



VIRGINIA DEPARTMENT OF HEALTH 2022 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

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

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Executive Summary

Background: In support of 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.

In 2019, the Virginia Department of Health (VDH) convened a work group to create a hospital stroke inventory survey to review questions that should be included. The VDH received funding for the Coverdell grant in June 2021 and the decision was made to proceed with the hospital survey with the addition of the required Coverdell hospital inventory survey questions. The survey was introduced at the April 2022, Virginia Stroke Systems Task Force (VSSTF) meeting and attendees were encouraged to utilize the link and a QR code to answer the survey for their respective hospitals. Additionally, an email was sent to all known Virginia hospital and free-standing emergency department (FSED) stroke coordinators and/or representatives to allow them the opportunity to answer the survey. A total of 93 total surveys (out of 106 facilities) were obtained with a total response rate of 88%.

Key Findings

Certification

- 60 (64.5%) of responding facilities (hospitals and FSEDs) are stroke certified.
- Eight non-certified hospitals intended to pursue certification within the next year.

Acute Stroke Team and Acute Stroke Care

- 76 (82%) facilities have a designated stroke team.
- 85 (91%) of respondents have the ability to provide thrombolytics to suspected stroke patients.
- 84 (95%) of respondents are able to perform a brain CT scan for acute stroke patient 24/7.
- 75 (81%) of respondents utilize teleneurology services, either via phone, video or both.

Admission and Care of Stroke Patients

- 54 (58%) respondents admit their stroke patients more than 75% of the time.
- 22 (24%) never admit their stroke patients at all; of these five (5) are hospitals and 17 are FSEDs.

EMS Protocols and Feedback

- 90 (88%) respondents have protocols in place to receive Emergency Medical Services (EMS) patients with a suspected stroke.
- When pre-notified by EMS of a potential stroke patient, 69 (82%) responded that they stroke alert more than 75% of the time.
- 69 (80%) have access to 75% or more of EMS patient care reports (PCRs)
- 38 (45%) are always integrating the EMS PCRs into the patient's medical record.

Transitions of Care

- 66 (73%) of respondents do not have a patient referral tracking systems to support transitions of care for stroke patients.
- 41 (45%) of respondents are attempting to make post-discharge phone calls to stroke patients and/or their families; however, 21 (51%) report that they are reaching less than 25% of their patients.

- There were 32 stroke survivor/caregiver support groups identified within the services area of facilities that responded.

Stroke Quality and Performance Improvement

- 81 (89%) respondents have a committee to review the quality of the stroke program.
- 66 (73%) respondents have implemented changes to improve stroke care practices and patient care.
- 54 (82%) of those who implemented changes saw improvements in stroke care practices and patient care.

Community Education and Resources

- 66 (73%) respondents provide community education on stroke recognition and calling 911.
- Only 35 (39%) of respondents monitor for disparities among patients impacted by stroke or at high risk for a stroke.
- 43 (48%) were unaware that VDH offers stroke educational supplies on the VDH website.

Virginia Department of Health 2022 Hospital Stroke Survey Report

Background: In support of 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.

In 2019, the Virginia Department of Health (VDH) convened a work group to create a Virginia hospital inventory survey and to review questions that should be included. The work group based the Virginia hospital inventory survey off Georgia's Coverdell hospital survey. The decision was made during that time to include questions on the following topics: hospital capacity, stroke registry use, post discharge transitions of care and community-based follow-up, community health workers/patient navigators, quality/process improvement processes and protocols, stroke education, monitoring healthcare disparities and stroke prevention, continuum of care, teleneurology, and stroke survivor support groups. The survey was postponed due to the COVID-19 outbreak in 2020.

VDH received funding for the CDC Paul Coverdell Acute Stroke Program (herein referred to as the Coverdell grant) grant in June 2021 and the decision was made to proceed with the hospital survey with the addition of the required Coverdell grant hospital inventory survey questions. The survey was placed into REDCap accessed by a webpage link or QR code.

Survey distribution: On April 22, 2022, an online REDCap survey was distributed to stroke coordinators at all Virginia hospitals and FSEDs via email and QR code. A reminder email was sent on May 23 to remind participants to complete the survey. The survey link remained active to submissions until July 31, 2022.

Response: A total of 93 responses were obtained out of 106 total facilities, with a total response rate of 88%. Thirteen facilities did not fill out the survey.

Virginia Department of Health 2022 Hospital Stroke Survey Results

CERTIFICATION

Of the 93 respondents, 64.5% (60) responded their facility is a certified stroke center. At the time of the survey, of those facilities that are certified, there were 8 Comprehensive Stroke Centers, two Thrombectomy-capable Stroke Centers, one Primary Stroke Center Plus, 39 Primary Stroke Centers, and 10 Acute Stroke Ready facilities. Regarding certification organization, 38 are certified by The Joint Commission (TJC), 21 are certified by Det Norske Veritas (DNV), and one is certified by Healthcare Facilities Accreditation Program (HFAP).

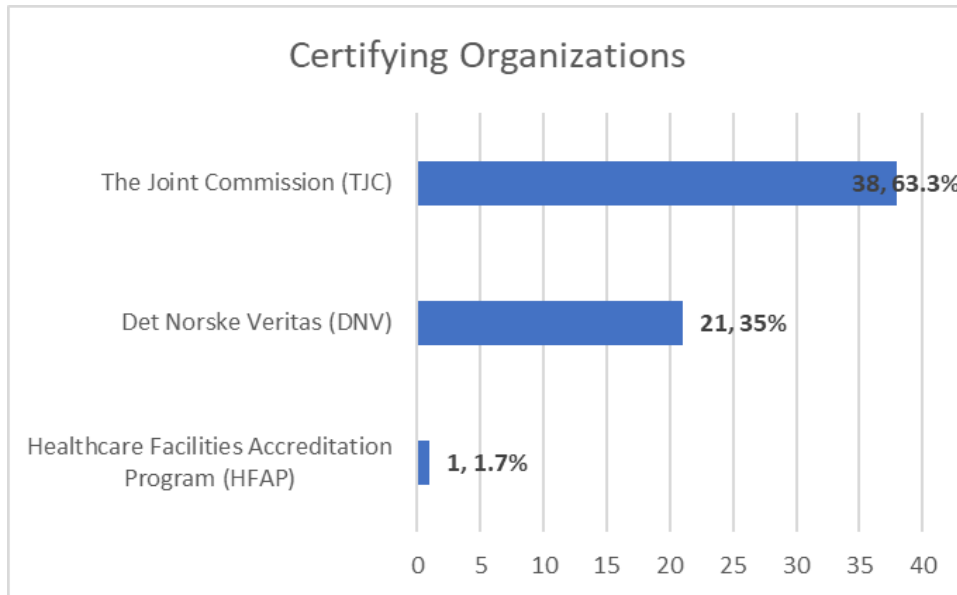


Figure 1. Note: This question was answered by 60 respondents.

