NORTHERN
REGIONAL HOSPITAL®

ADVANCED PRIMARY STROKE CENTER

1957-1960

NORTHERN
REGIONAL HOSPITAL

65th Anniversary
1957 - 2022

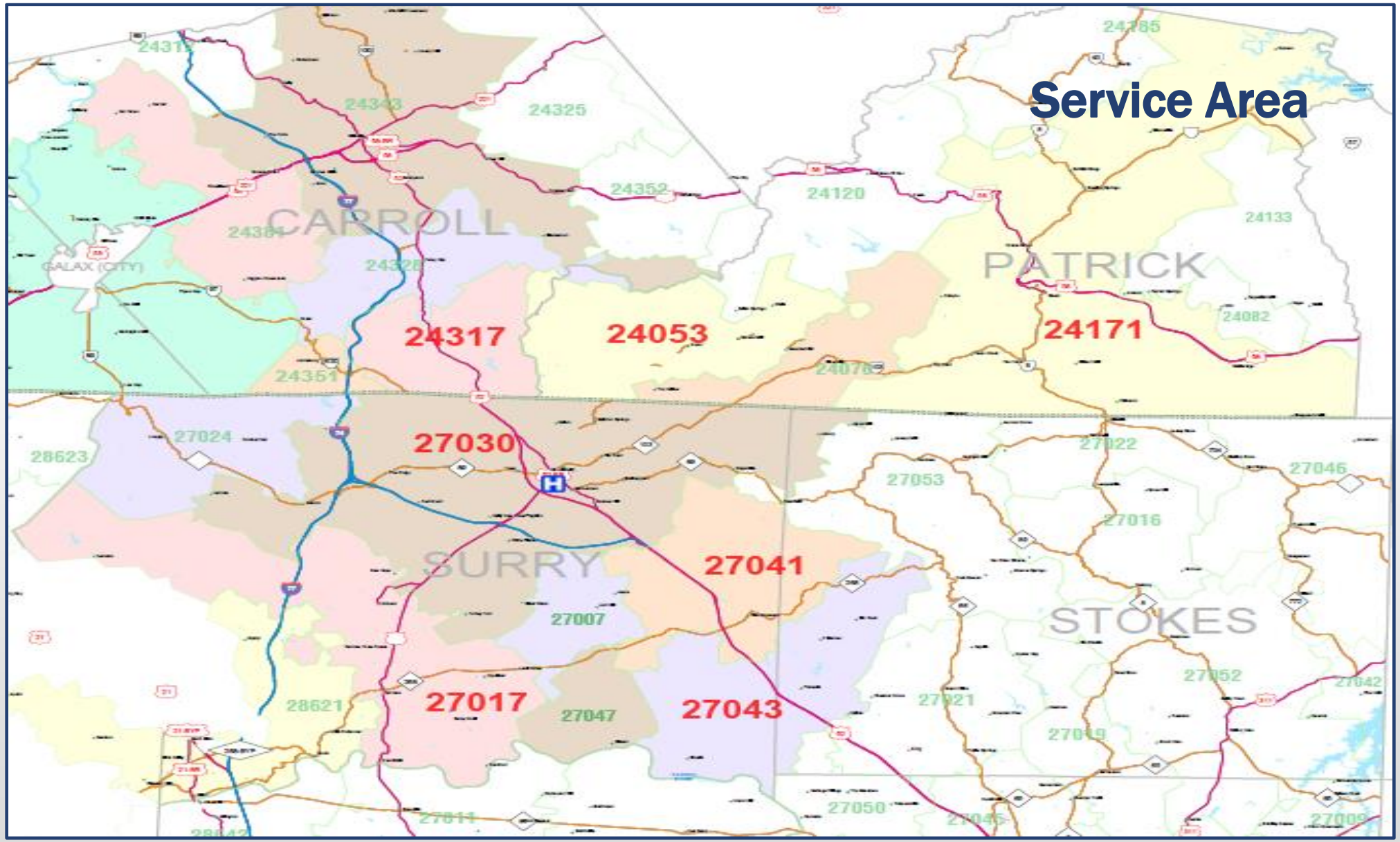
2022

Northern Regional Hospital

2024

A Little About Us

"Life is like a bicycle.
You don't fall off unless
you stop pedaling"
Andy Griffith



NRH Organization Treats Approximately
275,000 Patients Annually

Northern Regional Hospital

- Beds: 100 (acute care)

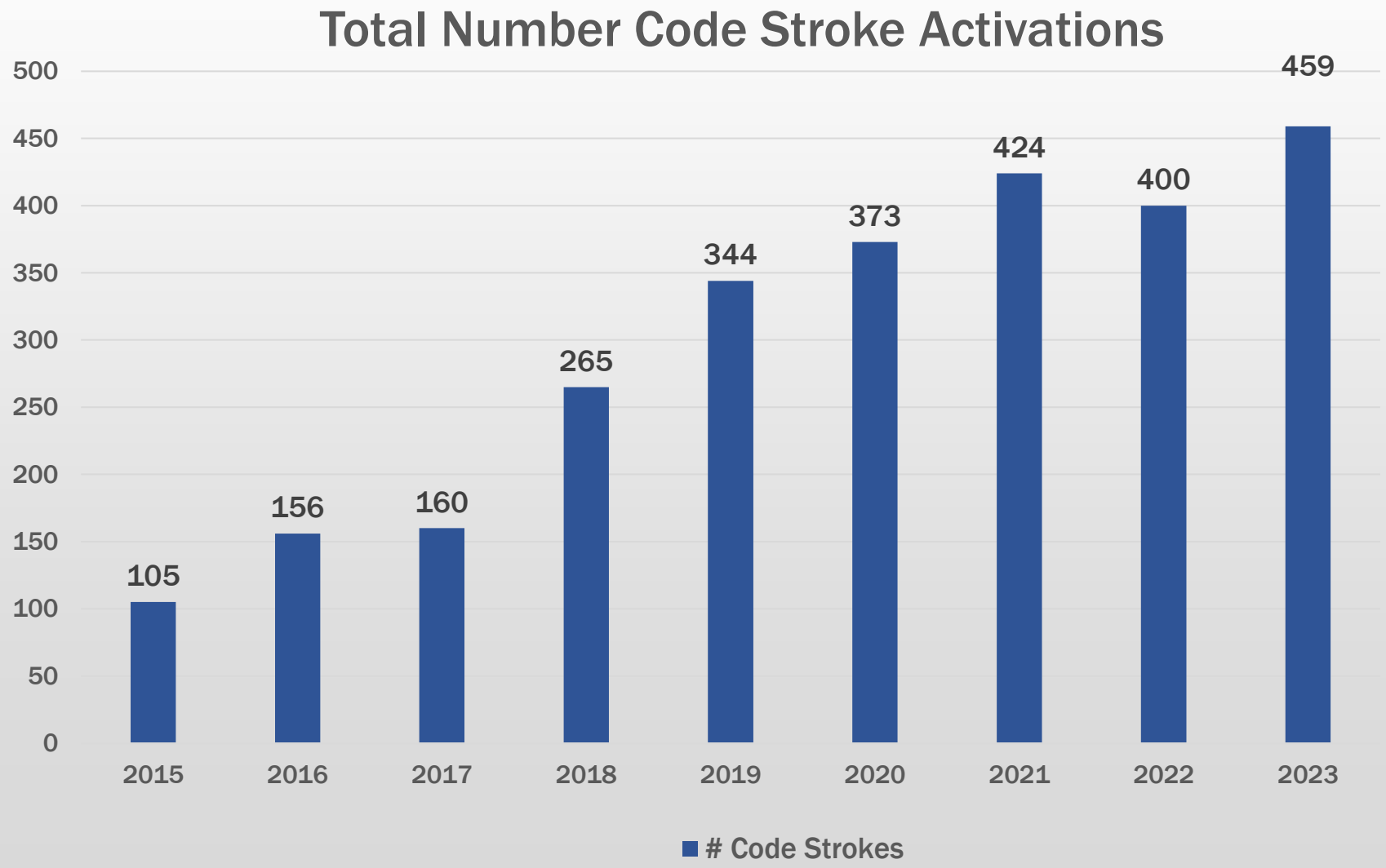
  33 (skilled nursing)
- Employees and contract staff: 1270
- Medical staff members: 288

24 Hour Emergency Dept Med/Surg ICU Step Down / Stroke Unit OB LDRP Imaging Lab Resp Therapy Skilled Nursing Unit Surgery Urgent Care	PT/OT/ST Rehab On Site EMS Transport 13 Clinic Sites including Cardiac and Pulmonary Rehab

