remove the largest ones. The small ones were treated with medication.

Within 12 hours, Peer says she had her speech back. Four days later, she was well enough to go home. She credits God with helping the doctors help her recover.

## PATIENT STORY

"I hollered Nancy's name twice. I knew I had something going on. That was the last I could speak.

"My left side went limp. My right side had contractions in the leg. My right arm was the only thing I could move at the time. I couldn't talk. My jaw was clamped shut.

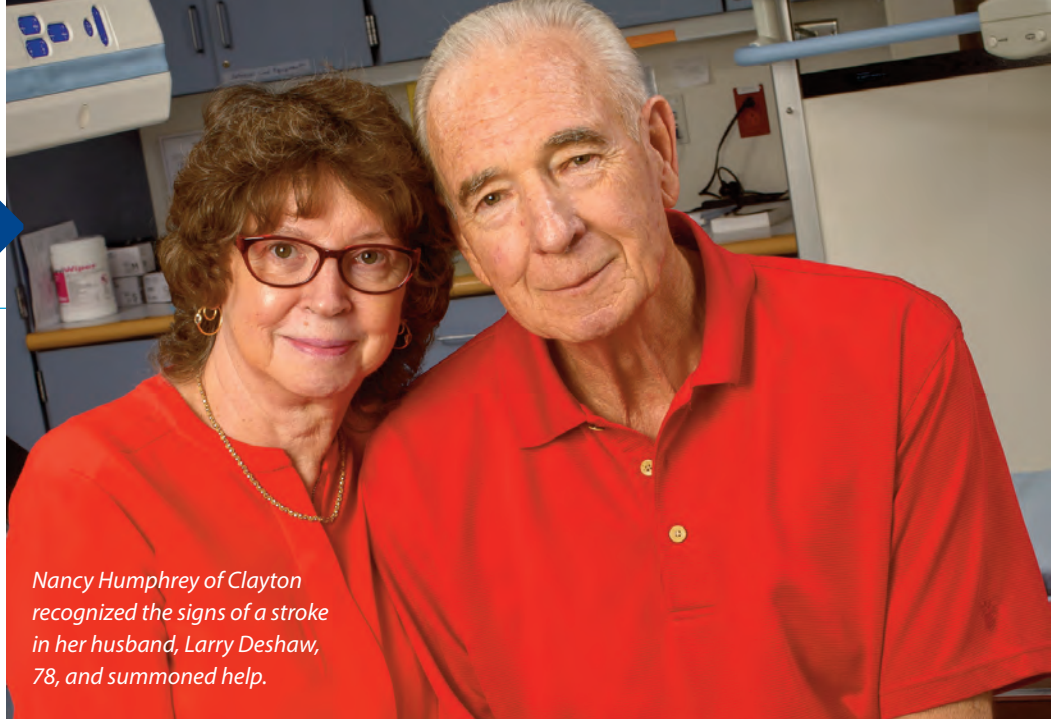
"I could hear everything going on around me, but I couldn't speak. It was the scariest thing I've ever been through."

"Mr. Deshaw's wife saved his life," Upstate interventional neurologist Hesham Masoud, MD, says plainly. "If he was not found in a timely fashion, he would not have survived."

On their drive to the couple's house, Thousand Islands Emergency Rescue Service paramedics Pamela Jones and Eimile Parker made the important decision to alert LifeNet of New York — and a helicopter based at Watertown International Airport in nearby Dexter was readied for flight, just in case. Patients in rural areas such as Clayton with certain medical emergencies including strokes or diabetic complications have better survival odds the faster they receive definitive medical care.

The paramedics knew Deshaw urgently needed to get to Central New York's first and only comprehensive stroke center, some 90 miles away at Upstate University Hospital in Syracuse, and the quickest way was by air. They made sure LifeNet was on the way and radioed the fire department to set up a landing zone for the helicopter.