Of the 33 facilities that are not certified, eight facilities (7 hospitals and 1 FSED) responded that they intended to pursue certification within the next year. Of those not planning to pursue certification within the next year, 14 (15%) are hospitals.

CARE GUIDELINE:

Stroke Center Certification recognizes a health care facility's commitment to improving stroke outcomes for their community and for their patients. Studies have shown that "certified stroke centers improve stroke-related health outcomes, delivery of stroke care, and patient care coordination, all while reducing health care costs" (Centers for Disease Control and Prevention, 2022, p. 39). The 2019 *Guidelines for the Management of Acute Ischemic Stroke* (Powers, et al.) further support the certification of stroke centers.

Recommendations are:

- Utilize the 2023 Hospital Stroke Inventory Survey to further explore the barriers preventing hospitals from seeking stroke certification.
- Provide encouragement and recognition to the hospitals and FSEDs that are planning to seek certification through collaboration with the Virginia Hospital and Healthcare Association (VHHA) Stroke Collaborative, VDH Stroke Coffee Hour, and the Virginia Stroke Coordinator's Consortium (VSCC).
- VDH should continue to support stroke-certified facilities by providing networking opportunities for professional growth through the VDH Stroke Coffee Hours, the VSCC, and other educational opportunities for growth.

ACUTE STROKE TEAM and ACUTE STROKE CARE

82% (76) of 93 respondents responded that they have a designated stroke team. Of the 17 facilities without a designated stroke team, 13 of these are hospitals. However, 99% of facilities responded that they do have a written protocol or care pathway in place for emergent care of stroke patients. One non-certified hospital responded that they do not have a written protocol or care pathway in place.

In response to having written protocols for acute stroke care components, there were 93 respondents. Figure 2 shows the frequency of each acute stroke care component for which facilities have written protocols.

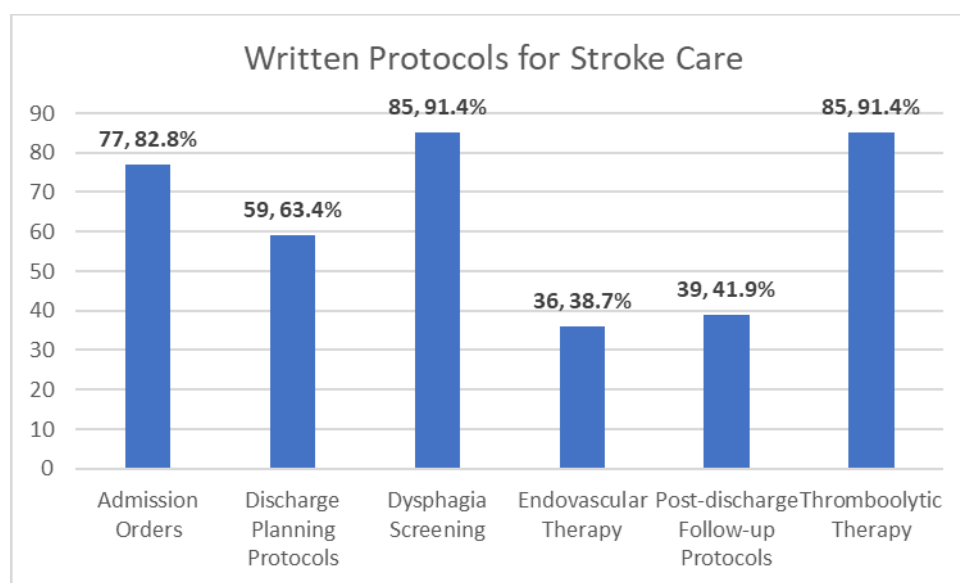


Figure 2. Note: Respondents had the ability to select more than one answer. Total responses = 93.

Facilities were asked how often they perform and interpret different imaging types for an acute ischemic stroke patient. The responses are shown in Table 1.

Scan Type	Number of responses	More than 75% of the time N (%)	Less than 75% of the time N (%)	Never N (%)
CT	93	88 (94.6%)	3 (3.2%)	2 (2.2%)
CTA/MRA	93	72 (77.4%)	15 (16.1%)	6 (6.5%)
CTP	92	34 (37%)	21 (22.8%)	37 (40.2%)
MRI	92	54 (58.7%)	22 (23.9%)	16 (17.4%)

Table 1. Note: Respondents had the ability to select more than one answer.

When assessing whether facilities use acute stroke consultation services from a neurology telemedicine provider, 75 respondents selected 'yes'. Further information regarding telemedicine provider usage is shown in Figure 3.

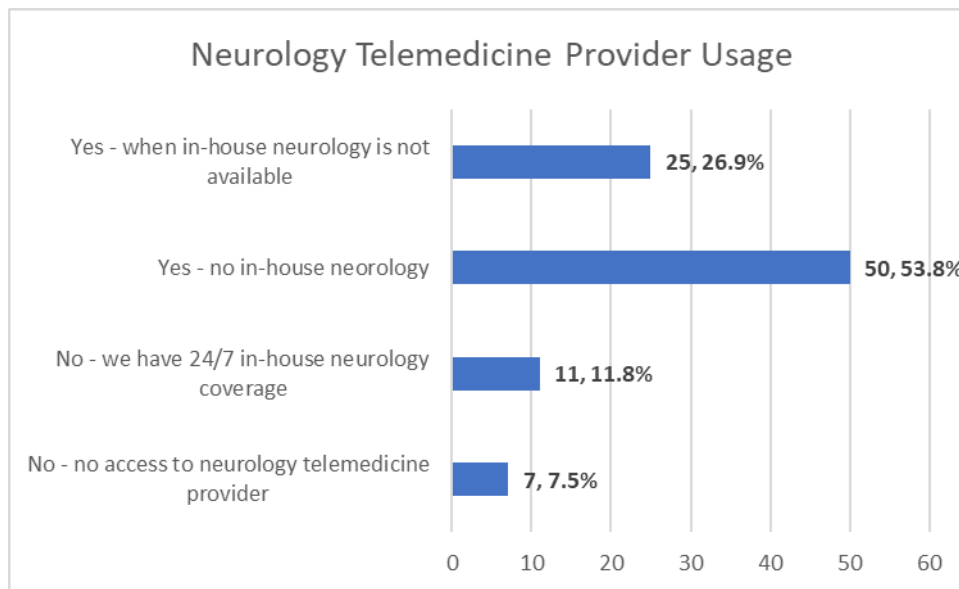


Figure 3.