Advanced Primary Stroke Center

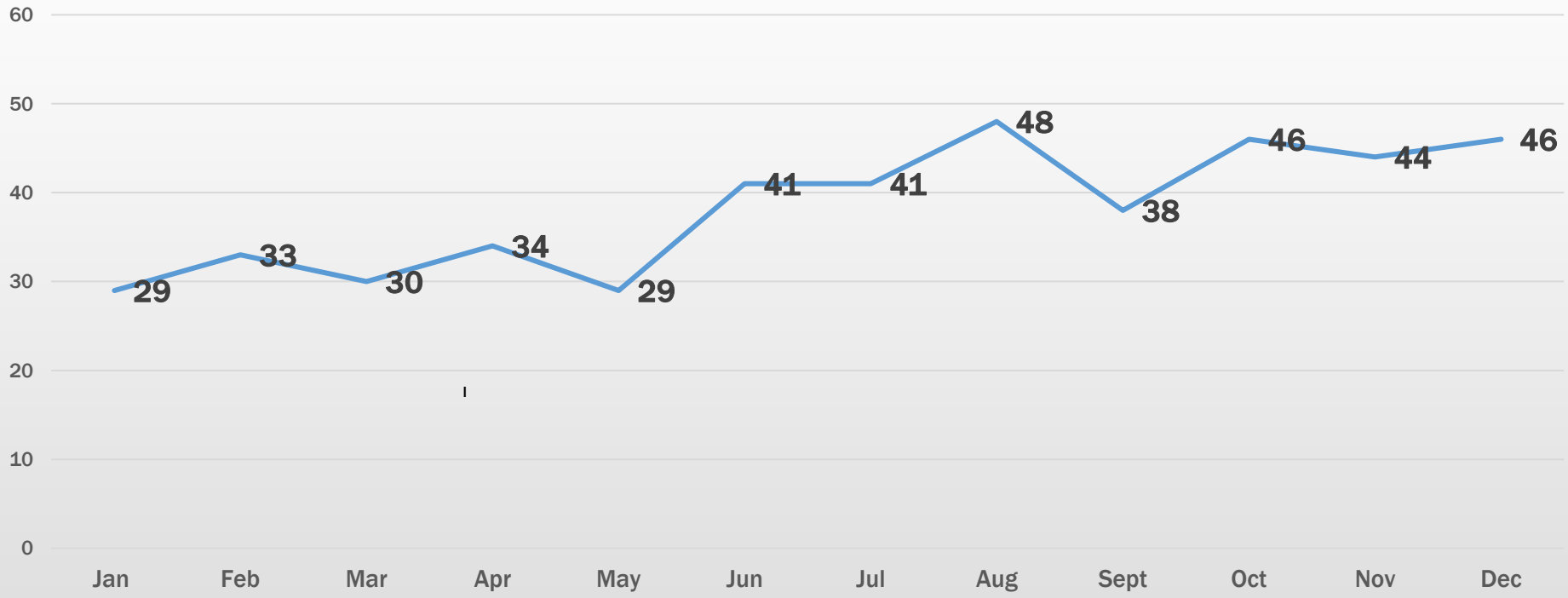
- Northern Hospital of Surry County was initially certified by The Joint Commission in February 2016 as an Advanced Primary Stroke Center
- Northern Hospital achieved recertification in December 2017
- October 2019 Northern Hospital District of Surry County became DBA Northern Regional Hospital and received Advanced Primary Stroke Center recertification in February 2020
- Advanced Primary Stroke Certification was most recently awarded to Northern Regional Hospital in February 2024

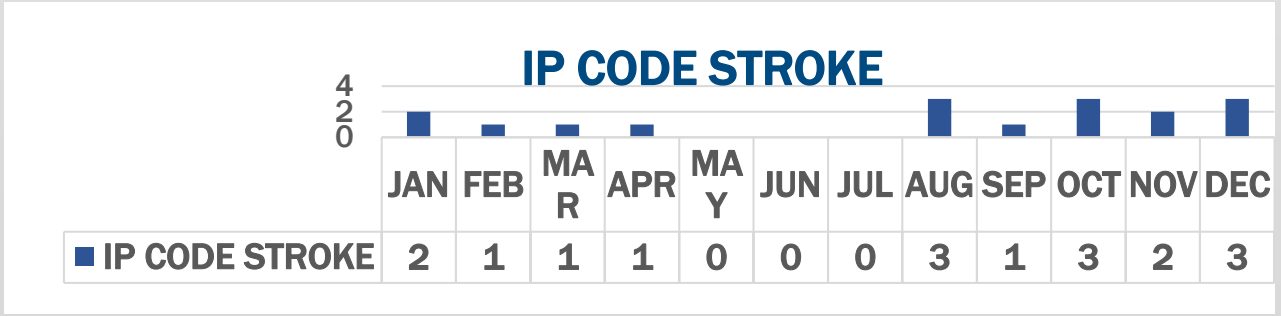
Code Stroke Yearly Trends



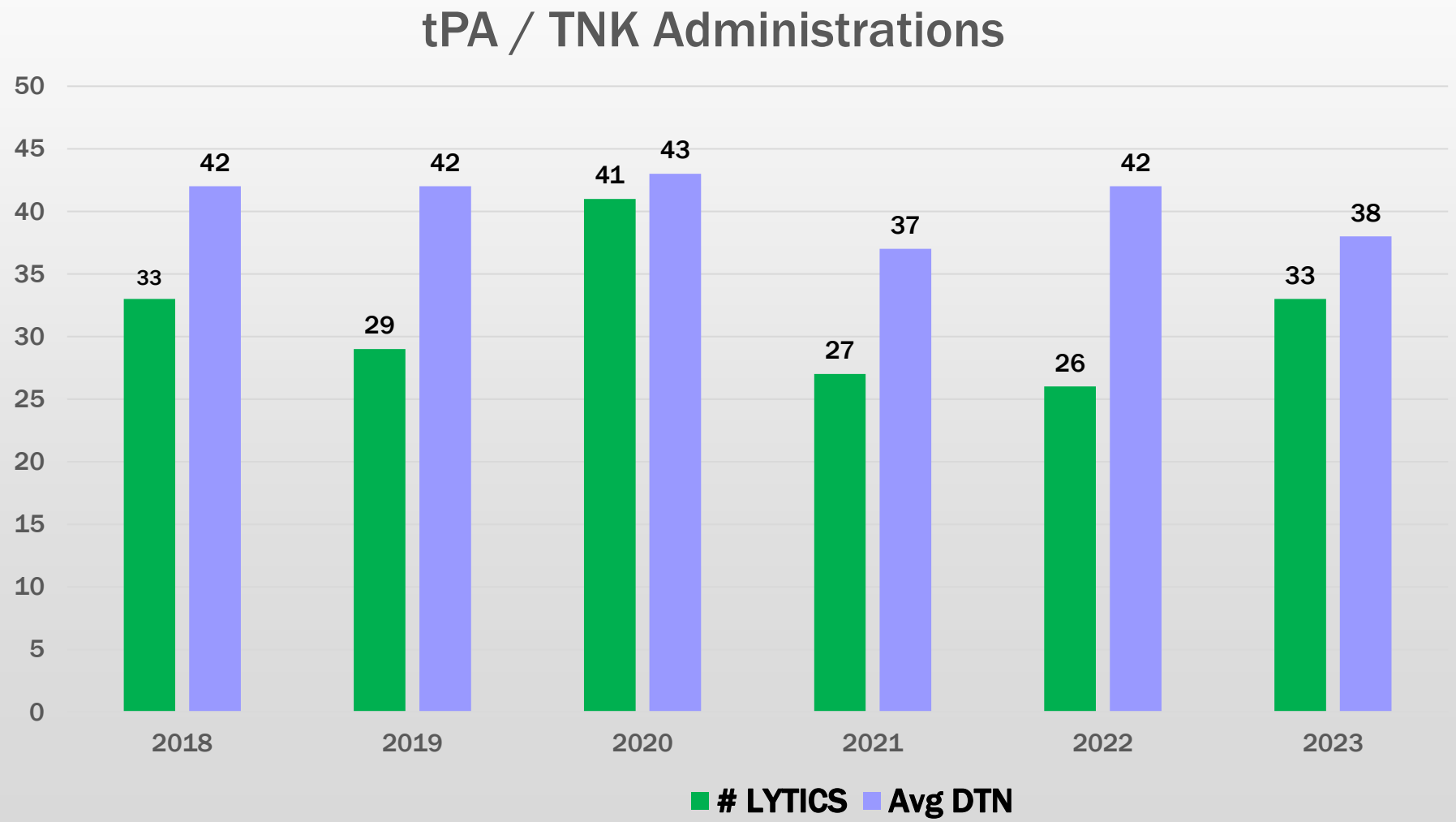
Monthly Code Stroke Activations

Jan – Nov 2023





Thrombolytic Administrations Yearly Trends



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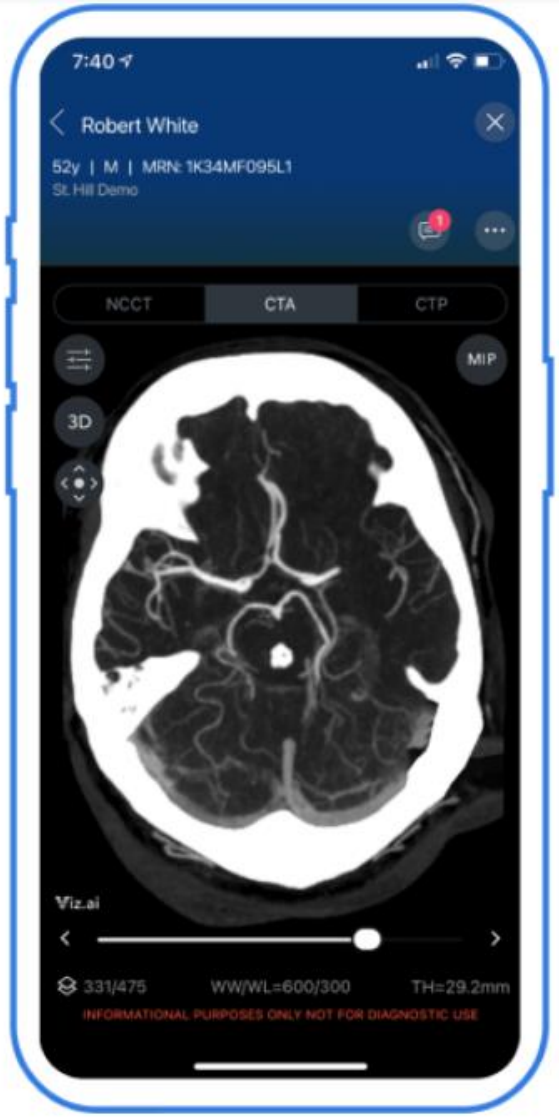