The Thousand Islands ambulance drove Deshaw about a half mile to the Clayton Volunteer Fire Department parking lot, where the helicopter landed. Flight nurse Rod Kester and flight paramedic Jeff Simons climbed out. Once Deshaw was



*Nancy Humphrey of Clayton recognized the signs of a stroke in her husband, Larry Deshaw, 78, and summoned help.*

secured to their stretcher, they opened the door beneath the tail of the helicopter and wheeled him in. Deshaw remembers the feel of the heat rising up from the asphalt.

Once LifeNet pilot Scott Talon pointed the helicopter toward Syracuse, the LifeNet crew radioed the emergency physician on duty at Upstate, Brett Cherrington, MD. He activated the hospital's stroke team.

Masoud's pager notified him, and he gathered in the emergency department with the other physicians and nurses who are part of the acute stroke team. They were ready for Deshaw even before his helicopter landed on the helipad.

Members of the team wheeled him straight to the computerized tomography suite in the emergency department for a CT scan, with the interventional neurologist, Masoud, at his side.

Deshaw had symptoms that suggested he had had a seizure or a stroke. "Anyone with these symptoms gets an immediate vessel imaging study. That way, we can identify the blocked artery and plan for immediate therapy," Masoud explains.

Nurse Jennifer Schleier is the stroke coordinator. She says the CT scan helps

rule out whether a vessel has burst within the brain. Patients with hemorrhagic strokes, in which a vessel bursts, are treated differently than those with ischemic strokes, in which a clot blocks a vessel.

Treatment was a team effort.

Deshaw received an injection of the clot-busting medication, tPA, or tissue plasminogen activator, at 6:18 p.m. through the intravenous line paramedics inserted at his home. Then he returned to the scanner for a CT angiogram, another set of images that relies on a contrast material, so details of the arteries and veins are visible.

There, deep in the basilar artery of Deshaw's brain, was the clot.

"Time is crucial anytime someone suffers a stroke. In many cases, other healthy arteries can temporarily keep the brain alive while we try to reopen the vessel. But for patients with clots lodged at the base of the brain, those other arteries aren't there to help," Masoud says. "For those strokes, time is exceedingly important."

Strokes in the basilar artery are rare, and the outcomes are usually poor. The brain area that can be damaged in this type of stroke controls essential functions such as



*Assembled in the suite where Larry Deshaw was treated are members of the Upstate Comprehensive Stroke Center team who cared for him, including from left: nurse Chelsea Wilson; radiology technician Gary Denigro; Aiga Rakhesh, MBBS; nurse Jillian Saunders; Elena Schmidt, MD; Hesham Masoud, MD; nurse practitioner Sari-Ann Yonaty, PhD; Larry Deshaw; Nancy Humphrey; J. Gene Latorre, MD; Gregory Meola, PharmD; nurse Alexis Coomey; Claribel Wee, MD; and radiology technician Jeff Ledbetter.*

consciousness, breathing and heart rate, balance and coordination and vision. “In my experience, without a rapid treatment, a majority of these patients die, usually within a couple days of having the stroke,” Masoud says.

Deshaw experienced what the interventional neurologist considers “a miraculous recovery.”

The emergency physician inserted a breathing tube. Then Deshaw was wheeled to the interventional radiology suite two floors above the emergency department.

Masoud inserted a small catheter into the artery of Deshaw’s right leg. Guided by an X-ray and contrast dye, the doctor delicately advanced a wirelike stent along the inside of the artery and into the brain. The stent wrapped around the clot, trapping it as if in a cage. Masoud gently backed the device out, removing the clot and restoring blood flow with a single pass of the device.

Deshaw’s wife arranged for her brother from Watertown to drive her to the hospital. By the time they arrived, he was already in surgery.

Surgery was complete at 7:43 p.m., and around sunset Deshaw was settled into the neurosurgical intensive care unit. The ninth-floor hospital unit is staffed by nurses and technicians with specialized training in the care of patients with stroke and other neurological emergencies.

“I didn’t really wake up until the next morning,” Deshaw says, “but when I woke up, everything was working.”

A steady stream of impressed doctors stopped by to see the patient who not only survived basilar artery thrombosis but was up and walking the next day.

After a stroke, many patients go through what can be a lengthy rehabilitation program. Deshaw was healthy enough to be discharged to his home three days later.