16 facilities responded that they offer 24/7 Neurointerventional/endovascular capabilities. 26 (28%) offer 24/7 neurosurgery services and 5 (5%) offer it less than 24/7.

CARE GUIDELINE:

The 2019 *Guidelines for the Management of Acute Ischemic Stroke* (Powers, et al.), referred to as the 2019 *Stroke Guidelines*, recommend protocols for the emergent evaluation of patients with a designated stroke team. Target Stroke II (American Heart Association/American Stroke Association, 2017) further recommended best practices to improve clinician response times in an effort to speed the process to provide thrombolytics in a more timely manner. The 2019 *Stroke Guidelines* also support the use of teleneurology to support rapid evaluation of patients, imaging, and consultation for thrombolytics or advanced stroke care (Powers, et al., 2019).

Recommendations are:

- Ask further questions regarding door to provider, door to imaging, door to imaging read, and door to thrombolytic times in the 2023 Hospital Stroke Inventory Survey due to respondents indicating that they do have protocols in place for the emergent care of a suspected stroke patient.
- Explore teleneurology services used and teleneurology quality of service metrics (e.g., time to call a teleneurologist) by asking further questions in the 2023 Hospital Stroke Inventory Survey.

ADMISSION and CARE OF STROKE PATIENTS

Figure 4 shows the responses to how often facilities admit Ischemic Stroke and transient ischemic attack (TIA) patients. Majority of the respondents who responded that they never admit patients are FSEDs (17). Of the TIA patients that are admitted, 49 (66%) are admitted as a mix of in patient and observation, 9 (12%) as inpatient only and 16 (22%) as observation only.

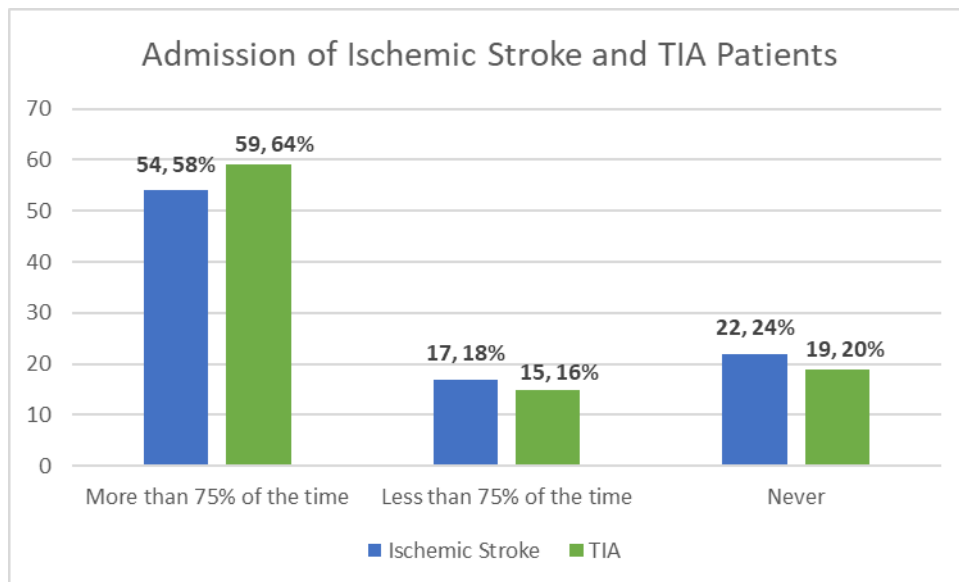


Figure 4.

There were 93 respondents who shared which method their neurologists use to see admitted patients, shown in Figure 5. Upon analysis, it was noted that this question should have been asked to only those facilities who admit their ischemic stroke and TIA patients, not to all respondents. This may have skewed results by adding more 'None of the above' responses.

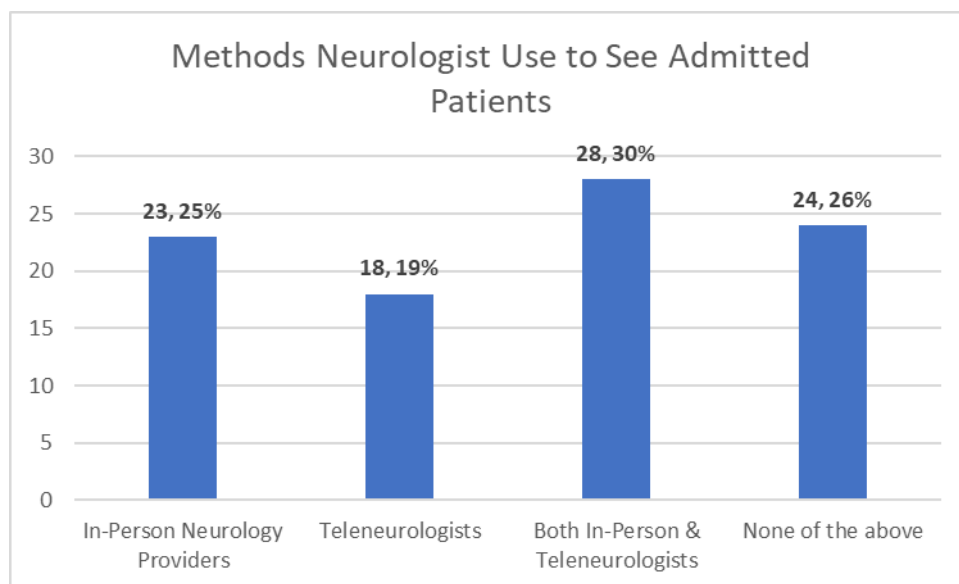


Figure 5.

Of the 15 hospitals with a neuro intensive care unit (ICU), 11 (73%) have neuro-intensivist coverage more than 75% of the time and 4 (27%) never use neuro-intensivists.

CARE GUIDELINE:

The *2019 Stroke Guidelines* recommend designated stroke units for acute ischemic stroke patients (Powers, et al., 2019) and research has shown that patients who are housed in a dedicated stroke unit have better long-term outcomes (Langhorn & Ramachandra, 2020).

Recommendations are:

- Change the question asking stroke patient admission in the 2023 Hospital Stroke Inventory Survey to be tailored to those that admit acute stroke and/or TIA patients.

- Integrate questions regarding whether a facility has designated stroke units would be beneficial in the 2023 Hospital Stroke Inventory Survey.

EMS PROTOCOLS

80 (88%) facilities responded saying they have protocols in place to receive patients with a suspected stroke from EMS. However, 6 (7%) do not have EMS protocols in place and 5 (6%) do not receive stroke patients from EMS providers.

