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New York State Stroke Services

GUIDANCE DOCUMENT FOR HOSPITALS AND HEALTH SYSTEMS

VERSION 19.4



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Guidance Document Change Log

December 9, 2019

Page 7: The Stroke **Medical Director** at the Primary Stroke Center can be a licensed and board-certified family medicine physician.

Page 7: The **Acute Stroke Team** is defined by the hospital but must have an individual that is privileged by the hospital to make treatment decisions.

Page 7: The **Neurologist** should be available in person or via telemedicine within 15 minutes of request when necessary for initial patient assessment or to make treatment decisions. The telemedicine should be two-way audio and visual if there is a need for the Neurologist to view the patient to make treatment decisions. In other instances, audio communication may suffice.

Page 8: The Primary Stroke Center is required to have a **diagnostic radiologist** and/or physician privileged to interpret CT, CTA and MRI of the brain. The facility should determine who is privileged to interpret these images.

Page 8: The bedside swallow screen can be performed by the **speech therapist** or other staff trained in doing this assessment.

Page 9: **Telemedicine** is defined as two-way audio and visual communication when needed to visually assess patients. In other instances, audio communication may suffice.

Page 14: **New Measure**. Clinical evidence and the standard of care for ischemic stroke has evolved to include the use of tissue plasminogen activator (tPA) between 3 and 4.5 hours after symptom onset. Given this, NYS is interested in looking at tPA given up to 4.5 hours after symptom onset. This measure update also aligns with GWTG update.

Page 24: **Cerebrovascular Neurosurgeon**; clarification on requirements for Comprehensive Stroke Centers.

Page 35: **Initial NIHSS Reported**. Measure clarification. Please use NYS measure that includes intracerebral hemorrhage.

Page 38: **Door to MD Assessment**, include initial assessments that are completed by midlevel's as well as MDs.

Page 38: **Door to Brain Image Initiated**, this measure was updated to reflect the July 2019 GWTG update. The new measure is door to brain image initiated instead of door to brain image complete.

Page 41: **Door-in-door-out time** clarified to include patients who arrived by modes other than EMS. This is now consistent with the GWTG pre-hospital care measure.

Introduction

This program guidance document provides information to New York State general hospitals on developing a stroke program and meeting requirements relating to the New York State Stroke Designation Program and Title 10 NYCRR 405.34: Stroke Services. It serves to detail the process by which a hospital may request designation as a stroke center from the New York State Department of Health, and it outlines New York State specific standards for all levels of stroke designation.

Treatment of acute stroke is most successful through a purposefully planned and implemented system of coordinated care. This happens across a continuum beginning with pre-hospital response, through emergency treatment, and post-discharge transitions of care. The New York State Department of Health is committed to working with medical care providers across the state to ensure that all stroke patients receive the most appropriate and timely medical treatments possible. This guidance document addresses the activities and roles that hospitals can and must play in their part of this effort.

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Stroke Hospital Designation

Pursuant to Title 10 NYCRR 405.34: Stroke Services regulations, general hospitals in New York State interested in becoming a designated stroke center will be required to receive certification as either a Primary, Thrombectomy Capable or Comprehensive Stroke Center from a nationally recognized accreditation organization approved by the New York State Department of Health. A list of accreditation organizations with certifying authority will be publicly available on the Department of Health webpage. These Organizations will be referred to as 'Certifying Organizations' throughout this document and in the Stroke Designation Program. Hospitals wishing to participate in the voluntary stroke designation program are not required to receive hospital wide accreditation from the certifying organization; rather, they must receive disease-specific certification for stroke services.

Once a hospital receives stroke specific certification at the Primary, Thrombectomy Capable or Comprehensive level, the hospital must apply, utilizing the 'Request for Stroke Designation' form found on the Department of Health webpage, to the New York State Department of Health for Stroke Designation. As outlined in Title 10 NYCRR 405.34, the New York State Department of Health will issue designation based on the certifying organizations recommendation but may also take other criteria in consideration.

Transition Timeline

Title 10 NYCRR 405.34, part (g) allows for a three-year transition period to phase out the current stroke designation program. During the transition period, all currently designated stroke centers will continue to receive suspected stroke patients from EMS and report to the Health Electronic Response Data System (HERDS). Hospitals will no longer be required to report performance measures and time targets to HERDS once they have been certified and designated under the regulated stroke program. Performance measures and time targets, as outlined in this document, will be reported to a stroke registry. Hospitals may be required to report other information (i.e. informed consent) to HERDS after designation in the regulated program. Hospitals that do not receive designation within the three-year transition time period will no longer maintain stroke designation and will not be recognized within the New York State stroke system of care by EMS as a destination for suspected stroke patients.

The transition time period applies only to hospitals seeking to maintain designation achieved prior to the regulated stroke program. Applications for designation will be accepted on a rolling basis for any hospital meeting certification requirements and newly seeking designation as a stroke center.

HOSPITALS WITH NEW YORK STATE STROKE DESIGNATION

Hospitals that are currently (before adoption of regulations) recognized by New York State as a designated stroke center and wish to remain a stroke center will have two years from the effective date of the regulations to enter into a contractual agreement with a certifying organization. Once the hospital has entered into a contractual agreement, the hospital will have one additional year to complete the certification process and apply to the New York State Department of Health for designation.

HOSPITALS WITH PRIOR CERTIFICATION FROM AN ACCREDITING ORGANIZATION

Hospitals that have already received certification from an accreditation organization prior to the effective date of the regulations must submit an application to the New York State Department of Health for stroke center designation before the end of the three-year transition. The application must be accompanied with verification that the hospital has been recertified with an approved certifying organization after the adoption of Title 10 NYCRR 405.34.

Stroke Center Certification Requirements

The Primary, Thrombectomy Capable and Comprehensive Stroke Center criteria integrate requirements related to the Guidelines of the Brain Attack Coalition and

recommendations of the New York State Department of Health, the New York State Stroke Advisory Group, the American Heart Association and the American Stroke Association.

Certifying organizations will utilize these criteria in developing their own standards. All certifying organizations must use these criteria as a baseline but may also include additional standards that exceed this baseline in their certification process.

Primary Stroke Center Certification Requirements

These Primary Stroke Center (PSC) requirements will replace the pre-regulation New York State Primary Stroke Center requirements. The Primary Stroke Center is a hospital-based center with the resources and processes to care for acute stroke patients. It is considered the cornerstone of New York State stroke care and as such it is the landing hub of patients with suspected stroke that, if necessary, may be transferred to a higher acuity center.

NOTE: For hospitals that meet criteria outlined in Title 10 NYCRR 405.19 (d)(1)(ii) (those with less than 15,000 unscheduled emergency visits per year), nurse practitioners and physician assistants may substitute for Emergency Department Physicians, if the roles of nurse practitioners and physician assistants are defined in the organizational policies as physicians.

ELIGIBILITY

The Primary Stroke Center must demonstrate through these standards that it has the infrastructure and capability to care for acute stroke patients including administration of intravenous thrombolytic therapy.

LEADERSHIP

The organization provides leadership for the stroke program through a stroke coordinator who is a full-time member of the hospital staff (can be concurrently assigned to other roles in the hospital) and a medical director.

Stroke Coordinator

The organization identifies an administrative leader (stroke coordinator) who acts as a liaison with EMS in coordinating and evaluating pre-hospital care related to stroke services. This includes ensuring timely and accurate data submission to EMS as requested, and complying with any monitoring programs established by regional EMS providers. The stroke coordinator will also take responsibility for collecting, storing and reporting data collection and for quality improvement of the stroke program.

Medical Director

The organization identifies a physician leader with sufficient knowledge in cerebrovascular disease and experience caring for stroke patients. This person shall be a physician on the hospital staff, licensed in New York State, and Board Certified in **Family Medicine**, Internal Medicine, Emergency Medicine, Neurology, Neuroradiology or Neurosurgery. The Medical Director shall attest to eight (8) hours of stroke focused continuing education on an annual basis. The director or designee shall be available 24 hours per day, 7 days per week (24/7) to provide leadership and deal with difficult medical, logistical and administrative issues. There must be a call schedule available for the designee when the director is unavailable.

PRE-HOSPITAL SERVICES (EMS)

The Primary Stroke Center tracks that EMS notified the ED of all potential incoming stroke patients and then provides feedback to EMS. The organization can contact their REMAC to connect with the Medical Director of the services to provide that feedback.

24/7 PROVIDER AVAILABILITY

The following providers must be available 24/7 and within time frames indicated below:

Acute Stroke Team

The acute stroke team, as defined by the organization, must be available 24/7, must be at the bedside within 15 minutes of patient arrival/activation and **must include an individual privileged to make treatment decisions**. The acute stroke team must complete eight (8) hours of stroke-focused continuing education on an annual basis (Please see staff education on page 11 for more details). Hospitals may determine the content and objectives of this education and attest on behalf of their staff to the completion of continuing education as evidence of satisfying this requirement.

