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State Health Commissioner

January 9, 2026

TO: The Honorable Glenn Youngkin
Governor, Commonwealth of Virginia

The Honorable Don Scott
Speaker, Virginia House of Delegates

The Honorable L. Louise Lucas
President Pro Tempore, Virginia Senate

FROM: Karen Shelton, MD
State Health Commissioner

SUBJECT: Stroke Care Quality Improvement

This report is submitted in compliance with the Code of Virginia § 32.1-111.15:1, which states:

> *E. The Department shall report to the Governor and the General Assembly annually on July 1 on stroke care improvement initiatives undertaken in accordance with this section. Such report shall include a summary report of the data collected pursuant to this section.*

Should you have any questions or need additional information, please feel free to contact me at (804) 864-7002.

KS/KB
Enclosure

Pc: The Honorable Janet Kelly, Secretary of Health and Human Resources

STROKE CARE QUALITY IMPROVEMENT

REPORT TO THE GOVERNOR AND THE GENERAL ASSEMBLY

2025

VIRGINIA DEPARTMENT OF HEALTH

PREFACE

Section 32.1-111.15:1 of the Code of Virginia designates the Virginia Department of Health (VDH) as the agency responsible for stroke care improvement initiatives within the Commonwealth. § 32.1-111.15:1 outlines several specific stroke care initiatives that VDH is responsible for overseeing. It also provides additional guidelines for VDH related to collecting data and information on stroke care and developing a process for continuous quality improvement for stroke care delivery. Section 32.1-111.15:1 requires VDH to submit an annual report to the Governor and the General Assembly by July 1 summarizing the work the agency has undertaken and the data the agency has collected over the past year related to stroke care improvement initiatives. This report serves to fulfill that requirement for 2025.

Chapter 198 of the 2018 Virginia Acts of Assembly, which amended the Code of Virginia to add § 32.1-111.15:1, included an enactment clause that requires VDH to convene a group of stakeholders to advise on the implementation of this section (Appendix A). This group, called the Virginia Stroke Care Quality Improvement (VSCQI) Advisory Group, has met quarterly since January 2019. This is a voluntary group of representatives from Virginia hospitals, EMS agencies, rehabilitation centers, and other agencies affiliated with improving stroke care. The VSCQI Advisory Group contributed to this report.

REPORT CONTRIBUTORS – VIRGINIA STROKE CARE QUALITY IMPROVEMENT (VSCQI) ADVISORY GROUP

Virginia Hospitals Represented

- Augusta Health General Hospital
- Bon Secours Rappahannock General Hospital
- Bon Secours Southampton Regional
- Bon Secours Southern Virginia Hospital
- Bon Secours Southside Medical Center
- Bon Secours St. Mary's Hospital
- Carilion Roanoke Hospital
- Centra Lynchburg Hospital
- Chesapeake Regional Hospital
- Fauquier Hospital
- HCA LewisGale Hospital Alleghany
- HCA Johnston Willis Hospital
- HCA Reston Hospital
- Inova Alexandria Hospital
- Inova Fairfax Hospital
- Novant UVA Haymarket Medical Center
- Richmond VA Medical Center
- Riverside Regional Hospital
- Sentara Norfolk General
- Twin County Regional Hospital
- University of Virginia Medical Center
- UVA Health Prince William Medical Center
- Valley Health Memorial Hospital - Winchester

- Virginia Commonwealth University Medical Center
- Virginia Hospital Center
- Wythe County Community Hospital

Rehabilitation Centers Represented

- Encompass Health Petersburg
- Riverside Rehabilitation Hospital
- Sheltering Arms Rehabilitation Hospital
- UVA Encompass Health Rehabilitation Hospital

Emergency Medical Services Represented

- Blue Ridge Emergency Medical Services Council
- Central Shenandoah Emergency Medical Services Council
- Lord Fairfax Emergency Medical Services Council
- Northern Virginia Emergency Medical Services Council
- Old Dominion Emergency Medical Services Council
- Peninsula Emergency Medical Services Council
- Rappahannock Emergency Medical Services Council
- Southwest Virginia Emergency Medical Services Council
- Thomas Jefferson Emergency Medical Services Council
- Tidewater Emergency Medical Services Council
- Western Virginia Emergency Medical Services Council

Other Stakeholders Represented

- American Heart Association/American Stroke Association
- Medical Society of Virginia
- Virginia Stroke Systems Task Force
- Virginia Stroke Coordinators Consortium
- VDH Office of Family Health Services
- VDH Office of Emergency Medical Services
- Virginia Hospital and Healthcare Association

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EXECUTIVE SUMMARY

The Virginia Department of Health (VDH) is the agency responsible for stroke care improvement initiatives within the Commonwealth. Per Virginia Code § 32.1-111.15:1, VDH is tasked with overseeing four primary stroke care initiatives:

1. Implementing systems to collect data and information about stroke care in the Commonwealth

2. Facilitating information and data sharing and collaboration among hospitals and health care providers to improve the quality of stroke care in the Commonwealth

3. Applying evidence-based treatment guidelines for transitioning patients to community-based follow-up care following acute treatment for stroke

4. Establishing a process for continuous quality improvement for the delivery of stroke care by the statewide system for stroke response and treatment

VDH is required to provide an annual report to the Governor and General Assembly on stroke care improvement initiatives undertaken in accordance with this Code section, and to include a summary report of the data collected pursuant to this section. This report serves to fulfill this requirement for 2025.

RECOMMENDATIONS

Virginia Code § 32.1-111.15:1 (3)(C) requires VDH to develop recommendations for the improvement of stroke care throughout the Commonwealth, and Chapter 198 of the 2018 Acts of Assembly requires VDH to convene the VSCQI to advise on the implementation of the provisions of § 32.1-111.15:1. Pursuant to these requirements, the VSCQI worked in partnership with VDH to develop the following recommendations for improving stroke care initiatives in the Commonwealth, which are based upon the four primary stroke care initiatives as listed in Virginia Code § 32.1-111.15:1. These recommendations remain largely the same as in 2024, due to lack of funding particularly for the Stroke Registry, which inhibited progress on implementation of many of the recommendations.

Implement Systems to Collect Data and Information about Stroke Care

1. Non-certified stroke centers, as well as free-standing emergency departments and post-acute discharge facilities, such as inpatient rehabilitation facilities and skilled nursing facilities, should contribute data to the Virginia Stroke Registry. VDH is currently establishing the Virginia Stroke Registry to serve as the statewide system for collecting data and information on stroke care in the Commonwealth, as required by Virginia Code § 32.1-111.15:1.

2. The Virginia Stroke Registry should collect additional data elements related to specific populations of interest, including pregnancy status and sickle cell status. The Registry should also collect data elements regarding patients who have been treated using advanced stroke therapies.

3. The Virginia Stroke Registry should include the collection of "Z" codes (ICD-10 codes for social determinants of health) in order to address disparities of care across Virginia.

4. The Virginia Stroke Registry should serve as a resource to hospitals and free-standing emergency departments to implement quality improvement efforts, including ongoing stroke certification processes.

5. The Virginia Stroke Registry should be interoperable with additional Virginia data sources, such as the Virginia Vital Events Statistics Program, to comprehensively describe stroke burden and gaps in stroke care along the full continuum of care.

6. Facilitate Data Sharing and Collaboration

7. The Virginia Hospital and Healthcare Association (VHHA) Collaborative should continue to engage the non-certified stroke hospitals and guide them towards stroke certification, participation in the Virginia Stroke Registry, and quality improvement.

8. Hospital participating in the American Heart Association's (AHA) *Get With The Guidelines ®-Stroke* program should activate the Coverdell layer, a nationally recognized data set. This means that those hospitals would be extracting additional data from patient records and submitting that data to the Registry, following AHA's national best practices for the kind of data hospitals should collect and report on stroke incidences.

Apply Guidelines for Transitioning Patients to Community-Based Follow-Up Care

9. Hospitals should continue to use Unite Us, or any statewide referral platform, to alleviate the burden on hospital stroke coordinators and care managers of connecting patients to necessary services post-discharge.

10. Establish a Process for Continuous Quality Improvement

11. VDH Office of Family Health Services (OFHS) should continue the re-abstraction project in partnership with hospitals that submit data through the American Heart Association's Get With the Guidelines® (AHA GWTG®) program. Of the possible variables for re-abstraction, at least one should be related to EMS. This information can be used by participating hospitals to evaluate or select an area for quality improvement.

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INTRODUCTION

STROKE CARE QUALITY IMPROVEMENT MANDATE

Effective January 1, 2019, Chapter 198 of the 2018 Virginia Acts of Assembly added a section 32.1-111.15:1 to the Code of Virginia to require that the Virginia Department of Health (VDH) oversee stroke care improvement initiatives in the Commonwealth, including implementing systems for stroke data collection and information sharing, facilitating information sharing with hospitals and health care providers, applying evidence-based guidelines for community-based follow-up care, and implementing a continuous process for stroke care quality improvement initiatives, in collaboration with hospitals and emergency medical services (EMS) agencies. The purpose of this report to the Virginia General Assembly and the Governor is to provide updates on the progress towards implementing the initiatives outlined in the Code and building statewide capacity pursuant to Chapter 198 (2018), as well as to provide recommendations for stroke care improvement in the Commonwealth, pursuant to § 32.1-111.15:1 (C)(3).