Figure 6 shows the frequency of common EMS protocols.

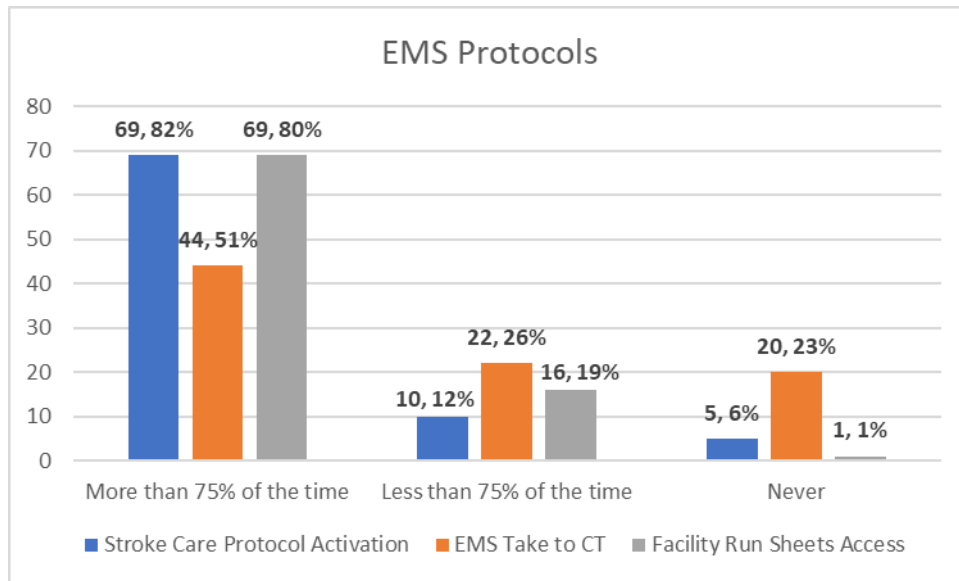


Figure 6. Note: There were 84 respondents for stroke care protocol activation, 86 respondents each for EMS take to CT and facility run sheet categories.

The figure below shows how often the responding facilities incorporate the EMS Patient Care Reports (PCRs) into the patient's medical record.

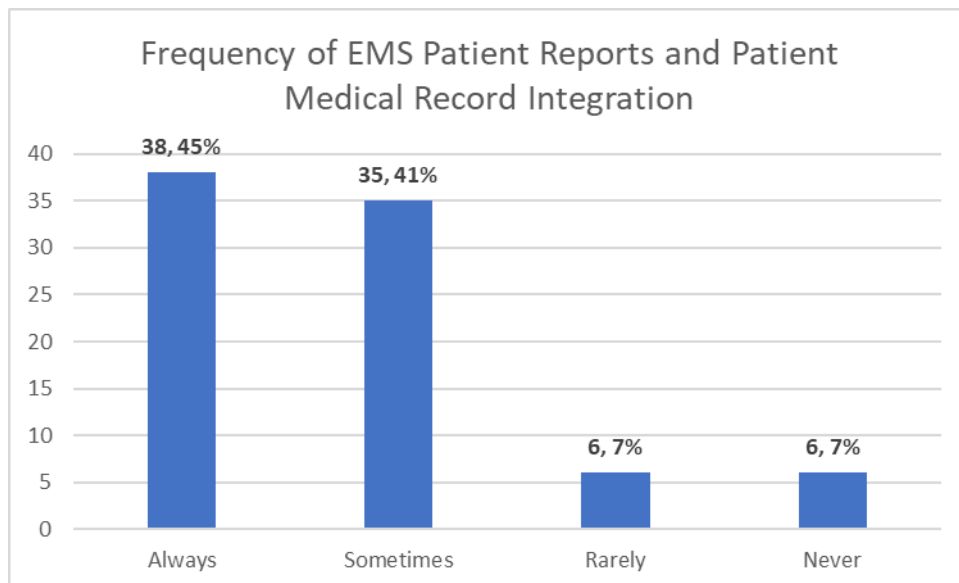


Figure 7. Note: This question was answered by 85 respondents.

CARE GUIDELINE:

Target: Stroke Phase II (2017) recommends utilizing the pre-notification alert by EMS as an opportunity to activate the stroke team, reduce time to brain imaging, reduce door to needle times and enhance the number of patients eligible for thrombolytic therapy. Utilizing EMS providers to transport directly to the CT scanner is one of the Key Best Practice Strategies from *Target: Stroke Phase II* (2017). Additionally, "Information from EMS is an important part of the medical record, and it has incredible value to patients and downstream health providers" (The Office of the National Coordinator for Health Information Technology, 2017). EMS records can and should be utilized to provide a written record of initial patient assessment and a guide for in-patient acute care (Short & Goldstein, 2022).

Recommendations are:

- Tailor the question asking whether hospitals receive a code stroke pre-alert from incoming EMS agencies to those facilities that do accept EMS patients. This question was answered by all hospitals and FSEDs.
- Utilize the 2023 Hospital Stroke Survey to explore the barriers that would prevent hospitals from having EMS providers take suspected stroke patients directly to the CT scanner, as 23% of facilities report that EMS never transports directly to the CT scanner.
- Utilize the 2023 Hospital Stroke Inventory Survey to explore the barriers that would prevent hospitals from always integrating the EMS PCRs into the patient's medical record, as only 45% of hospitals report doing so.

FEEDBACK BACK TO EMS AGENCIES

Survey respondents were asked whether there is a process to provide feedback to EMS agencies. Of the 86 facilities that responded, 66 (77%) responded that they do have a feedback process in place. Methods of providing feedback included email (77%), in person (73%), or by phone (23%). Respondents had the opportunity to choose more than one answer. Methods provided in the 'Other' write in field include: First Watch secure database, communications with an EMS coordinator, information posted in the hospital's EMS room, and monthly pre-hospital meetings.

Facilities report that EMS receives feedback for the following patient populations:

- Patients who received thrombolytic or endovascular treatment (79%)
- Patients transported by EMS with a final diagnosis of stroke with EMS pre-notification of a possible stroke (53%)
- Patients transported by EMS with a final diagnosis of stroke without EMS pre-notification of a possible stroke (43%)
- Possible stroke patients for whom EMS pre-notified the facility, regardless of the final diagnosis (30%)

(Facilities were able to choose more than one answer)

Nine (9) facilities responded they have an EMS liaison.