Neurologist

The Primary Stroke Center has access to a Neurologist 24/7 for consultation of suspected stroke patients.

The Neurologist (or appropriately trained clinician, as defined by the Stroke Medical Director) must be available in person or via telemedicine within 15 minutes of the request for initial assessment and/or when required for treatment decisions.

When the PSC uses Telemedicine to fulfil this requirement it must be two-way audio and visual communication when there is a need for the Neurologist to view the patient to make treatment decisions. Otherwise, contact with the Neurologist can be via audio communication only.

Emergency Medicine Physicians/Nurses

The Primary Stroke Center has physicians and nurses trained in the administration and monitoring of IV tPA. The organization assures that 100% of emergency department physicians, physician assistants, nurse practitioners and nursing staff are trained annually on evidence-based acute stroke assessment and recognition (signs and symptoms of stroke) as well as how to activate the acute stroke team per hospital protocol (Please see page 11 staff education for any ED staff that will be part of the Acute Stroke Team).

Diagnostic Radiologist

The Primary Stroke Center must have a diagnostic radiologist with complex stroke experience and/or a physician privileged (as determined by the facility) to interpret CT, CTA and MRI of the brain. The radiologist and/or physician that is interpreting the images must be available either in person or via telemedicine so that images can be read within 20 minutes of their completion.

Stroke Unit Nursing Care

Nursing staff on the stroke unit (monitoring stroke beds) are under the clinical direction of a Registered Nurse who by education, training, and experience is qualified to direct nursing care to the stroke population. Nurses on the stroke unit must complete eight (8) hours of stroke-focused continuing education on an annual basis (Please see staff education on page 11 for details).

AVAILABILITY OF SPECIALIZED ASSESSMENTS & SERVICES

Rehabilitation Staff

Physical Therapist, Occupational Therapist, and Speech Therapist are available as needed. The organization must have staff with the ability to perform a bedside swallowing screen 24/7. This can be done by a Speech Therapist or other staff trained to perform a bedside swallow screen.

Telemedicine

If used to assess patients (neurologist) or to read imaging, telemedicine capability must be available 24/7 within 20 minutes of the patient's arrival (within 15 minutes for initial neurologist assessment per Neurology time parameters above). Telemedicine is defined as two-way audio and visual communication when being used to visually assess patients.

NEUROSURGICAL COVERAGE

Written documentation shows evidence of neurosurgical coverage or protocol for transfer to an appropriate facility.

TRANSFER AGREEMENT

The Primary Stroke Center shall have a written transfer protocol and transfer agreement with at least one facility capable of providing timely neurosurgical, cerebral endovascular and neuro ICU services 24 hours a day, seven days a week.

The Primary Stroke Center must at a minimum have a transfer agreement with a Comprehensive Stroke Center (CSC).

If there is an accessible Thrombectomy Capable Stroke Center (TSC) the Primary Stroke Center may wish to have a transfer agreement with the TSC for timely endovascular services in addition to the agreement with the CSC.

When developing transfer agreements, the Primary Stroke Center is to ensure target timeframes for transfer are incorporated into the agreement. Transfer for neurosurgical and endovascular services shall be initiated and executed in a timely manner based on medical need.

At a minimum the transfer agreement must address:

- 24/7 emergency contact information of acute stroke team and/or the receiving team at the receiving facility authorized to accept transfers
- The ability to transfer the patient 24/7, the ability of the receiving facility to accept the patient 24/7
- The ability to affect a transfer in a timely manner as appropriate for patient needs (target timeframe for transfer must be identified in the transfer agreement for both neurosurgical and endovascular services),
- Clinical criteria for transfer and processes for obtaining consultation for transfer decisions.
- Expectations/criteria for advanced imaging prior to transfer, including CTA/CTP or other imaging modalities, and time frame for diagnostic service completion and image sharing processes.
- Plans for the triage and transport of suspected stroke patients including, but not limited to, those patients who may have an emergent large vessel occlusion, to an appropriate facility within a specified time.

The transfer agreement shall clearly delineate responsibility related to who will perform a CTA (the sending or receiving facility) and under which clinical circumstances. The imaging capabilities of the primary stroke center must be clearly articulated in the agreement. Any imaging performed at the sending facility must be shared with the receiving facility before or upon transfer. In all cases, the transfer agreement shall address the rapid imaging and treatment of the suspected stroke patient.

* Hospitals can demonstrate required elements of the transfer agreement through references in the transfer agreement to hospital policies and procedures that incorporate

these elements. Policy and procedure documents should be appended to the transfer agreement.

The Primary Stroke Center shall have a contract with a transportation vendor that covers expeditious transfer by both ground ambulance and air ambulance transfer options as applicable.

AVAILABILITY OF DIAGNOSTIC SERVICES

Neuroimaging

The Primary Stroke Center can perform and read a CT of the brain on a 24/7 basis. The center must have the capability to perform a CT within 25 minutes of the patient's arrival. Also, physicians experienced in interpreting such images must be readily available either on-site or through teleradiology so that the images can be read within 45 minutes of patient arrival.

It is recommended that Primary Stroke Center have MRI available to be utilized when clinically indicated. Administration of tPA or transfer for definitive care for acute stroke should not be delayed for MRI.

If using teleradiology, it is recommended that access to images and patient chart are also available.

Vascular Imaging

The NYSDOH Stroke Designation Program recommends that the Primary Stroke Center have the ability to perform a CTA of the arch to vertex (head and neck) to assess for a large vessel occlusion and identify candidates for endovascular therapy. CTA should not delay the administration of IV tPA. CTA imaging must be able to be read within 45 minutes of arrival either on-site or through teleradiology. Expectations for CTA prior to transfer for endovascular intervention should be clarified with the receiving facility.

While CTA is a strong recommendation of the NYSDOH, it is not currently required for initial certification. However, ALL Primary Stroke Centers will be required to have 24/7 CTA capability by the time of the Center's recertification (schedule to be determined by the certifying agency).

It is recommended that Primary Stroke Center have MRA available to be utilized when clinically indicated. Administration of tPA or transfer for definitive care for acute stroke should not be delayed for MRA.

Other Imaging

Echocardiogram is available for instances where it is clinically indicated.

Laboratory

Laboratory testing is available 24/7. Laboratory studies must be obtained, run, resulted, and communicated to the requesting practitioner within 45 minutes of patient arrival. Laboratory capability must include, but is not limited to:

- Complete blood count
- Coagulation studies (INR, PT, APTT)
- Troponin
- Blood chemistries
- Pregnancy test for all child-bearing aged females
- Drug toxicology

Pharmacy

Formulary must include availability of IV tPA 24 hours per day, seven days per week.

STROKE UNIT/ICU

The Primary Stroke Center has a stroke unit or designated stroke beds with the capability to continuously and simultaneously monitor acute stroke patients.

The stroke unit has sufficient equipment and supplies to provide an appropriate level of care for the stroke population, including multi-channel telemetry capable of monitoring blood pressure, pulse, respiration, and oxygenation.

STROKE EDUCATION

Staff Education

Staff on the Acute Stroke Team, or any staff member anticipated to serve as a member of the acute stroke team, nurses in the stroke unit and individuals in stroke leadership positions (stroke medical director and stroke coordinator) must complete eight (8) hours of stroke-focused continuing education annually. The hospital may determine the content and objectives of the education. Educational content should improve stroke care and may include, but is not limited to, health system or hospital specific educational components, review of new literature and/or changes in care that should be provided. Hospitals may attest to staff completion of continuing education as evidence of satisfying this requirement.

The Primary Stroke Center provides annual training and education, including a formal orientation on evidenced-based acute stroke assessment (recognition of signs and symptoms), management of stroke patients and protocol for the activation of the acute

stroke team, for all nurses, physicians and midlevel's providing care in the emergency department, acute stroke unit, intensive care unit (ICU), and catheterization laboratory.

Patient Education

Patient education materials relative to stroke are provided to the patient and documented in the medical record. Resources should include a graphic on benefits and risks of IV tPA (e.g. NNT, likelihood of benefits to risk)

Health Promotion/Public Education

Two (2) evidence-based public education activities (e.g. Hip-Hop Stroke) with a focus on stroke prevention done annually with data on type and numbers reached reported to the certifying organization.

PERFORMANCE MEASURES AND QUALITY IMPROVEMENT

Stroke Registry

The Primary Stroke Center must participate in an approved stroke registry. The stroke registry utilized by the PSC must meet specific criteria to be determined by the NYSDOH. It is the responsibility of the registry to collect the specific measures and to the specifications identified by the NYSDOH. Additionally, the data must be aggregated by the registry.