*Larry Deshaw and his wife, Nancy Humphrey, gathered for a photo with rescuers at the spot behind the Clayton Volunteer Fire Department where the helicopter landed to pick him up. Among his rescuers were, from left, Clayton firefighter Curtis Harvey; paramedic Pamela Jones from Thousand Islands Emergency Rescue Service; and paramedic Jeff Simons and nurse Rod Kester, both from LifeNet.*

# SUPERIOR OUTCOMES AND EXCEPTIONAL REHABILITATION CARE

## Upstate Regional Rehabilitation Center

**Stroke is one of the leading causes of long term adult disability, affecting approximately 795,000 people each year in the U.S.**

The Upstate Regional Rehabilitation Center offers Inpatient and Outpatient care throughout the region. Upstate's Inpatient services are offered at the Downtown and Community campuses providing full hospital level of care. The Outpatient Clinics offer neurological rehabilitation at five clinics throughout Central New York.

## Our Outcomes

Studies show that stroke survivors treated at an acute rehabilitation hospital like Upstate have a higher level of functional independence and are more likely to be discharged to home than those treated in other care settings. Upstate's stroke patients have greater improvement during their stay and a higher level of functional independence upon discharge, based on regional and

national benchmarks that measure criteria such as mobility, cognitive ability and activities of daily living.

## Continuum of Care

To help individuals successfully transition to life at home, at work and in the community, Upstate delivers an unparalleled continuum of care services.

## Stroke Specialty Services

The care program at Upstate can include: vocational counseling, recreational therapeutics, orthotic services, assistive technologies and advanced wheelchair seating and mobility options. Upstate also offers patients in need advanced speech and language pathology services including barium swallow studies, vital stimulation and augmentation devices.

## Stroke Survivors Support Group

Stroke support groups and educational programming give patients and their families the opportunity to share information, discuss common concerns and learn from the experiences of others.

## Treatment, Technology and Research

Upstate Rehabilitation Center is recognized as a pioneer in medical rehabilitation, integrating education, biomedical research and advanced clinical excellence. State of the art and leading technologies include:

- Spasticity and tone management: Botulinum toxin, ITB, NMES, serial casting, taping and pain management
- Bioness, stim bike, WalkAide
- Body-weight Support Treadmill Training (BWST)
- Constraint induced movement
- Lokomat, Andago, Armeo-Robotic therapies
- Latest computer-based rehabilitation aids