CARE GUIDELINE:

Prompt data feedback to EMS is one of the key recommendations of the *Target: Stroke Phase II* campaign (2017) with the purpose of monitoring progress, identifying delays in care, and developing strategies to improve acute stroke care. EMS feedback is also addressed in the *Recommendations for Regional Stroke Destination Plans in Rural, Suburban, and Urban Communities from the Prehospital Stroke System of Care Consensus Conference* (2021) with identification of specific metrics for EMS providers, as well as hospitals. Several of the recommendations from this report require integration of EMS metrics with hospital metrics, such as:

- The percentage of confirmed stroke patients transported to the hospital by EMS and those transported with a suspected stroke
- Time from EMS first medical contact to stroke alert notification
- Time from EMS first medical contact to brain imaging
- Time from EMS first medical contact to endovascular therapy (Jauch, et al., 2021).

Recommendations are:

- Investigate the types and methods of feedback provided to EMS providers from the hospitals to see if a standardized method and tool could be developed by the VSSTF and the Office of EMS.

TRANSITIONS OF CARE

When asked if facilities used a referral tracking system to support transitions of care for stroke patients post-discharge, 14 (45%) responded yes, 66 (73%) responded no, and 11 (12%) responded never (out of 91 respondents).

Table 2 shows the frequency facilities provide deliverables related to the transition of care: summaries, community resource referrals, and caregiver education and/or resources.

Transition of Care Deliverable	Number of Responses	Always N (%)	Sometimes N (%)	Rarely N (%)	Never N (%)
Transition of Care Summary	91	48 (53%)	21 (23%)	4 (4%)	18 (20%)
Community Resource Referral	41	14 (34%)	24 (59%)	1 (2%)	2 (5%)
Caregiver Education, Support, or Resource	41	24 (59%)	15 (37%)	1 (2%)	1 (2%)

Table 2.

More than half of the respondents (50 out of 91 total respondents) responded that they do not make post-discharge phone calls to follow-up with the stroke patient. Of the 41 making post-discharge phone calls, the majority are made within 1-7 days of discharge (20, 49%). Figure 8 shows the full response data for how long after discharge facilities conduct a follow-up check.

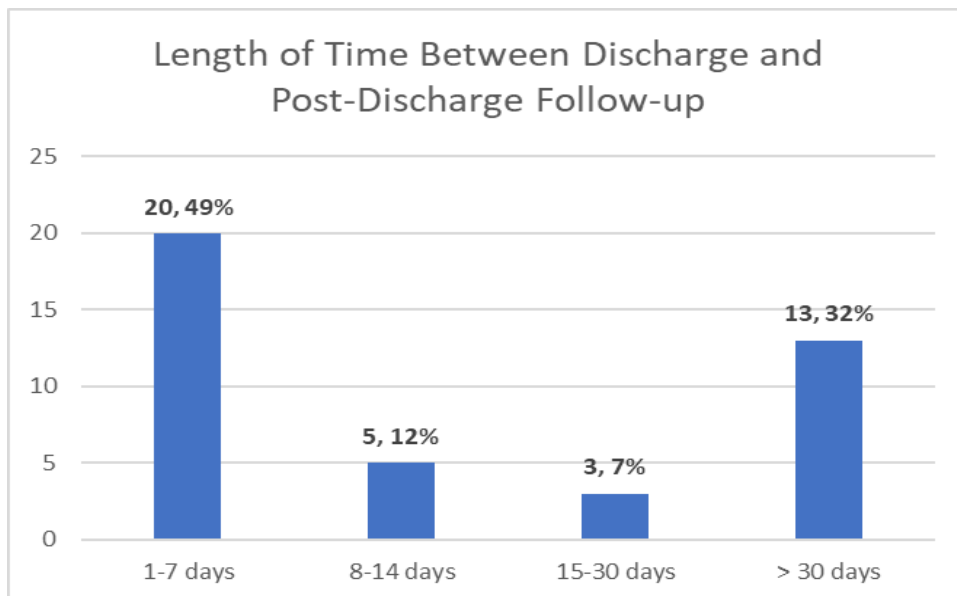


Figure 8. Note: This question was answered by 41 respondents.

When those 41 respondents were asked about percentage of patients reached, majority answered that 21 (51%) reach less than 25% of discharged patients. The rest of the data is displayed in figure 9 below.

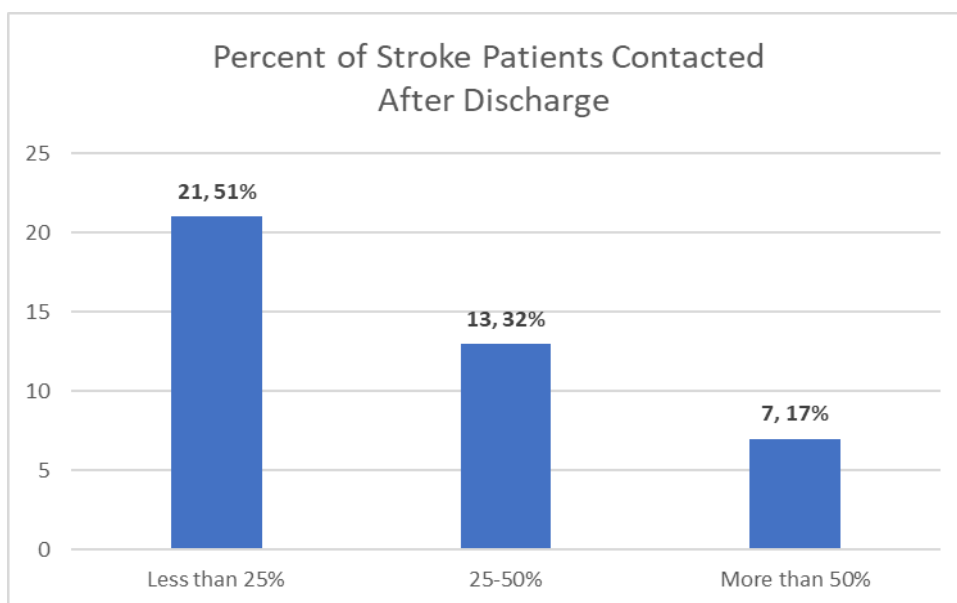


Figure 9. Note: This question was answered by 41 respondents.

CARE GUIDELINE:

Priority 3 of the CMS Framework for Health Equity is building the capacity of healthcare organizations to reduce health and health care disparities (Centers for Medicare and Medicaid Services, 2023). Adoption of a care referral tracking system would be beneficial in addressing stroke patient’s social determinants of health. Additionally, studies have shown better patient satisfaction and decreased re-admission rates when post-discharge calls are made (Mwachiro, Baron-Lee, & Kates, 2019). In 2013, Agency for Healthcare Research and Quality (AHRQ) recommended communicating with patients before discharge that they would receive a phone call at home after discharge. AHRQ also recommends utilizing someone familiar with the patient for this follow-up phone call.

