



# STROKE OUTCOMES REPORT

2019

# Welcome



It has been an exciting year for CentraCare Neurosciences with our program receiving two national stroke certifications. The Stroke Center achieved Comprehensive Stroke Certification with the DNV-GL. The inpatient rehabilitation unit became the first accredited Stroke Specialty Program in Central Minnesota by the Commission on Accreditation of Rehabilitation Facilities.

In 2018, we added four telestroke services sites: Riverwood Health Care Center in Aitkin, Carris Health – Redwood in Redwood Falls, Madison Health in Madison and St. Gabriel's Hospital in Little Falls. Now, with 18 telestroke sites, we provide expedited evaluation and treatment of acute stroke to most of Central Minnesota.

During the past year, we also acquired another federal telehealth grant. This grant allows us to expand our Telestroke/Vascular Neurology Clinic to all our telestroke sites. For the past three years, patients in several locations have successfully used telehealth as an option for their follow-up appointments. This enables stroke survivors easier access for their follow-up appointments.

Our dedication to the future of stroke care and the next generation of practitioners continues to be a priority, illustrated by our fellowship program. Tariq Hamid, MBBS, is our first-year interventional neurology fellow for the 2018-2020 rotation. He is a board-certified stroke neurologist furthering his education in our program to provide interventional treatment.

We are proud that our last interventional neurology fellowship graduate, Dr. Vikram Jadhav, started a new interventional neurology program at Essentia – St. Mary's Hospital in Duluth. Providing this advanced stroke care further improves access to specialty care in rural Minnesota.

As our program grows, we continuously strive to improve the quality of care we provide. We are excited to share with you our growth, metrics and outcomes in this report.

Sincerely,

A handwritten signature in black ink that reads 'M. Fareed Suri'.

M. Fareed Suri, MBBS  
Stroke Center Medical Director



We are your neighbors, friends and family members. This is our home.

## Our Mission

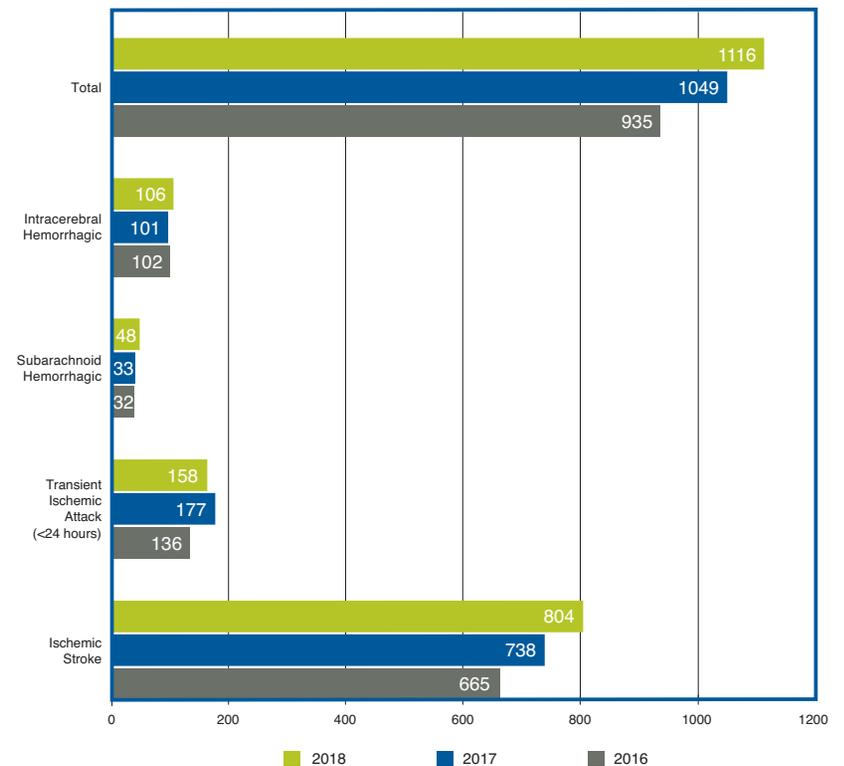
CentraCare Neurosciences Stroke Center offers comprehensive, interdisciplinary, patient-centered stroke care.

Our patients benefit from:

- Nationally recognized care
- Certified nurses, fellowship-trained doctors and excellent support staff
- Quality indicators which meet or exceed national benchmarks
- Multidisciplinary team
- State-of-the-art technology and surgical approaches
- High-volume center
- Stroke prevention education



Stroke Volumes (Graph 1)



# Comprehensive Stroke Certification

CentraCare Neurosciences Stroke Center has been a regional leader in stroke care since becoming the first Primary Stroke Center in Central Minnesota.

Over the years, the Stroke Center has continued to grow and build infrastructure to provide high-quality evidence-based care for the most complex stroke patients. To confirm our continued commitment to providing excellent stroke care, the Stroke Center underwent a rigorous two-day survey and was awarded certification as a Comprehensive Stroke Center in the summer of 2018 by DNV-GL Healthcare<sup>1</sup>.

## HIGHEST LEVEL OF TREATMENT AND CARE

We are very proud to offer this advanced level of care in Central Minnesota. As a Comprehensive Stroke Center (CSC), we offer the highest level of treatment and care available and treat the entire spectrum of strokes throughout the continuum of care. Complex stroke patients that are cared for at CSCs include, but are not limited to, ischemic strokes, large vessel occlusions, intracerebral hemorrhages, aneurysmal subarachnoid hemorrhages, strokes from unusual etiologies or any strokes that require specialized treatments such as clipping, coiling, thrombectomies or other endovascular and surgical procedures. We are fully equipped to evaluate, stabilize and provide emergent care to acute stroke patients. The Stroke Center is covered 24/7 by neurosurgeons, interventional neurologists, advanced practice providers, emergency physicians and neuro-critical care providers that all work collaboratively to provide initial and complex diagnostic services, emergent care and interventional treatments.