Large vessel occlusion

Reduces time to treatment

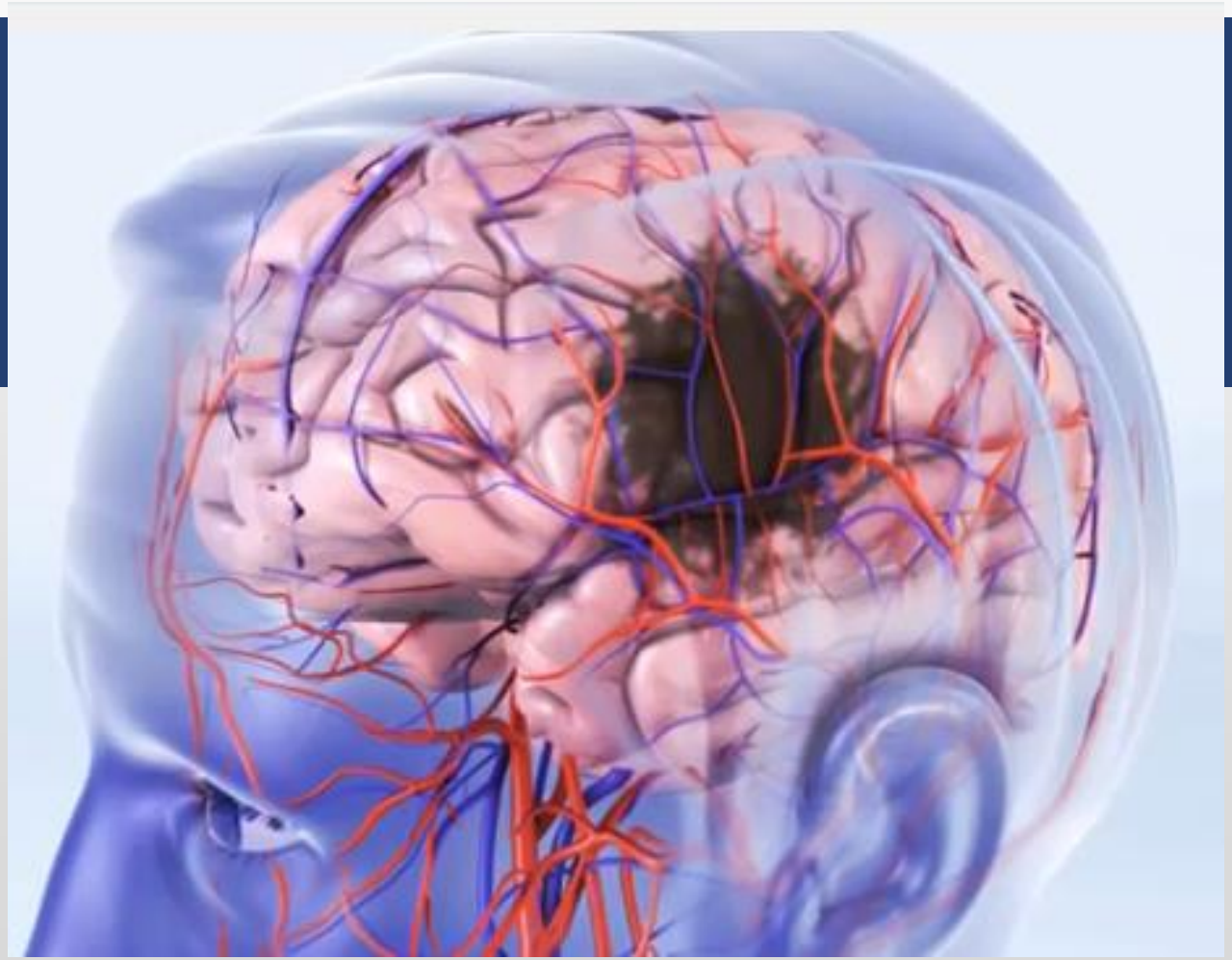
- Automatically detects and triages suspected large vessel occlusions (LVO)
- Proven to reduce door-in-door-out (DIDO) and door-to-groin (DTG) times

Learn more

VALIDATE: Validation of Artificial Intelligence to Limit Delays in Acute Stroke Treatment and Endovascular Therapy

Hospital utilization of an AI-based care coordination platform was associated with a significant decrease of 39.5 minutes in the time to NIR contact, increase in patients taken for intervention, and lower DTN times for thrombolytics.

Advanced Primary Stroke Center Case Study



The Story Begins…

- 71-year-old male (R.K.) that drove to Mt. Airy from Philadelphia on his motorcycle. He was staying in town with family on the morning of June 17th, 2020. Only real history is HTN.
- Awoke at 7:00am in his normal state of health.
- After awakening, he went to shower and suddenly became weak and fell. Family initially called EMS to help get him out of the shower.
- Upon arrival, EMS found him to be flaccid on the left side with neglect and he had a left facial droop. He was alert and oriented and able to speak, but with slurred speech.

PATIENT: RK TIMELINE OF CARE

- 0926: Arrived by EMS to NRH
- 0929: FSBS obtained – 110 mg/dl
- 0930 - 0933: Quick Look by ED Physician
- 0933: To CT via EMS Stretcher
- CT Scan showed Hyperdense right MCA sign
- Weight obtained by bed scale: 110 kg
- 0938: Dysphagia screen performed, and patient failed. Kept NPO.
- 0948: Physician notified ED staff potential tPA administration

PATIENT: RK TIMELINE OF CARE

- 0948: Patient back from CT, placed on monitors
- 0949: tPA brought to bedside and calculations for dosage performed
- 0950: Dr. Dharaiya from Novant on TeleNeurology cart to evaluate patient remotely
- 0952: Second large bore IV initiated
- 0955: Blood obtained for labs
- 0956: Hemoccult stool checked for presence of blood (negative)
- 0959: tPA mixed and dosage verified by staff and physician. Bolus given
- 1000: tPA drip initiated

LAST KNOWN WELL
7:00 AM

IMPORTANT TIMES
MEASURED BY JOINT COMMISSION

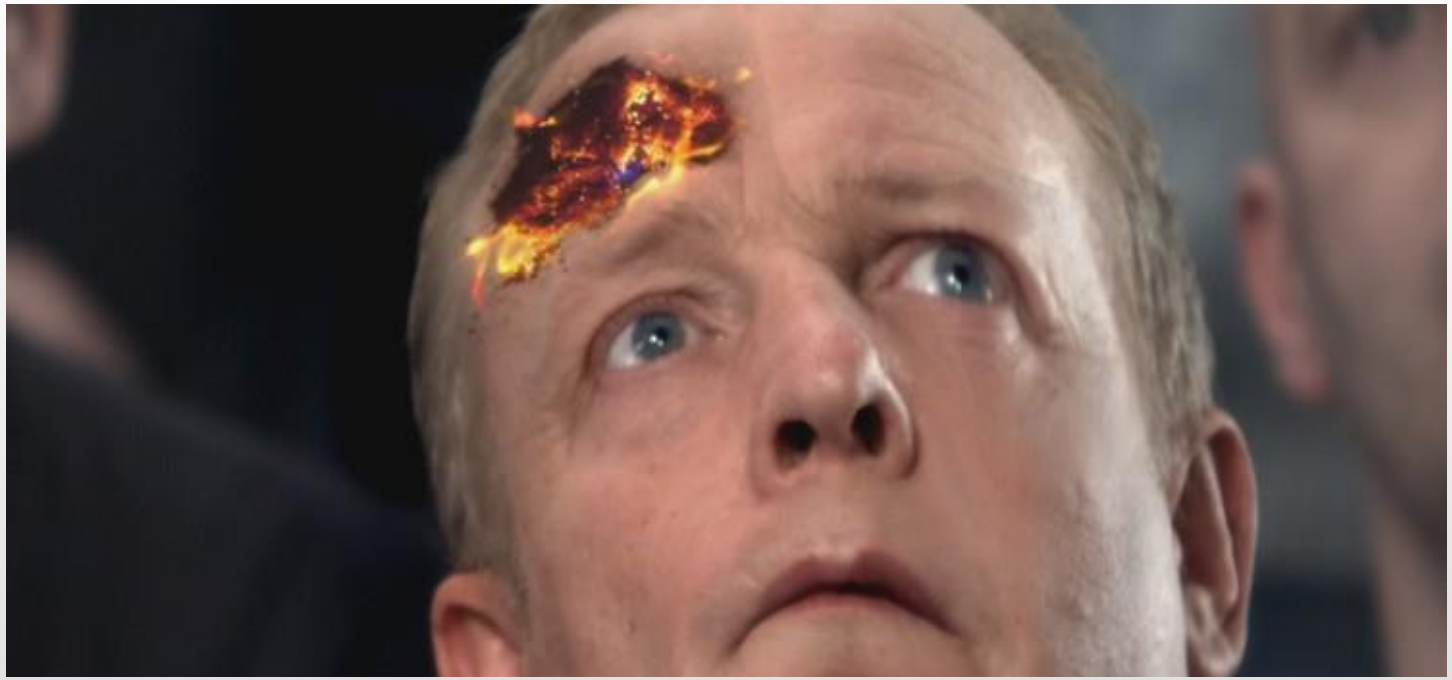
DOOR TO NEEDLE TIME: 33 minutes

TJC Goal = 60 minutes

NRH Goal Time = 45 Minutes

DOOR TO TRANSFER TIME: 44 MINUTES

DOOR TO COMPLETE THROMBECTOMY: 125 MINUTES



Simulated Photo, Not Real Patient

Reenactment provided by ED staff, Surry County EMS staff and a Volunteer at NRH

Walk With Us Through Our Patient's Emergency Department Care and See What These Numbers Really Mean

Simulation provided by Emergency Department staff, Surry EMS staff and one of our great Volunteers

