VIRGINIA DEPARTMENT OF HEALTH 2023 HOSPITAL STROKE INVENTORY SURVEY

A Collaboration between the Virginia Department of Health - Office of Family Health Services, Virginia Stroke Care Quality Improvement Advisory Group, and the CDC Paul Coverdell National Acute Stroke Program

October 26, 2023

Please email stroke@vdh.virginia.gov for any questions.

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Executive Summary

Background

In accordance with the Code of Virginia §32.1-111.15:1, the Virginia Department of Health (VDH) collected data and information from hospitals and emergency medical services (EMS) agencies through stroke inventory surveys to facilitate the evaluation and improvement of stroke care in Virginia. The results of the survey will be used to inform quality improvement initiatives, identify interventions in specific geographic areas of the commonwealth, and support appropriate allocation of resources throughout the commonwealth. The survey was first introduced in April 2022.

The 2023 hospital inventory survey was released on April 24, 2023, and closed on May 12, 2023. A total of 61 responses were obtained resulting in a response rate of 57%. Respondents included Virginia hospitals and free-standing emergency departments (FSEDs).

Key Findings

Certification

- Out of the 61 responses, 46 (75.4%) are currently stroke certified.
- Common barriers of non-certified facilities becoming stroke certified include lack of resources, lack of neurology services, and their facility is close enough to a certified facility to transfer patients as needed.

Acute Stroke Care

- Majority of facilities (41, 70.7%) reported they have an average door-to-thrombolytic time of less than 60 minutes, the recommended door-to-thrombolytic time.
- Less than half of facilities (16, 35.6%) reported an average door-in to door-out time for thrombectomy patients as less than 120 minutes, the recommended door-in to door-out time.

Telemedicine

- Fifty-three (53) facilities responded receiving consultation services from a neurology telemedicine provider; 40 hospitals and 13 FSEDs.
- Only 34 facilities (64.2%) receive performance reports from the telemedicine providers; 29 (85.3%) responded that they receive those reports monthly.

Emergency Medical Services (EMS) Integration

- Of the 61 respondents, 54 (88.5%) accept suspected stroke patients from EMS; 46 being hospitals and 8 being FSEDs.
- Half of the responding facilities (31, 57.4%) always include EMS patient care reports (PCRs) into the patient's medical record.

Stroke Quality and Data Usage

- Over half of the responding facilities (43, 70.5%) reported they implemented changes to improve stroke care practices and patient care within the past year.
- Of the 43 facilities that reported the implementation of changes to stroke care, 34 (79.1%) have already seen improvements after identifying performance gaps and quality improvement activities.

Transitions of Care

- Only 10 hospitals (16.4%) use a referral tracking system to support transitions of care post-discharge for all stroke patients.
- Thirty (30) hospitals (49.2%) reported they conduct post-discharge follow-up interactions with patients after being discharged home.

Community Resources/Disparities of Care

- Almost all facilities (55, 90.2%) have organized community education events in the past year.
- Half of responding facilities (31, 50.8%) monitor disparities among patients impacted by stroke or are at high risk for stroke.

Background

In accordance with the Code of Virginia §32.1-111.15:1, the Virginia Department of Health (VDH) collected data and information from hospitals and EMS agencies through stroke inventory surveys to facilitate the evaluation and improvement of stroke care in Virginia. The results of the survey will be used to inform quality improvement initiatives, identify interventions in specific geographic areas of the state, and support appropriate allocation of resources throughout the state. The survey was introduced in April 2022.

Survey distribution: On April 24, 2023, an online REDCap survey was distributed to stroke coordinators at all Virginia hospitals and free-standing emergency departments (FSEDs) via email. The survey collected responses through May 12, 2023.

Virginia Department of Health 2023 Hospital Stroke Survey Results

RESPONSE

A total of 61 total responses were obtained with a total response rate of 57% of all possible responding facilities. Of the 61 responses, 47 (77%) were submitted by hospitals and 14 (23%) were submitted by free-standing emergency departments (FSEDs), shown in Figure 1.

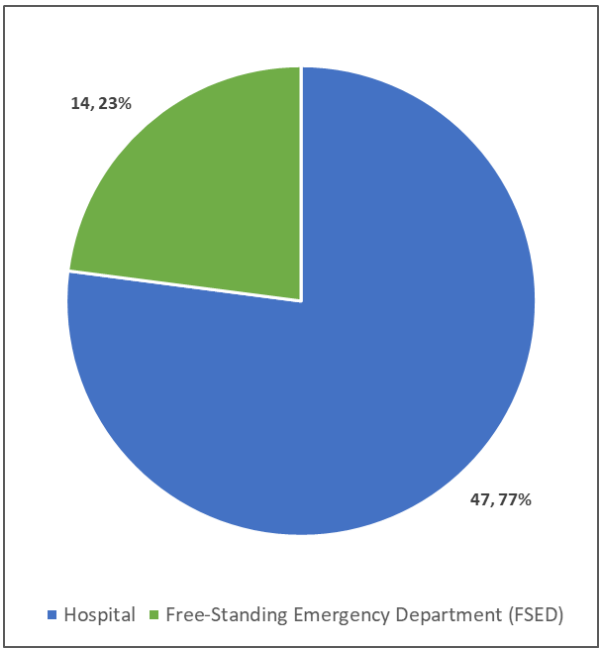

Figure 1. Survey Question: Is your facility a hospital or free-standing emergency department?

There were fewer responses to the 2023 survey when compared to the 93 respondents from the 2022 version of the survey, which resulted in a 35% decrease in response rates.

CERTIFICATION

Virginia has hospitals with all stroke certification levels – Acute Stroke Ready Hospitals, Primary Stroke Centers, Thrombectomy-Capable Stroke Centers, and Comprehensive Stroke Centers. The Virginia

hospitals are certified by three certifying bodies – The Joint Commission (TJC), Det Norske Veritas (DNV), and Accreditation Commission for Health Care (ACHC). Veteran health centers receive stroke certification through the Veterans Healthcare Association (VHA).

Out of the 61 responses, 46 (75.4%) are currently stroke certified. Of those that are certified, 5 are FSEDs and 41 are hospitals. Of the 46 certified facilities, nine (9) were Comprehensive Stroke Centers, three (3) were Thrombectomy-Capable Stroke Centers, 28 were Primary Stroke Centers, and six (6) Acute Stroke Ready Hospitals. Of those not certified, seven (7) were hospitals and eight (8) were free-standing emergency departments. Table 1 shows the breakdown of certification bodies by certification levels of those facilities who responded.