The PSC must grant NYSDOH access to their discharge level and aggregated data for the purpose of program evaluation and quality improvement.

Quality Improvement

The PSC must have an internal QI group specific to stroke care that meets at least monthly with recorded minutes. This group is minimally expected to review stroke quality benchmarks, indicators, evidence-based practices, patient outcome data (i.e., mortalities, etc.), and delays in patient care, and take actions as necessary. The PSC must have an interdisciplinary team with a peer review process that includes the medical director, stroke coordinator and a quality facilitator charged with conducting quality reviews.

Stroke Log

The Primary Stroke Center maintains a stroke log that includes response times, along with patient diagnoses, treatments, and outcomes.

Process and Outcome Measures & Data Collection

Primary Stroke Centers are required to collect and report data on a quarterly basis for the following measures. The information is to be used for ongoing performance improvement efforts. Please see Appendix I for measure specifications.

Performance Measures

NYS PSC 1: VTE prophylaxis

NYS PSC 2: Discharge on antithrombotic therapy

NYS PSC 3: Anticoagulation therapy for AFIB/Flutter

NYS PSC 4: Thrombolytic therapy (arrive by 3.5 hours, treat by 4.5 hours)

NYS PSC 5: Antithrombotic therapy by end of hospital day two

NYS PSC 6: Discharged on statin medication

NYS PSC 7: Stroke education

NYS PSC 8: Smoking cessation

NYS PSC 9: Assessed for rehabilitation

NYS PSC 10: Dysphagia screening

NYS PSC 11: NIHSS on admission

NYS PSC 12: mRS on discharge

NYS PSC 13: Pre-notification

NYS PSC 14: EMS Pre-hospital Stroke Scale

NYS PSC 15: Pre-notification content:

- a. Last Known Well communicated
- b. Stroke scale findings communicated

NYS PSC 16: Stroke team activated prior to arrival

Time Targets and Benchmark Goals

NYS PSC 17: Door to MD evaluation (10 minutes) – 85%

NYS PSC 18: Door to stroke team (15 minutes)- 85%

NYS PSC 19: Door to brain image initiated (25 minutes)- 85%

NYS PSC 20: Door to brain image read (45 minutes)- 85%

NYS PSC 21: Door to IV tPA (60 minutes)- 85%

NYS PSC 22: Door to IV tPA (45 minutes)- 50%

NYS PSC 23: Door-in-door-out time at first hospital prior to transfer for acute therapy (DOH has not set a goal time)

Thrombectomy Capable Stroke Center Certification Requirements

The Thrombectomy Capable Stroke Center (TSC) is a hospital-based program that performs endovascular thrombectomy procedures and provides post-procedural care. These requirements build on the Primary Stroke Center requirements and are in **addition** to those outlined in that respective section.

ELIGIBILITY

The Thrombectomy Capable Stroke Center must meet all Primary Stroke Center requirements. The Thrombectomy Capable Stroke Center must have performed mechanical thrombectomy and post-procedure care for at least 15 patients with ischemic stroke over the past 12 months (or 30 over the past 24 months).

A hospital seeking designation as a Thrombectomy Capable Stroke Center that does not meet the historical facility volume but otherwise demonstrates capability by meeting all other requirements and criteria outlined in this document (including the interventionist volume and credentialing requirement) may be eligible for certification and designation as a Thrombectomy Capable Stroke Center only if the following conditions are satisfied:

1. The hospital seeking certification must present evidence that it has performed mechanical thrombectomy and post-procedure care for at least 12 patients with ischemic stroke by the first full year following designation of the Thrombectomy Capable Stroke Center;
2. The Department may conduct a review of cases and outcomes performed by Thrombectomy Capable Stroke Centers with an annual volume of less than 15 mechanical thrombectomies to evaluate the appropriateness and quality of care provided by the center until the annual volume requirement of 15 is achieved;
3. The hospital seeking certification must present evidence that the annual volume requirement has been achieved by the second full year following designation of the Thrombectomy Capable Stroke Center and maintained thereafter;
4. Thrombectomy Capable Stroke centers with an annual volume below 15 cases by the end of the second full year shall surrender designation as a Thrombectomy Capable Stroke center or shall have their designation revoked.

LEADERSHIP

The organization provides leadership for the stroke program through a full-time stroke coordinator and medical director.

Stroke Coordinator

See PSC

Medical Director

The organization identifies a physician leader with experience caring for stroke patients. This person shall be a physician on the hospital staff, licensed in New York State, and Board Certified in Neurology, Vascular Neurology, Neuro-Critical Care, Neuro-Interventional Radiology, or Neurosurgery. The Medical Director shall attest to eight (8) hours of stroke focused continuing education. The director or designee shall be available 24 hours per day, 7 days per week (24/7) to provide leadership and deal with difficult medical, logistical and administrative issues. There must be a call schedule available for the designee when the director is unavailable.

PRE-HOSPITAL SERVICES (EMS)

See PSC

24/7 PROVIDER AVAILABILITY

The following providers must be available 24/7 and within time frames indicated below:

Acute Stroke Team

See PSC

Neurologist

See PSC

Vascular Neurologist

The Thrombectomy Capable Stroke Center must have a fellowship-trained vascular neurologist.

Diagnostic Radiologist

The Thrombectomy Capable Stroke Center must have a diagnostic radiologist with complex stroke experience and/or a physician privileged to interpret CT, CTA of head and neck and MRI of the brain.

Radiology Technician

Available 24/7 to perform CT/CTA/MRI/MRA/CA.

Intensivist

Available 24/7 for post procedure care and monitoring.

Neurointerventionist

All primary Neurointerventionists (i.e. those who routinely take call to perform emergency mechanical thrombectomy) must have performed, as the primary operator, an average of 15 mechanical thrombectomies over the past 12 months or 30 over the past 24 months (in evaluating the number of mechanical thrombectomies performed, procedures performed at hospitals other than the one applying for TSC certification can be included in the total) and meet credentialing requirements. Volume criteria are applicable to each Neurointerventionist.

Endovascular Team

The team is to consist of at least one endovascular RN, one endovascular catheterization laboratory technician, and a physician privileged to perform mechanical thrombectomy. The endovascular team should perform mechanical thrombectomies together as frequently as possible. Neurointerventionists shall be available by phone with access to imaging within 10 minutes of attempted contact and the endovascular team must be onsite (including interventionist) within 30 minutes of activation.

Neurosurgeon

The TSC has 24/7 general neurosurgery coverage to respond to complications of mechanical thrombectomy.

Emergency Medicine Physicians/Nurses

See PSC

Stroke Unit Nursing Care

See PSC

Nursing staff on the stroke unit (monitoring stroke beds) are under the clinical direction of a RN who by education, training, and experience is qualified to direct nursing care to the stroke population. RNs working on a stroke unit or ICU for complex stroke patients are knowledgeable about the stroke scale used in the organization (NIHSS).

AVAILABILITY OF SPECIALIZED ASSESSMENTS & SERVICES

Rehabilitation Staff

See PSC

Telemedicine

See PSC

AVAILABILITY OF NEUROSURGICAL SERVICES

All Thrombectomy Capable Stroke Centers must have general neurosurgery coverage that can respond onsite 24/7 and availability of neurocritical care 24/7.

Transfer for Neurosurgical Services

The Thrombectomy Capable Stroke Center has a written transfer agreement with at least one Comprehensive Stroke Center to ensure timely access to neurosurgical services. See transfer agreement section for details on composition of transfer agreement.

Transfer is initiated in a timely manner based on the medical needs of the patient.

AVAILABILITY OF ENDOVASCULAR SERVICES

Mechanical thrombectomy of the brain shall be available 24/7. A physician privileged in the hospital to perform mechanical thrombectomy of the brain must be available by phone with access to images within 10 minutes of attempted contact. The physician and endovascular team must be on site within 30 minutes of neurointerventionist determination that there is a need for endovascular therapy.

NEUROINTERVENTIONIST CREDENTIALS

All primary neurointerventionists (i.e., those who routinely take call to perform emergency mechanical thrombectomy) must either be CAST certified; or meet all of the following criteria:

- Completed an ACGME- accredited or equivalent residency in neurosurgery, neurology, or radiology;
- For neurologists: completed a stroke or neurocritical care fellowship supervised by the ACGME, CAST, or UCNS; or other equivalent oversight body
- For radiologists: completed a neuroradiology subspecialty fellowship supervised by the ACGME, CAST, or UCNS; or other equivalent oversight body
- Completed neuroendovascular procedure training in a CAST- accredited program or a similarly rigorous training program; and
- Performed an average of 15 mechanical thrombectomies (as the primary operator) over the past 12 months or 30 over the past 24 months (in evaluating the number of mechanical thrombectomies performed, procedures performed at hospitals other than the one applying for TSC certification can be included in the total).