09:24 am

EMS ALERTS ED STAFF

- Call comes in for Stroke Alert by Carroll County EMS Medics
- ED Team Notified
- Preparation Begins

LKW: 2 H 24 mins

09:26 am

QUICK LOOK by PHYSICIAN

ED TIME: 0 mins

- Patient arrived at Ambulance Entrance via EMS
- He was met at the door by the ED Physician, ED Nursing staff, and ED Registration

Quick Look Done

Performed to determine if this is potential stroke

09:32 am

CODE STROKE IS CALLED

ARRIVAL TIME: 0926

ED TIME: 6 mins

- FSBS performed to ensure symptoms were not due to a Stroke Mimic

FSBS 110 mg/dl

- The ED Physician determined this to be possible Stroke

CODE STROKE

Always paged overhead to activate all elements of emergent Stroke Care

09:33 am

PATIENT TRANSPORTED EMERGENTLY TO IMAGING

ARRIVAL TIME: 0926

ED TIME: 7 mins

NON-CONTRAST CT HEAD

- No time is ever wasted
- EMS transports Code Stroke patients to CT directly on their Stretcher

09:34 am

CT HEAD PERFORMED

ARRIVAL TIME: 0926

ED TIME: 8 mins

EMS assisted the CT staff by transferring the stroke patient onto the CT SCANNER platform

TEAMWORK + TIMING

ARRIVAL TIME: 0926

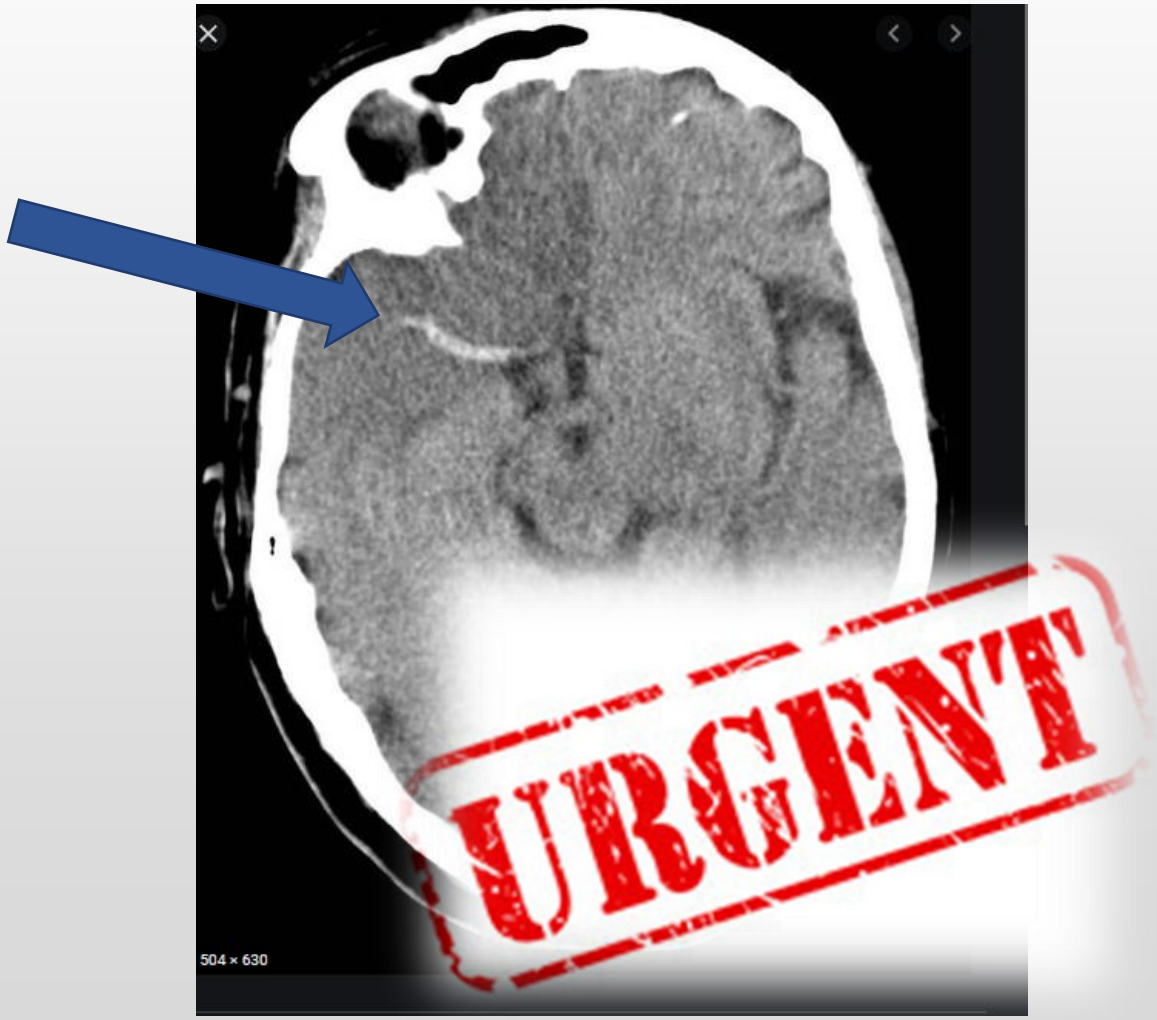
ED TIME: 9 mins

- Since CT heard the Overhead CODE STROKE page, they were prepared to immediately receive the patient
- A Non-Contrast Head CT is performed STAT on each and every Code Stroke patient

09:38 am

CT SCAN Detected Hyperdense MCA Sign

ED TIME: 12 mins



Radiologist notified ED Physician of Critical Finding

PREPARATION

ARRIVAL TIME: 0926

ED TIME: 12 mins

A weight-capable bed was brought to Imaging suite to receive the patient

An accurate weight is critical to the care of the stroke patient

tPA Dose: 0.9 mg / kg

(NRH has since switched to TNKase)

09:39 am

RAPID TRANSPORT BACK TO ED

ARRIVAL TIME: 0926

ED TIME: 13 mins

CT Scan is complete, and patient rapidly transported back to ED

13 Minutes Have Transpired

NIHSS 15

NIH Stroke Scale Evaluation is Completed by Nursing Staff While Awaiting TeleNeurologist

NIHSS Score

		Date Time		Initials	Signature
1a. Level of consciousness	Alert Drowsy Stuporous Coma	0 1 2 3			
1b. LOC questions (month, age)	Answer both Answers one Incorrect	0 1 2			
1c. LOC commands (open eyes, close eyes, make fist, let go)	Obeys both Obeys one Incorrect	0 1 2			
2. Best gaze (eyes open, follows examiner's finger or face)	Normal Partial gaze palsy Forced deviation	0 1 2			
3. Visual (introduce stimulation/threat to visual field.)	No visual loss Partial hemianopia Complete hemianopia Bilateral hemianopia	0 1 2 3			
4. Facial palsy (show teeth, raise eyebrows, squeeze eyes shut.)	Normal Minor Partial Complete	0 1 2 3			
5a. Motor arm – Right (elevate extremity to 90° and score drift/ movement. For amputation or joint fusion, score X.)	No drift Drift Can't resist gravity No effort against gravity No movement	0 1 2 3 4			
5b. Motor arm – Left (elevate extremity to 90° and score drift/ movement. For amputation or joint fusion, score X.)	No drift Drift Can't resist gravity No effort against gravity No movement	0 1 2 3 4			
6a. Motor leg – Left (elevate extremity to 90° and score drift/ movement. For amputation or joint fusion, score X.)	No drift Drift Can't resist gravity No effort against gravity No movement	0 1 2 3 4			
6b. Motor leg – Right (elevate extremity to 90° and score drift/ movement. For amputation or joint fusion, score X.)	No drift Drift Can't resist gravity No effort against gravity No movement	0 1 2 3 4			
7. Limb ataxia (finger–nose, heel down shin)	Absent Present in one limb Present in two limbs	0 1 2			
8. Sensory (pin prick to face, arm, trunk and leg. Compare side to side.)	Normal Partial loss Severe loss	0 1 2			
9. Best language (name items, describe pictures and read sentences.)	No aphasia Mild to moderate aphasia Severe aphasia Mute	0 1 2 3			
10. Dysarthria (evaluate speech clarity by patient reading listed words. If intubated or barrier, score X.)	Normal Mild to moderate Near to unintelligible	0 1 2			
11. Extinction and inattention (use information from prior testing to identify neglect or double stimultaneous stimuli testing.)	No neglect Partial neglect Complete neglect	0 1 2			
X= Untestable. Note areas in progress notes.	Total Score				
	Initials				