	Accrediting Bodies			
Certification Level	TJC	DNV	Other	*Total*
Acute Stroke Ready	4	2	0	*6*
Primary Stroke Center	15	12	1 (Veterans Health Administration)	*28*
Thrombectomy-Capable Stroke Center	3	0	0	*3*
Comprehensive Stroke Center	4	4	1 (ACHC)	*9*
Total	*26*	*18*	*2*	*46*

Table 1. Breakdown of Hospital and FSED Certification Level and Accrediting Bodies of the Survey Respondents. Survey Question: What is your facility's current certification status?

Those that reported not being stroke certified were asked to list the barriers to become certified. Common barriers across these facilities include lack of resources, lack of neurology services, and their facility is close enough to a certified facility to transfer patients as needed.

There was a higher proportion of certified facilities that responded in 2023 than in 2022 (75.4% and 64.5%, respectively). Eight (8) facilities indicated they were planning to pursue certification within the next year in the 2022 survey; however, none of those facilities were able to do so.

Care Guideline:

Stroke center certification recognizes a health care facility's commitment to improving stroke outcomes for their patients and their community through adherence to a recognized set of standardized care measures based upon recommended Clinical Practice Guidelines (Centers for Disease Control and Prevention, 2022; Powers, et al., 2019) A 2019 study by Jasne found that stroke-certified centers followed evidence-based care guidelines better than non-certified stroke centers. A more recent study by Towfighi, et al. (2023) recognized stroke certification as a needed strategy to reduce inequities in health care delivery for those at highest risk for stroke.

Recommendations:

- Provide encouragement and recognition to those facilities currently participating in the Virginia Hospital and Healthcare (VHHA) Stroke collaborative to continue their path towards stroke certification.
- Continue to seek representatives at non-certified stroke centers who might be willing to step into the role of stroke champion and provide mentorship through the VHHA Stroke Collaborative.
- Continue to support and encourage all Virginia hospitals, stroke-certified and non-certified stroke centers, through networking opportunities such as the VDH Stroke Coffee Hour, the future Stroke Coordinators Academy, and the Virginia Stroke Coordinators Consortium.
- Utilize the VHHA Stroke Collaborative, VDH Stroke Coffee Hour, and the 2023 Hospital Stroke inventory survey to better understand the barriers for certification to better understand teleneurology services, lack of resources and distance between centers.

ACUTE STROKE CARE

This year's version of the survey asked facilities to report several average "door-to" times over the past one year. The sections below report the findings from these questions. A copy of American Heart Association's suggested time interval goals is included in Appendix C.

Average Door-to-Thrombolytic Times

Majority of facilities (41, 70.7%) reported they have an average door-to-thrombolytic time of less than 60 minutes, the recommended door-to-thrombolytic time, with 20 facilities (34.5%) reporting an average time of less than 45 minutes. Less than a third of facilities (17, 29%) reported an average time of greater than 60 minutes, which is above the recommended medication administration time. These results are shown in Figure 2.

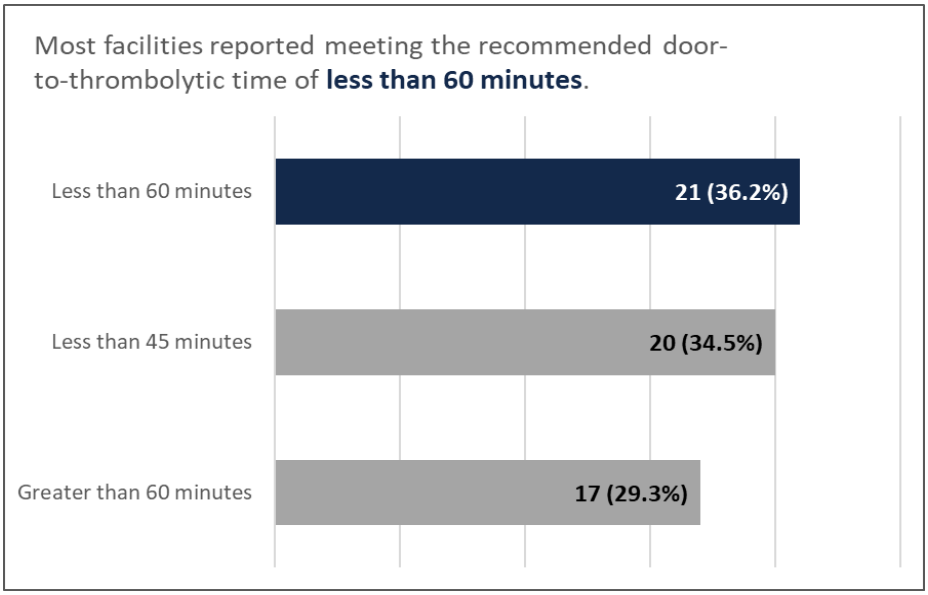

Figure 2. Note: Total number of responses was 58.
Survey Question: In 2022, what was your facility's average door-to-thrombolytic time for thrombolytic stroke patients?

Average Door-in to Door-out Times by Stroke Patient Type

Less than half of facilities (16, 35.6%) reported an average door-in to door-out time for thrombectomy patients as less than 120 minutes, the recommended door-in to door-out time. Both thrombolytic and hemorrhagic stroke patients had more reported average times of greater than 120 minutes (9, 33.3% and 17, 37.8%, respectively). Figure 3 shows the breakdown of number of responses for each stroke patient type by time category.