VIRGINIA STROKE CARE QUALITY IMPROVEMENT ADVISORY GROUP ACTIVITIES

Since 2019, VDH has convened the Virginia Stroke Care Quality Improvement (VSCQI) Advisory Group to provide guidance on fulfilling the requirements of § 32.1-111.15:1. The VSCQI meetings included in this report are from April and July 2024. While the VSCQI typically meets quarterly, meetings have been temporarily paused since the July 2024 quarterly meeting. This is due to a lack of sufficient and sustainable funding for VDH's stroke initiatives, including the discontinuation of financial support for the stroke registry vendor that occurred during the period of this report, which has limited the ability of the agency to carry this work forward.

APRIL 19, 2024 MEETING

This meeting was held in person at Edward Via College of Osteopathic Medicine (VCOM) in Blacksburg, VA. The goal of the meeting was to review the results of the hospital data re-abstraction project as a quality improvement initiative under the stroke legislation. Data re-abstraction is a process that involves revisiting patient medical records and comparing the data with what was previously submitted or what exists in a larger database. Data re-abstraction assists hospitals in demonstrating that their data submissions to VDH and to their certifying bodies are without error. In comparing 2023 to 2024 data re-abstraction projects, there were 27 hospitals who participated in 2023 and 35 hospitals participating in 2024. In 2023 there were 240 records abstracted compared to 339 records in 2024, and 1094 discrepancies found in 2023 compared to 559 discrepancies found in 2024. Hospital representatives shared their perspectives on participating in the first iteration of the re-abstraction process.

No public comment was provided at this meeting.

JULY 19, 2024 MEETING

This meeting was held in person at Maryview Medical Center in Portsmouth, VA. During the meeting, VDH provided updates on the Virginia Stroke Registry and how a loss of stroke registry funding inhibits the ability of the VSCQI Advisory Group and VDH to make progress on fulfillment of its statutory responsibilities. VDH described that the VDH Office of Emergency Medical Services (OEMS) could no longer provide financial and administrative support for the Virginia Stroke Registry, leading to a temporary pause in progress on several foundational stroke statutory activities until VDH can secure funding and a vendor for the Virginia Stroke Registry. VDH shared that the VSCQI will also undergo administrative and structural changes to ensure the group continues to adhere to public body requirements under the Virginia Freedom of Information Act (FOIA). VDH communicated that more information would come once available and when VDH has secured funding and a vendor for the Virginia Stroke Registry. VDH also described, in detail, the 2024 re-abstraction results and engaged in a discussion with Advisory Group members about various data and results.

Public comment was provided at this meeting and is included in Appendix F.

REPORT OUTLINE

This report begins with a brief description of the current state of stroke care in Virginia and stroke data collected under Section 32.1-111.15:1 (additional data is included in the appendices). The report then provides a summary of the activities performed to implement the initiatives mandated by Code and concludes with a series of recommendations developed in partnership with the VSCQI on how to improve stroke care throughout the Commonwealth. Additional data is included in the Appendices (including data on cities and counties with age-adjusted stroke mortality rates for 2023 and a list of the Certified Stroke Centers in Virginia as of March 2025).

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THE STATE OF STROKE DATA IN VIRGINIA

Stroke is the fifth leading cause of death in the United States (Curtin et. Al, 2020), and the fifth leading cause of death in Virginia (Centers for Disease Control and Prevention, 2025). Virginia is one of 11 states in the "Stroke Belt," a region of southeastern states recognized for its high incidence of stroke and prevalence of cardiometabolic conditions, including hypertension, diabetes, hyperlipidemia, and obesity (Howard & Howard, 2020). These chronic conditions contribute to cerebrovascular disease, which is a risk factor for the development of a stroke. Stroke occurs when the blood vessels that carry oxygen and nutrients to the brain are blocked or broken. This can occur by a clot blocking the flow or by a blood vessel bursting. When this happens, the part of the brain affected cannot receive oxygen or nutrients, and damage occurs to that portion of the brain. Acute ischemic strokes (AIS), caused by the blockage of a blood vessel, comprise approximately 87% of all strokes; whereas a hemorrhagic stroke, caused by a blood vessel bursting, is less common and comprises about 13% of all strokes (American Stroke Association, 2025). There are two main types of hemorrhagic strokes, intracerebral hemorrhage (ICH) due to a blood vessel bursting and subarachnoid hemorrhage (SAH) due to the rupture of an aneurysm. A transient ischemic attack (TIA), sometimes referred to as a "warning stroke", occurs by a temporary blockage of a vessel in the brain in which no brain damage occurs but is a warning sign of a potential future stroke (American Stroke Association, 2025).

Based on Centers for Disease Control and Prevention (CDC) data, there has been an increase in stroke mortality rates across the United States between 2019 and 2023, the most recent year for which their analysis is available. The CDC reports Virginia's age-adjusted stroke mortality rate as 41.6 per 100,000 for 2021-2023, an increase from 41 per 100,000 for 2020-2022 and 40.1 per 100,000 for 2019-2022 (CDC WONDER, 2025). Research has identified two factors which may contribute to this increase: the effects of the COVID-19 pandemic and the health of the next generation. From 2019 to 2020, Non-Hispanic Blacks experienced the greatest increase in risk-associated mortality rates (Sidney et. al, 2022). The COVID-19 pandemic contributed to this increase as patients missed routine appointments and avoided emergency departments due to the fear of COVID-19 exposure. Hospital overcrowding and short staffing due to COVID-19 caused long waits and limited appointment time slots. Additionally, US adult obesity rates increased and worsened as the pandemic continued (Restrepo, 2022). Social distancing led to adults adapting a more sedentary lifestyle while increasing alcohol and cigarette use. An increase in obesity also increases risk of chronic disease onset, such as heart disease and stroke. Rutgers University performed an analysis of epidemiologic trends in stroke mortality and found that the later a patient is born, starting around 1960, there is a higher risk of fatal ischemic stroke at any age (Cande et. al., 2022). In addition, the Journal of Urgent Care Medicine reported 44% of Millennials (person born between 1981-1996) already have one chronic health condition (Blachford, 2022). The Rutgers University analysis suggested the most likely conditions for this population are obesity and diabetes – especially after the onset of COVID-19 pandemic sedentary habits.

The number of stroke deaths among Virginians increased by 13.7% in 2023 as compared to 2019. Stroke death rates have steadily increased since 2018 (VHI Death Certificate Database, 2025). As shown in Figure 1, the age-adjusted stroke death rates per 100,000 population increased from 38.9 in 2018 to 42.6 in 2023.

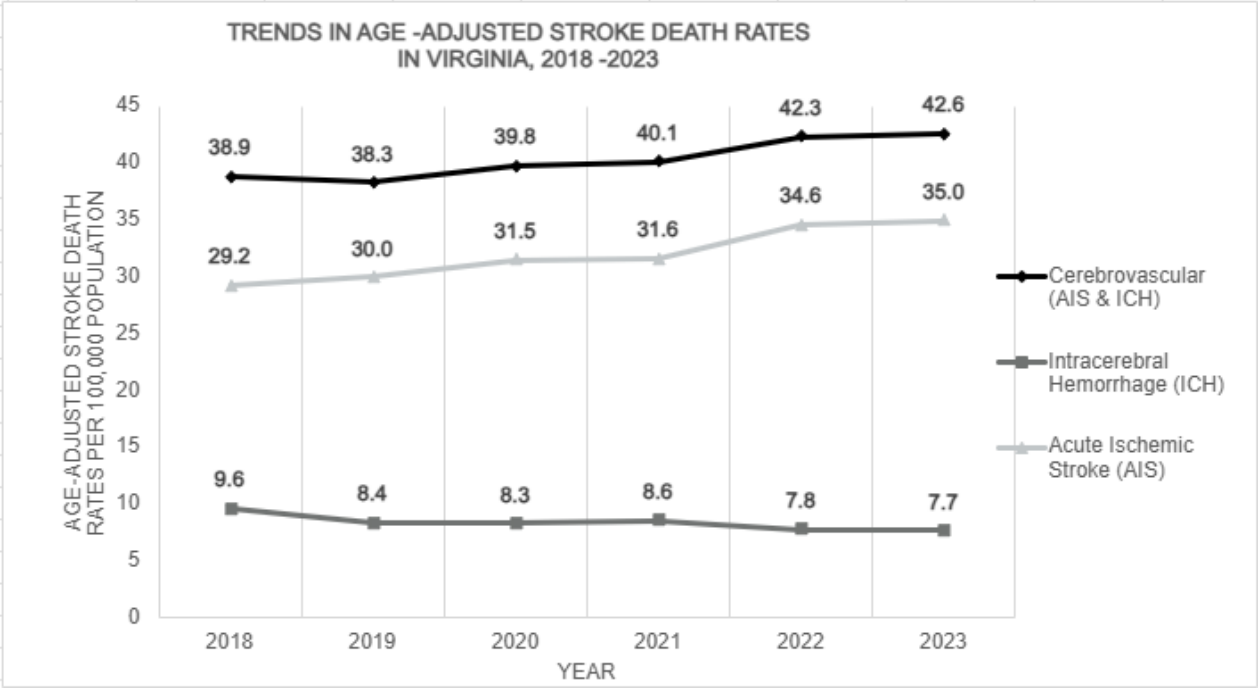

Figure 1. Trends in Age-Adjusted Stroke Death Rates in Virginia, 2018-2023. ICD-10 Codes I60-I69 (Cerebrovascular), I60-I62 (Intracerebral Hemorrhage (ICH)), I63-I69 (Acute Ischemic Stroke (AIS)). Data Source: Inpatient discharge dataset from Virginia Health Information (VHI) accessed in March 2025.