## MULTIDISCIPLINARY COLLABORATION

In a CSC, stroke patients are admitted to a stroke unit or designated bed that is dedicated to the highly intensive medical and surgical management

needs of these patients. Providers and staff who work in these specialized areas are highly trained and receive extensive education annually. The stroke patient is cared for by a multidisciplinary team that not only includes the providers and nursing staff, but also dietitians, therapists and care management. This multidisciplinary team collaborates to manage and treat co-morbidities, prevent complications and subsequent strokes and ensure all aspects of the patient's health are managed while in the hospital and during the transition back to the community.

The care management team collaborates with the multidisciplinary team to make appropriate referrals for post-hospital services to ensure a safe transition after discharge. Patients that are discharged home receive a follow-up phone call within seven days of discharge and again at 30 days to ensure the transition

home is successful. Stroke patients also follow up with a stroke provider at the CentraCare Neurosciences Stroke/Vascular Clinic either in person or virtually at one of the telehealth locations.

## A PARTNER IN THE REGION

A CSC also functions as a resource to other hospitals in the region. The initial recognition and care of stroke patients often begins in rural communities that do not have in-person access to experts in stroke care. One of the ways we have overcome this barrier is through the development of our telestroke network. Through telestroke, our CSC stroke experts can visually examine the patient and offer guidance in the diagnosis and treatment of acute strokes. Our experts work with the on-site providers to

Having a comprehensive stroke center in Central Minnesota ensures patients have access to the highest level of stroke care.



determine if the patient should transfer or remain at the local hospital for further work up. You can read more about our telestroke network on page 6.

Part of adding a new site in our telestroke network is working with them to update their policies and orders and provide initial and ongoing education. Once a site is fully functional, they will have the infrastructure to meet the Minnesota Department of Health's (MDH) Acute Stroke Ready Designation criteria. Since the initiation of the MDH stroke designation, we have helped dozens of regional hospitals achieve this designation, which ensures that patients arriving at these hospitals will be cared for swiftly with evidenced-based care set forth by the American Stroke Association.

While this overview covers some of the major aspects of a CSC, there are many other areas that also are highlighted in this outcomes report such as collaboration with EMS agencies for pre-hospital care, on-site inpatient rehabilitation, performance improvement, research, community education and stroke support groups.

<sup>1</sup>DNV GL Healthcare is a part of DNV GL - Business Assurance, all of which is a part of the global DNV GL Group. Our mission in Business Assurance is to help complex organizations achieve sustainable business performance. Our services help simplify organizational processes and validate your commitment to excellence.



"I was very impressed by the speed the staff showed in the ER the day of my stroke. I know the medical attention I received slowed my stroke symptoms enough that I could walk out of the hospital on my own. I will highly recommend your facility to others."

- patient

# Patient has advantage on the court and off

With no risk factors, Jennie Kalpin had a stroke at age 43 while playing tennis.



**After suffering a very severe stroke, quick recognition and emergency treatment helped minimize disability and get Jennie back to her life.**

It was a beautiful August day when Jennie Kalpin, a 43-year old St. Cloud resident, and her sister were playing in an outdoor tennis league. “We were a few games into the first set when I hit the ball,” Jennie said. “The next thing I knew, the ball was in the net and racquet on the ground. I tried three times but couldn’t pick it up. I sat down to try and figure out what was wrong when I realized I couldn’t move my right side — at all. Then suddenly I fell over on the court.”

Jennie’s sister came running over along with a player from another court who happened to be a nurse. “She was asking me questions, but I couldn’t get much of anything out,” Jennie said. “I was completely aware but couldn’t communicate at all. They knew I was having a stroke and called 911 right away.”

When Jennie got to the hospital, she saw a stroke physician through telestroke technology to help her get treatment quickly. “I remember getting assessed and seeing the doctor on the screen,” she said. “The next thing I knew, I was saying goodbye to family; I knew I was going to surgery.”

Jennie received a clot busting medication and was then whisked into the operating room for a thrombectomy — a catheter-based interventional procedure to remove a clot in an artery. The procedure typically lasts 30 minutes. When Jennie woke up, she met M. Fareed Suri, MBBS, stroke and vascular neurologist, and his team.

When Jennie arrived at the hospital, she scored a 23 on the stroke scale which reflects the severity of a stroke. A day and a half later, she was discharged at zero.

“If a patient with a score of 23 does not improve, the expected outcome is severe disability requiring a two-person assist for transfer, inability to communicate or understand language, wheel-chair bound, assistance required for all daily activities and possibly feeding tube placement,” said Dr. Suri. “Of those patients treated with thrombectomy, only 10-15 percent have no disability three months after their stroke. Complete recovery within a day or two is uncommon.”

Getting to CentraCare – St. Cloud Hospital quickly allowed Jennie to receive treatment faster, thus minimizing disability and long-term effects. Her treatment was delivered in nearly half the time of the recommended national average.

Jennie, a dentist in town with her own practice, expressed how lucky she feels. “If I lost any of my function, I would have lost my job, my career. I had

the stroke on Tuesday, got out of the hospital on Thursday and by the next week was back at work part time. If I wasn't on the court with all those people around that day, I might have been alone at home or at work which would have surely changed my outcome. It has been hard to

absorb just how serious it was. I owe so much to all my physicians and how dedicated and smart they are. They work endlessly and have devoted their entire lives to their work. I'm so thankful people are able and willing to do that.”

Jennie, who still plays tennis, says, “I'm one incredibly lucky person. And I have many, many people to thank for it.”