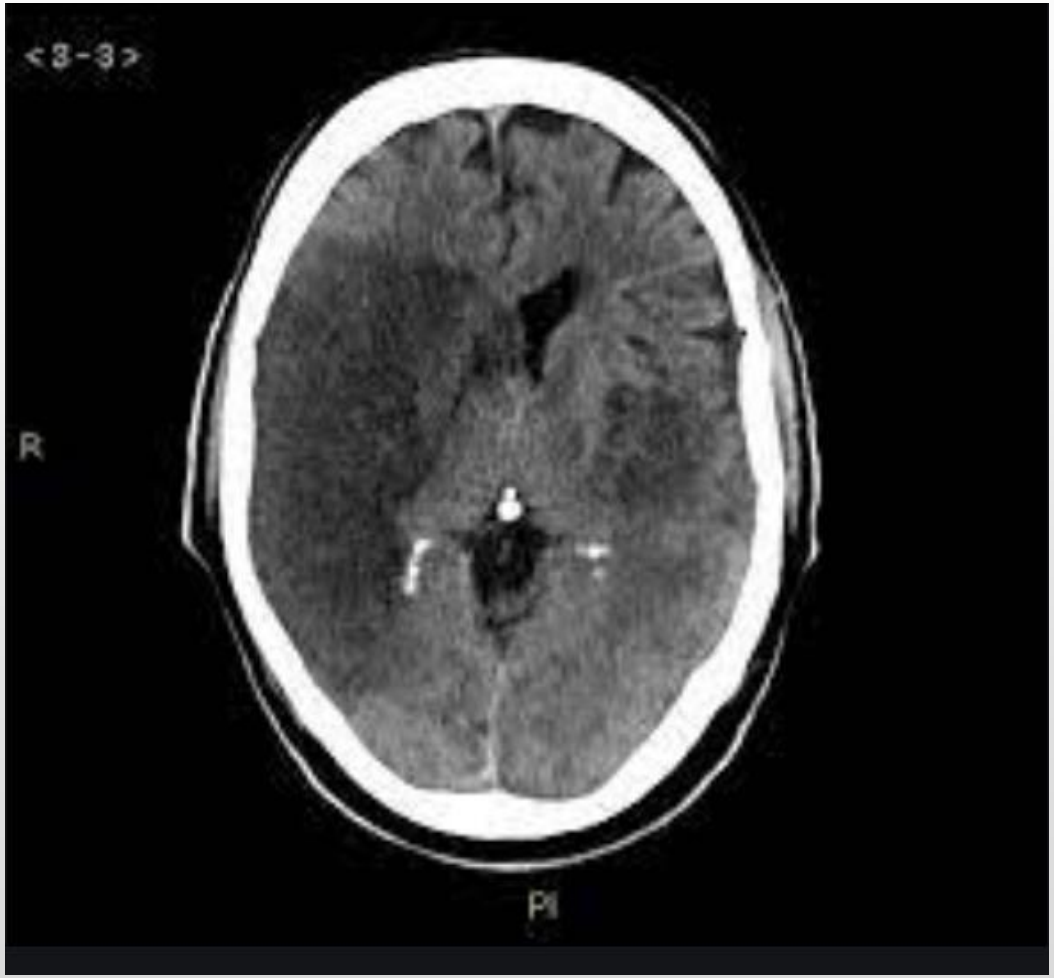
NORTHERN REGIONAL HOSPITAL

SCPGNSS NUR185A 012315

Stroke Clinical Practice Guidelines NIH Stroke Scale

Name:
Acct #:
Unit #:
Adm Date:
Room: DOB:
Physician:

National Institutes of Health Stroke Scale



Scoring range is 0-42 points. The higher the number, the greater the severity.

Score	Stroke Severity
0	No stroke symptoms
1-4	Minor stroke
5-15	Moderate stroke
16-20	Moderate to severe stroke
21-42	Severe stroke

American Stroke Association.
A division of the American Heart Association.

SWALLOW TEST

SWALLOW TEST

NIHSS complete and Swallow Evaluation is done by Nursing Staff

The patient failed the Dysphagia Screening test and was kept NPO to reduce the risk of aspiration

09:48 am

DECISION TIME

ARRIVAL TIME: 0926

ED TIME: 22 mins

- Patient placed on Monitor and Vital Signs were obtained
- TeleNeurology Cart was at bedside, awaiting evaluation by TN Provider

Thrombolytic Brought to Bedside by Pharmacy

09:51 am

TELENEUROLOGY

ARRIVAL TIME: 0926

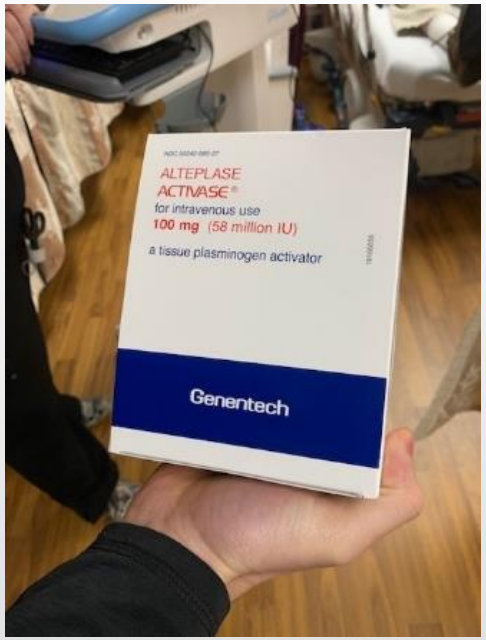
ED TIME: 25 mins

- TeleNeurologist came online and performed an evaluation remotely
- Decision was made to administer Thrombolytics

PREPARING FOR ADMINISTRATAION

ARRIVAL TIME: 0926

ED TIME: 29 mins



1. A second large bore IV was started
2. Dosages were calculated and verified
3. Medication was prepared and drawn up
4. Labs were drawn prior to administration
5. Hemoccult stool was checked
6. Physician reviewed the exclusion checklist

TENECTEPLASE (TNKase) 50 mg Vial
5mg/ml after reconstitution

TNKASE 50MG VIAL

SINGLE-BOLUS
TNKase®
Tenecteplase
For Fast Lytic Delivery in AMI

Careful evaluation is done to ensure there are NO CONTRAINDICATIONS to thrombolytics

Dosing For Tenecteplase

STROKE DOSE: 0.25 mg/kg

- Given as a Single IV Bolus over 5 Seconds

⚠ **Maximum Total Dose: 25 mg** ⚠

**** THERE IS 50 MG PER EACH VIAL ****

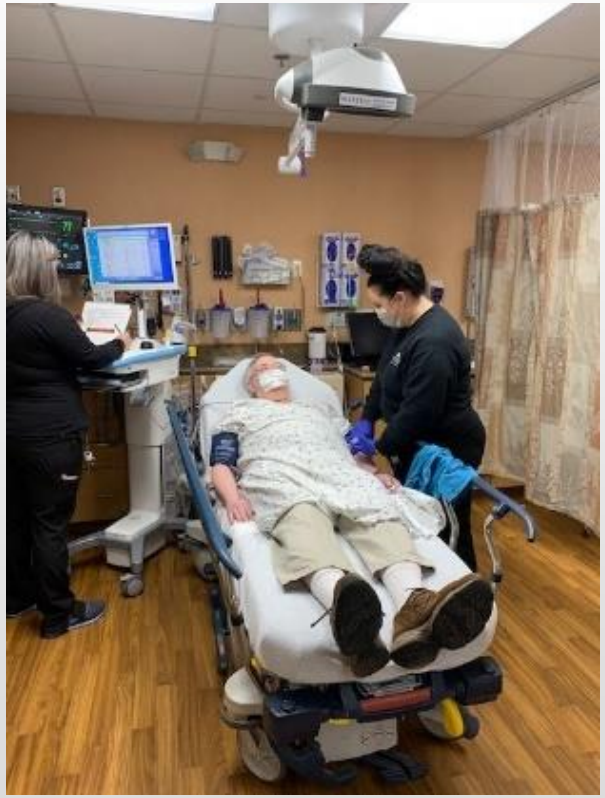
- **** THERE WILL ALWAYS BE AT LEAST HALF OF VIAL WASTED****

09:59 am

LYTIC ADMINISTRATION

ARRIVAL TIME: 0926

ED TIME: 33 mins



tPA Bolus Given 09:59
IV Infusion Began 10:00

33 Minutes Have Transpired from Arrival

2 Hours and 59 Minutes Have Transpired from Last Known Well

THROMBYLYTICS

Window for tPA/TNKase Administration is 3 – 4.5 Hours.
New guidelines allow for Alteplase administration for up to 4.5 to 9 hours if the patient meets specific criteria.

10:10 am

TRANSFER TO NOVANT HEALTH CSC

ARRIVAL TIME: 0926

ED TIME: 44 mins

TRANSFER TIME: 1010

1002: Unit Clerk notified C-Com of 10-18 transfer to FMH for Code Purple

1010: EMS to ED, report given, patient placed on EMS stretcher and loaded in EMS ambulance.

Departed NRH on route to Novant Health where Interventionalist and Neurology Cath team were awaiting his arrival

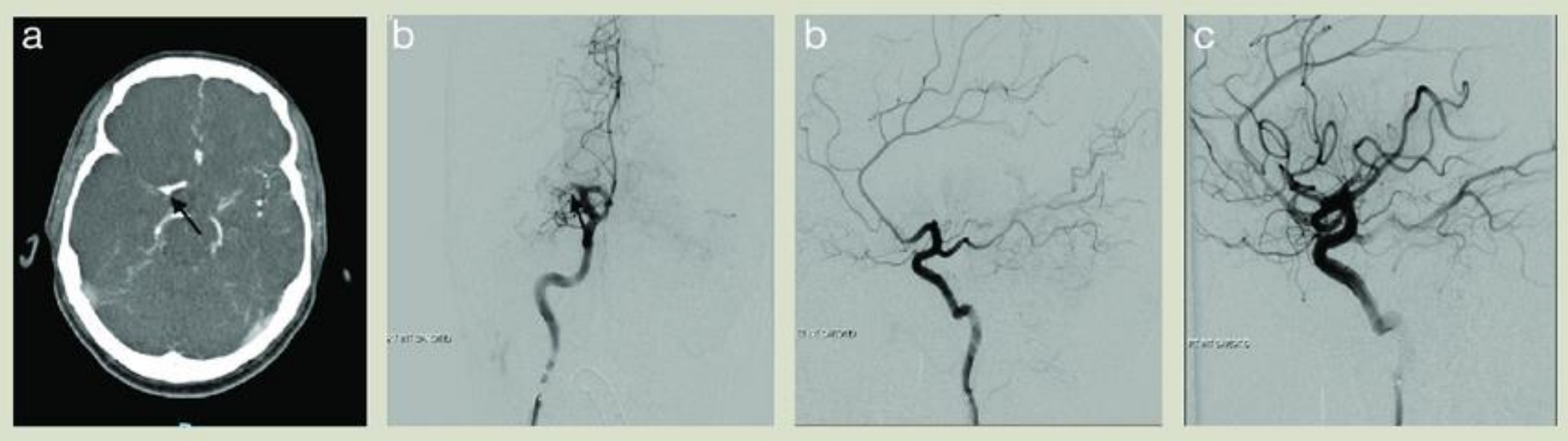
DOOR TO TRANSFER TIME:

44 MINUTES

THROMBECTOMY

Window for Thrombectomy is Up to 16 Hours

THROMBECTOMY AT NOVANT HEALTH

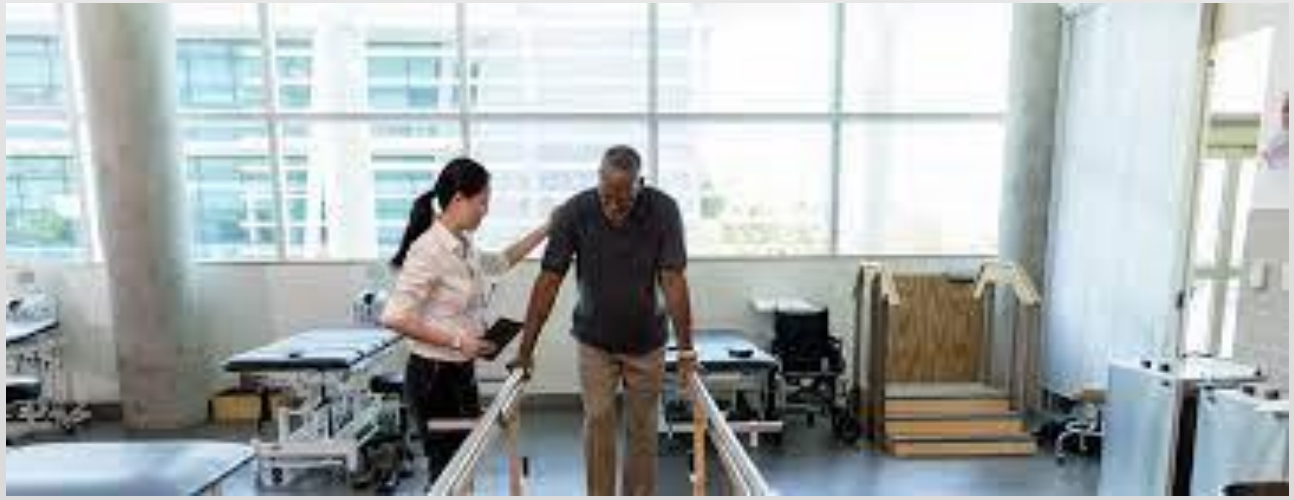


DOOR TO COMPLETED THROMBECTOMY: 125 MINUTES

LAST KNOWN WELL TO THROMBECTOMY: 269 MINUTES (4.5 HOURS)

RECOVERY

- ✓ The patient was transferred out of Neurology ICU at Novant Health on the night of June 19th,able to walk on his own
- ✓ By the morning of June 20th, he was walking by himself even better
- ✓ Mr. K. was discharged to Inpatient Rehab for strengthening within a few days.



JUNE 26TH

Finally, he was able to go home to Philadelphia… with a second chance at life.

Message From Novant Interventional Physician

(This is a message we received from the Interventional Physician at Novant Health on June 18th)

"So, I was looking at the times on (RK). He hit your ED just before 0950. He got tPA and CT at NRH and was transferred for thrombectomy. He had an atherosclerotic occlusion in the neck and an intracranial embolus. His angioplasty and thrombectomy were completed at 1155. That's 2:05 minutes for TeleNeurology, tPA, a drive to WS and a tandem occlusion thrombectomy. It's truly exceptional care. He is from Philadelphia and was riding a motorcycle through your town. He is an NIHSS of Zero, from a 15.

Please tell your team what an awesome job they did for this man"

Success Story

“To know even one life has breathed easier because you have lived. This is to have succeeded.”

— Ralph Waldo Emerson

Thank you to Mike Flanagan, one of our Northern Volunteers for helping us tell this story!

IT MATTERS

It matters that we stand at the ready

It matters that we know our protocols

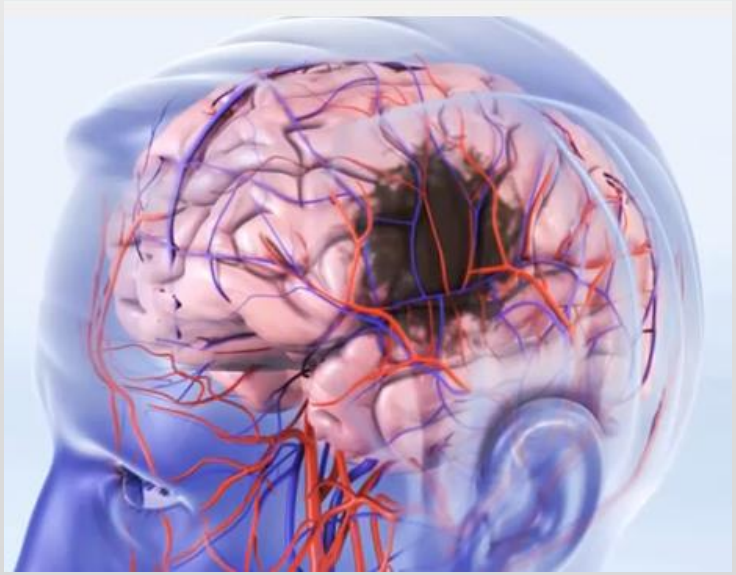
It matters that we know the when, how and why of our stroke treatments

It matter that we do our best, every singe time

In countless EMS Agencies and Stroke Centers - Comprehensive, Thrombectomy Capable, Advanced Primary and Acute Stroke Ready - All across our country...

What We All Do Matters

COLLABORATION



NEW EMS COLLABORATION PROJECT

Indication: EMS Providers often did not understand why a Stroke Alert patient was not elevated to a Code Stroke upon arrival to the Emergency Department. This led to EMS questioning confidence in their skill of stroke recognition or questioning the ED Provider

Purpose: To provide feedback to EMS for all Stroke Alerts

- If no Code Stroke was called, an explanation is provided to EMS providers
- If patient not brought in as Stroke Alert but ED Provider found indication and proceeded with Code Stroke, feedback and/or education is provided to support EMS staff in their skill set for stroke recognition

Monthly reports are generated and shared with Surry County EMS. Education sessions are provided if a need is identified

SURRY COUNTY EMS DEC 2023

DATE	AGE	M/F	STROKE ALERT	COMPLAINT	REASON CODE STROKE CALLED/NOT CALLED IN ED	DIAGNOSIS / OUTCOME
12/3/2023	84	F	Yes	right side weakness and tremors		CVA
12/3/2023	91	M	Yes	facial droop, slurred speech		ARF, Encephalopathy
12/5/2023	64	M	No	Transported for c/o weakness	Code Stroke Called - Ataxia noted in ED, weakness in L leg	TNK - CVA w L M1 LVO
12/6/2023	55	M	No	Numb tingling bilateral upper extremeties	Code Stroke Called - Bilat Upper extremity numbness	Transient Cerebral Ischemia Left AMA
12/6/2023	80	F	No	Found unresponsive, posturing	Code Stroke Called - Pt hypertensive and posturing	Large Subdural Hematoma
12/5/2023	66	M	Yes	left side weakness, left facial droop, slurred speech		TNK - CVA w R M1 LVO
12/6/2023	76	F	Yes	incoherent speech		Acute Embolic CVA
12/7/2023	52	F	Yes	weakness upper & lower ext. bilateral		AMS, Drug Reaction
12/7/2023	68	M	Yes	AMS which resolved		Septic Shock, Pnx, ARF
12/8/2023	26	F	Yes	pressure head, tingling right side		Stroke S/S
12/10/2023	53	F	Yes	headache, syncope	Provider suspected seizure - No Code Stroke	Hypoxic Resp Failure, Pnx, Syncope
12/11/2023	88	M/F	No	Gen Weakness, limp gait, diff walking, slid out of W/C	Code Stroke Called - L leg drift, sensory deficit, ataxia	Acute CVA
12/14/2023	69	F	Yes	weakness right side, dizziness, slurred speech, vomiting		Acute CVA
12/15/2023	56	F	Yes	Pt vomited and became unresponsive	Stroke Alert by EMS	Accidental drug poisoning
12/16/2023	78	F	Yes	headache, fall		TNK - CVA w R M1 LVO
12/17/2023	91	M	Yes	left side jerking activity after fall		Brain mass
12/19/2023	56	F	Yes	left side facial numbness		Stroke S/S
12/20/2023	64	M	Yes	Lethargic, repsonding only to pain	Stroke Alert by EMS	GI Bleed, Acute Hepatic Encephalopathy
12/20/2023	77	F	Yes	left facial and extremity numbness		L Leg Paresthesia
12/21/2023	69	F	Yes	left face, arm, leg numbness		Acute CVA
12/23/2023	69	F	No	Pt and Husband reported no new deficits from old Stroke	Code Stroke Called - Pt had fully recovered from old CVA	Tranisent Neuro symptoms - Left AMA
12/23/2023	73	M	Yes	left side waekness; slurred speech		TIA
12/26/2023	76	F	Yes	AMS, sudden onset weakness	No focal deficits - No Code Stroke	Acute Metabolic Encephalopathy
12/26/2023	74	F	Yes	numbness, tingling right side; right vision problem		Stroke S/S
12/27/2023	80	M	Yes	fall, slurred speech; improved in transport	Symptoms > 24 hours - No Code Stroke	Influenza, Rhabdomylosis, AKI
12/31/2023	63	M	No	stuttering speech	Code Stroke Called - Multiple recent strokes, S/S onset 1 h	Stroke symptoms - Left AMA
PATRICK COUNTY EMS						
12/8/2023	97	F	Yes	L facial droop, L weakness	Stroke Alert by EMS	TIA Symptoms resolved
CARROLL COUNTY EMS						
12/11/2023	65	F	Unknown	Fall previous day, Onset 12/11 unable to move L side	Code Stroke Called	CVA Multiple acute infarcts