TRANSFER AGREEMENT

The Thrombectomy Capable Stroke Center shall have a transfer agreement with at least one Comprehensive Stroke Center. The CSC must have neurosurgical services and a neuro ICU available 24 hour a day, seven days a week. The Thrombectomy Capable Stroke Center shall have a transfer agreement with referring Primary Stroke Centers within their catchment area for 24/7 receipt of patients needing cerebral endovascular services.

At a minimum the transfer agreement must address:

- 24/7 emergency contact information of acute stroke team and/or the receiving team at the receiving facility authorized to accept transfers
- The ability to transfer the patient 24/7, the ability of the receiving facility to accept the patient 24/7
- The ability to affect a transfer in a timely manner as appropriate for patient needs (target timeframe for transfer should be identified in the transfer agreement for both neurosurgical and endovascular services),
- Clinical criteria for transfer and processes for obtaining consultation for transfer decisions.
- Expectations/criteria for advanced imaging prior to transfer, including CTA/CTP and other imaging modalities, and time frame for diagnostic service completion and image sharing processes.
- Plans for the triage and transport of suspected stroke patients including, but not limited to, those patients who may have an emergent large vessel occlusion, to an appropriate facility within a specified time.

The transfer agreement with a PSC shall clearly delineate responsibility related to which center will perform a CTA (the sending or receiving facility) and the agreement shall identify under which circumstances patients will receive a CTA at the sending facility prior to transfer. The agreement shall clearly articulate imaging capabilities of the sending facility. In all cases, the transfer agreement shall address the rapid imaging and appropriate treatment of the suspected stroke patient.

* Hospitals can demonstrate required elements of the transfer agreement through references in the transfer agreement to hospital policies and procedures that incorporate these elements. Policy and procedure documents should be appended to the transfer agreement.

The Thrombectomy Capable Stroke Center shall have a contract with a transportation vendor that covers expeditious transfer by both ground ambulance and air ambulance transfer options as applicable.

AVAILABILITY OF DIAGNOSTIC SERVICES

Neuroimaging

See PSC for CT requirements. TSC must also have MRI 24/7.

Vascular Imaging

The Thrombectomy Capable Stroke Center must have the ability to perform head and neck CTA arch to vertex 24/7. CTA imaging must be able to be read within 45 minutes of arrival either on-site or through teleradiology by a radiologist.

The Thrombectomy Capable Stroke Center must also be able to perform and read MRA/Catheter Angiography/CTP 24/7.

Other Imaging

Echocardiogram, carotid duplex ultrasound, extracranial ultrasonography, transcranial doppler, TEE, TTE as indicated.

Laboratory

See PSC

Pharmacy

See PSC

Other Procedures

24/7 availability for IV thrombolytics, mechanical thrombectomy, IA thrombolytics.

STROKE UNIT/ICU

The Thrombectomy Capable Stroke Center has dedicated neuro intensive care beds for complex stroke patients available 24/7; on site critical care coverage of these beds also available 24/7.

The stroke unit has sufficient equipment and supplies to provide an appropriate level of care for the stroke population, including multi-channel telemetry capable of monitoring blood pressure, pulse, respiration, and oxygenation.

STROKE EDUCATION

Staff Education

See PSC

Patient Education

See PSC

Health Promotion/Public Education

See PSC

PERFORMANCE MEASURES AND QUALITY IMPROVEMENT

Stroke Registry

See PSC

Quality Improvement

The TSC must have an internal QI group specific to stroke care that meets at least monthly with recorded minutes. This group is minimally expected to review stroke quality benchmarks, indicators, evidence-based practices, patient outcome data, delays in patients care and takes actions as necessary. The TSC must have an interdisciplinary team with a peer review process that includes the medical director, stroke coordinator and a quality facilitator charged with conducting quality reviews.

Stroke Log

See PSC

Process and Outcome Measures & Data Collection

Thrombectomy Capable Stroke Centers are required to collect and report data on a quarterly basis for the following measures. The information is to be used for ongoing performance improvement efforts. Time targets and benchmarks will be established after one year of data collection. Please see Appendix II for measure specifications.

Performance Measures (all PSC plus the following)

NYS TSC 1: mRS at 90 days: documented

NYS TSC 2: mRS at 90 days: following mechanical endovascular reperfusion therapy, favorable outcome

NYS TSC 3: Hemorrhagic transformation (overall rate)

NYS TSC 4: Mechanical Endovascular Reperfusion Therapy for Eligible Patients with Ischemic Stroke

NYS TSC 5: Thrombolysis in Cerebral Infarction (TICI post treatment reperfusion grade)

NYS TSC 6: Timeliness of reperfusion: arrival time to TICI 2B or higher (120 minutes)

NYS TSC 7: Timeliness of reperfusion: skin puncture to TICI 2B or higher (60 minutes)

NYS TSC 8: NIHSS at Discharge

Time Targets (all PSC plus the following)

NYS TSC 9: Door to Arterial Puncture Time (IA and Mechanical)

NYS TSC 10: Imaging to Puncture Time

Comprehensive Stroke Center Certification Requirements

The Comprehensive Stroke Center (CSC) is a hospital-based program with the resources, staff and training that are necessary for the treatment of the most complex stroke cases. These requirements build on both the PSC and TSC requirements and are in addition to those requirements.

ELIGIBILITY

The Comprehensive Stroke Center must meet all Thrombectomy Capable and Primary Stroke Center requirements. The Comprehensive Stroke Center must also meet the following volume eligibility:

- Provide care to 20 or more patients per year with a diagnosis of subarachnoid hemorrhage.
- Accomplish greater than or equal to 10 endovascular coiling or surgical clipping procedures per year for the treatment of an aneurysm.
- Administer IV tPA to an average of 25 eligible patients per year or 50 patients over a two-year time frame. (IV tPA given at another hospital based on tele-stroke recommendation by the CSC and transferred to the CSC or if the patient is not transferred to the CSC, and there is evidence of follow-up monitoring, that patient can be counted in the eligibility number)
- Performed mechanical thrombectomy and post-procedure care for at least 15 patients with ischemic stroke over the past 12 months (or 30 over past 24 months).

LEADERSHIP

The organization provides leadership for the stroke program through a full-time stroke coordinator and medical director.

Stroke Coordinator

See TSC

Medical Director

The organization identifies a physician leader with extensive experience and expertise in neurology and cerebrovascular disease. This person shall be a physician on the hospital staff, licensed in New York State, and Board Certified in Neurology, Neurosurgery, Interventional Neuro-Radiology, Vascular Neurology or Neuro-Critical Care. The Medical Director shall attest to eight (8) hours of stroke focused continuing education annually. The Medical Director may not be concurrently a Stroke Medical Director at another hospital.

PRE-HOSPITAL SERVICES (EMS)

See TSC

24/7 PROVIDER AVAILABILITY

The following providers must be available 24/7 and within time frames indicated below:

Acute Stroke Team

See TSC

Neurologist

See TSC

Vascular Neurologist

See TSC

Cerebrovascular Neurosurgeon

The CSC is required to have:

- Neurosurgeon on call 24/7 (cannot be concurrently on call at another facility) for emergent procedures such as ventriculostomies and hemicraniectomies.
- Cerebrovascular Neurosurgeon on call 24/7 (can be on call concurrently at another facility) with experience in clipping aneurysms and performing AVM surgery.
- Cerebrovascular Neurosurgeon or Interventional Neurologist or Interventional Neuroradiologist on call 24/7 with experience in coiling aneurysms.

Interventional Neurologist/Interventional Neuroradiologist that are also responsible for performing mechanical thrombectomy shall also fulfill requirements in the Neurointerventionist section.

Vascular Surgeon

With expertise in carotid endarterectomy.

Neurointerventionist

See TSC

Diagnostic Radiologist

See TSC

Radiology Technician

See TSC

Neurointensivist

Available 24/7 for post procedure care and monitoring and for ICU/ Neuro ICU coverage.

Endovascular Team

See TSC

Emergency Medicine Physicians/Nurses

See TSC

Stroke Unit Nursing Care

See TSC

AVAILABILITY OF SPECIALIZED ASSESSMENTS & SERVICES

Rehabilitation Staff

Physical Therapist and Occupational Therapists are available 6 days a week and on-call on the 7th day to perform patient assessment during the acute stroke phase. Staff who are qualified to perform patient swallowing function assessment during the acute stroke phase are available 7 days a week (does not need to be SLP). The Comprehensive Stroke Center must have nurse case managers and social workers with expertise in neurology/stroke care, care coordination, different levels of rehabilitation and community resources. The rehabilitation services are directed by a physician with expertise and experience in neuro-rehabilitation.