Stroke death can occur at any age; however, advanced age is the strongest predictor of death from stroke in Virginia, increasing with each progressively older age group. In Figure 2, the 45-54 year age group had an age-adjusted death rate per 100,000 population of 1.5, followed by 2.8 for ages 55-64, 5.9 for ages 65-74, 13.9 for ages 75-84, and 17.5 for ages 85 and older (VHI Death Certificate Database, 2025). The 75-84 age group saw the largest increase in death rates from 2022 to 2023, increasing from 12.7 to 13.9.

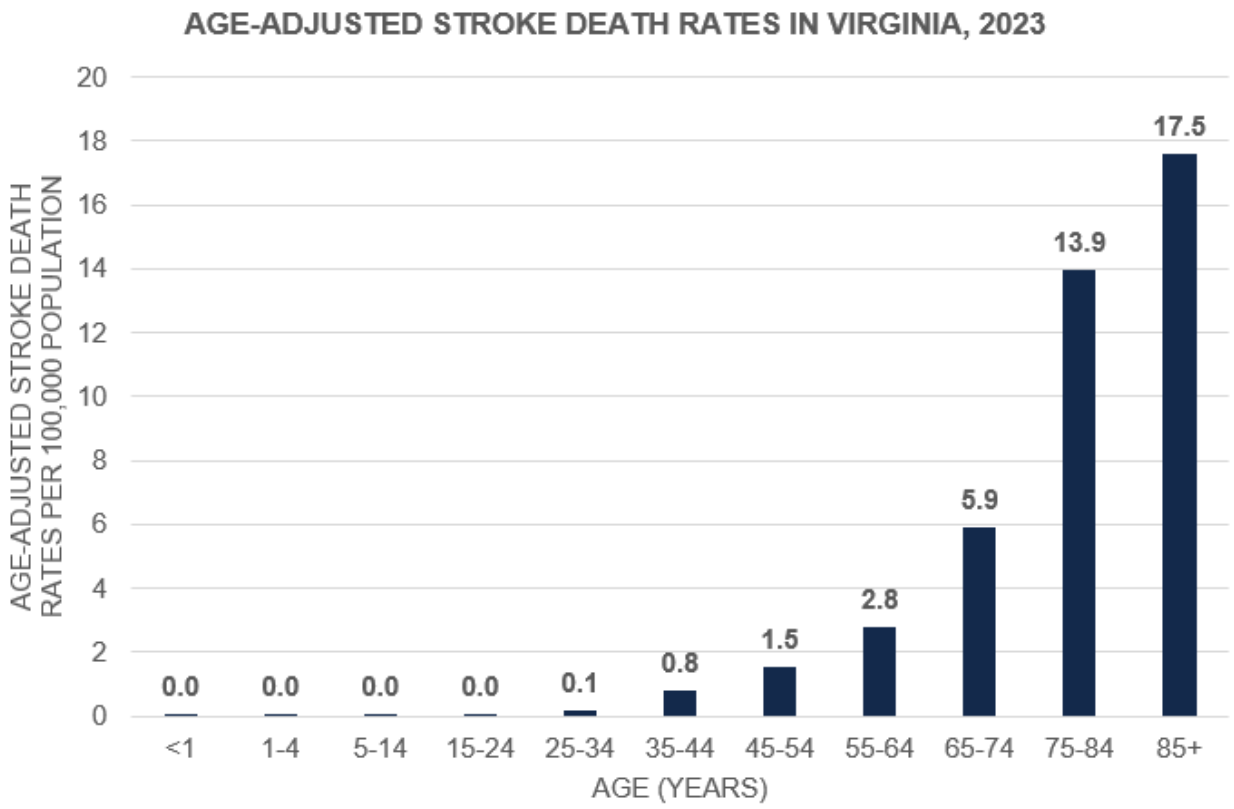

Figure 2. Age-Adjusted Stroke Death Rates in Virginia, 2023. ICD-10 Codes I60-I69 (Cerebrovascular), I60-I62 (Intracerebral Hemorrhage (ICH)), I63-I69 (Acute Ischemic Stroke (AIS)). Data Source: Inpatient discharge dataset from Virginia Health Information accessed in March 2025.

In Figure 3, advanced age was the strongest predictor of age-adjusted stroke hospitalization rates per 100,000 population. Persons aged 75-84 years had the highest rate per 100,000 population with 75.0 hospitalizations for stroke, followed by ages 65-74 at 55.5 and ages 85 and older at 39.5 (VHI Inpatient Discharge Database, 2025).

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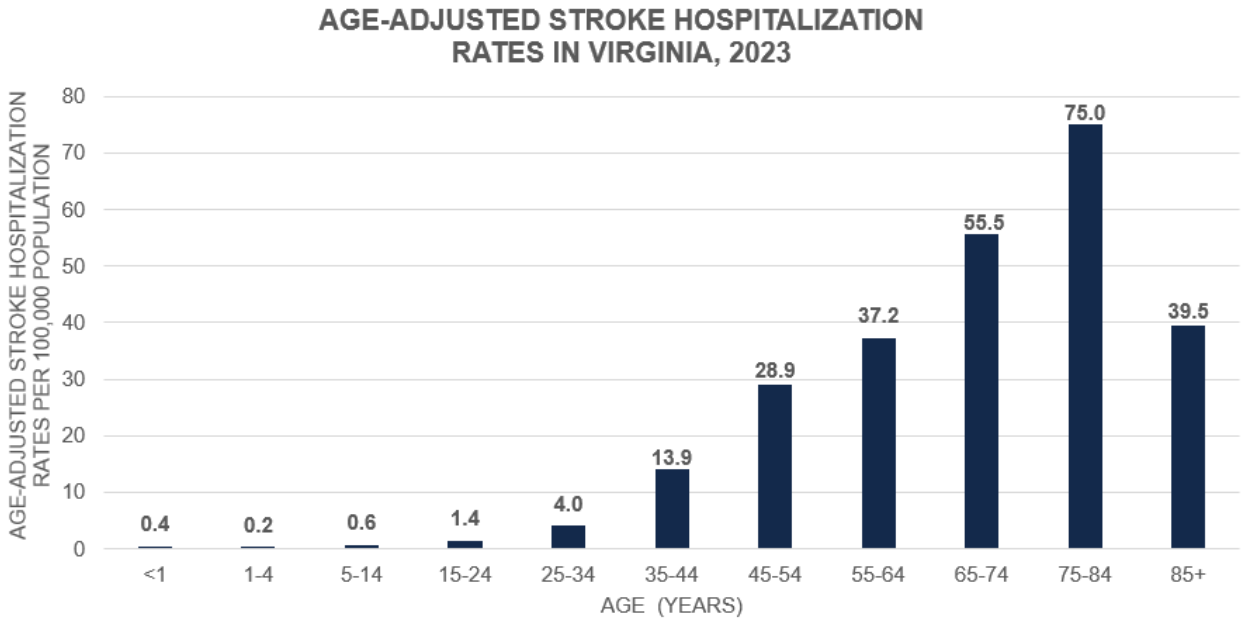

Figure 3. Age-Adjusted Stroke Hospitalization Rates Per 100,000 Population in Virginia, 2023. ICD-10 Codes I60-I62 (Intracerebral Hemorrhage (ICH)), I63-I69 (Acute Ischemic Stroke (AIS)), G45 (Transient Ischemic Attack (TIA)), I60-I69 and G45 (All Stroke/TIA). Data Source: Inpatient discharge dataset from Virginia Health Information accessed in March 2025.

In addition to observed stroke death and hospitalization disparities by age, surveillance data also indicate disparities among stroke death and hospitalization rate disparities by geography across the Commonwealth of Virginia. Table 1 shows the 10 cities or counties with the highest age-adjusted stroke mortality rate in 2023. A table with 2023 age-adjusted stroke mortality rates for all cities and counties in Virginia can be found in Appendix C.

Table 1. Virginia Cities and Counties by Stroke Mortality Age-Adjusted Rates per 100,000 population, 2023.