“I couldn't communicate at all. They knew I was having a stroke.”

- Jennie Kalpin

## ENHANCED CARE FOR STROKE PATIENTS

CentraCare – St. Cloud Hospital Inpatient Rehabilitation Unit was the first facility in Central Minnesota to achieve accreditation by the Commission on Accreditation of Rehabilitation Facilities (CARF). CARF is an international organization whose mission is to promote the quality, value and optimal

outcome to enhance the lives of the persons served. CARF believes in treating all people with dignity and respect while ensuring they have access to needed services so they can be empowered to make informed choices. In doing this, CARF is committed to continuous improvement in management and services. Diversity and cultural competency, health and safety, additional education and technology are just a few of many items

reviewed for the patients served as well as employees.

Because of CARF values, and stroke patients being the largest demographic served in our facility, we decided to seek additional certification. In 2018, St. Cloud Hospital's Inpatient Rehabilitation Unit was surveyed and accredited with a Stroke Specialty Certification, which was another first for Central Minnesota.

Stroke specialty care units offer an enhanced experience, from the emergency room through discharge, by offering integrated systems that optimize prevention, recovery, adaptation and active stroke education participation based on the most current research and evidence.

A stroke specialty care unit is committed to assisting patients with accessing health care appropriately, supporting efforts for health and wellness and improving the quality of care throughout their lifespan.



## CENTRACARE TELESTROKE LOCATIONS

- Aitkin
- Alexandria
- Appleton
- Benson
- Glenwood
- Hutchinson
- Little Falls
- Long Prairie
- Madison
- Melrose
- Monticello
- Olivia
- Paynesville
- Redwood Falls
- Sauk Centre
- Staples
- St. Cloud
- Wadena
- Willmar



## Telestroke in the Region

CentraCare Neurosciences has provided telestroke services across the region since 2014. In 2018, we added telestroke in Aitkin, Little Falls, Madison and Redwood Falls. This service ensures that patients who are experiencing a stroke receive treatment as quickly as possible at their local facilities, reducing the long-term effects of a stroke. Patients who access a telestroke facility connect in real time with a stroke and vascular neurologist from CentraCare – St. Cloud Hospital. Telestroke support provides prompt stroke diagnosis so treatment can begin quickly, and when necessary, patients can be transferred to St. Cloud Hospital for advanced surgical interventions such as thrombectomies.

With stroke, every second matters. Interventions like IV alteplase can be administered quickly to break up clots. IV alteplase is the only U.S. Food and Drug Administration-approved drug for the treatment of acute ischemic strokes. Numerous studies have demonstrated the clinical effectiveness of telestroke care. In a large controlled trial, stroke patient outcomes were better at hospitals with telestroke support than hospitals without that support. According to the national guidelines by the American Heart Association and American Stroke Association, the door-to-needle time (from the time a patient arrives with stroke symptoms to the time the medication is administered to the patient) should be within 60 minutes. Our current median time for IV alteplase administration from 18 of our telestroke sites is 55 minutes. This program is making a positive difference in how stroke care is provided to our local communities.

St. Cloud Hospital Telestroke Data Rollup	2018	2017	2016
Number of requests for telestroke consult	765	661	260
Average response time (minutes:seconds)	09:13	09:46	08:00
Number of transfers to St. Cloud Hospital	428 (56%)	390 (59%)	152 (61%)
Number of patients kept locally	337 (44%)	271 (41%)	98 (39%)

# Grant helps patients stay close to home

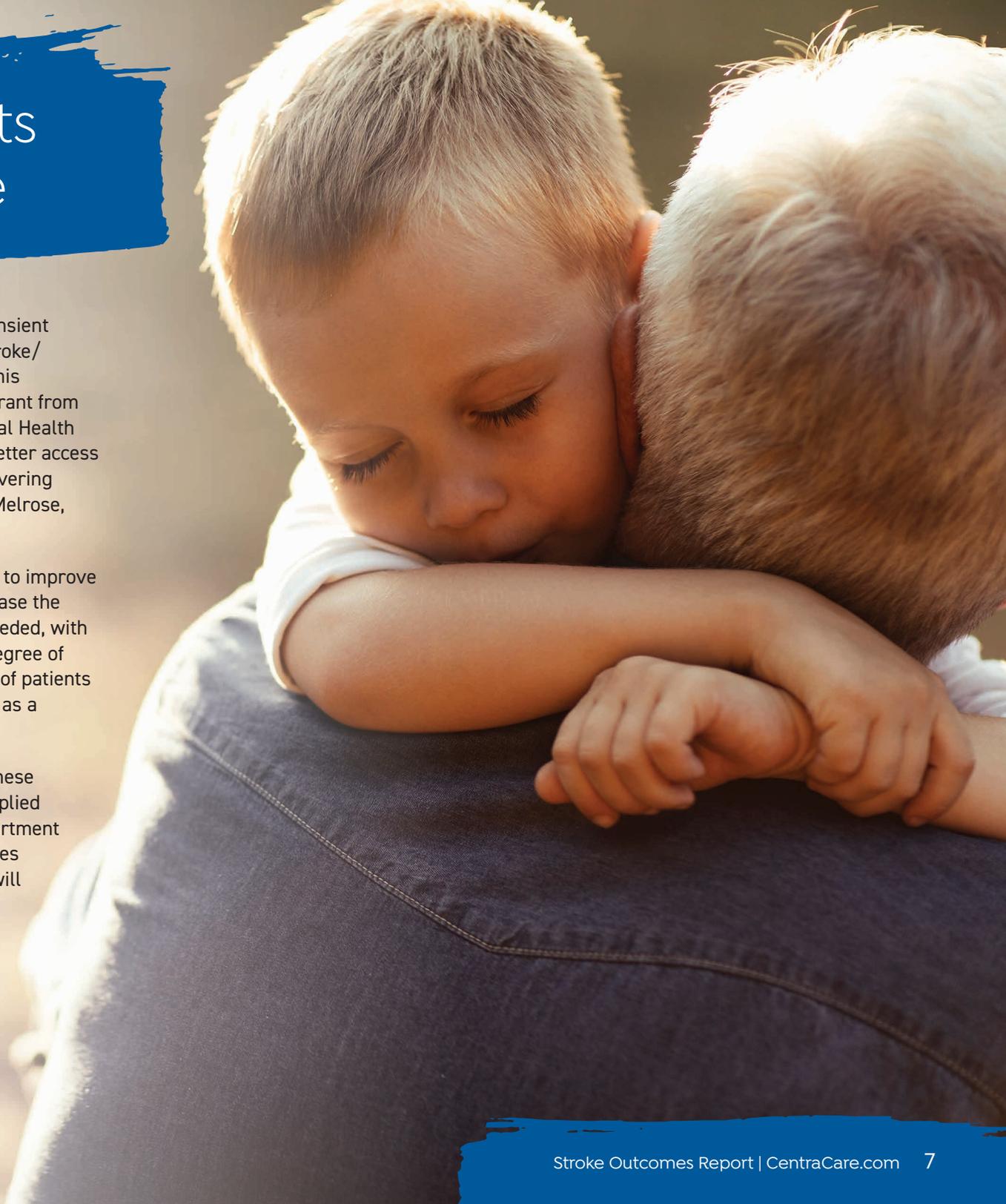
Beginning in October 2015, regional post-stroke and transient ischemic attack (TIA) patients gained access to a Telestroke/Vascular Neurology Clinic patient navigator program. This program was made possible by a \$540,000 three-year grant from the U.S. Department of Health and Human Services Rural Health Care Services Outreach Grant. This program provided better access to care and improved health outcomes for patients recovering from stroke or TIA in: Benson, Glenwood, Long Prairie, Melrose, Paynesville, Sauk Centre, Staples and Wadena.