Telehealth

Available 24/7 within 20 minutes to assess patients at PSC and TSCs within catchment area (at a minimum this should include the ability to review imaging to assist in transfer determinations).

AVAILABILITY OF NEUROSURGICAL SERVICES

The Comprehensive Stroke Center has 24/7 Operating Room availability. Surgeons, neurosurgeons, and other neurosurgical staff are available on site within 30 minutes of notification to perform and support the performance of emergent neurosurgical procedures 24 hours a day, 7 days a week. The Comprehensive Stroke Center must have the capacity and staff availability to handle a general neurosurgery case and a stroke at the same time.

AVAILABILITY OF ENDOVASCULAR SERVICES

See TSC

NEUROINTERVENTIONIST CREDENTIALS

See TSC

TRANSFER AGREEMENT

The Comprehensive Stroke Center shall have a transfer agreement with referring Thrombectomy Capable Stroke Centers and Primary Stroke Centers within their catchment area for intake purposes.

The transfer agreement with the Primary Stroke Center shall clearly delineate responsibility related to who will perform a CTA (the sending or receiving facility) and the agreement shall identify under which circumstances patients will receive a CTA at the sending facility. The agreement shall clearly articulate the imaging capabilities of the sending facility. In all cases, the transfer agreement shall address the rapid imaging and treatment of the suspected stroke patient.

At a minimum all transfer agreements must address:

- 24/7 emergency contact information of acute stroke team and/or the receiving team at the receiving facility authorized to accept transfers
- The ability to transfer the patient 24/7, the ability of the receiving facility to accept the patient 24/7
- The ability to affect a transfer in a timely manner as appropriate for patient needs (target timeframe for transfer must be identified in the transfer agreement for both neurosurgical and endovascular services),
- Clinical criteria for transfer and processes for obtaining consultation for transfer decisions.
- Expectations/criteria for advanced imaging prior to transfer, including CTA/CTP, and time frame for diagnostic service completion and image sharing processes (for transfer from a PSC).

* Hospitals can demonstrate required elements of the transfer agreement through references in the transfer agreement to hospital policies and procedures that incorporate these elements. Policy and procedure documents should be appended to the transfer agreement.

The Comprehensive Stroke Center shall have a contract with a transportation vendor that covers expeditious transfer by both ground ambulance and air ambulance transfer options as applicable.

The Comprehensive Stroke Center shall be able to identify another Comprehensive Stroke Center that they will transfer to when case complexity determines that further specialized care is needed, or high volume exceeds resources dictating a need for transfer. This can be identified through a policy document, such as a surge policy and does not need to be in the form of a transfer agreement.

AVAILABILITY OF DIAGNOSTIC SERVICES

Neuroimaging

See TSC

Vascular Imaging

See TSC

The Comprehensive Center must also be able to perform and read MRA/Catheter Angiography/CTP 24/7.

Other Imaging

Echocardiogram, carotid duplex ultrasound, extracranial ultrasonography, transcranial doppler, TEE, TTE as indicated.

Laboratory

See TSC

Pharmacy

See TSC

Other Procedures

The Comprehensive Stroke Center has 24/7 onsite availability for IV thrombolytics, mechanical thrombectomy, IA thrombolytics, microsurgical neurovascular clipping of aneurysms, neuroendovascular coiling of aneurysm, stenting of extracranial carotid arteries, and carotid endarterectomy.

STROKE UNIT/ICU

The Comprehensive Stroke Center has dedicated neuro intensive care beds for complex stroke patients available 24/7; on site Neurointensivist coverage of these beds also available 24/7.

The stroke unit has sufficient equipment and supplies to provide an appropriate level of care for the stroke population, including multi-channel telemetry capable of monitoring blood pressure, pulse, respiration, and oxygenation.

STROKE EDUCATION

Staff Education

See TSC

Patient Education

See TSC

Health Promotion/Public Education

See TSC

PERFORMANCE MEASURES AND QUALITY IMPROVEMENT

Stroke Registry

See TSC

Quality Improvement

See TSC

The Comprehensive Stroke Center must have a quality representative that has the responsibility for monitoring requirements of the Comprehensive Stroke Center program. The CSC must have an interdisciplinary team with a peer review process that includes the medical director, stroke coordinator and a quality facilitator charged with conducting quality reviews. There must be a written document defining quality review processes, how the CSC will measure objectives and goals and how the CSC will engage PSCs and TSCs in regional quality improvement initiatives.

Stroke Research

The Comprehensive Stroke Center must participate in IRB approved patient-centered stroke research.

Stroke Log

See TSC

Process and Outcome Measures & Data Collection

Comprehensive Stroke Centers are required to collect and report data on a quarterly basis for the following measures. The information is to be used for ongoing performance improvement efforts.

Time Targets

No additional time targets for Comprehensive Stroke Center Certification. Please refer to Primary Stroke Center and Thrombectomy Capable Stroke Center time targets. Please see Appendix III for measure specifications.

Performance Measures (all PSC and TSC measures plus the following)

NYS CSC 1: Severity measurement for SAH and ICH

NYS CSC 2: Nimodipine Treatment Administered

Measure Specification Background

DISCLAIMER: All specifications outlined in these appendices are for use by New York State Designated Stroke Centers for their quality reporting to the New York State Department of Health. Measure ownership is indicated under the measure steward for each measure. Where the owner is not New York State, please contact that specific organization for detailed specifications and measure algorithms. Use of these specifications outside the scope of quality reporting to New York State Department of Health is expressly prohibited.

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The Joint Commission

https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

Appendix I: Measure Specifications for Primary Stroke Centers

Primary Stroke Center Performance Measures

NYS PSC 1: VTE prophylaxis

NYS PSC 2: Discharge on antithrombotic therapy

NYS PSC 3: Anticoagulation therapy for AFIB/Flutter

NYS PSC 4: Thrombolytic therapy (arrive by 3.5 hours, treat by 4.5 hours)

NYS PSC 5: Antithrombotic therapy by end of hospital day two

NYS PSC 6: Discharged on statin medication

NYS PSC 7: Stroke education

NYS PSC 8: Smoking cessation

NYS PSC 9: Assessed for rehabilitation

NYS PSC 10: Dysphagia screening

NYS PSC 11: Initial NIHSS reported

NYS PSC 12: mRS on discharge

NYS PSC 13: Pre-notification

NYS PSC 14: EMS Pre-Hospital Stroke Scale

NYS PSC 15: Pre-notification content:

- c. Last Known Well communicated
- d. Stroke scale findings communicated

NYS PSC 16: Stroke Team Activated Prior to Arrival

NYS PSC 1: VTE Prophylaxis: Percent of patients with an ischemic stroke, or a hemorrhagic stroke, or stroke not otherwise specified who receive VTE prophylaxis the day or of the day after hospital admission.
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of Ischemic stroke, Subarachnoid hemorrhage, Intracerebral hemorrhage, or Stroke not otherwise specified.
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Comfort measures only documented on day of arrival or day after arrival • Patients who have length of stay less than 2 days • Undocumented Admission Date • Patients with negative calculated time difference • Not admitted • Clinical Trial • Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> • Patients who received VTE prophylaxis the day or of the day after hospital admission which was not graduated compression stockings alone • Patients that receive Oral Factor Xa Inhibitor for VTE prophylaxis • Patients with a contraindication to VTE prophylaxis

NYS PSC 2: Discharged on Antithrombotic Therapy: Percent of patients with an ischemic stroke or TIA prescribed antithrombotic therapy at discharge.
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of ischemic stroke or TIA
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Comfort measures only documented on day of arrival or day after arrival • Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice • Contraindications to antithrombotic therapy at discharge • Discharged on “other antithrombotic” (without contraindication in stroke) • Not admitted as inpatient • Clinical Trial • Elective Carotid Intervention

Numerator
<ul style="list-style-type: none"> Patients who received antithrombotic medication at discharge

NYS PSC 3: Anticoagulation therapy for AFIB/Aflutter: Percent of patients with an ischemic stroke or TIA with atrial fibrillation/flutter discharged on anticoagulation therapy.
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> Patients with a diagnosis of ischemic stroke or TIA <p>AND</p> <ul style="list-style-type: none"> History of AF or Persistent or paroxysmal Atrial Fibrillation/Flutter on this admission
Exclude
<ul style="list-style-type: none"> Age < 18 years Stroke occurred after hospital arrival (in ED/Obs/inpatient) Comfort Measures Only documented Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice Contraindications to Anticoagulation therapy at discharge Not admitted as an inpatient Clinical Trial Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> Patients who received anticoagulation therapy at discharge