Region	Locality	Stroke Mortality Rate (per 100,000 population)
Central	Emporia	148.27
Central	Greensville County	116.32
Southwestern	Martinsville	106.49
Northwestern	Winchester	90.55
Southwestern	Covington	90.18
Northwestern	Rappahannock County	84.60
Northwestern	Lexington	81.54
Central	Hopewell	80.24
Northwestern	Fauquier County	80.20
Southwestern	Salem	77.89

PROGRESS TOWARDS IMPLEMENTATION OF STROKE CARE INITIATIVES IN ACCORDANCE WITH VIRGINIA CODE § 32.1-111.15:1

As of March 2025, there are a total of 67 certified stroke centers (including hospitals and free-standing emergency departments) in Virginia compared to 72 in February 2024. The 67 certified stroke centers include eight Comprehensive Stroke Centers, three Thrombectomy-Capable Stroke Centers, 41 Primary Stroke Centers, and 14 Acute Stroke Ready facilities. The reason for the decrease in the number of stroke certified facilities can vary, but is most likely attributed to a decrease in neurological specialty staff or the elimination or decrease in neurological services provided by the hospital (i.e., the inability to have neurological staff onsite 24/7). VDH plans to connect with hospitals to further understand the decrease in stroke certification levels and/or the elimination of stroke certification accreditation. Virginia hospitals utilize three stroke-certifying agencies: The Joint Commission (TJC), Det Norske Veritas (DNV), and Accreditation Commission for Health Care (ACHC), with the majority (67%) utilizing TJC. A table with the levels of stroke certification and the capabilities of each can be found in Appendix E.

VDH made the following progress over the past year in carrying out the four initiatives outlined in Virginia Code § 32.1-111.15:1:

1. Implementing Systems to Collect Data and Information About Stroke Care

VDH currently receives funding for some of its stroke work from the CDC's Paul Coverdell National Acute Stroke Program. As part of the Coverdell grant requirements, VDH must submit de-identified stroke care patient data to CDC's data set platform, Secure Access Management Site (SAMS) throughout the grant period. In September 2024, 47 hospitals submitted data. All 47 hospitals participate in the American Heart Association/American Stroke Association Get With The Guidelines (GWTG) ®-Stroke data collection platform. The GWTG ®-Stroke platform allows data to be exported directly from the system and sent to VDH, encouraging all GWTG ®-Stroke participating hospitals to submit data. However, all hospitals in Virginia are eligible to submit data as part of the Coverdell grant. Table 2 shows the progress VDH has made in collecting stroke patient records as part of the Coverdell grant.

Table 2. Number of Records Submitted Per CDC Coverdell Data Submission.

CDC Coverdell Submission Date	Number of Hospitals Enrolled	Cumulative Number of Records Submitted (start of grant to submission date)
June 2024	47	58,755
September 2024	47	69,206
February 2025*	47	3,368

* New CDC Coverdell grant cycle

Although VDH has been able to make progress towards establishing the Virginia Stroke Registry, VDH does not currently receive any General Funds or grant funds explicitly dedicated to developing and maintaining the stroke registry. The lack of funding hampers the agency's ability to fully implement the statewide system, create a sustainable staffing plan, and meet the

entirety of the statutory mandates outlined in Virginia Code § 32.1-111.15:1. VDH has been able to use some CDC grant funding to start this work. However, the CDC has shifted the focus of the grant that VDH has been using to support some of the stroke registry work. Given this, VDH will not be able to use this funding to support the registry moving forward. This federal funding was also already insufficient to cover the costs of staffing and infrastructure development/maintenance for the registry. VDH needs a sustainable and sufficient funding source to continue to implement this work. While VDH pursues a sustainable and sufficient funding source, implementation of the statutory mandates outlined in Virginia Code § 32.1-111.15:1 will decelerate or pause, including, but not limited to, the implementation of the Stroke Registry, initiation of Stroke Registry-informed quality improvement initiatives, and frequency of the Virginia Stroke Care Quality Improvement (VSCQI) Advisory Group Meetings. The total estimated yearly cost for the Virginia Stroke Registry and full-time staff support is $587,130. This total represents the Stroke Registry Vendor and its associated software and hospital connectivity fees ($294,876) and the funding of two full-time staff to facilitate and maintain the stroke registry ($266,714), travel ($5,000) and VITA agency charges ($20,540). The two full-time staff are comprised of the Stroke Registry Coordinator and Epidemiologist senior.

2. Facilitating Data Sharing and Collaboration Among Hospitals and Health Care Providers

VDH managed collaborative efforts among hospitals and health care providers to share data related to stroke care. Specifically, the CDC Paul Coverdell National Acute Stroke Program (Coverdell) funds state health departments to collect, measure, and track data to improve the quality of care for stroke patients. In 2001, Congress provided funding to the CDC to establish the Paul Coverdell National Acute Stroke Registry (PCNASR) which was named after the late U.S. Senator Paul Coverdell of Georgia, who suffered a fatal stroke in 2000 while serving in Congress. As the program expanded, the name was changed to the Paul Coverdell National Acute Stroke Program (PCNASP). In September 2024, the CDC awarded VDH funding under the next grant cycle of Coverdell. While the previous iteration of Coverdell (2021-2024) focused on statewide stroke systems of care across Virginia, this 2024-2029 cycle of Coverdell focuses on strengthening continuity of stroke care within census tracts where the stroke crude prevalence is 150% times greater than the stroke crude prevalence within the corresponding county or city.

The three cities with the most burdened census tracts (as determined by a formula provided by the CDC) were Richmond, Newport News, and Norfolk. In June 2025, VDH partnered with the Virginia Hospital and Healthcare Association (VHHA), Unite Us, Virginia Commonwealth University (VCU) Health, Riverside Regional Medical Center, and Sentara Norfolk General Hospital to launch the first cohort of the Virginia Stroke Continuum Program (VSCP). This program will fulfill the statutory requirement of facilitating data sharing and collaboration among hospitals and health care providers by focusing on three specific hospitals and localities, with the goal to expand the program in future years. Through the VSCP, the hospital teams and health care providers will utilize the Partnering for a Healthier Virginia collaboration platform to foster collaboration and continuity of stroke care from pre-hospital to post-discharge referrals and care. Additional funding, as previously discussed, will be needed in future years to continue to sustain these collaborations and scale them beyond the three cities. This will allow the agency to improve stroke care statewide across the continuum.

3. Applying Guidelines for Transitioning Patients to Community-Based Follow-up Care

The VDH Stroke Registry Epidemiologist, funded through the Coverdell grant, analyzes the quantitative and qualitative data from the Virginia Stroke Registry and the hospital inventory survey to create tailored reports. These reports inform hospitals about their stroke care data and outcomes. They also help identify opportunities for implementing quality improvement, increasing capacity, and changing stroke protocols, including those related to transitions to community-based follow up care.

The VDH 2024 Hospital Stroke Inventory Survey reached 99% of all hospitals and free-standing emergency departments (FSEDs) in Virginia. This was an increase in respondents from 57% of hospitals who responded to the 2023 Hospital Stroke Inventory Survey. Of the 69 respondents, 55 (80%) respondents do not have a patient referral tracking systems to support transitions of care for stroke patients, a decrease from 84% the previous year. Responses to post-discharge follow-up performance by hospitals are split between hospitals that conduct follow-up (34, 49.3%) and those that do not (35, 50.7%). Of the hospitals that report post-discharge follow-up, just over one-quarter (9, 26.5%) report successful contact over half the time. Hospital stroke programs lack the necessary tools and resources to apply guidelines for transitioning patients to community-based follow-up care. Currently, attempts by stroke coordinators to reach patients post-discharge have not been widely successful.

VDH has taken steps to improve post-discharge outreach, screening, and referrals to support transitioning patients to community-based follow-up care. VDH continues its collaboration with Unite Us to integrate health system and community partners into the statewide referral network. Across 133 localities, Unite Us has integrated over 1,404 partners into the Unite Us referral network with 3,031 active programs, 70% of which are open to referrals. Since December 2022, over 43,871 clients have been served and 46,558 referred cases sent. Food assistance (20%), Housing/Shelter (15%) and Social Services Case Management (12%) are the top service types by volume throughout the network in 2024, followed by additional individual and family support, transportation, mental/behavioral health, physical health, and income support. Throughout 2024, the acceptance rates of referrals increased from 65.3% in Q1 2023 to 71.0% in Q4 2023 for VHHA member health systems. Table 3 describes the health system status of Unite Us usage, type of usage, and number of active users. VHHA referrals have been achieved through the deployment of Community Health Workers at the health system level. These Community Health Workers function as an internal referral hub, receiving referrals from stroke programs and other departments within the health system. The Community Health Workers perform outreach, conduct screenings, and make referrals through Unite Us. From 2023-2024, there were 61 Community Health Workers employed by health systems. As evidenced through a retrospective analysis with Ballad Health and Unite Us, the use of this e-referral system resulted in an 8.5% reduction in the number of patients visiting the ED after social care referral, 34.4 decrease in the number of emergency department visits for patients that entered the Unite Virginia Network through a Ballad Health Community Health Worker, and an estimated $825,000 annual cost savings per 100,000 patients.