The project's clinical outcome goals were twofold. First, to improve quality of life scores by 30 percent and second, to decrease the degree of disability by 50 percent. Both goals were exceeded, with quality of life scores improving by 41 percent and the degree of disability decreasing by 56 percent. Further, 77 percent of patients agreed the quality of care via telemedicine was as good as a face-to-face visit.

Following this success, CentraCare decided to expand these services even further into rural Minnesota and again applied and was awarded a three-year grant from the U.S. Department of Health and Human Services Rural Health Care Services Outreach Grant Program. This second \$560,000 award will again utilize the evidence-based practices of telehealth and patient navigation to bring these same clinical outcome goals to more rural Minnesotans.

Sites identified for the second grant are:

- Aitkin
- Alexandria
- Appleton
- Little Falls
- Madison
- Monticello
- Olivia
- Willmar



# Stroke Quality Measures

## GET WITH THE GUIDELINES-STROKE GOLD PLUS QUALITY ACHIEVEMENT AWARD WITH TARGET: STROKE HONOR ROLL ELITE PLUS

Hospitals receiving Get With The Guidelines® Gold Plus Achievement Award have reached an aggressive goal of treating patients with 85 percent or higher compliance to core standard levels of care as outlined by the American Heart Association/American Stroke Association® for two consecutive calendar years. In addition, those hospitals have demonstrated 75 percent compliance to seven out of 10 stroke quality measures during the 12-month period. This is the fifth year in a row that CentraCare – St. Cloud Hospital has achieved this award.

### ABOUT GET WITH THE GUIDELINES®

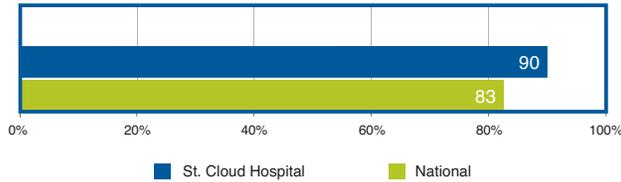
Get With The Guidelines® is the American Heart Association/American Stroke Association’s hospital-based quality improvement program that provides hospitals with the latest research-based guidelines. Developed with the goal of saving lives and hastening recovery, Get With The Guidelines has touched the lives of more than five million patients since 2001.



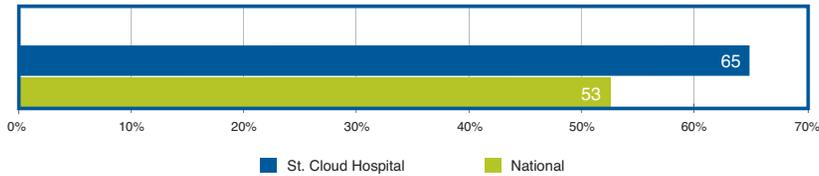
**CentraCare – St. Cloud Hospital was awarded the Get With The Guidelines-Stroke Gold Plus Quality Achievement Award for adhering to all achievement measures.**