	Indicates pt brought in by EMS as Stroke Alert but Code Stroke not called by ED Provider
	Indicates pt not included in report submitted by EMS but still brought in as Stroke Alert
RED	Indicates pt not included in report submitted by EMS

COVERDELL STROKE PROGRAM

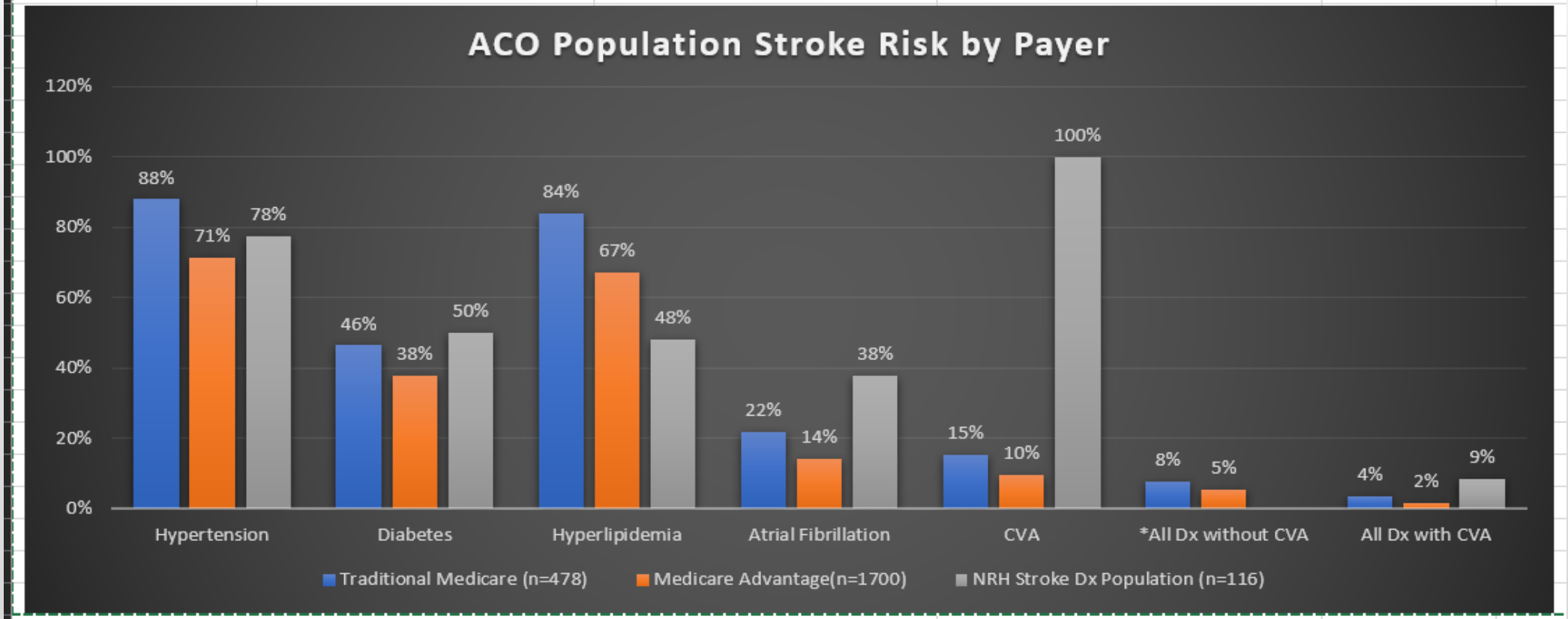
Northern Regional Hospital began participating in the Coverdell Stroke Program in 2022.

Participation is two-fold:

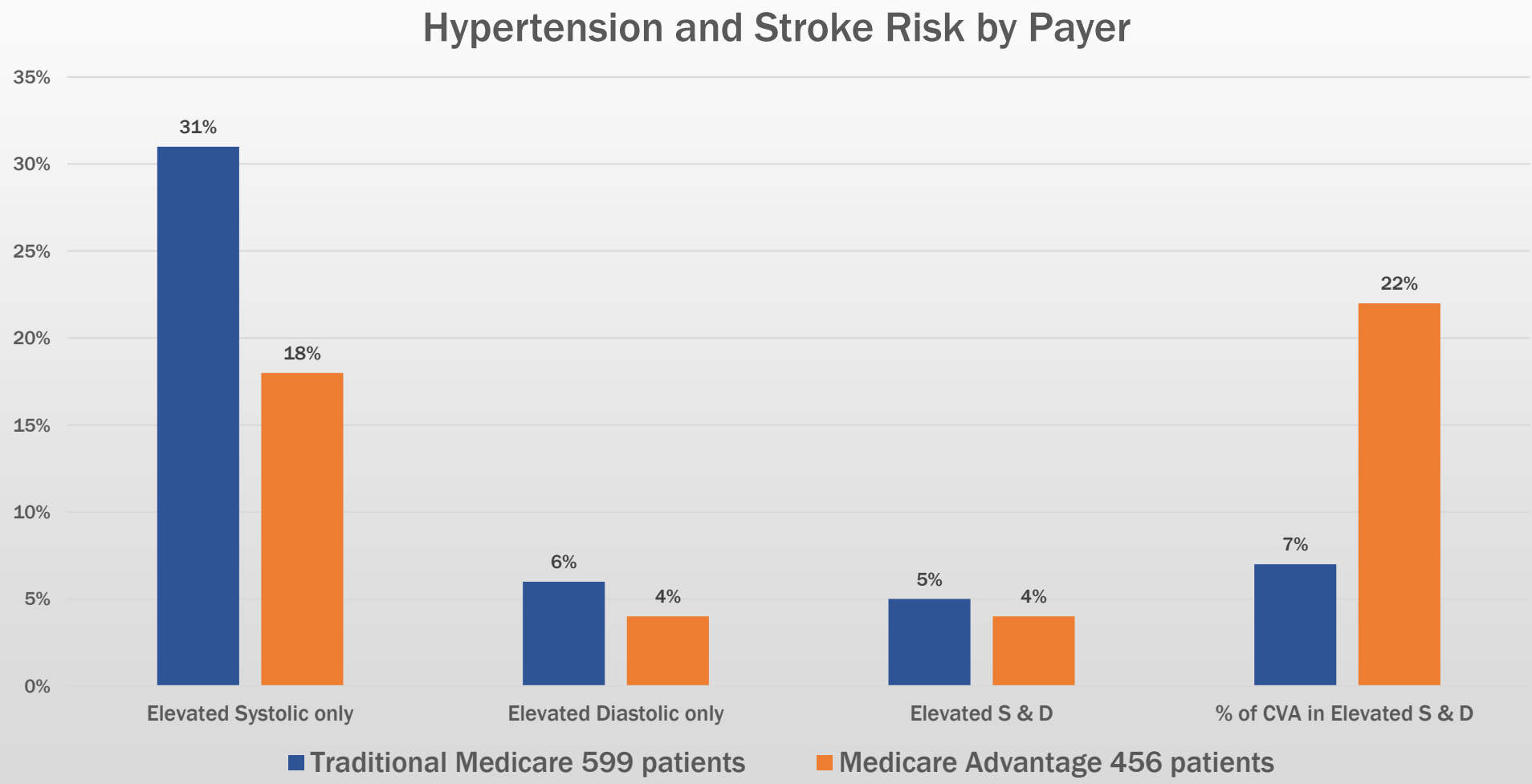
- Data from the collaboration with EMS is shared with any gap performance identification and process improvements reported to the Coverdell team
- Manager of Quality Management initiated engagement of the outpatient clinics to identify any stroke patients that may be susceptible to inequity in healthcare or resource. This data is also reported to the Coverdell team on a monthly basis with information on findings and process improvement.