**Stroke Rehabilitation Team Members include:**

**Physical Medicine and Rehabilitation Physicians**

**Rehabilitation Nurses**

**Physical Therapists**

**Speech and Language Pathologists**

**Case Managers**

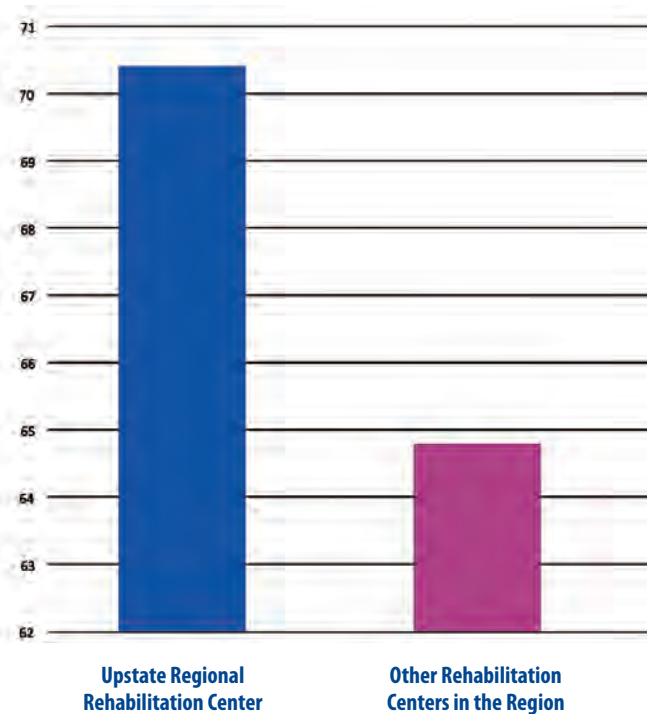
**Psychologists**

**Therapeutic Recreation Specialists**

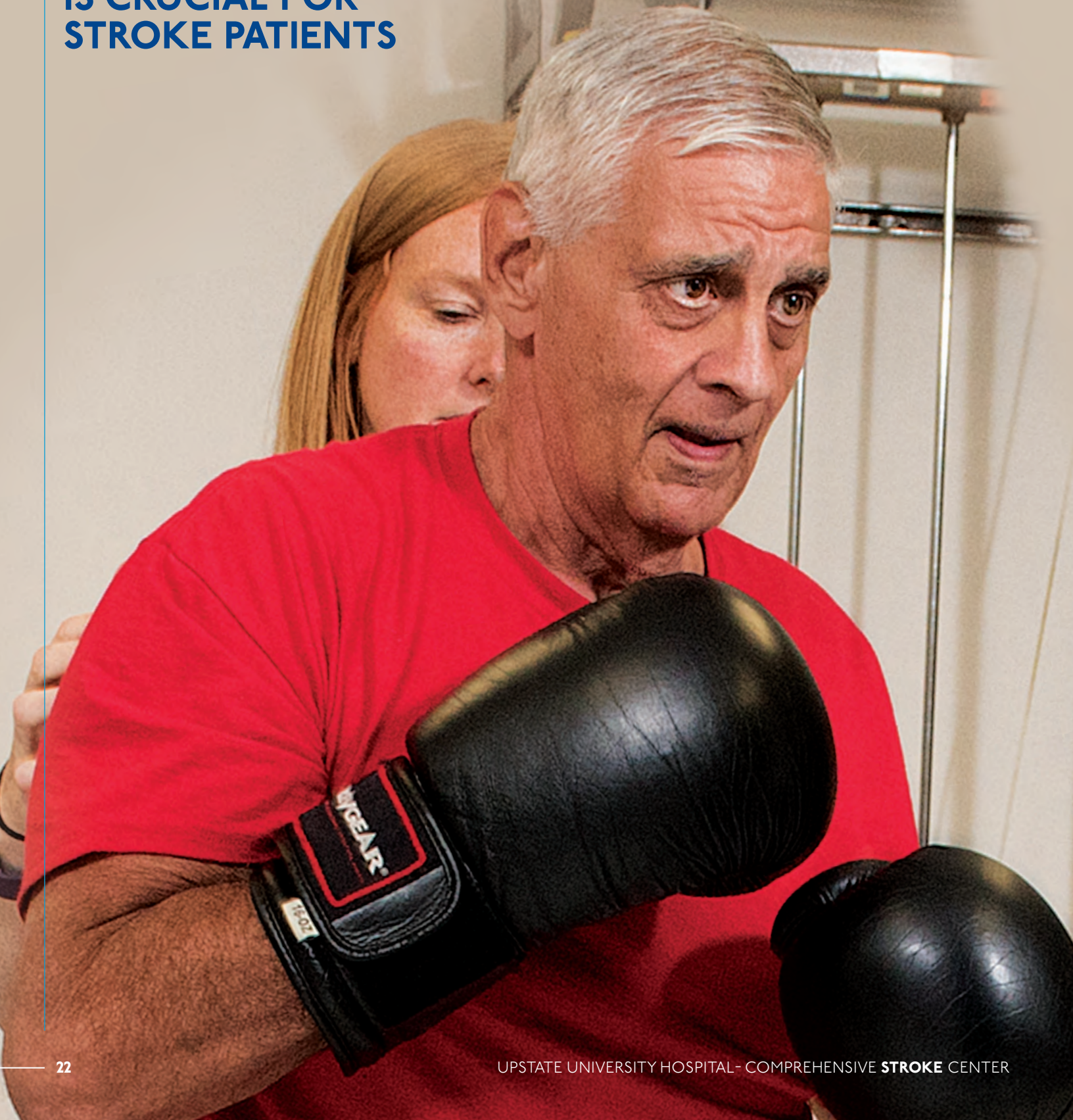
**Vocational Counselors**

**Occupational Therapists**

**Percentage of patients who returned home from rehabilitation in 2016**



# REHABILITATION IS CRUCIAL FOR STROKE PATIENTS





Many people recovering from strokes in Central New York receive rehabilitation at Upstate, the only hospital in the region offering inpatient rehabilitation. Patients who meet certain criteria can transfer from Upstate's neurological intensive care unit, or from other hospitals for their rehab.