Get With The Guidelines (GWTG)-Stroke Gold Achievement Metrics	GWTG Gold Achievement Goal	2018 National Average	2018 St. Cloud Hospital	2017 St. Cloud Hospital	2016 St. Cloud Hospital
Ischemic or hemorrhagic stroke patients who receive VTE prophylaxis by the end of hospital day 2	85%	97.1%	98.7%	98.5%	98.8%
Ischemic stroke or TIA patients prescribed antithrombotics on DC	85%	98.9%	100%	100%	100%
Ischemic stroke or TIA patients with atrial fibrillation/flutter discharged on anticoagulation therapy	85%	96.6%	99.4%	98.8%	96.9%
Acute ischemic stroke patients who arrive at the hospital within 2 hours of last time known well, receive IV tPA within 3 hours of last time known well	85%	90.3%	100%	96.4%	88.2%
Ischemic stroke or TIA patients who receive antithrombotic by end of hospital day 2	85%	97.2%	98.2%	97.7%	98.9%
Ischemic stroke and TIA patients with LDL >100, LDL not measured, or on cholesterol-reducer prior to admission are prescribed statin therapy on DC	85%	97.6%	98.5%	98.5%	99%
Ischemic or hemorrhagic stroke, or TIA with a history of smoking cigarettes, who are, or whose caregivers are, given smoking cessation advice or counseling during hospital stay	85%	97.5%	100%	100%	100%
Additional Quality Metrics for Gold Plus	GWTG Quality Award Goal	2018 National Average	2018 St. Cloud Hospital	2017 St. Cloud Hospital	2016 St. Cloud Hospital
Stroke or TIA patients or their caregivers who were given education and/or educational materials during the hospital stay	75%	95.1%	94.4%	94.6%	92.4%
Patients with stroke who were assessed for rehabilitation services	75%	98.9%	99.5%	99.9%	99.7%
Ischemic stroke or TIA patients with a documented Lipid profile <sup>98</sup>	75%	93.1%	96.7%	96%	98%
Ischemic stroke and stroke not otherwise specified patients with a score reported for NIH Stroke Scale (Initial)	75%	91.6%	97.6%	96.4%	95%
Stroke patients who undergo screening for dysphagia with an evidence-based bedside testing protocol approved by the hospital before being given any food, fluids or medication by mouth	75%	84.5%	92.6%	93.4%	97.2%

### IV Alteplase within 60 minutes (Graph 2)



### IV Alteplase within 45 minutes (Graph 3)



### Door-to-Incision time (Graph 4)



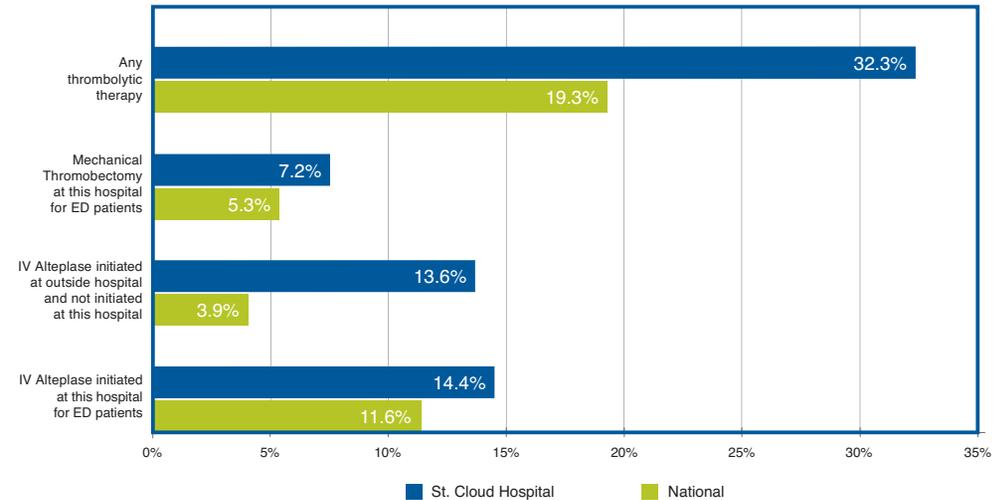
## DOOR-TO-INCISION TIME

It is recommended that patients that are eligible for a thrombectomy receive treatment as quickly as possible. The national proposed benchmark is based on recent clinical trials and includes both patients that were transferred from outside hospitals and those that came directly to the Stroke Center emergency room. The transfer time from outside hospitals can vary greatly due to distance from the Stroke Center. [Graph 4](#) shows the breakdown between these two categories for CentraCare – St. Cloud Hospital and that performance is better than the proposed national benchmark in both categories.

## QUICK TREATMENT IMPROVES RESULTS

To qualify for the Target: Stroke Honor Roll Elite Plus, hospitals must achieve Time to Intravenous Thrombolytic Therapy  $\leq 60$  minutes in 75 percent or more of applicable acute ischemic stroke patients treated with IV alteplase. Hospitals also must achieve Time to Intravenous Thrombolytic Therapy within 45 minutes in 50 percent or more of applicable acute ischemic stroke patients treated with IV alteplase. These findings are shown in [graphs 2 and 3](#) to the left.

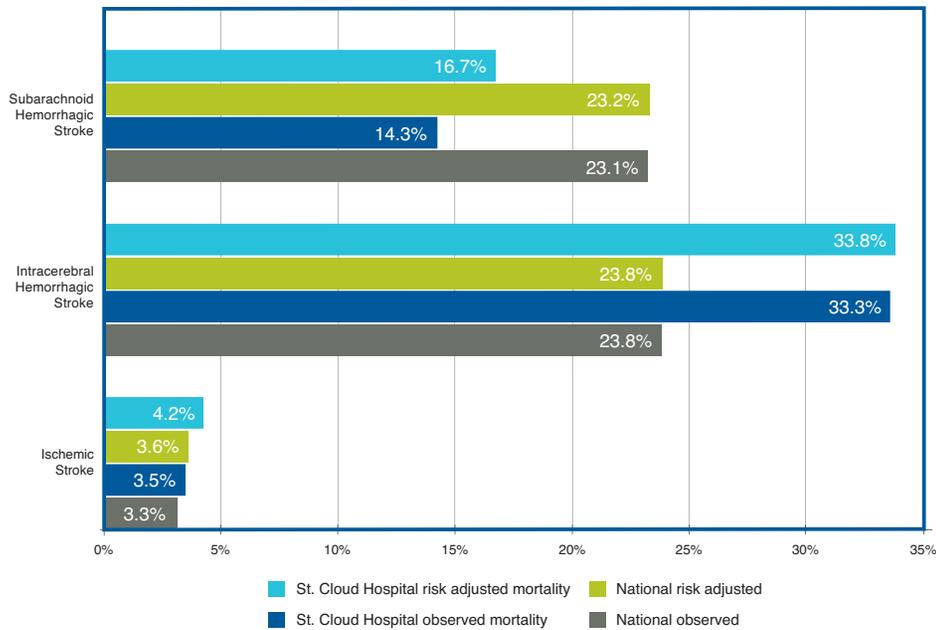
### IV Alteplase and Mechanical Thrombectomy (Graph 5)



## STROKE TREATMENT

[Graph 5](#) compares the IV alteplase and mechanical thrombectomy 2018 usage rate for Stroke Center patients to national benchmarks. The graph indicates that our overall treatment rates are above national benchmarks. We have a developed telestroke system where stroke providers consult with emergency department providers on IV alteplase administration. Our administration rates at outside facilities are higher than national benchmarks.

### In-Hospital Stroke Mortality (Graph 6)



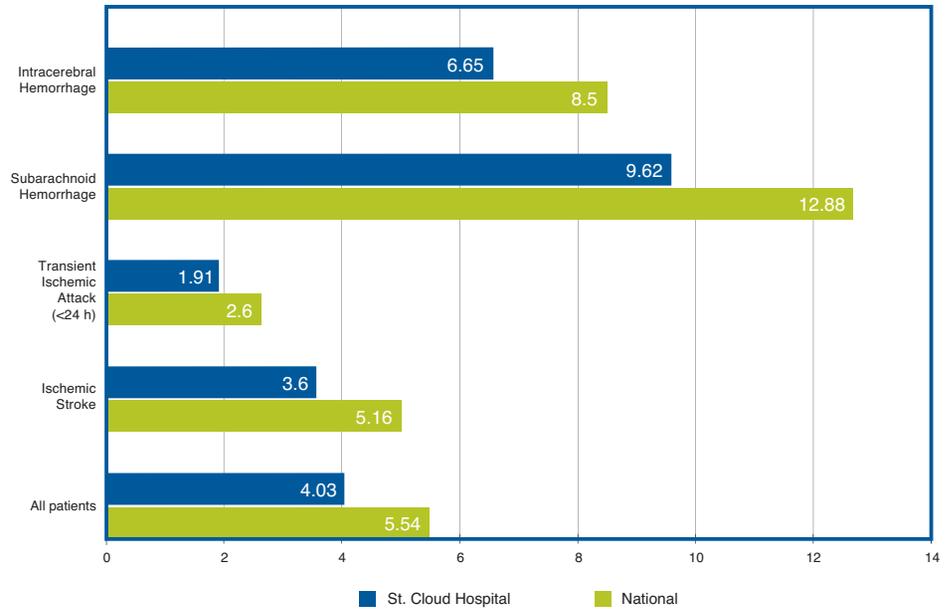
### IN-HOSPITAL STROKE MORTALITY

CentraCare – St. Cloud Hospital's 2018 in-hospital mortality reports (graph 6) were obtained through Get With The Guidelines-Stroke. Acute ischemic stroke calculations include adjustments using the National Institutes of Health Stroke Scale. Risk-adjusted mortality takes into account co-morbidities that would increase mortality and is considered the expected mortality. St. Cloud Hospital's acute ischemic, intracerebral and subarachnoid hemorrhagic strokes observed mortality is less than the expected mortality. When compared to national benchmarks, the observed mortality is higher for acute ischemic and intracerebral hemorrhagic strokes, however, the risk-adjusted mortality is significantly higher indicating that St. Cloud Hospital cares for sicker patients with higher expected mortality rates.

### ALL-CAUSE 30-DAY READMISSIONS

Centers for Medicare and Medicaid Service (CMS) reporting period from third quarter 2014 through second quarter 2017 listed CentraCare – St. Cloud Hospital's All-Cause 30-Day readmission rate at 11.6 percent, which is reported as "the same as" the national rate.

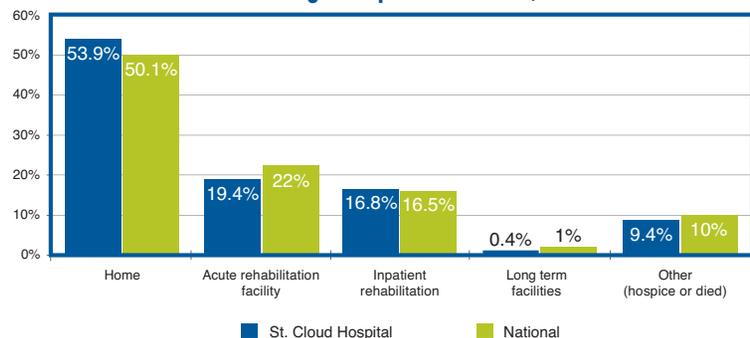
### Length of Stay (Graph 7)



### LENGTH OF STAY

Graph 7 depicts the mean length of stay (LOS) for the various types of strokes in 2018. CentraCare – St. Cloud Hospital LOS is below national benchmarks for all stroke types.

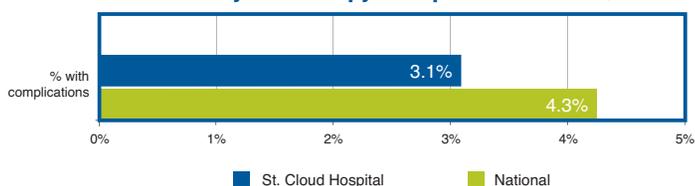
**Discharge Disposition** (Graph 8)



## DISCHARGE DISPOSITION

In 2018, more of our patients went home and fewer patients needed hospice or died when compared to national benchmarks, as shown in [graph 8](#).

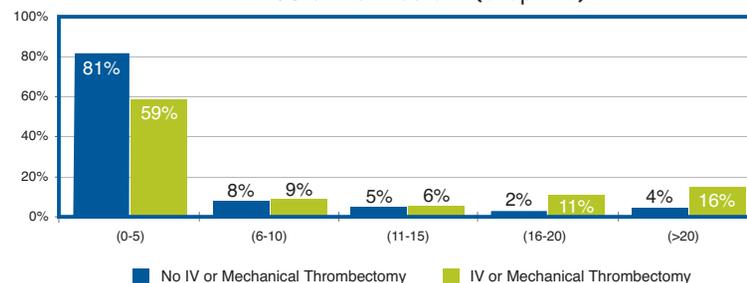
**Thrombolytic Therapy Complications** (Graph 9)



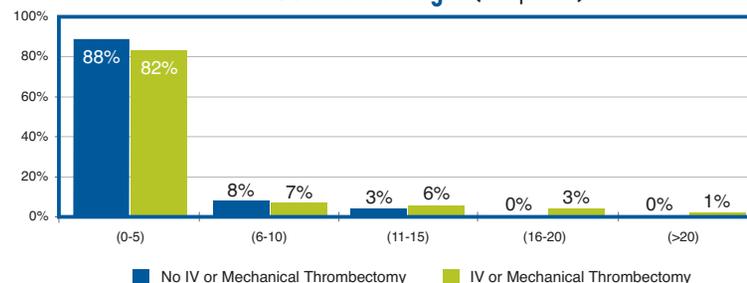
## THROMBOLYTIC THERAPY COMPLICATIONS

[Graph 9](#) shows CentraCare – St. Cloud Hospital has comparable 2018 thrombolytic complication rates compared to national benchmarks. Thrombolytic therapy refers to IV alteplase or mechanical thrombectomy. Thrombolytic complications are defined as life-threatening serious systemic hemorrhages or symptomatic brain hemorrhages within 36 hours of treatment or other serious complications that require additional medical interventions or a prolonged hospital stay.