Table 3. Health System Unite Us Status, Integration, and Active Users as of March 1, 2025.

Hospital / Health System	Unite Us Status	EHR Integration or Web Application	# Active Unite Us Users

Augusta Health	Live	Web App	48
Ballad Health	Live	Integration	541
Bath Community	Live	Web App	3
Bon Secours	Live	Web App	125
Carilion	Live	Integration	200
Centra Health	Live	Integration	181
Chesapeake	Live	Web App	153
CHKD	Live	Integration	365
Inova	Live	Integration	33,821
LifePoint / Sovah Health	Live	Web App	27
Mary Washington	Live	Integration	206
Riverside	Live	Integration	486
Sentara Health	Live	Integration	675
Sheltering Arms Institute	Live	Integration	39
UVA Health	Live	Web App	235
Valley Health	Live	Web App	45
VCU Health	Live	Integration	412
Virginia Hospital Center	Live	Integration	53

*Note: Live status indicates Unite Us is fully operational in the hospital / health system.

4. Establishing a Process for Continuous Quality Improvement

In 2024 and 2025, VDH continued to provide opportunities to hospitals and FSEDs to begin or continue quality improvement projects. The two main projects that allow for data collection to influence quality improvement projects are (1) annual data re-abstraction, and (2) a hospital inventory survey.

Data re-abstraction is an evidenced-based best practice for increasing data quality and reliability. VDH works with hospitals to compare their current medical records to data previously submitted to VDH through the Coverdell grant data submission requirements. The previously submitted data is retrieved from the GWTG ®-Stroke platform. In March 2025, VDH submitted re-abstraction requests to 47 hospitals towards the determination of interrater reliability. The information from participating hospitals will be aggregated by VDH for the determination of interrater reliability. Individualized re-abstraction reports will be provided to participating hospitals in summer 2025. The individualized reports will compare previously submitted patient data to the electronic medical record re-abstraction submitted by the hospitals. Statewide and individual hospital results can be used to determine future quality improvement projects.

The VDH Hospital Stroke Inventory Survey was released on April 16, 2024, with an email invitation sent to all known hospitals and FSED stroke coordinators and/or representatives. A total of 110 survey responses were obtained, representing 99% of hospitals and FSEDs. Specific survey questions targeted the following areas of stroke care: certification, acute stroke care,

telemedicine, EMS protocols and feedback, transitions of care, and stroke quality and data use. Some of the key findings are listed below including number (N) of respondents for calculating the percentage of facilities:

- Certification
  - 64 (58%; N=110) responding facilities are stroke certified.
- Acute Stroke Care
  - 68 (62%, N=109) respondents meet the recommended average door-to-thrombolytic time of less than 60 minutes.
- Telemedicine
  - 87 (79%, N=109) respondents receive consultation services from a neurology telemedicine provider.
  - 45 (52%, N=87) responding facilities reported to receive performance reports from the telemedicine providers.
- EMS Protocols and Feedback
  - 93 (86%, N=93) respondents accept suspected stroke patients from EMS; 75 respondents being hospitals and 18 being FSEDs.
- Transitions of Care
  - 14 (20%, N=69) respondents have a patient referral tracking system to support transitions of care for stroke patients.
  - 34 hospitals (57%, N=69) reported they conduct post-discharge follow-up interactions with patients after being discharged home.
- Stroke Quality and Data Use
  - 89 (81%, N=110) respondents have implemented changes to improve stroke care practices and patient care, with 81 of these facilities (98%) reporting improvements.
- Community Education and Disparities of Care
  - The most common used Stroke Smart material was the English language magnet (61 of 110, 55%) and least common was the Spanish language wallet card (41 of 110, 37%).
  - 46 (57%, N=81) respondents monitor for disparities among patients impacted by stroke or at high risk for a stroke.

Findings from the 2024 Virginia Hospital Stroke Inventory Survey were presented to stakeholders in July 2024 and summarized in a report as posted to the VDH Stroke website in August 2024.

RECOMMENDATIONS

Upon advisement of the Virginia Stroke Care Quality Improvement Advisory Group, the following are recommendations provided in response to the Code of Virginia § 32.1-111.15:1:

Implement Systems to Collect Data and Information about Stroke Care

1. Non-certified stroke centers, as well as free-standing emergency departments and post-acute discharge facilities such as inpatient rehabilitation facilities and skilled nursing facilities, should contribute data to the Virginia Stroke Registry. VDH is currently establishing the Virginia Stroke Registry to serve as the statewide system for collecting data and information on stroke care in the Commonwealth, as required by Virginia Code § 32.1-111.15:1.

2. The Virginia Stroke Registry should collect additional data elements related to specific populations of interest, including pregnancy status and sickle cell status. The Registry should also collect data elements regarding patients who have been treated using advanced stroke therapies.

3. The Virginia Stroke Registry should include the collection of "Z" codes (ICD-10 codes for social determinants of health) in order to address disparities of care across Virginia.

4. The Virginia Stroke Registry should serve as a resource to hospitals and free-standing emergency departments to implement quality improvement efforts, including ongoing stroke certification processes.

5. The Virginia Stroke Registry should be interoperable with additional Virginia data sources, such as the Virginia Vital Events Statistics Program, to comprehensively describe stroke burden and gaps in stroke care along the full continuum of care.

6. Facilitate Data Sharing and Collaboration

7. The Virginia Hospital and Healthcare Association (VHHA) Collaborative should continue to engage the non-certified stroke hospitals and guide them towards stroke certification, participation in the Virginia Stroke Registry, and quality improvement.

8. The American Heart Association's (AHA) Get With The Guidelines ®-Stroke participating hospitals should activate the Coverdell layer, a nationally recognized data set. This means that those hospitals would be extracting additional data from patient records and submitting that data to the Registry, following AHA's national best practices for the kind of data hospitals should collect and report on stroke incidences.

Apply Guidelines for Transitioning Patients to Community-Based Follow-Up Care

9. Hospitals should continue to use Unite Us, or any statewide referral platform, to alleviate the burden on hospital stroke coordinators and care managers of connecting patients to necessary services post-discharge.

10. **Establish a Process for Continuous Quality Improvement**

11. VDH Office of Family Health Services (OFHS) should continue the re-abstraction project in partnership with hospitals that submit data through the American Heart Association's Get With the Guidelines® (AHA GWTG®). Of the possible variables for re-abstraction, at least one should be related to EMS. This information can be used by participating hospitals to evaluate or select an area for quality improvement.

APPENDIX A – CHAPTER 198 OF THE 2018 ACTS OF ASSEMBLY

CHAPTER 198

An Act to amend the Code of Virginia by adding in Article 2.1 of Chapter 4 of Title 32.1 a section numbered 32.1-111.15:1, relating to stroke care quality improvement. [S 867]

Approved March 5, 2018

Be it enacted by the General Assembly of Virginia: 1. That the Code of Virginia is amended by adding in Article 2.1 of Chapter 4 of Title 32.1 a section numbered 32.1-111.15:1 as follows: *§ 32.1-111.15:1. Department responsible for stroke care quality improvement; sharing of data and information.A. The Department shall be responsible for stroke care quality improvement initiatives in the Commonwealth. Such initiatives shall include:1. Implementing systems to collect data and information about stroke care in the Commonwealth in accordance with subsection B;2. Facilitating information and data sharing and collaboration among hospitals and health care providers to improve the quality of stroke care in the Commonwealth;3. Requiring the application of evidence-based treatment guidelines for transitioning patients to community-based follow-up care following acute treatment for stroke; and4. Establishing a process for continuous quality improvement for the delivery of stroke care by the statewide system for stroke response and treatment in accordance with subsection C.B. The Department shall implement systems to collect data and information related to stroke care (i) that are nationally recognized data set platforms with confidentiality standards approved by the Centers for Medicare and Medicaid Services or consistent with the Get With The Guidelines-Stroke registry platform from hospitals designated as comprehensive stroke centers, primary stroke centers, or acute stroke-ready hospitals and emergency medical services agencies in the Commonwealth and (ii) from every primary stroke center with supplementary levels of stroke care distinction in the Commonwealth. Every hospital designated as a comprehensive stroke center, primary stroke center, or primary stroke center with supplementary levels of stroke care distinction shall report data and information described in clauses (i) and (ii) to the Department. The Department shall take steps to encourage hospitals designated as acute stroke-ready hospitals and emergency medical services agencies to report data and information described in clause (i) to the Department. C. The Department shall develop a process for continuous quality improvement for the delivery of stroke care provided by the statewide system for stroke response and treatment, which shall include:1. Collection and analysis of data related to stroke care in the Commonwealth;2. Identification of potential interventions to improve stroke care in specific geographic areas of the Commonwealth; and3. Development of recommendations for improvement of stroke care throughout the Commonwealth. D. The Department shall make information contained in the systems established pursuant to subsection B and data and information collected pursuant to subsection C available to licensed hospitals and the Virginia Stroke Systems Task Force, and, upon request, to emergency medical services agencies, regional emergency medical services councils, the State Emergency Medical Services Advisory Board, and other entities engaged in the delivery of emergency medical services in the Commonwealth to facilitate the evaluation and improvement of stroke care in the Commonwealth. E. The Department shall report to the Governor and the General Assembly annually on July 1 on stroke*

care improvement initiatives undertaken in accordance with this section. Such report shall include a summary report of the data collected pursuant to this section. F. Nothing in this article shall require or authorize the disclosure of confidential information in violation of state or federal law or regulations, including the Health Insurance Portability and Accountability Act, 42 U.S.C. § 1320d et seq.2. That the provisions of the first enactment of this act shall become effective on January 1, 2019.3. That the Department of Health shall convene a group of stakeholders, which shall include representatives of (i) hospital systems, including at least one hospital system with at least six or more stroke centers in the Commonwealth, recommended by the Virginia Hospital and Healthcare Association; (ii) the Virginia Stroke Systems Task Force; and (iii) the American Heart Association/American Stroke Association, to advise on the implementation of the provisions of this act.