NYS PSC 4: Thrombolytic Therapy (arrive by 3.5 hours, treat by 4.5 hours): Percent of acute ischemic stroke patients who arrive at the hospital within 210 minutes (3.5 hours) of time last known well and for whom IV t-PA was initiated at this hospital within 270 minutes (4.5 hours) of time last known well.
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> Patients with a diagnosis of ischemic stroke
Exclude
<ul style="list-style-type: none"> Age < 18 years Stroke occurred after hospital arrival (in ED/Obs/inpatient) No stroke related diagnosis Received IV tPA at an outside hospital

<ul style="list-style-type: none"> • Arrived at the hospital more than 210 minutes (3 hours) past the time last known well • Arrival at the hospital is before the time last known well • Documented reason for not initiating IV thrombolytic • Arrived within 0-2 hours, and any documented exclusion criteria for not initiating IV thrombolytic in the 0-3hr treatment window are selected, • and any documented exclusion for the 3-4.5hr treatment window are selected • Arrived within 2-3.5 hours, and any documented exclusion for the 3-4.5hr treatment window are selected • Undocumented time for Last Known Well • Undocumented time for Arrival to this hospital • IV thrombolytic therapy initiated at this hospital • Undocumented time for IV tPA initiated at this hospital • Clinical Trial • Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> • Patients who received IV t-PA at this hospital \leq 270 minutes from time last known well

NYS PSC 5: Antithrombotic Therapy by end of hospital day two: Percent of patients with ischemic stroke or TIA who receive antithrombotic therapy by the end of hospital day two.
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of ischemic stroke or TIA
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Comfort Measures Only documented • Discharged before end of hospital day 2 • Contraindications to antithrombotic therapy by end of hospital day 2 • Undocumented Discharge Date • Undocumented Date and time of hospital arrival • IV thrombolytic therapy initiated at this hospital • IV tPA at an outside hospital • IA catheter-based reperfusion at this hospital • IA catheter-based reperfusion at an outside hospital • Not admitted as an inpatient • Clinical Trial • Elective Carotid Intervention
Numerator

- Patients who received antithrombotic medication by the end of hospital day two

NYS PSC 6: Discharged on Statin Medication: Percent of ischemic stroke or TIA patients who are discharged on Statin Medication
Measure Steward: Get with the Guidelines Achievement
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of ischemic stroke or TIA
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Comfort Measures Only documented • Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice • A documented reason for not prescribing a statin medication at discharge • Not admitted as an inpatient • Clinical Trial • Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> • Patients who were discharged on Statin

NYS PSC 7: Stroke Education: Percent of patients with Stroke or TIA or their caregivers who were given education and/or educational materials during the hospital stay addressing ALL of the following: personal risk factors, warning signs for stroke, activation of emergency medical system, need for follow-up after discharge, and medications prescribed.
Measure Steward: Get with the Guidelines Quality
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of Ischemic stroke, TIA, subarachnoid hemorrhage, Intracerebral hemorrhage, or Stroke not otherwise specified
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Comfort Measures Only documented • Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice • Not admitted as an inpatient • Clinical Trial • Elective Carotid Intervention

Numerator
<ul style="list-style-type: none"> • Patient or their caregivers were given educational material addressing all of the following: <ol style="list-style-type: none"> 1. Activation of emergency medical system 2. Need for follow-up after discharge 3. Medications prescribed at discharge 4. Risk factors for stroke 5. Warning signs for stroke

NYS PSC 8: Smoking Cessation: Percent of patients with ischemic or hemorrhagic stroke, or TIA with a history of smoking cigarettes, who are, or whose caregivers are, given smoking cessation advice or counseling during hospital stay.

Measure Steward: Get with the Guidelines Achievement

Denominator

Include

- Patients with a diagnosis of Ischemic stroke, TIA, Subarachnoid hemorrhage, Intracerebral hemorrhage, or Stroke not otherwise specified

Exclude

- Age < 18 years
- Stroke occurred after hospital arrival (in ED/Obs/inpatient)
- Comfort Measures Only documented
- Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice
- Patient did not smoke cigarettes during the past year
- Contraindications to smoking cessation advice or counseling
- Not admitted as an inpatient
- Clinical Trial
- Elective Carotid Intervention

Numerator

- Patients who were given smoking cessation advice or counseling during hospital stay

NYS PSC 9: Assessed for Rehabilitation: Percent of patients with Stroke who were assessed for rehabilitation services.

Measure Steward: Get with the Guidelines Quality

Denominator

Include

- Patients with a diagnosis of Ischemic stroke, subarachnoid hemorrhage, Intracerebral hemorrhage, or Stroke not otherwise specified

Exclude

- Age < 18 years
- Stroke occurred after hospital arrival (in ED/Obs/inpatient)

<ul style="list-style-type: none"> • Comfort Measures Only documented • Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice • Not admitted as an inpatient • Clinical Trial • Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> • Patient assessed for rehabilitation services

NYS PSC 10: Dysphagia Screen: Percent of Stroke patients who undergo screening for dysphagia with an evidence-based bedside testing protocol approved by the hospital before being given any food, fluids, or medication by mouth.
Measure Steward: Get with the Guidelines Quality
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of Ischemic stroke, Subarachnoid hemorrhage, Intracerebral hemorrhage, or Stroke not otherwise specified.
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Patient NPO throughout the entire hospital stay • Contraindication to dysphagia screening prior to any oral intake • Clinical Trial • Elective Carotid Intervention
Numerator
<ul style="list-style-type: none"> • Patients who were screened for dysphagia prior to any oral intake

NYS PSC 11: Initial NIHSS Reported: Percent of ischemic stroke, intracerebral hemorrhage, TIA and stroke not otherwise specified patients with a score reported for NIH Stroke Scale (Initial).
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of Ischemic stroke, intracerebral hemorrhage, TIA or Stroke not otherwise specified
Exclude
<ul style="list-style-type: none"> • Stroke symptoms resolved at time of presentation
Numerator
<ul style="list-style-type: none"> • NIH Stroke scale performed as part of initial evaluation
AND
<ul style="list-style-type: none"> • Total score reported

NYS PSC 12: Modified Rankin Scale (mRS) at Discharge: Patients grouped by Modified Rankin Scale at discharge.
Measure Steward: Get with the Guidelines Reporting
Denominator
Include
<ul style="list-style-type: none"> • Patients with a diagnosis of Ischemic stroke or Subarachnoid Hemorrhage or Intracerebral Hemorrhage or Stroke not otherwise specified
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Patients who are discharged/transferred to hospice, discharged/transferred to another acute care facility, patients that expire, and patients that leave against medical advice • Clinical Trial • Elective Carotid Intervention
Display
<ul style="list-style-type: none"> • Percent of patients in each Modified Rankin Scale at discharge value Labels: <ul style="list-style-type: none"> 0 - No symptoms at all 1 - No significant disability despite symptoms: Able to carry out all usual activities 2 - Slight disability 3 - Moderate disability: Requiring some help but able to walk without assistance 4 - Moderate to severe disability: Unable to walk without assistance and unable to attend to own bodily needs without assistance 5 - Severe disability: Bedridden, incontinent and requiring constant nursing care and attention 6 - Death 7 - ND/Missing 8 - Documented mRS at discharge

NYS PSC 13: Pre-notification: Percent of cases of advanced notification by EMS for patients transported by EMS from scene.
Measure Steward: Get with the Guidelines Reporting
Denominator
Include
<ul style="list-style-type: none"> • Patients who were transported to your hospital for stroke by EMS • Patients with a diagnosis of Ischemic stroke, TIA, subarachnoid hemorrhage, intracerebral hemorrhage, or stroke not otherwise specified
Exclude
<ul style="list-style-type: none"> • Age < 18 years • Clinical Trial

<ul style="list-style-type: none"> • Elective Carotid Intervention
Display
<ul style="list-style-type: none"> • Cases of Advanced notification by EMS

NYS PSC 14: EMS Pre-Hospital Stroke Scale: Percent of patients arriving via EMS who had pre-hospital stroke scale performed.
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who were transported to your hospital for stroke by EMS • Patients who arrived at the ED < 360 minutes after Last Known Well.
Exclude
<ul style="list-style-type: none"> • Patients with a diagnosis of Elective Carotid Intervention only • Stroke occurred after hospital arrival (in ED/Obs/inpatient)
Numerator
<ul style="list-style-type: none"> ○ Patients who had a prehospital stroke screen performed
NYS PSC 15: Pre-Notification Content: Histogram breakdown of what information was communicated in the EMS pre-notification.
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who were transported to your hospital for stroke by EMS • Cases of advanced notification by EMS •
Exclude
<ul style="list-style-type: none"> • Patients with a diagnosis of Elective Carotid Intervention only • Stroke occurred after hospital arrival (in ED/Obs/inpatient)
Numerator
<ul style="list-style-type: none"> • Percent of Patients in the follow groups (bars) <ul style="list-style-type: none"> ○ Pre- hospital stroke scale findings ○ Patient last known well ○ Pre-hospital stroke scale findings AND last known well

NYS PSC 16: Stroke Team Activated Prior to Arrival: Percent of patients arriving via EMS for whom the stroke team was activated prior to patient arrival based upon EMS pre-notification.
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who were transported to your hospital for stroke by EMS • Cases of advanced notification by EMS •

Exclude
<ul style="list-style-type: none"> • Patients with a diagnosis of Elective Carotid Intervention only • Stroke occurred after hospital arrival (in ED/Obs/inpatient)
Numerator
<ul style="list-style-type: none"> • Patients for whom advanced notification by EMS resulted in stroke team activation prior to patient arrival.