COVERDELL REPORTING

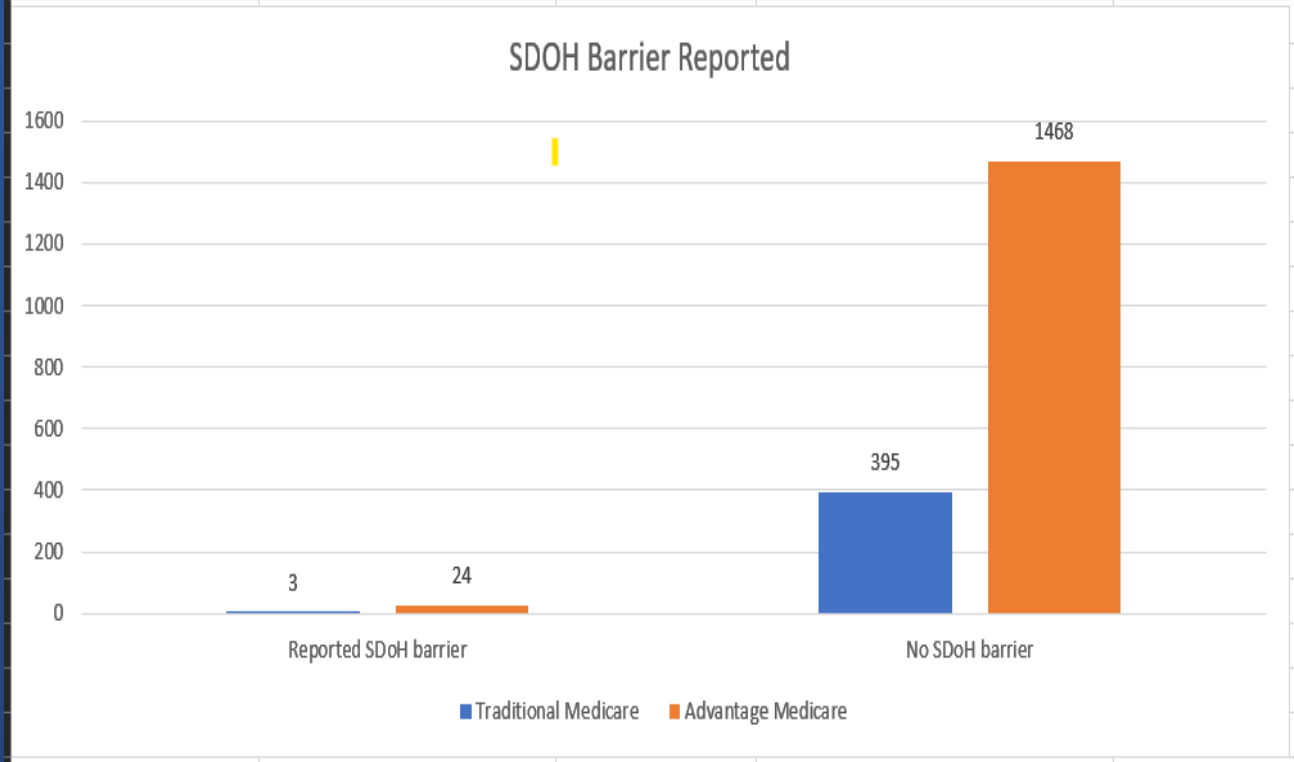
Diagnosis	Traditional Medicare (n=478)	Medicare Advantage(n=1700)	NRH Stroke Dx Population (n=116)
Hypertension	88%	71%	78%
Diabetes	46%	38%	50%
Hyperlipidemia	84%	67%	48%
Atrial Fibrillation	22%	14%	38%
CVA	15%	10%	100%
*All Dx without CVA	8%	5%	
All Dx with CVA	4%	2%	9%



Coverdell Reporting



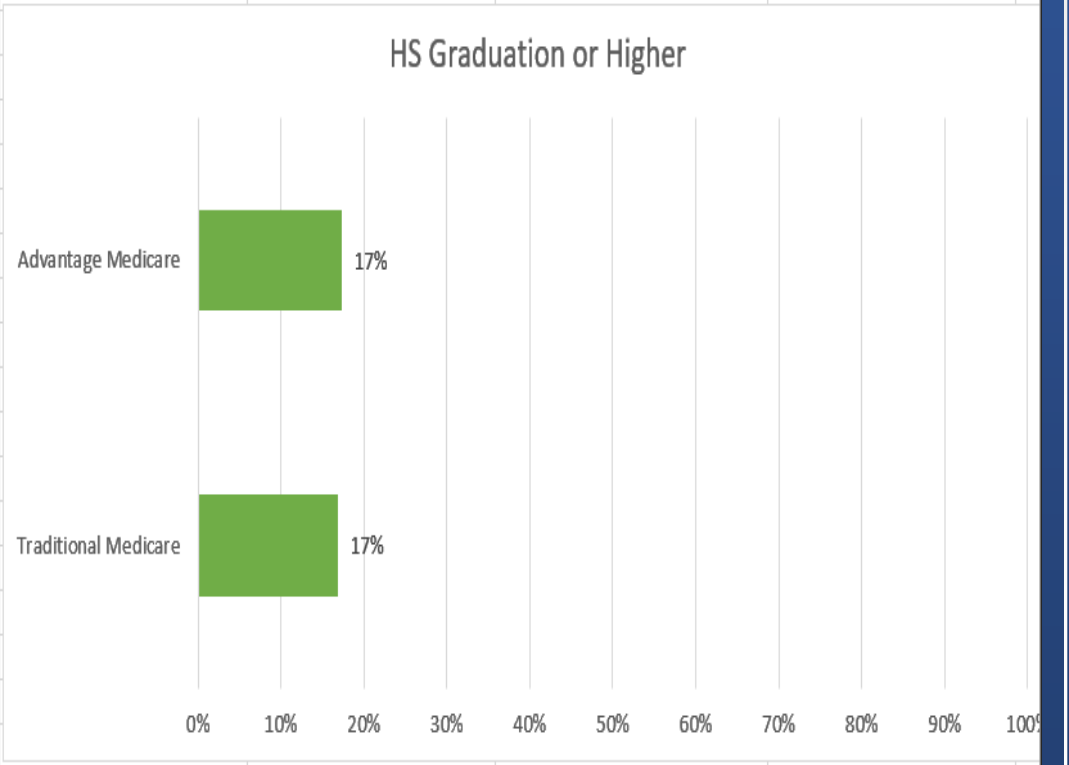
Contract	Reported SDoH barrier	No SDoH barrier	Barrier
Traditional Medicare	3	395	Financial (3)_Transportation (0)
Advantage Medicare	24	1468	Financial (19)_Transportation (10)



Contract	New Referral to Care Coord
Traditional Medicare	0
Advantage Medicare	3*

*One Advantage Medicare SDOH barrier respondent is deceased, and another in Hospice Care.

Contract	HS Graduation or Higher
Traditional Medicare	17%
Advantage Medicare	17%



PATIENT	Payer	NFM PCP	APPT?	CCM?	SW REFERRAL?	NOTES
	Advantage		AWV was 4/13; f/u scheduled for 11/17	No	No	Dunmore resident
	Advantage		attended AWV 10/5, next visit is 2/12/24	No	No	CCM offered previously--pt. declined
	Advantage		wants to wait until PCP returns	Yes	referred to Jasmine	I had contacted DSS for CAP services early Oct.--supp
	Advantage		N/A			pt. changed providers in August
	Advantage		11/20 and f/u with cardiology scheduled	No	No	
	Advantage		had sick appt. 9/28; AWV scheduled for 12/21	No	No	
	Advantage		N/A Deceased			
	Traditional		appt. 11/21, 3/25/24, and AWV for 7/24/24	Yes	No	
	Advantage		last appt. 12/13/22--no future appts. Scheduled			unable to reach pt/no return calls
	Advantage		OV10/17; AWV scheduled for 1/17/24	enrolled	No	cardiology 11/15
	Advantage		N/A			
	Advantage		OV 8/9 and AWV scheduled for 11/10	No	No	was seeing wt. loss clinic, noncompliance issues
	Advantage		had AWV recently and follow up 2/21/24	No	No	resident of Ridgecrest ALF
	Advantage		OV 6/20 and AWV scheduled for 12/19	No	No	Full time employed
	Advantage		f/u scheduled for 12/6	declined	No	was dismissed for second time in May?
	Traditional		OV 10/25, HFU 11/16	Yes	No	
	Advantage		OV 10/23; OV 1/30/24	No	referred to Jasmine	
	Traditional		had HFU 7/26; AWV scheduled for 4/30/24			unable to reach pt/no return calls
	Advantage		AWV was 8/23; f/u scheduled for 2/27/24	No	No	
	Advantage		AWV was 8/30; f/u scheduled for 3/7/24	No	No	also followed in wt. loss program
	Advantage		OV 10/12; AWV scheduled for 4/10/24	enrolled	referred to Jasmine	
	Advantage		OV 10/31; AWV scheduled for 12/21	No	No	
	Advantage		OV 9/25; AWV scheduled for 4/8/24	No	referred to Jasmine	
	Advantage		AWV was 7/17; OV scheduled for 11/21	No	No	
NEW						

Get With The Guidelines Awards

2023

- Get With The Guidelines – Rural Stroke BRONZE
- Get With The Guidelines – Stroke GOLD PLUS with Target: Stroke Honor Roll Elite and Target: Type 2 Diabetes Honor Roll

2022

- Get With The Guidelines – Stroke GOLD PLUS with Target: Stroke Honor Roll Elite and Target: Type 2 Diabetes Honor Roll

STROKE LIFE SUPPORT EDUCATION COLLABORATION

EDUCATION COLLABORATION

With the recent change in the Advanced Stroke Life Support class being made into a “Blended Learning” only format and the tremendous cost of providing this education, Northern Regional Hospital has partnered on a regional level with Surry County Emergency Medical Services and Hugh Chatham Memorial Hospital, a nearby Advanced Primary Stroke Center.

Our team has worked together for several months to develop our own Stroke Life Support education. Project completion is anticipated for this upcoming Fall.

EDUCATION COLLABORATION

As part of this collaboration, we have created a series of educational videos that will be used in the classroom to expand on stroke care beginning at the 9-1-1 call. The video does an outstanding job of demonstating all aspects of the stroke care process and all entities that are involved.

The video concludes as the patient has been treated at an Advanced Primary Stroke Center and is being transferred to a Comprehensive Stroke Center for intervention of a Large Vessel Occlusion.

Portions of the video have been put together in a somewhat condensed fashion and can be view through the link below. This video lasts approximately 15 minutes and will be used to share with outside agencies and within our community as an educational resource! It ends as the decision has been agreed upon to administer thrombolytics.

A huge thank you to Surry On The Go for doing such a great job and making this video happen!

Link: https://www.youtube.com/watch?v=RCgTVR3YgCo

Thank you for your time and attention!

NORTHERN
REGIONAL HOSPITAL®

Contact Information:

Debbie Moser RN, BSN, SCRN
Director Staff Development
Stroke Coordinator
dmoser@wearenorthern.org

Emily Volk MSN, RN
Manager, Quality Management
evolk@wearenorthern.org