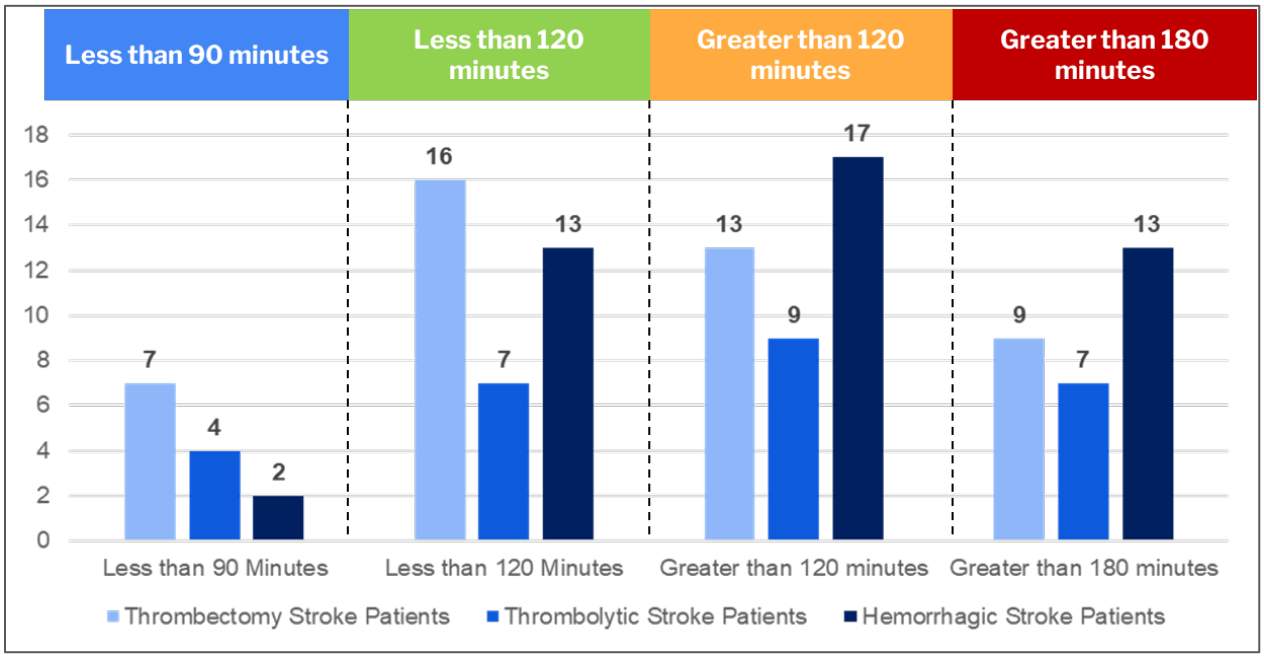

Figure 3. Note: There were 45 responses for thrombectomy patients, 27 for thrombolytic patients, and 45 for hemorrhagic patients.

Survey Question: In 2022, what was your facility's average door0in to door0out time for (1) thrombectomy stroke patients, (2) thrombolytic stroke patients, and (3) hemorrhagic stroke patients.

Facilities also reported door-in to door-out times for non-urgent stroke patients, with 13 out of 31 facilities (41.9%) reporting an average time of greater than 240 minutes, closely followed by greater than 180 minutes (12, 38.7%).

Other "Door-to" Times

Almost all facilities reported an average door-to-doctor time of less than 10 minutes (40, 67.8%) and 11 facilities (18.6%) reported an average time of 11-15 minutes, shown in Figure 4.

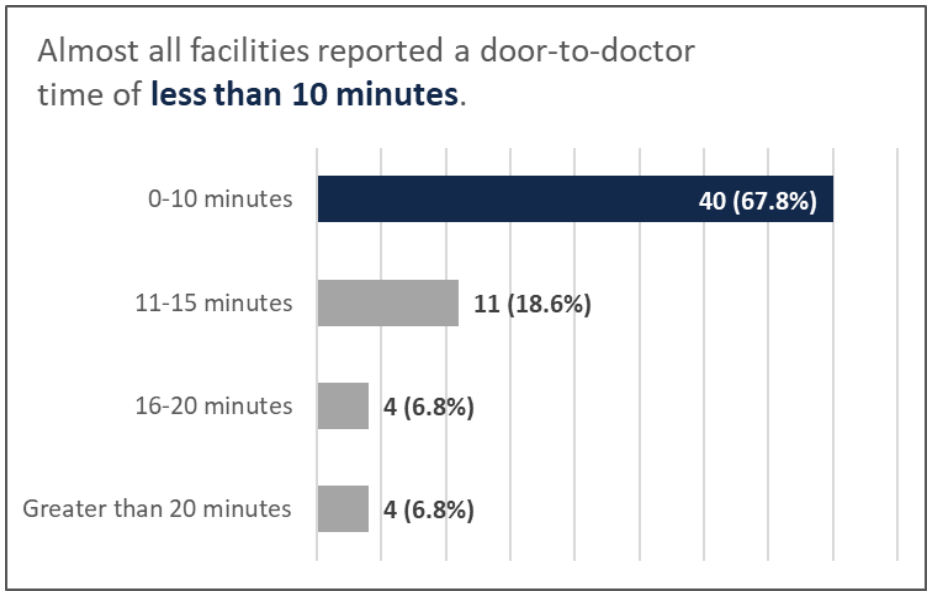

Figure 4. Note: Total number of responses was 59.
Survey Question: What was your facility's average door-to-doctor/provider time in 2022?

Forty-one (41) facilities (67.2%) reported to have an average door-to-CT time of less than 20 minutes. Slightly over half the responding facilities (32, 52.5%) reported an average door-to-CT complete time of less than 25 minutes.

Hospital-specific Questions
The following data were collected from questions that were asked only to the 47 hospital respondents.

Majority of hospitals reported to admit ischemic stroke patients (39, 83%) more than 75% of the time. While 35 hospitals (74.5%) admit (TIA) patients more than 50% of the time, of which 22 (62.8%) admit more than 75% of the time.

Seventeen (17) hospitals (36.2%) reported to have neurological services 24/7 and 13 hospitals (27.7%) have stroke neurointerventional/endovascular capabilities 24/7. Less than a quarter (11, 23.4%) of responding hospitals have neurointensive care units.

Twenty-nine (29) hospitals reported they receive stroke patients of any kind from other facilities. Of those 29, 23 (79.3%) provide feedback to those sending facilities.

Care Guideline:

Prompt recognition of patients experiencing a stroke is crucial as therapies for stroke are time dependent (Powers, et al., 2019). The establishment of goals based upon certain time expectations, notably time of arrival to care decisions/interventions, has long been part of the acute stroke care process (Centers for Disease Control and Prevention, 2022). *Target: Stroke*, launched in 2010 by the American Heart Association/American Stroke Association, led the way in recommending specific "door-to-needle" time parameters for the delivery of thrombolytics (American Heart Association, 2023). *Target: Stroke* Phase II and Phase III further refined specific time parameters surrounding the delivery of thrombolytics and added additional parameters and recommendations for mechanical thrombectomy (American Heart Association, 2019; American Heart Association/American Stroke Association, 2017). A Phase III *Target: Stroke* document provided updated recommended time parameters regarding most of the "door-to"

times (American Heart Association, 2019). Additional time parameters and recommendations have been established for expectations of patient transfer to higher level with recommended goals ranging from less than 120 minutes to less than 90 minutes for less than or equal to 50% all patient transfers (American Heart Assocation, n.d.).