Rehabilitation ideally begins early in the patient's recovery.

"Studies show that the earlier you can get people to rehabilitation, the better the outcome," says Shernaz Hurlong, DO, a doctor of physical medicine and rehabilitation at Upstate. She says most of the recovery that will occur after a person has a stroke takes place within the first three months.

William Bouchard's rehabilitation therapy began with a stretch band in his bed in the neurological intensive care unit. Bouchard, 72, of Clay suffered a stroke April 4. He was working as a biomedical engineer at the Syracuse VA Medical Center. Co-workers found him slumped in a stairwell.



*At the end of June, after a stroke on April 4, William Bouchard, 72, of Clay strapped on boxing gloves and punched a target, while his physical therapist Kelly Grier stood ready to steady him if he wobbled.*

At Upstate he received medication to help shrink the size of the clot, and neurosurgeon Grahame Gould, MD, used a clot retrieval device to remove what remained of the clot. All Bouchard remembers is being told that he could not go to karate the next morning.

Bouchard trains regularly at Impact Martial Arts in Clay. He was determined to return to the dojo – and that determination has helped in his recovery, says physical therapist Kelly Grier, who built karate into Bouchard's therapy.

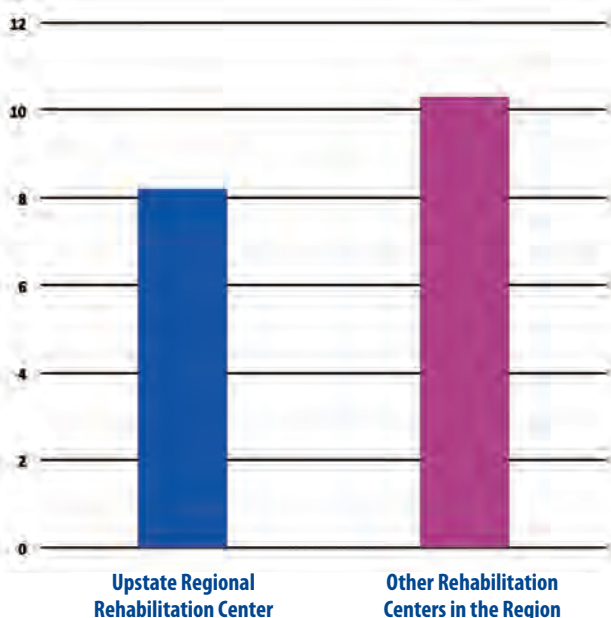
"I do my very best to make sure that each patient's goals and interests are being talked about in therapy, so that rehabilitation is meaningful to them," Grier explains.

She can't recall a patient with goals as ambitious as Bouchard's. He wanted to walk up the Adams Street hill. He wanted to do 500 wall kicks, per leg. He wanted to spar. He wanted to run a mile. So Grier helped him, and sometimes his therapy sessions felt more like work-outs.

After 22 nights at Upstate, Bouchard was discharged, returning for physical and occupational therapy appointments.

"What really stands out is his high self efficacy to get better," says Grier. "He's had a remarkable recovery."

**Number of days a patient waits for admission to a rehabilitation program**



# STROKE MEDICAL TEAM

Our stroke team is comprised of experts from multiple disciplines. It includes neurologists, neurosurgeons,

interventional radiologists, cardiologists and rehabilitation therapists. These specialists are supported by our three

levels of neuro-nursing care, all conveniently located on our 9th floor, at Upstate University Hospital.