**NIHSS at Admission** (Graph 10)

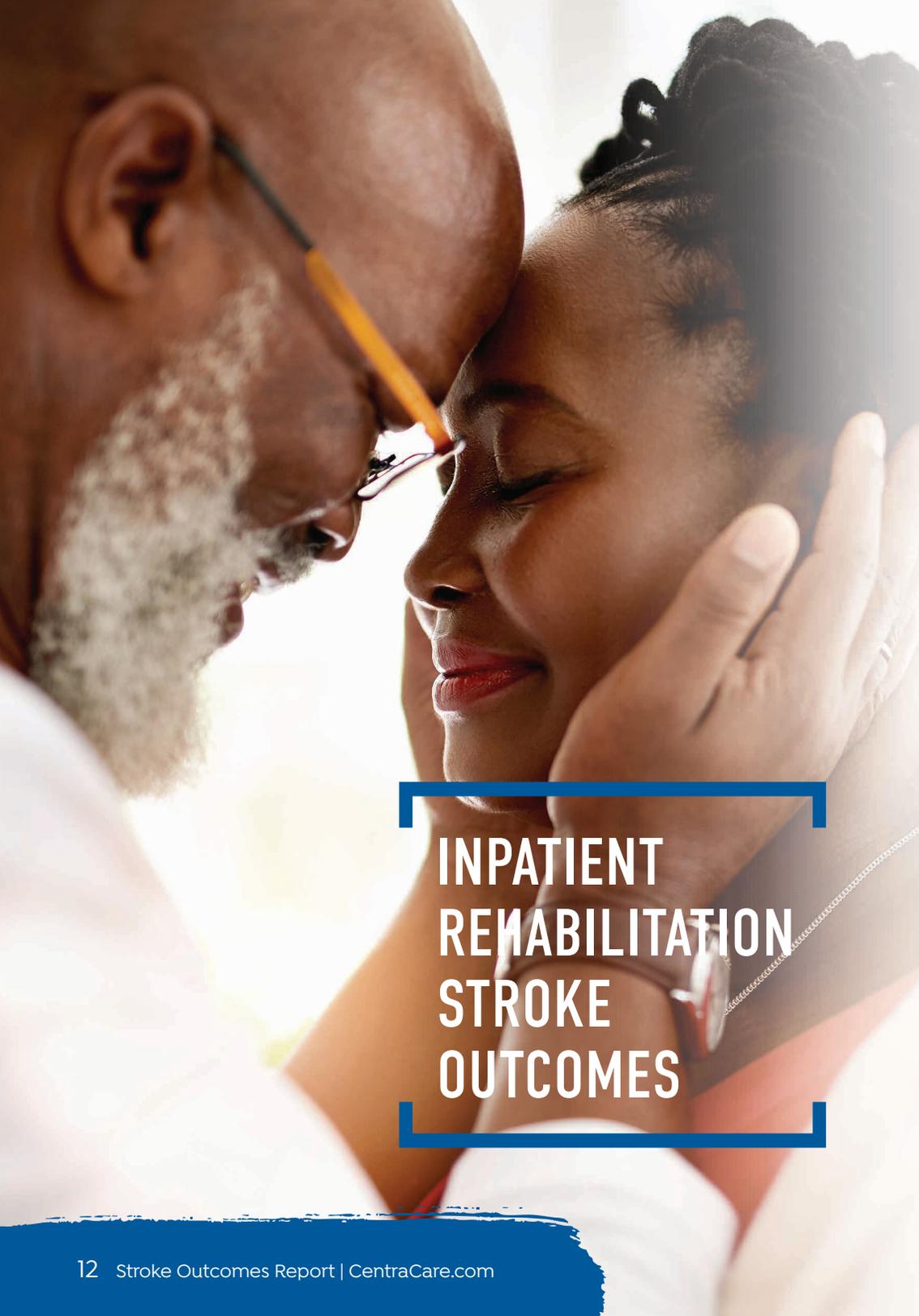


**NIHSS at Discharge** (Graph 11)



## FUNCTIONAL OUTCOME (NIHSS)

The National Institutes of Health Stroke Scale (NIHSS) is validated clinical assessment that provides a quantitative measure of stroke severity. The scale ranges from 0, being no deficits to 42, being a severe stroke. [Graphs 10 and 11](#) illustrate greater improvements in 2018 stroke severity upon discharge for patients that receive IV alteplase and/or mechanical thrombectomy.



In 2017, 158 (34 percent) of our rehabilitation unit patients were stroke survivors. In 2018, the number increased to 210 (44 percent).

Functional Independence Measure (FIM), is a nationally recognized tool used by inpatient rehabilitation units to measure patients' abilities to care for themselves. Areas measured include eating, grooming, bathing, toileting, communicating, ambulation, speaking and thinking skills. We can measure patients' improvement through these scores. The higher the FIM score, the more independently patients can function. We look at patients' admission FIM scores as well as their discharge scores. We also measure their improvement through the FIM change score. The FIM change score is the difference in a patient's admission and discharge scores compared to a patient's length of stay. During 2018, the average length of stay for our patients was 13.8 days. Upon admission, the average FIM score was 57.7 and discharge was 84.4 which indicated a FIM change score of 26.7.

We also measure our patients Case Mix Index (CMI) which takes their admission FIM scores, age, diagnosis and preexisting conditions into account. Our stroke patients in 2018 had a CMI of 1.46, this is between the regional average of 1.45 and national scores of 1.53. A higher CMI reflects the more clinically complex needs of the patient. Even though we had slightly above average CMI scores for our patients, we were able to discharge 62 percent of these patients back into the community setting.

# INPATIENT REHABILITATION STROKE OUTCOMES

Inpatient Rehabilitation Stroke Patients	2018	2017	2016
Total patients	210	158	165
Length of stay	13.8	13.4	15
Discharge to community	62%	71.5%	73%
Admission FIM	57.7	56.5	57
Discharge FIM	84.4	86.2	88
FIM change	26.7	29.6	30
CMI	1.46	1.47	1.47
Average age	69.9	68.9	69
Male	56%	65%	65%
Female	44%	47%	35%
Non-caucasian	2.9%	4%	5%

# Improving Community Health

Stroke prevention begins with education. Community education is aimed at increasing overall knowledge of stroke risk factors, stroke warning signs and what action is needed when stroke warning signs occur. CentraCare Neurosciences Stroke Center educates the community by being involved in numerous events. Strike Out Stroke, Let's Talk about Stroke and Strides for Stroke are three of our largest events.

Each May, the Minnesota Stroke Association holds a walk to honor stroke survivors and raise stroke awareness. The walk is held at three locations across the state – Duluth, St. Cloud and the Twin Cities. Between these sites, nearly a thousand walkers participate and raise thousands of dollars. The Inpatient Rehabilitation Unit at CentraCare – St. Cloud Hospital also forms a team consisting of patients, family members and staff. All team members gather at the starting line and walked or wheeled around the unit to join in the walk.

## COMMUNITY EVENTS

- Strike Out Stroke
- Let's Talk about Stroke
- Strides for Stroke

CentraCare Neurosciences Stroke Center hosts "Let's Talk about Stroke," a free community event to learn about stroke and how to prevent one. The event provides participants an opportunity to complete a stroke risk assessment and get their questions answered by a stroke specialist.

CentraCare also partners with the St. Cloud Rox baseball team to sponsor Strike Out Stroke night. Stroke Center staff are present for pre-game events that includes a bat giveaway for children. A stroke honoree throws out the first pitch and the St. Cloud Stroke Support Group and St. Cloud State University's Let's Talk Again aphasia group lead the crowd in singing the national anthem. Throughout the game, attendees hear messaging about stroke signs, how to reduce risk and what to do if experiencing a stroke.

Courtney Bevans, a nurse at St. Cloud Hospital, suffered a stroke at age 26 while working. She threw out the first pitch at the Strike Out Stroke game.



# RESEARCH

CentraCare Neurosciences Stroke Center is involved in clinical and academic research to support best practices and evidence-based care for stroke. Members of our robust cerebrovascular team have published several research articles in medical journals and presented at national and international conferences.

## ARAMIS

The Stroke Center enrolls patients in Addressing Real-world Anticoagulant Management Issues in Stroke (ARAMIS). This study is sponsored by Duke University and by invitation only. The study is designed to provide important and timely insight into the management of acute stroke patients who are on novel oral anticoagulants in community practice. The study is expected to enroll 10,000 patients by study completion date of August 2019.

## STROKENET

The Stroke Center has joined the National Institute of Health's StrokeNet, which was created to conduct small and large clinical trials and research studies to advance acute stroke treatment, stroke prevention, and recovery and rehabilitation following a stroke. The network consists of 25 regional centers across the United States which involves more than 200 hospitals. CentraCare – St. Cloud Hospital is part of the University of Minnesota Regional Coordinating Center.



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## Refer a patient

Acute cases: **888-387-2862** patient transfer line

Non-acute cases: **320-240-2148** CentraCare Neurosciences