Recommendations:

Most Virginia hospitals that responded to the survey were performing proficiently and meeting time-recognized goals for stroke care delivery. However, feedback received from facilities is that collection of "door-to" time metrics are not something that all centers in Virginia routinely collect, especially the non-stroke certified stroke centers and FSEDs. Additionally, while a center may have been collecting some of the requested metrics, they may not have been collecting all the survey requested metrics (a requirement of the 2023 Hospital Stroke Inventory Survey) and thus the facility was unable to completely participate in the survey.

Prompt recognition of stroke and a well-designed acute stroke treatment process is crucial to provide thrombolytics in a timely manner. This includes a prompt assessment by a physician, prompt completion of a CT of the brain, and prompt decision making. While many hospitals reported meeting and exceeding the recommended time parameters, there are still 30-40% struggling in the acute assessment and treatment period.

- Continue to ask questions regarding time metrics for care delivery for future iterations of the Hospital Stroke Inventory Survey; however, provide an option for a facility to indicate that they did not collect this information for certain questions.
- Identify those facilities struggling to provide thrombolytics in under the recommended 60 minutes to provide support to improve the stroke recognition and treatment process.
- Identify those facilities with delayed brain imaging times to discover barriers to prompt assessment and completion of imaging.
- Understanding that stroke therapies are time dependent, exploring any barriers in the transfer process would be beneficial to better understand delays in care and would assist in developing solutions to improve this process measure.

TELEMEDICINE

Fifty-three (53) facilities responded receiving consultation services from a neurology telemedicine provider; 40 hospitals and 13 FSEDs. The most reported provider was Sentara (13, 24.5%), followed by Adjacent (12, 22.6%) and Inova (6, 11.3%). Other telemedicine providers included Eagle, Novant, and in-house telemedicine providers. Most facilities, (46, 86.8%), provide feedback to their telemedicine vendor. Only 34 facilities (64.2%) receive performance reports from the telemedicine providers; 29 (85.3%) responded that they receive those reports monthly.

Most facilities (26, 52%) report to have average teleneurology provider to camera times under 10 minutes; 19 facilities (38%) reported to have average provider to camera times between 11-15 minutes and 5 facilities (8%) reported to have times greater than 15 minutes. This is shown in Figure 5.

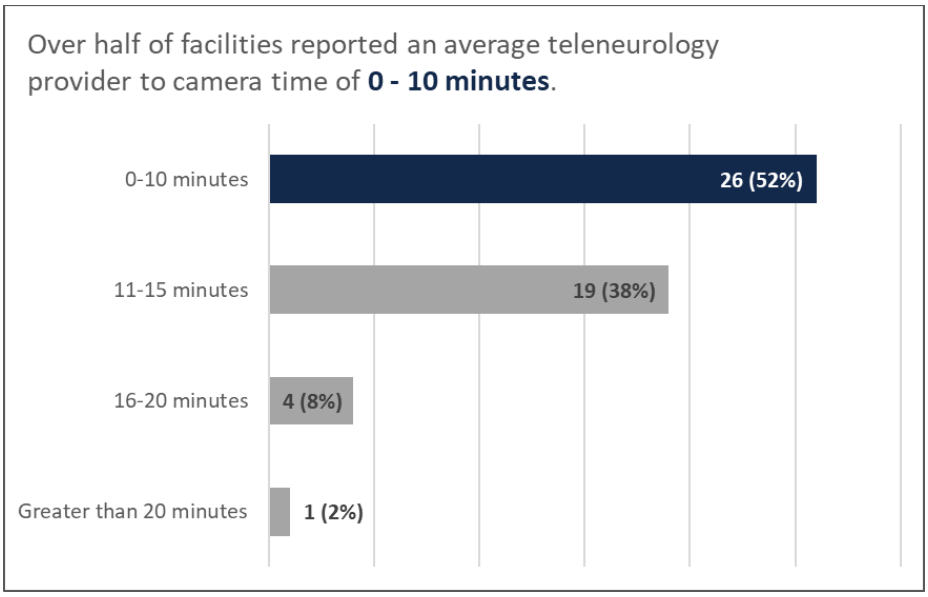

Figure 5. Note: Total number of responses was 50.
Survey Question: How long (on average) did it take to get a teleneurology provider on camera in 2022?

Care Guideline:

Use of video teleneurology services to evaluate and assess acute stroke patients has been identified as a best practice for those facilities who lack the ability to have on-site neurology providers and using the services has been recognized as "feasible and safe" (Powers, et al., 2019). The 2023 paper *Ideal Foundations Requirements for Stroke Program Development and Growth* recognizes the role of telestroke in diagnosis, treatment, and ongoing patient management in ensuring that the highest level of recommended evidence-based care is provided to those suffering from an acute neurologic event (Dusenbury, et al.). Utilization of a telemedicine provider in the stroke patient transfer process has been recognized as a Door-in-Door-out best practice strategy (American Heart Assocation, n.d.). Additionally, utilization of a teleneurology service has increased the ability of smaller community hospitals to better determine which patients are acceptable to keep in their facility versus transferring to another facility (Schwamm, 2023). Acute stroke care via telehealth delivery has also been recognized as a strategy to reduce stroke healthcare inequities (Towfighi, et al., 2023).

Recommendations:

- Lack of access to neurology services and/or resources was reported to be a barrier to stroke-certification for 6 facilities responding to the 2023 Hospital Stroke Inventory Survey. A recommendation would be to explore access to teleneurology resources and/or other resources for those underserved areas of the Commonwealth.
- Of those facilities responding to the 2023 survey, most report quick responses in camera times from their providers, as well as monthly reports and performance feedback. A recommendation would be to further understand the best practices of stroke care amongst all telestroke providers to develop a standardized expectation of care amongst teleneurology providers in Virginia.

EMERGENCY MEDICAL SERVICES (EMS) INTEGRATION

Of the 61 respondents, 54 (88.5%) accept suspected stroke patients from EMS; 46 being hospitals and 8 being FSEDs. Out of those 54, 29 facilities (53.7%) have EMS personnel take patients to the CT scanner

more than 75% of the time. Those facilities who do not have EMS personnel take patients to the CT scanner listed the following barriers preventing them from doing so: insufficient resources, lack of pre-alerts from EMS, physician preference, and lack of patient weight attainment.

Half of the responding facilities (31, 57.4%) always include EMS patient care reports (PCRs) into the patient's medical record, shown in Figure 6. This is an increase from 2022, where 45% of hospitals reported to always integrate EMS PCRs into the patient's medical record.