**Antonio Culebras, MD**



**Anuradha K Duleep, MD**



**Grahame Gould, MD**



**Julius Gene Latorre, MD**



**Carmen M Martinez, MD**



**Hesham Masoud, MD**



**Michael L Vertino, MD**



**Sari-Ann Yonaty, NP, PhD**



**Elena Schmidt, MD**



**Awss Zidan, MD**



**Stephanie Loveless, NP**



**Marcia Tommie Harris, NP**

## Resident Training for emergent stroke care

"Upstate's Level 1 Comprehensive Stroke Center designation provides our Neurology residents with an experience at the cutting edge of advanced stroke care. Our residents lead emergency stroke codes in the ER and wards, their diligence and efficiency results in faster treatment times, consistently faster than the national standard. To this end the residents undergo tailored

simulation training sessions, formal didactics on cerebrovascular disease and neuroanatomic localization, in addition to bed-side teaching highlighting the importance of effective communication and compassionate delivery of care. With the strength of our residents, we maintain our status as the regional leader in stroke care."

*- Dr Hesham Masoud*



## STROKE NURSING TEAM SERVING OUR PATIENTS AND THE COMMUNITY

Our 100 Neuroscience nurses have a passion for stroke care. They complete over 8 hours annually of stroke education and being located on the same floor as the stroke program staff hear more about stroke than they probably want to in any given day! Our nurses specialize in all phases of stroke care: acute care and tPA administration and monitoring, post thrombectomy assessments, family support for patients discharged to rehab or home and are often the first line of defense in teaching about stroke prevention. We are proud that we have many nurses who have earned their SCRNP credential. SCRNP is a national certification in stroke care given by the American Association of Neuroscience Nurses (AANN). This passion and desire to be challenged

has led some to transfer to higher levels of care from the Neuro-Med Surgical floor to our Neuro Intermediate Care Unit or Neuro ICU. They give many volunteer hours to stroke community events and participate in several work groups for quality improvement projects. We hope that no one has to experience their expertise and compassion first hand but if you do, you are in good specialized hands!

### Outreach projects

Pars for Stroke  
Strike out Stroke  
Strikes against Stroke  
American Heart Association Heart Walk  
Stroke Camp

### Accolades: Publications, Trials, Research, Posters

“Morphological Features of Intracranial Aneurysms Predicts Risk of Rupture”  
Author(s):Gentian Toshkezi, MD, Amar Swarnkar, MD, Satish Krishnamurthy, MD, MCh (Syracuse, NY)

Kapinos G, Latorre JG. Seizure burden in subarachnoid hemorrhage: “Time is brain” as well. *Neurology* 2016;86(3):206-7.

Rosenberg D, Latorre JG. Hearing one’s voice in your speech: An unusual case of palinacousis due to acute intracerebral hemorrhage. *Neurologist* 2016;21(1):13-15.

Prasad A, Sharma S, Schmidt E, Latorre, J. Cerebral amyloid angiopathy presenting as new onset refractory status epilepticus (NORSE) complicated by PRES. AAN 2016 Annual meeting. *Neurology* 2016;86:16 Suppl P6.219

Kaur G, Sharma S. Latorre, J. Single center experience of endovascular intervention in extra and intracranial vertebrobasilar stenosis at a tertiary care center. AAN 2016 Annual meeting. *Neurology* 2016;86:16 Suppl P1.197

Stroke Code simulation lab (April 17, 2016 AAN presentation)  
[www.neurology.org/content/86/16\\_Supplement/P2.375](http://www.neurology.org/content/86/16_Supplement/P2.375)

Schleier J, Onyan J, Vallelunga M, Rainbow S. Direct to CT Impacts Door to Needle Times. 2016 North East Cerebrovascular Consortium (NECC) Annual Conference, poster presentation.

# UPSTATE

COMPREHENSIVE STROKE CENTER

750 East Adams Street  
Syracuse, NY 13210



### The Highest Standards

Upstate is the only Level I Comprehensive Stroke Center in Central New York. This means only Upstate has met and exceeded the highest standards for stroke care.



**DESIGNATED  
STROKE CENTER**

New York State Department of Health