– Glossary of Terms, Acronyms, and Abbreviations

This is a listing of the acronyms and abbreviations appearing throughout the report and its appendices.

ACHC	Accreditation Commission for Health Care (an accrediting and certifying body)
AHA/ASA	American Heart Association/American Stroke Association
AIS	Acute Ischemic Stroke
CDC	Centers for Disease Control and Prevention
CHWs	Community Health Workers
CSC	Comprehensive Stroke Center
DE	Data Elements
DNV	Det Norske Veritas (an accrediting and certifying body)
EHR	Electronic health record
EMR	Electronic medical record
EMS	Emergency Medical Services
ePCR	Electronic patient care report
ESO	Emergency Services Organization
FIPS	Federal Information Processing Standards
GWTG	Get With The Guidelines®
ICH	Intracerebral Hemorrhage
JCHC	Joint Commission on Health Care
OEMS	Office of Emergency Medical Services
OFHS	Office of Family Health Services
PSC	Primary Stroke Center
PSC+	Primary Stroke Center Plus
Re-abstraction	A process that involves revisiting patient medical records and compares the data with what was previously submitted or what exists in a larger database
SAH	Subarachnoid Hemorrhage
SAMS	Secure Access Management Site
Stroke Registry	A reporting system designed to assist with the collection of data elements regarding stroke care to allow for the tracking and measuring of care provided and outcomes with the goal of validating and improving the quality of care
TJC	The Joint Commission (an accrediting and certifying body)
TSC	Thrombectomy-Capable Stroke Center
VDH	Virginia Department of Health
VHHA	Virginia Hospital and Healthcare Association
VSCQI	Virginia Stroke Care Quality Improvement
VSCC	Virginia Stroke Coordinator Consortium
VSSTF	Virginia Stroke Systems Task Force

APPENDIX B – TABLE 1, COMPLETE VIRGINIA CITIES AND COUNTIES MORTALITY AGE-ADJUSTED RATES, 2023

Region	Locality	Stroke Mortality Rate
Central	Amelia County	37.00
	Brunswick County	33.97
	Buckingham County	17.58
	Charles City County	29.33
	Charlotte County	56.13
	Chesterfield County	43.15
	Colonial Heights City	41.23
	Cumberland County	47.70
	Dinwiddie County	45.81
	Emporia City	148.27
	Goochland County	35.17
	Greensville County	116.32
	Halifax County	49.74
	Hanover County	28.91
	Henrico County	39.51
	Hopewell City	80.24
	Lunenburg County	50.93
	Mecklenburg County	56.65
	New Kent County	67.31
	Nottoway County	18.72
	Petersburg City	66.71
	Powhatan County	44.50
	Prince Edward County	62.12
	Prince George County	42.93
	Richmond City	46.14
	Surry County	35.26
	Sussex County	52.76
Eastern	Accomack County	45.87
	Chesapeake	46.83
	Essex County	42.08
	Franklin City	65.42
	Gloucester County	61.01
	Hampton City	56.07
	Isle of Wight County	51.76
	James City County	44.67
	King and Queen County	38.04
	King William County	49.09

	Lancaster County	7.69
	Mathews County	70.98
	Middlesex County	34.39
	Newport News City	52.32
	Norfolk City	55.46
	Northampton County	46.11
	Northumberland County	45.83
	Poquoson City	72.16
	Portsmouth City	63.33
	Richmond County	46.56
	Southampton County	53.58
	Suffolk City	52.84
	Virginia Beach City	51.10
	Westmoreland County	53.07
	Williamsburg City	30.14
	York County	38.66
Northern	Alexandria City	24.89
	Arlington County	24.16
	Fairfax County	29.46
	Fairfax City	58.94
	Falls Church City	22.29
	Loudoun County	30.56
	Manassas City	49.28
	Manassas Park City	10.03
	Prince William County	37.86
Northwest	Albemarle County	40.33
	Augusta County	35.25
	Bath County	59.19
	Buena Vista City	22.69
	Caroline County	28.14
	Charlottesville City	34.67
	Clarke County	75.38
	Culpeper County	37.54
	Fauquier County	80.20
	Fluvanna County	25.84
	Frederick County	67.11
	Fredericksburg City	30.77
	Greene County	33.20
	Harrisonburg City	58.40
	Highland County	18.23
	King George County	41.66
	Lexington City	81.54
	Louisa County	36.52

	Madison County	17.67
	Nelson County	50.76
	Orange County	43.91
	Page County	67.84
	Rappahannock County	84.60
	Rockbridge County	32.85
	Rockingham County	33.80
	Shenandoah County	59.56
	Spotsylvania County	43.06
	Stafford County	43.84
	Staunton City	46.72
	Warren County	65.45
	Waynesboro City	51.34
	Winchester City	90.55
Southwest	Alleghany County	47.53
	Amherst County	49.34
	Appomattox County	32.63
	Bedford County	32.69
	Bland County	70.51
	Botetourt County	48.21
	Bristol City	70.09
	Buchanan County	35.00
	Campbell County	39.79
	Carroll County	62.02
	Covington City	90.18
	Craig County	48.61
	Danville City	59.37
	Dickenson County	37.46
	Floyd County	29.35
	Franklin County	35.42
	Galax City	47.74
	Giles County	57.73
	Grayson County	53.46
	Henry County	57.16
	Lee County	23.97
	Lynchburg County	55.83
	Martinsville City	106.49
	Montgomery County	43.01
	Norton City	50.04
	Patrick County	46.48
	Pittsylvania County	35.58
	Pulaski County	51.96
	Radford City	24.97
	Roanoke City	49.86

	Roanoke County	52.36
	Russell County	21.81
	Salem City	77.89
	Scott County	16.55
	Smyth County	31.61
	Tazewell County	45.00
	Washington County	35.85
	Wise County	40.64
	Wythe County	33.55

APPENDIX C – LEVELS OF STROKE CERTIFICATION

	Acute Stroke Ready	Primary Stroke Center	Thrombectomy-Performing	Comprehensive Stroke Center
Certifying Body	TJC, DNV ACHC: Stroke Ready Hospital	TJC, DNV, ACHC	TJC-Thrombectomy Capable DNV-Primary Stroke Plus ACHC-Thrombectomy Stroke	TJC, DNV, ACHC
What type of facility?	Hospitals or Free-Standing Emergency Departments	Hospitals	Hospitals	Hospitals
Capabilities	Transfers most if not all AIS patients Transfers thrombolytic pts Transfers all ICH, SAH	Keeps most AIS may transfer thrombolytic pts Transfers most ICH Transfers all SAH	Keeps most AIS Keeps Thrombectomy May keep ICH or SAH Transfers to CSC	Keeps all patients Acts as a receiving facility for all patients
Receives from other facilities	No	May receive	Yes, for thrombectomy	Yes, for all
Thrombolytics	Gives	Gives	Gives	Gives
Thrombectomy	Does not do	Approx. 30% do	Does 24/7	Does 24/7
Neurosurgery	Does not do	May have	May have	Must have
Transfers patients	Yes	Yes	Yes	Yes
Teleneurology	Yes	Many have	May have	May have, May provide
Assessment by	ED Dr, NP or PA	ED Dr	ED Dr	ED Dr
Imaging Requirements	CT, Labs 24/7	CT, labs 24/7, MRI if used CTA, MRA	CT, CTA, CTP MRI, labs, MRA, angiography 24/7	CT, MRI, labs, MRA, angiography 24/7

	MRI 24/7 (if used)	Cardiac imaging	Carotid ultrasound Cranial ultrasound (TJC only) TEE as indicated (DNV	Carotid ultrasound Cranial ultrasound TEE, TTE as indicated
Stroke Unit	Not required	Dedicated stroke beds	Dedicated stroke beds Dedicated neuro ICU beds On-site CCU coverage	Dedicated stroke beds Dedicated neuro ICU beds On-site CCU coverage
Research	Not required	Not required	Not required	Required
Reviewed	TJC-every 2 yrs, Call on off years DNV-Annually ACHC-every 3 yrs	TJC-every 2 yrs, Call on off years DNV-Annually ACHC-every 3 yrs	TJC-every 2 yrs, Call on off years DNV-Annually ACHC-every 3 yrs	TJC-every 2 yrs, Call on off years DNV-Annually ACHC-every 3 yrs
Guidelines	Recommendations from Brain Attack Coalition for Acute Stroke Ready Hospitals, 2013	Recommendations from Brain Attack Coalition for Primary Stroke Centers, 2011	No guideline recommended—developed from 2015 Update to 2013 Guidelines	Recommendations from Brain Attack Coalition for Comprehensive Stroke Centers, 2005

TJC=The Joint Commission
DNV=Det Norske Veritas
ACHC=Accreditation Commission for Health Care

APPENDIX E – CERTIFIED STROKE CENTERS IN VIRGINIA AS OF MARCH 2025

Hospital Name	City
Comprehensive Stroke Centers	
Bon Secours St. Mary's Hospital	Richmond
Chesapeake Regional Medical Center	Chesapeake
HCA CJW Medical Center - Johnston Willis	Richmond
Inova Fairfax Hospital	Falls Church
Riverside Regional Medical Center	Newport News
Sentara Norfolk General Hospital	Norfolk
UVA Hospital	Charlottesville
VCU Medical Center	Richmond
Thrombectomy-Capable Stroke Centers	
Carilion Roanoke Memorial Hospital	Roanoke
Centra Lynchburg General Hospital	Lynchburg
Virginia Hospital Center	Arlington
Primary Stroke Centers	
Augusta Health	Fishersville
Bon Secours Mary Immaculate Hospital	Newport News
Bon Secours Maryview Medical Center	Portsmouth
Bon Secours Memorial Regional Medical Center	Mechanicsville
Bon Secours Rappahannock General Hospital	Kilmarnock
Bon Secours Richmond Community Hospital	Richmond
Bon Secours Southside Regional Medical Center	Petersburg
Bon Secours St. Francis Medical Center	Midlothian
HCA CJW Medical Center - Chippenham	Richmond
HCA Henrico Doctors Hospital - Forest	Richmond
HCA Henrico Doctors Hospital - Parham	Richmond
HCA Henrico Doctors Hospital - Retreat	Richmond
HCA LewisGale Medical Center	Salem
HCA Reston Hospital Center	Reston
HCA Spotsylvania Regional Hospital	Fredericksburg
HCA StoneSprings Hospital Center	Dulles
HCA Tricities Hospital	Hopewell
Inova Alexandria Hospital	Alexandria
Inova Fair Oaks Hospital	Fairfax
Inova Loudoun Hospital	Leesburg
Inova Mount Vernon Hospital	Alexandria

LP Fauquier Hospital	Warrenton
LP Sovah Health Danville Regional Medical Center	Danville
LP Sovah Health Memorial Hospital of Martinsville	Martinsville
LP Twin County Regional Hospital	Galax
Mary Washington Hospital	Fredericksburg
Riverside Doctors' Hospital of Williamsburg	Williamsburg
Riverside Shore Memorial Hospital	Onancock
Riverside Walter Reed Hospital	Gloucester
Sentara Care Plex Hospital	Hampton
Sentara Leigh Hospital	Norfolk
Sentara Martha Jefferson Hospital	Charlottesville
Sentara Northern Virginia Medical Center	Woodbridge
Sentara Obici Hospital	Suffolk
Sentara Princess Anne Hospital	Virginia Beach
Sentara RMH Medical Center (Rockingham Memorial)	Harrisonburg
Sentara Virginia Beach General Hospital	Virginia Beach
Sentara Williamsburg Regional Medical Center	Williamsburg
UVA Prince William Medical Center	Manassas
Valley Health Winchester Medical Center	Winchester
VCU Community Memorial Hospital	South Hill
Acute Stroke Ready Facilities	
Ballad Health Johnston Memorial Hospital	Abingdon
Bon Secours Emergency Center - Colonial Heights	Colonial Heights
Bon Secours Emergency Center - Harbour View	Suffolk
HCA Emergency Center - Prince George	Prince George
HCA Emergency Center - Swift Creek	Chesterfield
HCA Emergency Center - Tysons	Leesburg
HCA Emergency Room - Fredericksburg	Fredericksburg
HCA Montgomery Regional Hospital	Blacksburg
Inova Emergency Center - Ashburn	Ashburn
Inova Emergency Center - Leesburg	Leesburg
Mary Washington Stafford Hospital	Stafford
Sentara Emergency Center - Belle Harbour	Suffolk
Sentara Emergency Center - Independence	Virginia Beach
VCU Tappahannock Hospital	Tappahannock
Non-Stroke Certified Hospitals	
Ballad Health Dickenson Community Hospital	Clintwood
Ballad Health Lee County Community Hospital	Pennington Gap
Ballad Health Lonesome Pine Hospital	Big Stone Gap
Ballad Health Norton Community Hospital	Norton

Ballad Health Russell County Medical Center	Lebanon
Ballad Health Smyth County Community Hospital	Marion
Bath Community Hospital	Hot Springs
Bon Secours Southampton Memorial Hospital	Franklin
Bon Secours Southern Virginia Regional Medical Center	Emporia
Buchanan General Hospital	Grundy
Carilion Franklin Memorial Hospital	Rocky Mount
Carilion Giles Memorial Hospital	Pearisburg
Carilion New River Valley Medical Center	Christiansburg
Carilion Rockbridge Community Hospital	Lexington
Carilion Tazewell Hospital	Tazwell
Centra Bedford Memorial Hospital	Bedford
Centra Southside Community Hospital	Farmville
HCA Alleghany Regional Hospital	Low Moor
HCA Pulaski Community Hospital	Pulaski
LP Clinch Valley Medical Center	Richlands
LP Wythe County Community Hospital	Wytheville
Sentara Halifax Regional Hospital	South Boston
UVA Culpeper Regional Hospital	Culpeper
UVA Haymarket Medical Center	Haymarket
Valley Health Page Memorial Hospital	Luray
Valley Health Shenandoah Memorial Hospital	Woodstock
Valley Health Warren Memorial Hospital	Front Royal
Non-Stroke Certified Free Standing Emergency Departments	
Bon Secours Emergency Center - Chester	Chester
Bon Secours Emergency Center - Short Pump	Henrico
Bon Secours Emergency Center- Westchester/Watkins	Midlothian
Centra Emergency Center - Gretna	Gretna
HCA Emergency Center - Cave Spring	Roanoke
HCA Emergency Center - Hanover	Mechanicsville
HCA Emergency Center - LewisGale Blue Hills	Roanoke
HCA Emergency Room - LewisGale Christiansburg	Christiansburg
Inova Emergency Center - Fairfax	Fairfax
Inova Emergency Center - Franconia-Springfield	Alexandria
Inova Emergency Center - Lorton	Lorton
Mary Washington ED - Harrison Crossing	Fredericksburg
Mary Washington Emergency Center - Lee's Hill	Fredericksburg
Sentara Emergency Center - Lake Ridge	Lake Ridge
Sentara Emergency Center - Martha Jefferson	Charlottesville
Sentara Emergency Center - Port Warwick	Newport News

VCU Emergency Center - New Kent	Quinton

APPENDIX F – MEETING MINUTES

Virginia Stroke Care Quality Improvement Advisory Group Meeting

Meeting Location: Edward Via College of Osteopathic Medicine (VCOM) – Virginia Campus
2265 Kraft Drive, Blacksburg, VA 24060
April 19, 2024 | 8:30am – 9:40am
Meeting Minutes
Attendance: 22 attendees in person

Attendees **4 VDH** **13 Hospital** **2 EMS** **3 Public**	1. Patrick Wiggins, VDH Chronic Disease Supervisor 2. Kathryn Funk, VDH Stroke Registry Coordinator 3. Allie Lundberg, VDH Stroke Epidemiologist 4. Bethany McCunn, VDH Stroke Registry Epidemiologist 5. Ron Januchowski, VCOM Dean 6. Amy Markham, Augusta Health 7. Beth Hundt, Centa Health 8. Donna Layne, Centra Health 9. Elizabeth Hart, HCA Lewis Gale Salem 10. Heather Turner, UVA Health 11. Mary Jobson-Oliver, UVA Health 12. Melanie Winningham, Sentara/Sevaro 13. Nicole Duck, Riverside Medical 14. Rebecca Smith, Ballad Health 15. Rhonda Ragan, Winchester Medical 16. Robin Scott, Bon Secours St. Mary's 17. Stacie Stevens, VCU Health 18. Karen Bonham, Twin County Hospital 19. David Long, TEMS Regional Council 20. Valerie Vagts, TEMS Regional Council 21. Kip Rollins, AstraZeneca 22. Laurie Mayer, Telespecialists
Agenda	**Notes**
8:30-8:45 am Welcome and Minutes Approval	Kathryn Funk (VDH) opened the meeting at 8:42 am with introductions of the stroke team. Elizabeth Hart motioned to approve the minutes, and Melanie Winningham seconded. The minutes were approved as submitted.
8:45-9:30 am Hospital Reabstraction Project	Allie Lundberg provided a brief overview of the results of the Hospital Data Re-abstraction Project. The Patient Record Re-Abstraction Survey was distributed on 12/1/23 with targeted completion date of 1/31/24. 44 Hospitals were requested to participate with a total of 35 hospitals responding with 339 patient records re-abstracted. Of the hospitals participating, 12 are new to participating this year.

Virginia Stroke Registry Update	Comparison of 2023 to 2024: 27 hospitals to 35 hospitals, 240 records to 339 records, 1094 discrepancies to 559 discrepancies. Please see attached pdf of PP for overview of Data Elements Collected and re-abstracted results. Questions/Comments from Attendees: • Regarding Date/Time Questions, Are these a yes/no Question or exact date and time? Response: Exact date and time and a discrepancy may be off by a minute. • Regarding Time of Brain Imaging at Hospital with only 68.7% match. Question asked regarding what is used for capturing this metric and does Get With The Guidelines (GWTG) provide guidance for what constitutes the start time, i.e., order, Scout image, end of series, etc. Response: Hospitals need to work internally to be consistent with how they are abstracting data as this re-abstracted survey compares how a hospital compares with itself. It might be recommended for a hospital to develop an internal document to ensure that they are consistently collecting data from the same source. • Regarding ICD 10 Code with only 85% match, a 2% improvement over last year: Question regarding where is this coming from? Allie stated it was the primary discharge code, which may or may not be the primary discharge ICD-10 Code for the hospital. • David Long, co-chair of the VSSTF asked if there is a way to see more granular data at a facility level and if this would provide the VDH an opportunity to assist that organization for improvement. Allie stated that we are available to have conversations with facilities with a large number of discrepancies. We have also been communicating by email with some facilities regarding their fallouts.
2023 General Assembly Report	Allie Lundberg provided updates on the Virginia Stroke Registry and that the VDH Stroke team is obtaining GWTG SuperUser access. The stroke registry continues to be built and tested through the vendor and the VDH will not have an open call for beta testers. There were no comments or questions regarding this information. Allie Lundberg provided a brief overview of the 2023 General Assembly report from the VDH that is obtained from the work of the VSCQI and other Coverdell Stroke partners. An email had been sent to the attendees of the VSCQI committee on 4/18/24 with requests for public comment to be emailed to VDH by 4/25/24. Questions/Comments: • Appendix F, Table of Stroke Certified and non-Stroke Certified Hospitals and free-standing emergency departments (FSEDs). Comment made on purpose of list to assist EMS to take suspected stroke patients to certified facilities over non-certified and there are many rural areas without a certified hospital or FSED.

Public comment
9:41 am Adjourn
	• Comment that some health systems may choose to not obtain stroke certification for FSED due to close distance to certified hospital and that EMS will not be taking patients to FSED.
	  o Kathryn Funk responded that the 2024 Hospital Inventory Survey will track FSED facilities that are choosing not to be certified based upon this metric.
	  o Comment made that some FSEDs do not have stroke metrics tracked and that patients walking into a FSED will not know it is not stroke certified and will not receive the same level of care as a stroke certified FSED.
	  o Comment made that some FSED are held to the same standard of care as certified facility; however, certifying bodies will not look at the care provided to the patient prior to arrival at the certified facility. This means that non-stroke certified FSED metrics are not being tracked.
	  o Question regarding GWTG tracking of FSED metrics. Kathryn Funk responded that GWTG makes it difficult to track 2 facilities under 1 HCO account—such as a primary stroke hospital and a FSED. There is a way to have a separate account through GWTG but it is an additional cost.
	• Request made by attendee to see the table of the certified hospital and mortality data by county
	  o Question asked if mortality data is assigned by place of death or by residence of the patient. Allie responded that this is based upon residence.
	• Patrick Wiggins following up on comment about FSED certification, asked if health systems are following the same decisions to become certified or if there are other considerations. Response is that certification costs money and some organizations may choose to become stroke-certified based upon competition or remain non-stroke certified based up demand in the community and no stroke-certified facilities in area to provide competition. Cost is a consideration.
	  o Comment from attendee is that she was told that stroke programs do not make money but there is downstream revenue. How is it possible to learn more about DRGs, length of stay and Return on Investment (ROI) and if this is possible to discuss with stakeholders.
	• David Long commented that EMS is guided by state office document to take patients to certified stroke centers. This has impact in a community if a facility decides to not become stroke certified due to cost and/or distance to certified facility. EMS providers do not always know who is providing the best care and knowing that a facility is stroke-certified helps to guide destination decision.
	
	Public Comment: There was no public comment.
	Meeting adjourned by Kathryn Funk

Virginia Stroke Care Quality Improvement Advisory Group Meeting
Meeting Location: Maryview Medical Center, 3636 High Street, Portsmouth, VA
Conference Room B, 2nd Floor
July 19, 2024 | 8:30am – 9:40am

Meeting Minutes
Attendance: Patrick Wiggins, Allie Lundberg, Sophea Booker, Sue Fibish, David Long, Heather Jarvis, Chad Aldridge, Wendy Bunting, Susan Halpin, Ronda Reagan, Darrel Wellingham, Beth Hundt, Mary Jobson-Oliver, Valerie Vox, Alec Thompson, Dan Solomonsky, John Gaughen. Angel Medina-Bravo.

Time Start/End	Agenda	Minutes
Start – 8:30am End – 8:45am	**Welcome and Minutes Approval**	- David Long motioned to accept the minutes, Wendy Bunting seconded. All were in favor, none opposed. - VDH communicated that future Meetings will be held in Richmond. -VDH said that the advisory group will undergo changes to be more task oriented based on the requirements of the Code, with a big focus on the stroke registry and alignment with the CDC Coverdell grant.
Start – 8:45am End – 8:55am	**VDH Stroke Registry Updates**	- Patrick Wiggins and Allie Lundberg provided updates on the Virginia Stroke Registry and the impact on the VSCQI Advisory Group. VDH described that the VDH OEMS could no longer provide financial and administrative support for the Virginia Stroke Registry, leading to a temporary pause in progress on several foundational stroke legislative activities until VDH can secure funding and a vendor for the Virginia Stroke Registry. VDH shared that the VSCQI will also undergo administrative and structural changes to strictly adhere to public body requirements under the Freedom of Information Act. VDH communicated that more information would come once available and when VDH has secured funding and a vendor for the Virginia Stroke Registry. -David Long requested connections to EMS data in the new stroke registry. VDH responded that the registry will have EMS, hospital and acute care data.

		-Stacie Stevens: A long time ago, "Comments" were shared in GWTG, we want to avoid that this time. Requesting clear indicators of what data the VDH would be collecting. What layers requested, such as Coverdell layer only. -David Long: What is the benefit of the new registry? - VDH response: free to all hospitals to provide data and utilize data patient centered, more robust.
Start – 8:55am End – 9:40am	**Virginia Re-abstraction Data Elements Activity**	VDH presented the 2024 re-abstraction results. VDH asks the advisory group – where does the principal diagnosis come from? - Rhonda Reagan: Some are complex patients with multiple diagnoses. - Stacie Stevens: VCU uses billing coding, we appeal the diagnosis with screenshots. This impacts documenting measures for strokes. - Mary Jobson-Oliver: Is there any way to meet with coders to educate them? Can templates be standardized? - Chad Aldridge: suggestions for VRS and CDC Coverdell to include primary, secondary, tertiary diagnosis for stroke, regardless of what GWTG does. Potential requirement from AHA is that they make every element of NIH stroke scale to be reported. Task force can recommend if we want this or not. - Stacie: I do like the hierarchy at AHA GWTG. David Long: Having NIH (6 or greater) could justify EMS hospital bypass. - Chad Aldridge: I do not think this is validated yet. Could we measure pre-hospital arrival and see improvement over time? - VDH: Could this be looked at mobile stroke unit elements to see NIH pre-hospital / post-hospital? - Mary Jobson-Oliver: iTreat at UVA measures this, but we only have a few cases. - Chad Aldridge: Teleneurology may be more widely used in Central VA because of this reason. VDH: What is the definition of the initial evaluation?

		- John Gaughen: It is a hub and spoke model. Could be coding outpatients who had a seizure. - Wendy Bunting: EPIC – episode of care is beginning to end, sounds like the Coverdell definition of initial evaluation may be limited. - Ronda Reagan: Initial evaluation is the key difference. Example, someone could be in the hospital for 3 days and then stroke occurs, in this example brain imaging, did not occur at initial evaluation. - VDH: Could look into yes/no to drill down to see if they are a transfer hospital or receiving hospital. - Suggestion for future meetings to have a coder come and present. - Elizabeth Hundt: Coding goes by discharging physician. - John Gaughen: Could be hemorrhagic transformation.
Start – 9:40am End – 9:43am	**Public Comment**	There were no comments from the public.
End – 9:43am	**Adjourn**	Meeting adjourned at 9:43am.

APPENDIX G – REFERENCES

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