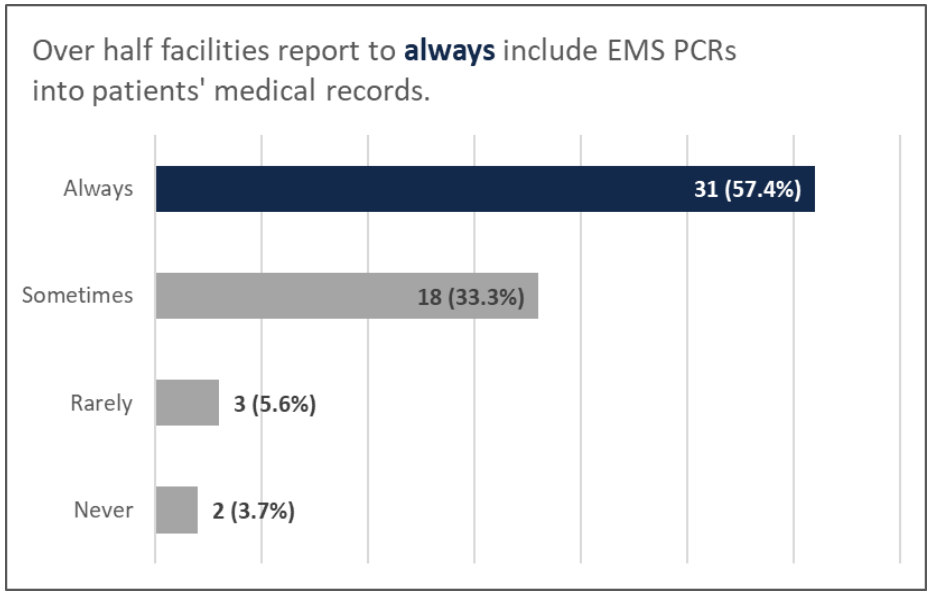

Figure 6. Note: There were 54 responses.
Survey Question: How often does your facility integrate EMS patient care reports into the patient health medical record?

The most common type of feedback provided to EMS agencies is regarding patient outcome (43, 79.6%), closely followed by patient diagnosis (32, 59.3%) and emergency department disposition (25, 46.3%). Some of the other feedback facilities give EMS agencies are timestamps and copies of radiological images for educational purposes.

Care Guideline:

EMS providers transferring patients directly to the CT scanner and bypassing hospital beds is a recommended best practice strategy from the *Target: Stroke Phase II 12 Key Best Practice Strategies* document (American Heart Association/American Stroke Association, 2017). Additionally, pre-alerting by EMS providers is recommended in the 2019 *Guidelines for the Early Management of Patients with Acute Ischemic Stroke* (Powers, et al., 2019, p. e6), as well as the referenced *Target: Stroke* Phase II strategies as published by American Heart Association/American Stroke Association (2017).

The need to obtain patient weight was listed as one of the barriers of EMS taking suspected stroke patients directly to CT. There are mulitple established methods of obtaining patient weight, such as a ground-level scale, weighted stretchers, wieghted CT tables, or a rapid transfer of patient to weighted ED bed following imaging (Ragoschke-Schumm, et al., 2017). Moreover, a 2021 study by Cheng, et al. demonstrated that estimated weight calculations for IV alteplase did not produce significant negative patient outcomes. Regarding integration of EMS patient care reports into the hospital electronic medical

record, Short and Goldstein (2022) recommend utilizing these reports as a written record of the initial patient assessment and a guide to inform in-patient care.

Recommendations:

- Utilize the Virginia Stroke Coordinators Consortium and the VDH Stroke Coffee Hour to provide examples of hospital acute stroke protocols that incorporate EMS direct to CT as well as weight obtainment methods to optimize acute stroke care delivery.
- Further explore barriers of EMS direct to CT, such as physician preference and lack of resources to best determine methods to improve acute stroke patient care delivery.
- Explore methods to improve communication between hospitals and EMS providers to ensure clear alerting of incoming suspected stroke patients.
- Continue to encourage facilities to integrate EMS patient care reports into the hospital's electronic medical record.

STROKE QUALITY AND DATA USAGE

Over half of the responding facilities (43, 70.5%) reported they implemented changes to improve stroke care practices and patient care within the past year. Of those 43 facilities, 35 are hospitals and 8 are FSEDs. Some common responses of changes made include telestroke practice review, quick pass to the CT scanner, pre-alert protocol review, obtain new equipment, increase the number and frequency of stroke education classes, and the switch to TNK.

Of the 43 facilities that reported the implementation of changes to stroke care, 34 (79.1%) have already seen improvements after identifying performance gaps and quality improvement activities. Some common responses in improvements seen include the improvement of time goals, improved early recognition of stroke signs and symptoms, an increased number of EMS pre-alerts, increased number of in-house stroke calls, and increase in frequency of advanced imaging at the start of a patient's stroke recognition.

Care Guideline:

Tracking and benchmarking stroke performance and quality measures, as well as adoption of protocols based upon clinical practice guidelines, is recommended in the 2019 Stroke Guidelines (Powers, et al.), as a best practice in the effort to reduce door-in-door-out times (American Heart Assocation, n.d.), and has been shown as a method to reduce inequities in stroke patient care (Towfighi, et al., 2023). The 2023 *Ideal Foundational Requirements for Stroke Program Development and Growth* calls quality improvement "essential to stroke program development and evolution" (Dusenbury, et al., 2023, p. e8)

Recommendations:

Virginia hospitals continue to report improvements in stroke care through stroke quality tracking, measurement, benchmarking, and process improvement measures.

- Utilization of the data captured from the Virginia Stroke Registry to allow benchmarking of Virginia performance measures.
- Continue to coordinate with those facilities who have successfully implemented process improvement changes to encourage sharing and mentoring through the VHHA Stroke Collaborative, the VDH Stroke Coffee Hour, the VSCC, and the Stroke Coordinators Academy.

- Utilize the 2024 Hospital Inventory Survey to identify successful best practices implemented by the Virginia facilities.

TRANSITIONS OF CARE

Referral tracking systems provide hospitals, clinics, and other healthcare providers a way to connect with social care providers (i.e., food banks, homeless shelters, transportation coordinators) to assist patients in need to continue treatment, follow-up care, or maintaining a healthy lifestyle. Only 10 hospitals (16.4%) use a referral tracking system to support transitions of care post-discharge for all stroke patients.

Having future appointments scheduled before discharge is important for patients to receive continued care after a stroke event. More than half (37, 60.7%) of hospitals responded they ensure stroke patients have a primary care appointment scheduled at the time of discharge and 26 hospitals (42.6%) responded they ensure patients have a neurologist appointment scheduled at the time of discharge.

Thirty (30) hospitals (49.2%) reported they conduct post-discharge follow-up interactions with patients after being discharged home. Of those 30, 33% (10) reported to contact more than half of their discharged stroke patients. This is an increase from 2022, where 17% (7) of 41 hospitals reported contacting more than 50% of discharged stroke patients.

Care Guideline:

Care coordination of patients discharging from the hospital is essential to ensure adequate follow-up and rehabilitation of stroke patients (Dusenbury, et al., 2023). The 2023 *Diagnosis, Workup, Risk Reduction of Transient Ischemic Attack in the Emergency Department Setting* recognizes the role of primary care providers in the on-going and long-term management of stroke patients (Amin, et al., 2023), while the *2021 Guideline for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack* recognizes the role of shared decision making between patients and care providers (Kleindorfer, et al., 2021). Access to an early primary care follow up appointment has been shown to reduce re-admission rates post-stroke (Towfighi, et al., 2023). Mwachiro, Baron-Lee, and Kates (2019) showed increased patient satisfaction rates and decreased readmission rates when patients receive a post-discharge phone call.

Recommendations:

- Utilization of a post-stroke referral has been shown to be beneficial. Continue working with hospitals in Virginia to address barriers to implementing a care referral system to improve post-stroke patient care.
- Follow up on re-admission rates for hospitals to determine best practice efforts for those hospitals who have successfully lowered their re-admission rates.
- Utilize the future Virginia Stroke Registry to capture percentage of patients who have post-discharge appointments scheduled prior to discharge.
- Utilize the existing Community Health Workers and/or Stroke Navigators already in place at facilities to determine best practices in patient referrals, lowering patient re-admissions, and patient transitions in care.

COMMUNITY RESOURCES/DISPARITIES OF CARE

The responding facilities provided many ways to identify patients who are at the highest risk for a stroke event. Some of the listed methods of identification include risk factor and assessment reports, community outreach events, and reviews of current patient demographics. One risk for stroke is smoking and patients at highest risk of stroke who currently smoke should work to limit their smoking habits. One resource Virginia provides to help smokers decrease and quit smoking is the *Quit Now Virginia Tobacco and Nicotine Quit* services, but 14 facilities (23%) responded to have never heard of this resource. Half of responding facilities (31, 50.8%) monitor disparities among patients impacted by stroke or are at high risk for stroke.

Many facilities organize events to encourage healthy behaviors within their community. Almost all facilities (55, 90.2%) have organized community education events in the past year.

On average, responding facilities have a 4-person care team which may include community health workers, patient navigators, or community paramedics. Thirty (30) facilities are unsure of the number of care team members they have.

Care Guideline:

Identifying those patients at highest risk for a stroke and assisting those who have already had a stroke is imperative in addressing those social inequalities in care. The 2023 *Strategies to Reduce Racial and Ethnic Inequities in Stroke Preparedness, Care, Recovery and Risk Factor Control* (Towfighi, et al.) provides a model for addressing stroke patient inequities through the continuum of stroke care. Towfighi, et al. (2023) emphasizes that utilization of an interdisciplinary approach is imperative and the role of EMS providers, telehealth, community education, stroke-center certification, and patient rehabilitation only highlights the need for collaboration among all members involved in stroke recognition and care.

Recommendations:

- Raise awareness of interdisciplinary teams engaged in improving stroke care such as community paramedicine, stroke navigators, stroke support groups and stroke awareness representatives through the Virginia Stroke Systems Task Force, Virginia Stroke Coordinators Consortium, the Virginia Stroke Coordinators Academy, the VHHA Stroke Collaborative and the VDH Stroke Coffee Hour.
- Encourage engagement of community partners and local hospitals representative in areas defined by the Virginia Department of Health as being at high risk of stroke and cardiovascular events. This may include attendance at the upcoming Virginia Heart Disease and Stroke Learning Collaborative meetings or other opportunities for community engagement.
- Continue to raise awareness about Community Health Workers (CHWs) and the valuable work that they are doing throughout the state by having CHWs participate in the VSSTF and VSCC meetings, as well as providing data regarding their efforts to improve stroke patient outcomes.

Appendices

Appendix A: Copy of Survey Questionnaire

Virginia Coverdell Hospital Survey 2023

The Virginia Department of Health (VDH) is requesting your assistance with completing the 2023 VDH Hospital Stroke Inventory Survey, a survey about your facility's stroke program.

Please submit one survey for each facility and/or free standing emergency department you oversee. This survey requires to be completed in one sitting, as there is no 'Save Now & Return Later' option.

The information provided in this survey is confidential and will only be reported as aggregated results, without identifying your individual facility. Questions about this survey can be directed to the stroke team at stroke@vdh.virginia.gov.

Facility Information

Name of facility

- ◯ Augusta Health Hospital
- ◯ Ballad Health Dickenson Community Hospital
- ◯ Ballad Health Johnston Memorial Hospital
- ◯ Ballad Health Lee County Community Hospital
- ◯ Ballad Health Lonesome Pine Hospital
- ◯ Ballad Health Norton Community Hospital
- ◯ Ballad Health Russell County Medical Center
- ◯ Ballad Health Smyth County Community Hospital
- ◯ Bath Community Hospital
- ◯ Bon Secours Emergency Center - Chester
- ◯ Bon Secours Emergency Center - Colonial Heights
- ◯ Bon Secours Emergency Center - Harbour View
- ◯ Bon Secours Emergency Center - Short Pump
- ◯ Bon Secours Emergency Center - Westchester
- ◯ Bon Secours Mary Immaculate Hospital
- ◯ Bon Secours Maryview Medical Center
- ◯ Bon Secours Memorial Regional Medical Center
- ◯ Bon Secours Rappahannock General Hospital
- ◯ Bon Secours Richmond Community Hospital
- ◯ Bon Secours Southampton Memorial Hospital
- ◯ Bon Secours Southern Virginia Regional Medical Center
- ◯ Bon Secours Southside Regional Medical Center
- ◯ Bon Secours St. Francis Medical Center
- ◯ Bon Secours St. Marys Hospital
- ◯ Buchanan General Hospital
- ◯ Carilion Franklin Memorial Hospital
- ◯ Carilion Giles Memorial Hospital
- ◯ Carilion New River Valley Medical Center
- ◯ Carilion Roanoke Memorial Hospital
- ◯ Carilion Rockbridge Community Hospital
- ◯ Carilion Tazewell Hospital
- ◯ Centra Bedford Memorial Hospital
- ◯ Centra Emergency Center - Gretna
- ◯ Centra Lynchburg General Hospital
- ◯ Centra Southside Community Hospital
- ◯ Chesapeake General Hospital
- ◯ Clinch Valley Medical Center
- ◯ Fauquier Hospital
- ◯ HCA Alleghany Regional Hospital
- ◯ HCA CJW Medical Center - Chippenham
- ◯ HCA CJW Medical Center - Johnston Willis
- ◯ HCA Emergency Center - Cave Spring
- ◯ HCA Emergency Center - Hanover
- ◯ HCA Emergency Center - Swift Creek

- ◯ HCA Emergency Center - Prince William (formerly Tricities)
- ◯ HCA Henrico Doctors Hospital - Forest
- ◯ HCA Henrico Doctors Hospital - Parham
- ◯ HCA Henrico Doctors Hospital - Retreat
- ◯ HCA Tricities (formerly John Randolph Medical Center)
- ◯ HCA LewisGale Medical Center
- ◯ HCA Montgomery Regional Hospital
- ◯ HCA Pulaski Community Hospital
- ◯ HCA Reston Hospital Center
- ◯ HCA Spotsylvania Regional Hospital
- ◯ HCA StoneSprings Hospital Center
- ◯ Hunter Holmes McGuire Hospital
- ◯ Inova Alexandria Hospital
- ◯ Inova Emergency Center - Ashburn
- ◯ Inova Emergency Center - Fairfax
- ◯ Inova Emergency Center - Franconia-Springfield
- ◯ Inova Emergency Center - Leesburg
- ◯ Inova Emergency Center - Lorton
- ◯ Inova Emergency Center - Reston
- ◯ Inova Fair Oaks Hospital
- ◯ Inova Fairfax Hospital
- ◯ Inova Loudoun Hospital
- ◯ Inova Mount Vernon Hospital
- ◯ Mary Washington Emergency Center - Lee's Hill
- ◯ Mary Washington Hospital
- ◯ Mary Washington Stafford Hospital
- ◯ Novant UVA Culpeper Regional Hospital
- ◯ Novant UVA Haymarket Medical Center
- ◯ Novant UVA Prince William Medical Center
- ◯ Riverside Doctors' Hospital of Williamsburg
- ◯ Riverside Regional Medical Center
- ◯ Riverside Shore Memorial Hospital
- ◯ Riverside Walter Reed Hospital
- ◯ Sentara Care Plex Hospital
- ◯ Sentara Emergency Center - Belle Harbour
- ◯ Sentara Emergency Center - Independence
- ◯ Sentara Emergency Center - Lake Ridge
- ◯ Sentara Emergency Center - Martha Jefferson
- ◯ Sentara Emergency Center - Port Warwick
- ◯ Sentara Halifax Regional Hospital
- ◯ Sentara Leigh Hospital
- ◯ Sentara Martha Jefferson Hospital
- ◯ Sentara Norfolk General Hospital
- ◯ Sentara Northern Virginia Medical Center
- ◯ Sentara Obici Hospital
- ◯ Sentara Princess Anne Hospital
- ◯ Sentara RMH Medical Center (Rockingham Memorial)
- ◯ Sentara Virginia Beach General Hospital
- ◯ Sentara Williamsburg Regional Medical Center
- ◯ Sovah Health Danville Regional Medical Center
- ◯ Sovah Health Memorial Hospital of Martinsville
- ◯ Twin County Regional Hospital
- ◯ UVA Hospital
- ◯ Valley Health Page Memorial Hospital
- ◯ Valley Health Shenandoah Memorial Hospital
- ◯ Valley Health Warren Memorial Hospital
- ◯ Valley Health Winchester Medical Center
- ◯ VCU Community Memorial Hospital
- ◯ VCU Emergency Center - New Kent
- ◯ VCU Medical Center
- ◯ VCU Tappahannock Hospital
- ◯ Virginia Hospital Center
- ◯ Wythe County Community Hospital

(If your facility name is not listed, a response your facility may have already been submitted. Please contact us with any questions.)

Name of respondent	_____
Respondent role title	_____
Is your facility a Hospital or Free-Standing Emergency Department?	◯ Hospital ◯ Free-Standing Emergency Department
Is your facility a certified stroke center?	◯ Yes ◯ No
Did your facility change certification levels in the past year?	◯ Yes ◯ No
What is your facility's current certification status?	◯ TJC CSC ◯ TJC TSC ◯ TJC PSC ◯ TJC ASR ◯ DNV CSC ◯ DNV PSC+ ◯ DNV PSC ◯ DNV ASR ◯ ACHC CSC ◯ No Stroke Certification
If your facility is not a certified stroke center, are you planning to pursue stroke certification in the next 1 year?	◯ Yes ◯ No
Please list the barrier(s) preventing you from seeking certification at your facility:	_____

Acute Stroke Care	
Does your facility receive any stroke patients from other facilities?	◯ Yes ◯ No
Do you provide feedback to the sending facility regarding the outcome of the patient that they sent?	◯ Yes ◯ No
In 2022, what was your facility's average door-to-thrombolytic time for thrombolytic stroke patients?	◯ Less than 30 minutes ◯ Less than 45 minutes ◯ Less than 60 minutes ◯ Greater than 60 minutes
In 2022, what was your facility's average door-in to door-out time for thrombectomy stroke patients?	◯ Less than 90 minutes ◯ Less than 120 minutes ◯ Greater than 120 minutes ◯ Greater than 180 minutes ◯ My facility does not transfer thrombectomy patients
In 2022, what was your facility's average door-in to door-out time for thrombolytic stroke patients?	◯ Less than 90 minutes ◯ Less than 120 minutes ◯ Greater than 120 minutes ◯ Greater than 180 minutes ◯ My facility does not transfer thrombolytic patients
In 2022, what was your facility's average door-in to door-out time for hemorrhagic stroke patients?	◯ Less than 90 minutes ◯ Less than 120 minutes ◯ Greater than 120 minutes ◯ Greater than 180 minutes ◯ My facility does not transfer hemorrhagic stroke patients
What was your facility's average door-in to door-out time for non-urgent stroke patients in 2022?	◯ Less than 120 minutes ◯ Less than 180 minutes ◯ Greater than 180 minutes ◯ Greater than 240 minutes ◯ My facility does not transfer non-urgent stroke patients
What was your facility's average door to doctor/provider time in 2022?	◯ 0-10 minutes ◯ 11-15 minutes ◯ 16-20 minutes ◯ Greater than 20 minutes
What was your facility's average door to CT time in 2022?	◯ Less than 20 minutes ◯ Greater than 20 minutes
What was your facility's average door to CT complete time in 2022?	◯ Less than 25 minutes ◯ Greater than 25 minutes
How often does your facility admit your ischemic stroke patients?	◯ More than 75% of the time ◯ Less than 75% of the time ◯ Never
How often does your facility admit TIA patients?	◯ 1-25% of the time ◯ 26-50 % of the time ◯ 51-75 % of the time ◯ Greater than 75% of the time ◯ Never

Do your facility's TIA patients get admitted as Inpatient or Observation	◯ Inpatient ◯ Observation ◯ Mix of both
Does your facility have stroke neurointerventional/endovascular capabilities?	◯ Yes ◯ No
If your facility has neurointerventional/endovascular capabilities, does the facility offer the service 24/7?	◯ Yes - 24/7 ◯ Not 24/7
What are your facility's neurointerventional/endovascular capabilities if they are not offered 24/7?	_____
Does your facility have neurosurgical services on staff?	◯ Yes - 24/7 ◯ Yes - but not 24/7 ◯ No
What are your facility's neurosurgical capabilities if they are not offered 24/7?	_____
Which of the following methods does your facility use to see in-house stroke patients?	◯ In-Person Neurology providers ◯ Teleneurologists ◯ Both In-Person and Teleneurologists ◯ None of the above
Does your facility have a neuro-intensive care unit?	◯ Yes ◯ No
How often does your facility have neuro-intensivist providers to manage care for stroke patients?	◯ More than 75% of the time ◯ Less than 75% of the time ◯ Never
Telemedicine	
Does your facility receive acute stroke consultation services from a neurology telemedicine provider?	◯ Yes ◯ No
Who is your facility's telemedicine vendor?	_____
How long (on average) did it take to get a teleneurology provider on camera in 2022?	◯ 0-10 minutes ◯ 11-15 minutes ◯ 16-20 minutes ◯ Greater than 20 minutes ◯ My facility does not use camera teleneurology services
Does your facility receive performance reports from your teleneurology vendor?	◯ Yes ◯ No
How often do you receive these performance reports?	◯ Monthly ◯ Quarterly ◯ Biannually ◯ Annually
What mode is used to conduct telemedicine consultations?	◯ Telephone ◯ Videoconference ◯ Both telephone and videoconference
Does your facility have a process to provide feedback to your telemedicine vendor?	◯ Yes ◯ No

Transitions of Care	
Does your facility use a referral tracking system to support transitions of care for stroke patients post-discharge? (An example of a referral tracking system is Unite Us.)	◯ Yes ◯ No
For which of the following specific population(s) of patients do you use referral tracking systems?	☐ Thrombolytic/Thrombectomy patients ☐ Intracerebral/subarachnoid hemorrhage patients ☐ All stroke patients
At time of discharge, does your patient care team ensure stroke patients have a scheduled primary care appointment?	◯ Yes ◯ No (A patient care team may include a case manager, social worker, stroke coordinator, unit manager, or other similar staff.)
At time of discharge, does your patient care team ensure patients have a scheduled neurologist appointment?	◯ Yes ◯ No
Does your facility conduct post-discharge follow-up on patients discharged to home?	◯ Yes ◯ No
In the past one year, what percentage of stroke patients were you able to contact after facility discharge?	◯ 0-25% ◯ 26-50% ◯ Greater than 50%
Do you refer and/or connect patients to community resources?	◯ Always ◯ Sometimes ◯ Rarely ◯ Never
Do you provide education, support, or resources to the patient's caregiver(s)?	◯ Always ◯ Sometimes ◯ Rarely ◯ Never
Stroke Quality and Data Usage	
Has your facility implemented changes in the past one year to protocols through systemic quality improvement methods and interventions to improve stroke care practices and patient care?	◯ Yes ◯ No
What changes have you made to improve stroke care practices and patient care in the past one year?	_____
Has your facility seen an improvement in the past one year to a selected performance measure of care based upon identified performance gaps and quality improvement activities?	◯ Yes ◯ No ◯ Don't know
What improvements in a selected performance measure of care have you experienced at your facility in the past one year?	_____

Community Resources/Disparities of Care	
In the past year, has your facility provided community education on stroke signs and symptoms and the importance of calling 911?	◯ Yes ◯ No
How does your facility identify patients at the highest risk for stroke events?	_____
Does your facility monitor disparities among patients impacted by stroke or are at high risk for stroke, including disparities in stroke risk factors and outcomes, stroke care, and referrals to resources post-stroke discharge?	◯ Yes ◯ No ◯ Don't know
In the past year, has your facility referred patients who use tobacco to Quit Now Virginia services?	◯ Yes ◯ No ◯ I have never heard of the Virginia Quit Line
How many Community Health Workers, patient navigators, or community paramedics does your facility use to address social services and support needs for those with hypertension, high cholesterol, or other risk of stroke or cardiovascular disease?	_____

Appendix B: References

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Appendix C: American Heart Association's Suggested Time Interval Goals

Action	Time
30-minute door-to-needle time interval goals:	
Door to physician	≤ 2.5 minutes
Door to stroke team	≤ 5 minutes
Door to CT/MRI initiation	≤ 15 minutes
Door to CT/MRI interpretation	≤ 25 minutes
Door to needle time	**≤ 30 minutes**
45-minute door-to-needle time interval goals:	
Door to physician	≤ 5 minutes
Door to stroke team	≤ 10 minutes
Door to CT/MRI initiation	≤ 20 minutes
Door to CT/MRI interpretation	≤ 35 minutes
Door to needle time	**≤ 45 minutes**
60-minute door-to-needle time interval goals:	
Door to physician	≤ 10 minutes
Door to stroke team	≤ 15 minutes
Door to CT/MRI initiation	≤ 25 minutes
Door to CT/MRI interpretation	≤ 45 minutes
Door to needle time	**≤ 60 minutes**
60-minute door-to-device time interval goals:	
Door to physician	≤ 5 minutes
Door to stroke team	≤ 10 minutes
Door to CT/MRI initiation	≤ 20 minutes
Door to CT/MRI interpretation	≤ 35 minutes
Door to needle time	≤ 40 minutes
Door to patient arrival in neurointensive suite	≤ 60 minutes
Door to puncture	≤ 75 minutes
Door to device	**≤ 90 minutes**