Recommendations are:

- Work with existing hospitals systems in Virginia to address barriers to implementing a care referral tracking system and to encourage the adoption of such a system to improve stroke patient discharge referrals.
- Ask in the 2023 Hospital Stroke Inventory Survey if anyone in the organization, such as a community health worker or case manager, other than the stroke coordinator is reaching out to the patients via phone and their success rate.
- Ask in the 2023 Hospital Stroke Inventory Survey if stroke programs routinely look at their readmission rates to determine if the readmissions could have been prevented by earlier patient follow-up post-discharge.

STROKE QUALITY and PERFORMANCE IMPROVEMENT

When asked if their facility has a committee to review the quality of the stroke program, there were 91 respondents with 81 (89%) answering yes and 10 (11%) responding no. Figure 10 shows where feedback is provided.

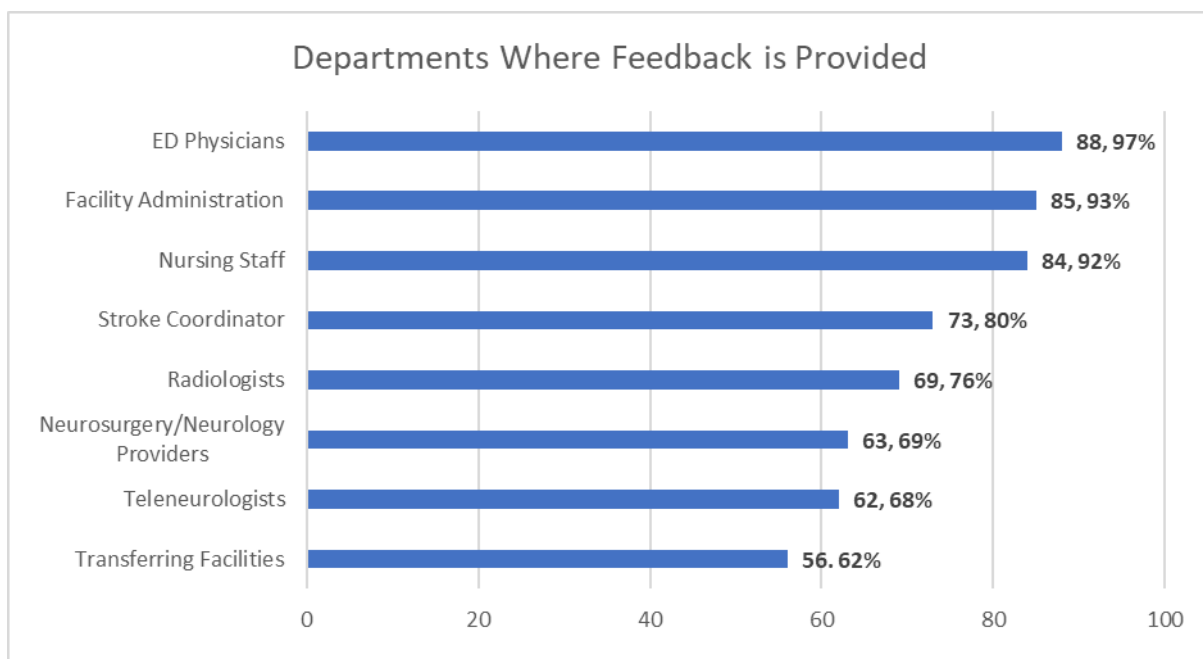


Figure 10. Note: Respondents had the ability to choose more than one answer. Total responses = 580.

66 facilities (73%) reported they have implemented changes in the past year through systemic quality improvement methods and interventions. Of those who had implemented changes, 54 (82%) responded they have seen a change since the implementation of new practices. Twelve facilities (18%) responded that they did not know if they have seen an improvement after implementing changes.

Respondents were provided the opportunity to provide their own answers to what they have done to improve stroke processes. Several themes emerged regarding changes made to the programs. The most common changes were in acute stroke management. Table 3 highlights the most popular quality improvement (QI) themes in the answers provided.

Hospital Quality Improvement Project Themes	
Acute Stroke Management	Changing Thrombolytics to Tenecteplase
	Improving stroke triage recognition
	Teleneurology providers – adding or changing
Improving Care Times	Door to Thrombolytics
	Door to CT scan
	Door to Groin Puncture
	Door to Lab Times
	Door to Transfer Out
Radiology Specific	Adding software to rapidly read images
	Adding CTP capabilities
	Changing stroke imaging processes
Standardization of Care	Order sets and usage by providers
	Neurology/stroke documentation
	Updating clinical practice guidelines
	Patient education – performing and documenting

Table 3.

The American Heart Association/American Stroke Association’s (AHA/ASA) Get with the Guidelines (GWTG) registry is the most common stroke registry used by Virginia hospitals (60, 67%). Other stroke registries used are: Premier (7, 8%), other (7, 8%) and none (23, 26%). Of those that responded “Other”: 4 facilities utilize an Access database, and 2 facilities use an Excel spreadsheet.

CARE GUIDELINE:

The *2019 Stroke Guidelines* recommends quality improvement activities to be performed at the stroke system of care level so that the system may benefit from improved patient outcomes (Powers, et al., 2019). Quality improvement projects should consist of multidisciplinary stakeholders and should focus on evidence-based practice, as well as benchmarks for care (Powers, et al., 2019).

Recommendations are:

- Coordinate with those facilities who implemented quality improvement changes to share with other facilities in the state at the monthly VDH Stroke Coffee hour, at the VSCC, or at the VSSTF so that other hospitals may benefit from best practices.
- Change the language in the 2023 Hospital Stroke Inventory Survey to address if the hospital receives stroke patients from other facilities, if feedback is provided to the transferring facilities, and if so, what type of feedback is given.

COMMUNITY EDUCATION and RESOURCES

There were 66 facilities (73%) who report providing community education on stroke signs and symptoms and the importance of calling 911.

When asked if there was a process to identify populations at highest risk for stroke events, 48 facilities (53%, out of 90 respondents) replied yes. Of the facilities that said yes, using their hospital’s/district’s/locality’s Community Health Needs Assessment was the most popular way to identify these high-risk populations. Eleven (11) facilities (23%) use their stroke registry data and 6 use other methods. Some of the other methods include Quality database, risk assessment, and monitoring demographics of discharged patients.

The survey also asked if the facilities monitored disparities among patients impacted by stroke or at high risk for stroke. Of the 90 who responded, 39% (35) responded yes, 33% (30) responded no, and 28% (25) responded that they did not know.

There were 32 respondents who state that they have a stroke survivor/caregiver support group in their area.

Majority of respondents (43, 48%) were unaware that VDH offers stroke education supplies. Only 10 facilities (11%) have ordered supplies from VDH.

There were 19 respondents (21% out of 90 respondents) who replied that they had referred patients to the Virginia Quit Now Tobacco Quitline and 41 (46%) had not referred patients. A third of facilities (30, 33%) were unaware of the Quitline.

Majority of hospitals (71, 80%) do not have a Collaborative Practice Agreement (CPA) to include community health workers. Six hospitals do have a CPA that includes a community health worker and 5 hospitals responded they also have community health workers employed by the hospital.

CARE GUIDELINE:

The *2019 Stroke Guidelines* specifically address the need to provide patient education regarding stroke, as well as the opportunity to discuss the impact of illness on their lives. The *2019 Stroke Guidelines* also recommend providing tobacco cessation education to patients who has smoked within the past year (Powers, et al., 2019). One of the emerging sources of support for hospital systems is the Community Health Worker (CHW)—a public health liaison designed to assist patients in their transition from hospital to home through linkage to community resources. CHWs are designed to “promote health equity and social justice within the communities they serve” (Centers for Disease Control and Prevention, 2022, p. 70). The *2021 Guideline for the Prevention of Stroke in Patients with Stroke and Transient Ischemic Attack* (Kleindorfer, et al., 2021) recommends hospital-based or outpatient-based program to improve both short-term and long-term outcomes yet acknowledges that little is known about effective care transitions. CHWs are well-suited to provide these interventions and can provide quantifiable measures regarding the patients that they assist.

Recommendations are:

- Collect information and share information from the stroke coordinators of the state who are doing community outreach to learn best practices and pitfalls, as well as any demonstrable quality metrics tied to education through the VDH Stroke Coffee Hour, the VHHA Stroke Collaborative, and the VSCC.
- Follow up with those respondents to identify the stroke support groups available in the state and provide a list on the Virginia Department of Health Stroke website.
- Raise awareness about the free materials VDH provides by promoting them at the VSSTF meetings, at the VSCC meetings, and at stroke awareness events. Materials should be available for stroke program stakeholders at the VSSTF and VSCC meetings.
- Raise awareness about CHWs and the valuable work they are doing throughout the state by having CHWs participate in the VSSTF and VSCC meetings, as well as providing information on the work that they are doing to improve stroke patient outcomes.

ELECTRONIC HEALTH RECORD

Of the 93 respondents, majority of hospitals use Epic (70, 75%), 19 (20%) use Meditech, and 2 (2%) use Cerner.

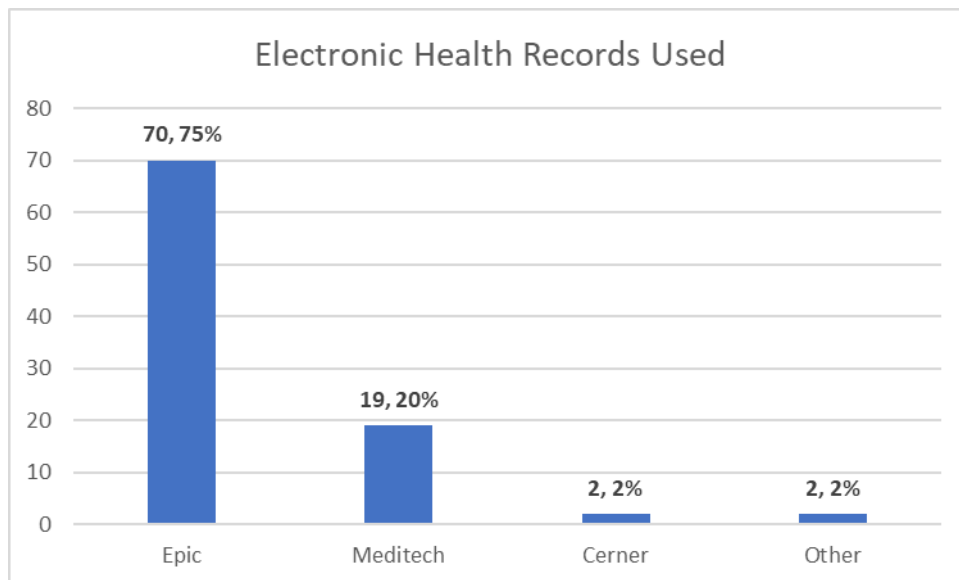


Figure 11.

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Copy of Survey Questions

Virginia Coverdell Hospital Survey 2022

The Virginia Department of Health appreciates your work in stroke patient care and thanks you for your time completing the following survey. The information provided will help VDH understand the current capacity of facilities for stroke care in Virginia. It will also help the VCASR better serve its participating facilities. 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 Kathryn Funk (Kathryn.Funk@vdh.virginia.gov).

Please answer all questions for each individual facility and not for a healthcare system.

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 - 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
- Children's Hospital of the King's Daughters
- 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 - Tricities
- HCA Henrico Doctors Hospital - Forest
- HCA Henrico Doctors Hospital - Parham
- HCA Henrico Doctors Hospital - Retreat

Name of facility

- HCA 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
- 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 Hospita
- 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
- Soxah Health Danville Regional Medical Center
- Soxah 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
- Other

Please list your facility

Name of respondent

Respondent role title

Is your facility a certified stroke center?

Yes
No

What is your facility's certification status?

- TJC CSC
- TJC TSC
- TJC PSC
- TJC ASR
- DNV CSC
- DNV PSC+
- DNV PSC
- DNV ASR
- HFAP CSC
- HFAP PSC
- HFAP ASR

If your facility is not a certified stroke center, are you planning to pursue stroke certification in the next 1 year?

- Yes
- No

What electronic health record system does your facility [use](#)?

- [Allscripts](#)
- Centricity
- Cerner
- Computer Programs and Systems Inc (CPSI)
- eClinicalWorks
- Epic Systems
- McKesson
- Meditech
- NextGen Healthcare
- Other

Name of electronic health record system

Acute Stroke Care

Does your facility have a designated acute stroke team? (A stroke team includes at least one physician and one other health care provider such as a nurse or advanced practice provider. The team is available 24 hours per day and can see patients within 15 minutes of being notified. The physician can be a neurologist, emergency physician or another specialist, but must have experience and expertise in diagnosing and treating cerebrovascular disease.)

- Yes
 No

Does your facility have a written protocol or care pathway in place for emergent care of ischemic strokes (including diagnostic imaging and labs)?

- Yes
 No

Does your facility have a written protocol or care pathway in place for emergent care of hemorrhagic strokes (including diagnostic imaging and labs)?

- Yes
 No

Does it include (select all that apply):

- Initial Stabilization
 Diagnostic imaging
 Treatment
 Labs

Does your facility have a written protocol or care pathway in place for the following? (Select "yes" for all that apply).

- Thrombolytic Therapy
 Endovascular Therapy
 Dysphagia Screening
 Admission Orders
 Discharge Planning Protocols
 Post-Discharge follow-up protocols

How often does your facility perform and interpret Computerized Tomography (CT) for the acute ischemic stroke patient

- More than 75% of the time
 Less than 75% of the time
 Never

How often does your facility perform and interpret advanced imaging such as CTA/MRA for the acute ischemic stroke patient

- More than 75% of the time
 Less than 75% of the time
 Never

How often does your facility perform and interpret advanced imaging such as Computerized Tomography Perfusion (CTP) for the acute ischemic stroke patient

- More than 75% of the time
 Less than 75% of the time
 Never

How often does your facility perform and interpret MRIs for the acute ischemic stroke patient

- More than 75% of the time
 Less than 75% of the time
 Never

Does your facility receive acute stroke consultation services from a neurology telemedicine provider?

- YES - when in-house neurology is not available
 YES - because we do not have in-house neurology
 NO - we have 24/7 in-house neurology coverage
 NO - we have no access to a neurology telemedicine provider.

What mode does the telemedicine consult take place?

- Telephone
 Videoconference
 Both telephone and videoconference

Does your facility admit your ischemic stroke patients

- More than 75% of the time
- Less than 75% of the time
- Never

Does your facility admit your TIA patients?

- More than 75% of the time
- Less than 75% of the time
- Never

Do your 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?

Does your facility utilize the following 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

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

Emergency Medical Services (EMS) Integration

Does your facility have its own EMS providers?

- Yes
 No

Is there a written plan for receiving patients with suspected stroke via EMS? (This could include how the ED receives a call in advance of arrival and may include other information on assigning high priority code to ensure rapid evaluation and transport.)

- Yes
 No
 Not Applicable (do not receive EMS)

Does pre-notification lead to activation of written stroke care protocols? (e.g. notification to pharmacy, clearing of CT scanner)

- More than 75% of the time
 Less than 75% of the time
 Never

Does EMS take suspected stroke patients directly to the CT scanner?

- More than 75% of the time
 Less than 75% of the time
 Never

Does your facility have access to all EMS run sheets?

- More than 75% of the time
 Less than 75% of the time
 Never

Does your facility integrate EMS run sheets into the patient health medical record?

- Always
 Sometimes
 Rarely
 Never

Do you have a process for feedback on stroke patients to EMS agencies?

- Yes
 No

How is the feedback provided to EMS agencies? (Select all that apply)

- FAX
 EMAIL
 PHONE
 IN-PERSON (for example, at a meeting or during case review)
 OTHER

Please describe the other method to how feedback provided to EMS agencies

For what patient population is feedback provided? (Select all that apply)

- Patients transported by EMS with a final diagnosis of stroke with pre-notification of possible stroke
 Patients transported by EMS with a final diagnosis of stroke without pre-notification of possible stroke
 Possible stroke patients for whom EMS pre-notified the Facility, regardless of the final diagnosis
 A select population of patients who have received thrombolytic or endovascular treatment
 Other

Please describe the other population that feedback is provided.

Does your facility have an EMS coordinator or liaison?

- 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
- Never

Do you utilize a transition of care summary with stroke patients during discharge? (The National Transition of Care Coalition (NTOCC) defines a transition of care summary as a method of communication between sending and receiving providers and patient/family/caregivers. Use of a transition of care summary has been proven to reduce readmission rates and decrease medical errors.)

- Always
- Sometimes
- Rarely
- Never

Does your facility conduct post-discharge follow-up on patients discharged to home?

- Yes
- No

How long after discharge does this follow-up typically take place?

- 1-7 days
- 8-14 days
- 15-30 days
- >30 days

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

Do you have stroke survivor/caregiver support groups in your area?

- Yes
- No

Stroke Quality and Data Usage

Do you have a committee to review the quality of your stroke program?

- Yes
 No

Is feedback provided to: (Select all that apply)

- Facility administration/leadership
 Neurosurgery/Neurology providers
 ED Physicians
 Stroke Coordinator
 Radiologists
 Teleneurologists
 Nursing Staff
 Transferring facilities

Do you use any of the following stroke registries? (Select all that apply)

- GWTG
 Neurobase
 Premier
 Other
 None

Please list the other stroke registries you utilize

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

Yes education on stroke signs and symptoms a

Does your facility have a process for identifying populations at highest risk for stroke events?

Yes
No

What does your facility use to identify populations at highest risk for stroke events?

Stroke Registry
Community
Health Needs
Assessment
Other

What other method does your facility use to identify populations at 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 post-stroke discharge?

Yes
No
Don't know outcomes, stroke care, and referral

In the past year, have you ordered stroke educational supplies from the VDH website?

Yes
No
I did not know that stroke educational supplies were available from VDH

In the past year, have you referred patients who use tobacco to Quit Now Virginia services?

Yes
No
I have never heard of the Virginia Quit Line

Does your hospital have a Collaborative Practice Agreement (CPA) in place that includes community Health Workers are also health workers (CHWs)? hospital

Yes
Yes, and Community
employed by the
No
No, Community Health
Workers are employed by the
hospital only

List of Acronyms

AHA	American Heart Association
CDC	Centers for Disease Control and Prevention
CEUs	Continuing Education Units
CHW	Community Health Worker
CPA	Collaborative Practice Agreement
CT	Computerized Tomography
CTA	Computerized Tomography Angiography
CTP	Computerized Tomographic Perfusion
DNV	Det Norske Veritas
EMS	Emergency Medical Services
FSED	Free-Standing Emergency Department
HFAP	Healthcare Facilities Accreditation Program
ICU	Intensive Care Unit
LKW	Last Known Well
MRA	Magnetic Resonance Angiography
MRI	Magnetic Resonance Imaging
OEMS	Office of Emergency Medical Services
OFHS	Office of Family Health Services
PCNASP	Paul Coverdell National Acute Stroke Program
PCRs	Patient Care Reports
TIA	Transient Ischemic Attack
TJC	The Joint Commission
TNK	Tenecteplase
tPA	tissue plasminogen activator
VDH	Virginia Department of Health
VHHA	Virginia Hospital and Healthcare Association
VSCC	Virginia Stroke Coordinator's Consortium
VSSTF	Virginia Stroke Systems Task Force