Primary Stroke Center Time Targets

NYS PSC 17: Door to MD/DO (can include midlevel) assessment (10 minutes) – 85%

NYS PSC 18: Door to Stroke Team (15 minutes)- 85%

NYS PSC 19: Door to Brain Image Initiated (25 minutes)- 85%

NYS PSC 20: Door to Brain Image Read (45 minutes)- 85%

NYS PSC 21: Door to IV tPA (60 minutes)- 85%

NYS PSC 22: Door to IV tPA (45 minutes)- 50%

NYS PSC 23: Door-in-door-out time at first hospital prior to transfer for acute therapy

NYS PSC 17: Door to MD/DO (includes midlevel) Assessment: Time from arrival to initial physician assessment for all patients who arrive < 6 hours from time last known well.
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who arrived at the ED \leq360 minutes after time last known well • Patients with an inpatient stroke who had symptom discovery < 360 minutes after last known well • Patients with a diagnosis of ischemic stroke or TIA or subarachnoid hemorrhage or intracerebral hemorrhage or stroke not otherwise specified or no stroke related diagnosis
Exclude
<ul style="list-style-type: none"> • Full time is not documented for last known well or arrival date/time or symptom discovery (if inpatient)
Display
<ul style="list-style-type: none"> • Percent of patients in each of 10 groups as follows, based on time from patient arrival at the ED or symptom discovery (for inpatient) to time of initial physician assessment: 0-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, >35 minutes,

Date/Time MD Assessment blank, unknown or only MM/DD/YYYY, Arrival Date/Time or Date/Time Symptom Discovery >Date/Time MD Assessment (A categorical bar chart with 10 bars)

NYS PSC 18: Door to Stroke Team: Time from arrival to stroke team arrival for patients who arrive < 6 hours from time last known well
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who arrived at the ED \leq360 minutes after time last known well • Patients with an inpatient stroke who had symptom discovery < 360 minutes after last known well • Patients with a diagnosis of ischemic stroke or TIA or subarachnoid hemorrhage or intracerebral hemorrhage or stroke not otherwise specified or no stroke related diagnosis
Exclude
<ul style="list-style-type: none"> • Patients where symptoms have resolved upon arrival to the hospital • Initial NIH Stroke Scale total is zero • Full time is not documented for last known well or arrival date/time or symptom discovery (if inpatient)
Display
<ul style="list-style-type: none"> • Percent of patients in each of 10 groups as follows, based on time from patient arrival at the ED or symptom discovery (for inpatient) to time of stroke team arrival: 0-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, >35 minutes, Date/Time Stroke Team Arrival blank, unknown or only MM/DD/YYYY Arrival Date/Time or Date/Time Symptom Discovery >Date/Time Stroke Team (A categorical bar chart with 10 bars)

NYS PSC 19: Door to Brain Image Initiated: Time from arrival to initial imaging for all patients who arrive < 6 hours from time last known well
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who arrived at the ED \leq360 minutes after time last known well • Patients with an inpatient stroke who had symptom discovery < 360 minutes after last known well • Patients with a diagnosis of ischemic stroke or TIA or subarachnoid hemorrhage or intracerebral hemorrhage or stroke not otherwise specified or no stroke related diagnosis
Exclude
<ul style="list-style-type: none"> • Brain Imaging not completed, not documented, or contraindicated at your hospital for this episode of care • Patients where symptoms have resolved upon arrival to the hospital

<ul style="list-style-type: none"> • Full time is not documented for Last Known Well or Arrival Date/Time or Symptom Discovery (if inpatient stroke)
Display
<ul style="list-style-type: none"> • Percent of patients in each of nine groups as follows, based on time from patient arrival at the ED or symptom discovery (for inpatient) to time of initiation of initial brain imaging: 0-12, 13-25, 26-50, 51-75, 76-100, 101-125, >125 minutes, Date/Time Brain Imaging Completed blank, unknown or only MM/DD/YYYY, Arrival Date/Time or Date/Time Symptom Discovery >Date/Time Brain Imaging Completed (A categorical bar chart with 9 bars)

NYS PSC 20: Door to Brain Image Read: Time form arrival to initial brain image read for all patients who arrive <6 hours form time last known well
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Patients who arrived at the ED \leq360 minutes after time last known well • Patients with an inpatient stroke who had symptom discovery < 360 minutes after last known well • Patients with a diagnosis of ischemic stroke or TIA or subarachnoid hemorrhage or intracerebral hemorrhage or stroke not otherwise specified or no stroke related diagnosis
Exclude
<ul style="list-style-type: none"> • Brain Imaging contraindicated at your hospital for this episode of care • Patients where symptoms have resolved upon arrival to the hospital • Initial NIH Stroke Scale total score is zero. • Full time is not documented for Last Known Well or Arrival Date/Time or Symptom Discovery (if inpatient stroke)
Display
<ul style="list-style-type: none"> • Percent of patients in each of 9 groups as follows, based on time from patient arrival at the ED or symptom discovery (for inpatient) to time of completion of initial brain imaging read: 0-15, 16-30, 31-45, 46-60, 61-75, 76-90, >90 minutes, Date/Time Brain Imaging Reported/Read blank, unknown or only MM/DD/YYYY, Arrival Date/Time or Date/Time Symptom Discovery > Brain Imaging Reported/Read (A categorical bar chart with 9 bars)

NYS PSC 21: Door to IV tPA (60 minutes): Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initiation of thrombolytic therapy administration (door-to-needle-time) of 60 minutes or less.
Measure Steward: Get with the Guidelines Quality
Denominator
Include

<ul style="list-style-type: none"> Patients with a primary stroke diagnosis of ischemic stroke who received IV t-PA at my hospital
Exclude
<ul style="list-style-type: none"> Age < 18 years Stroke occurred after hospital arrival (in ED/Obs/inpatient) Patients whose date/time of ED arrival and/or date/time of thrombolytic administration are blank, not documented, or N/A. Patients with a negative calculated time difference. Patients with a Date Last Known Well, but no time Last Known Well Patients that receive tPA greater than 4.5 hours after Last Known Well Patients transferred from outside hospital Patients with documented Eligibility or Medical reason for delay in treatment Clinical Trial
Numerator
<ul style="list-style-type: none"> Patients who receive IV t-PA at my hospital within 60 minutes after triage

NYS PSC 22: Door to IV -tPA (45 minutes): Percent of acute ischemic stroke patients receiving intravenous tissue plasminogen activator (tPA) therapy during the hospital stay who have a time from hospital arrival to initiation of thrombolytic therapy administration (door-to-needle time) of 45 minutes or less.
Measure Steward: Get with the Guidelines Reporting
Denominator
Include
<ul style="list-style-type: none"> Patients with a primary stroke diagnosis of ischemic stroke who received IV-tPA at my hospital
Exclude
<ul style="list-style-type: none"> Age < 18 years Stroke occurred after hospital arrival (in ED/Obs/inpatient) Patients whose date/time of ED arrival and/or date/time of thrombolytic administration are blank, not documented, or N/A. Patients with a negative calculated time difference. Patients with a Date Last Known Well, but no time Last Known Well Patients that receive tPA greater than 4.5 hours after Last Known Well Patients transferred from outside hospital Patients with documented Eligibility or Medical reason for delay in treatment Clinical Trial
Numerator
<ul style="list-style-type: none"> Patients who receive IV t-PA at my hospital within 45 minutes after triage

NYS PSC 23: Door- in – door- out time at First Hospital Prior to Transfer for Acute Therapy: Percent of confirmed stroke patients who arrived at your hospital and

for whom ≤ 60 minutes was spent in the ED prior to transfer to a higher-level stroke center for time critical therapy.
Measure Steward: Get with the Guidelines Pre- Hospital
Denominator
Include
<ul style="list-style-type: none"> • All patients age 18 years and older with a final clinical diagnosis of stroke. <p>AND</p> <ul style="list-style-type: none"> • Were transferred to a higher-level stroke center for time critical therapy.
Exclude
<ul style="list-style-type: none"> • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Transferred patients from another hospital • Elective Carotid Intervention • Clinical Trial
Numerator
<ul style="list-style-type: none"> • Per patient population: <ul style="list-style-type: none"> ○ Time from arrival at the referral center to discharge from the referral enter for all patients in the denominator. • Percent of patients in each of the following time groups, based on time in minutes <ol style="list-style-type: none"> 1. 0-10 minutes 2. 11-20 minutes 3. 21-30 minutes 4. 31-40 minutes 5. 41-50 minutes 6. 51-60 minutes 7. ≥ 61 minutes 8. Invalid Times [Missing Data/ Unknown or negative time difference date/time for ED arrival time or Discharge time

Appendix II: Measure Specifications for Thrombectomy Stroke Centers

Thrombectomy Capable Stroke Center Performance Measures

NYS PSC 1-15 plus the following:

NYS TSC 1: mRS at 90 days: documented

NYS TSC 2: mRS at 90 days: following mechanical endovascular reperfusion therapy, favorable outcome

NYS TSC 3: Hemorrhagic transformation (overall rate)

NYS TSC 4: Mechanical Endovascular Reperfusion Therapy for Eligible Patients with Ischemic Stroke

NYS TSC 5: Thrombolysis in Cerebral Infarction (TICI post treatment reperfusion grade)

NYS TSC 6: NIHSS at Discharge

NYS TSC 7: Timeliness of reperfusion: arrival time to TICI 2B or higher (120 minutes)

NYS TSC 8: Timeliness of reperfusion: skin puncture to TICI 2B or higher (60 minutes)

NYS TSC 1: Modified Rankin Score (mRS) at 90 days: Documented. Ischemic stroke patients treated with IV or IA t-PA therapy or who undergo mechanical endovascular reperfusion therapy for whom a 90-day mRS is obtained via telephone or in-person.
Measure Steward: The Joint Commission (CSTK-02)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 2: Modified Rankin Score (mRS) at 90 days: Following Mechanical Endovascular Reperfusion Therapy, Favorable outcome. Patients with acute ischemic stroke who received mechanical endovascular reperfusion therapy grouped by mRS at 90 days post-procedure.
Measure Steward: The Joint Commission (CSTK-10)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 3: Hemorrhagic Transformation (overall rate). Ischemic stroke patients who develop a symptomatic intracranial hemorrhage (i.e., clinical deterioration ≥ 4 point increase on NIHSS and brain image finding of parenchymal hematoma, or subarachnoid hemorrhage, or intraventricular hemorrhage) within (\leq) 36 hours after the onset of treatment with IV or IA t-PA therapy, or mechanical endovascular reperfusion procedure (i.e., mechanical endovascular thrombectomy with a clot retrieval device).
Measure Steward: The Joint Commission (CSTK-05)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 4: Mechanical Endovascular Reperfusion Therapy for Eligible Patients with Ischemic Stroke: Percentage of eligible patients with ischemic stroke due to large vessel occlusion who receive mechanical endovascular reperfusion therapy
Measure Steward: American Heart Association, Get with the Guidelines MER
Denominator
Include
<ul style="list-style-type: none"> • All patients age 18 years and older admitted to the hospital who have a diagnosis of acute ischemic stroke with a clinical impression of stroke due to occlusion of the distal intracranial carotid artery (ICA) or the proximal middle cerebral artery (MCA/M₁)
AND
<ul style="list-style-type: none"> • Whose NIHSS closest to the start of the procedure is greater than or equal to 6
AND
<ul style="list-style-type: none"> • Whose time last known well is less than or equal to 6 hours prior to arrival
Exclude (always remove from denominator)

<ul style="list-style-type: none"> • Stroke occurred after hospital arrival (in ED/Obs/inpatient) • Arrived at the hospital more than 6 hours after time last known well • Patients whose date/time of arrival or date/time last known well are blank, not documented, or N/A. • Patients with length of stay > 120 days • Enrolled in a clinical trial as part of their treatment for stroke • Elective carotid intervention
Exceptions (remove from denominator if present and numerator is not met)
<ul style="list-style-type: none"> • Patients who did not receive mechanical endovascular reperfusion therapy AND who had a contraindication or warning documented as the reason for not performing mechanical endovascular reperfusion.
Numerator
<ul style="list-style-type: none"> • Patients who receive mechanical endovascular reperfusion therapy

NYS TSC 5: Thrombolysis in Cerebral Infarction (TICI Post-Treatment Reperfusion Grade): Ischemic stroke patients with a post-treatment reperfusion grade of TICI ≥B or higher in the vascular territory beyond the target arterial occlusion at the end of treatment with intra-arterial (IA) thrombolytic (t-PA) therapy and/or mechanical endovascular reperfusion therapy.
Measure Steward: The Joint Commission (CSTK-o8)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 6: NIHSS at Discharge: Percent of ischemic stroke patients with a score reported for NIH stroke scale at discharge.
Measure Steward: New York State
Denominator
Include
<ul style="list-style-type: none"> • Ischemic stroke patients
Exclude
<ul style="list-style-type: none"> • Discharge Status of Left against medical advice or Expired • Patient is made Comfort Measures Only prior to discharge • Stroke symptoms resolved at time of presentation
Numerator
<ul style="list-style-type: none"> • A score is recorded for NIH stroke scale at discharge

NYS TSC 7: Timeliness of Reperfusion: Arrival Time to TICI ≥B or Higher. Ischemic stroke patients with a large vessel cerebral occlusion (i.e., internal carotid artery (ICA) or ICA terminus (T-lesion; T-occlusion), middle cerebral artery (MCA) M1 or M2, basilar artery) who receive mechanical endovascular
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reperfusion (MER) therapy within 120 minutes (≥ 0 min. and ≤ 150 min.) of hospital arrival and achieve TICI 2B or higher at the end of treatment
Measure Steward: The Joint Commission (CSTK-11)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 8: Timeliness of Reperfusion: Skin Puncture to TICI 2B or Higher. Ischemic stroke patients with a large vessel cerebral occlusion (i.e., internal carotid artery (ICA) or ICA terminus (T-lesion; T-occlusion), middle cerebral artery (MCA) M ₁ or M ₂ , basilar artery) who receive mechanical endovascular reperfusion (MER) therapy and achieve TICI 2B or higher less than (<) or equal to 60 minutes from the time of skin puncture.
Measure Steward: The Joint Commission (CSTK-12)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

Thrombectomy Capable Stroke Center Time Targets

NYS PSC 16-22 plus the following.

Times will be collected in year 1 and benchmarking will begin in year 2.

NYS TSC 9: Door to Puncture Time

NYS TSC 10: Imaging to Puncture Time

NYS TSC 9: Door to Puncture Time: Histogram of the distribution of times from hospital arrival to arterial puncture for patients with acute ischemic stroke who receive mechanical endovascular reperfusion therapy.
Measure Steward: The Joint Commission (CSTK-09)
https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS TSC 10: Imaging to Puncture Time. Histogram of the distribution of times from brain imagine to arterial puncture for patients with acute ischemic stroke who receive mechanical endovascular reperfusion therapy.
Measure Steward: American Heart Association, Get with the Guidelines MER
Denominator
Include
<ul style="list-style-type: none"> • All patients age 18 years and older admitted to the hospital who have a diagnosis of acute ischemic stroke and who have received mechanical endovascular

reperfusion therapy during the hospital admission and who had brain imaging completed at this hospital

Exclude

- Stroke occurred after hospital arrival (in ED/Obs/inpatient)
- Patients with length of stay > 120 days
- Enrolled in a clinical trial as part of their treatment for stroke
- Elective carotid intervention

Numerator

- Display a bar graph of the distribution of times from brain imaging to arterial puncture displayed in 10-minute increments from 0-60 minutes, with one bar for >60 minutes and one bar for unable to calculate due to missing or invalid time(s)

Appendix III: Measure Specifications for Comprehensive Stroke Centers

Comprehensive Stroke Center Performance Measures

PSC 1-22 and TSC 1-10 plus the following:

NYS CSC 1: Severity measurement for SAH and ICH

NYS CSC 2: Nimodipine treatment within 24 hours

NYS CSC 1: Severity Measurement for SAH and ICH Patients: Subarachnoid hemorrhage (SAH) and intracerebral hemorrhage (ICH) stroke patients for whom a severity measurement (i.e., Hunt and Hess Scale for SAH patients or ICH Score for ICH patients) is performed prior to surgical intervention (e.g. clipping, coiling, or any surgical intervention) in patients undergoing surgical intervention and documented in the medical record; OR documented within 6 hours of arrival at the hospital emergency department for patients who do not undergo surgical intervention.

Measure Steward: The Joint Commission (CSTK-03)

https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx

NYS CSC 2: Nimodipine Treatment Administered. Subarachnoid hemorrhage (SAH) patients for whom nimodipine treatment was administered within 24 hours of arrival at this hospital

Measure Steward: The Joint Commission (CSTK-06)

https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx