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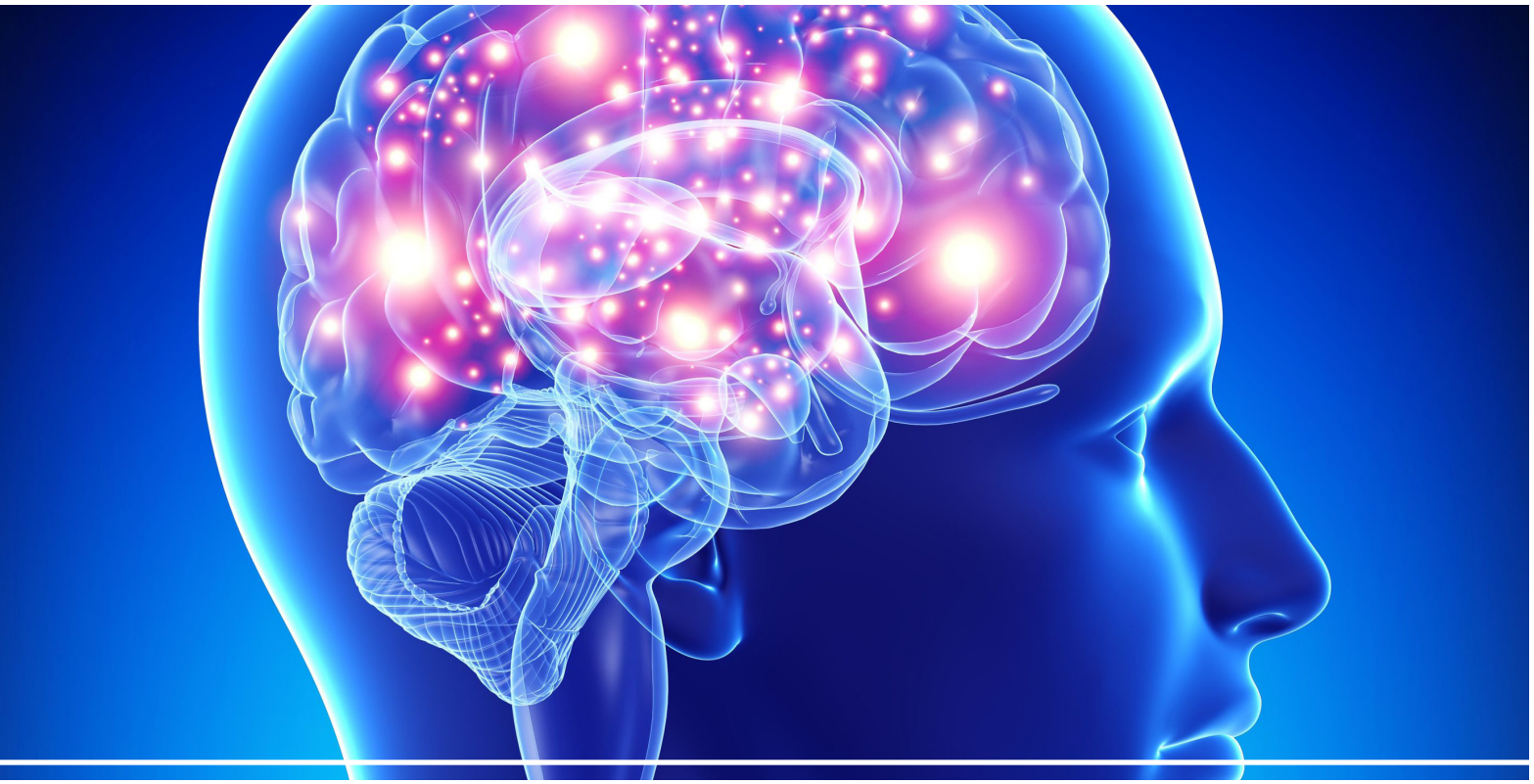

DNV GL - HEALTHCARE

COMPREHENSIVE STROKE CENTER CERTIFICATION PROGRAM – REQUIREMENTS CSC 2.0

TABLE OF CONTENTS

Introduction **5**
Regulatory and Policy Reference **5**
Eligibility **7**
Abbreviations and Definitions **9**
Program Management (PM) **11**
PM.1 SENIOR MANAGEMENT 11
PM.2 MANAGEMENT COMMITMENT 12
PM.3 PROGRAM LEADERSHIP 12
Quality Management (QM) **13**
QM.1 MANAGEMENT 13
QM.2 QUALITY OUTLINE/PLAN 13
QM.3 QUALITY OBJECTIVES 13
QM.4 QUALITY REPRESENTATIVE 13
QM.5 DOCUMENTATION AND PROGRAM REVIEW 14
QM.6 SYSTEM REQUIREMENTS 14
QM.7 MEASUREMENT, MONITORING, ANALYSIS 15
QM.8 PATIENT SAFETY SYSTEM 17
QM.9 DNVGL COMPREHENSIVE STROKE CENTER METRICS FOR MEASURING PROCESSES AND QUALITY 17
Patient Care Services (PC) **18**
PC.1 PLANNING FOR SERVICE DELIVERY 18
PC.2 REVIEW OF REQUIREMENTS RELATED TO CSC SERVICE DELIVERY 18
PC.3 CONTROL OF SERVICE DELIVERY 19
PC.4 EMERGENCY DEPARTMENT (ED) 19
PC.5 EMERGENCY MEDICAL SERVICES 21
PC.6 TELEMEDICINE/TELESTROKE 22
PC.7 ACUTE STROKE TEAM (AST) 23
PC.8 PROTOCOLS 24
PC.9 TRANSFER AGREEMENT 26
PC.10 PLAN OF CARE 26
PC.11 MEDICATION MANAGEMENT 28
PC.12 DIAGNOSTIC TESTS 29
PC.13 REHABILITATION SERVICES 30
PC.14 PATIENT/FAMILY/COMMUNITY EDUCATION 32
Medical Staff (MS) **33**
MS.1 ADMISSION REQUIREMENTS 33
MS.2 CONSULTATION 33
MS.3 NEUROSURGICAL COVERAGE 34
MS.4 PROGRAM MEDICAL DIRECTOR 34
MS.5 ICU / CRITICAL CARE MANAGEMENT AND COVERAGE 35
MS.6 ENDOVASCULAR SERVICES 35
Nursing Services (NS) **36**
NS.1 NURSING SERVICE 36
Staffing Management (SM) **38**
SM.1 PERSONNEL 38
SM.2 COMPETENCE, TRAINING AND AWARENESS 38

SM.3 DETERMINING AND MODIFYING STAFFING 39
SM.4 JOB DESCRIPTION 39
SM.5 ORIENTATION 39
SM.6 STAFF EVALUATIONS 40
Patient Rights (PR) 41
PR.1 SPECIFIC RIGHTS 41
PR.2 ADVANCE DIRECTIVE 41
PR.3 LANGUAGE AND COMMUNICATION 42
PR.4 INFORMED CONSENT 42
PR.5 GRIEVANCE PROCEDURE 43
Medical Records (MR) 44
MR.1 ORGANIZATION 44
MR.2 CONFIDENTIALITY 44
MR.3 RECORD CONTENT 44
MR.4 REQUIRED DOCUMENTATION 45
Physical Environment (PE) 47
ADDENDUM: 2015 DNV GL Comprehensive Stroke Center Metrics for Measuring Processes and Quality 48
QM.9 METRICS FOR MEASURING QUALITY OF CSC CARE 48
Professional References 57

Effective Date

These DNVGL Healthcare Comprehensive Stroke Center Certification Requirements, CSC 2.0 Effective Date: **September 1, 2015.**

Federal Laws, Rules and Regulations

The Comprehensive Stroke Center Certification requirements are based in whole or in part on the most current recommendations from the Brain Attack Coalition (BAC), American Heart Association and the American Stroke Association (AHA/ASA) and the Center for Medicare and Medicaid (CMS) Conditions of Participation.

The most current version of Federal law and the Code of Federal Regulations referenced in this Certification Program document are incorporated herein by reference and constitute, in part, Comprehensive Stroke Center Certification requirements.

Comprehensive Stroke Centers through their association to hospitals participating in the Medicare and Medicaid program are expected to comply with current Conditions of Participation. When new or revised requirements are published CSCs are expected to demonstrate compliance in a time frame consistent with the effective date as published by CMS in the Federal Register and/or as required by DNVGL Healthcare.

Introduction

The Comprehensive Stroke Certification (CSC) Program is offered by DNV GL – Healthcare USA, Inc. (DNVGL HC) and integrates requirements related to the CMS Conditions of Participation for Hospitals (CoPs), the Guidelines of the Brain Attack Coalition and Recommendations of the American Heart Association and the American Stroke Association.

CSCs are designed to be a part of a larger stroke system of care which will include all levels of stroke care. The CSC certification will mean that a hospital is equipped to evaluate, stabilize and to provide emergency care to all patients with acute stroke symptoms and admit the patient to a dedicated stroke unit or designated stroke beds. The intent of the CSC is to be fully capable to provide initial and more complex diagnostic services, stabilization, emergent care and therapies to patients with an acute stroke.

A CSC has the personnel, infrastructure, and expertise to diagnose and treat stroke patients who require high intensive medical and surgical care, specialized tests, or interventional therapies. The types of patients who might use and benefit from a CSC include, but are not limited to, patients with large ischemic strokes or hemorrhagic strokes, those with strokes from unusual etiologies or requiring specialized testing or therapies (e.g., endovascular, surgery) , and/or those requiring multispecialty

In addition, a Level 1 Comprehensive Stroke Center functions as a resource center for other facilities in their region, such as Primary Stroke Centers (PSC) and Acute Stroke Ready Hospitals (ASRs). This might include providing expertise about managing particular cases, offering guidance for triage of patients, making diagnostic tests or treatments available to patients treated initially at a PSC, and being an educational resource for other hospitals and health care professionals.

Regulatory and Policy Reference

- The Medicare Conditions of Participation for hospitals are in 42 CFR Part 482.
- The DNVGLHC Certification Process, Certification Requirements, and applicable CMS State Operations Manual (SOM) provide the policies and procedures regarding certification activities.
- American Stroke Association / American Heart Association - Guidelines for Stroke Patients and Establishment of Stroke Systems of Care.
- Brain Attack Coalition – Pathways and Guidelines.

Organizations seeking and maintaining a CSC certification must participate in the Medicare program and be in compliance with the CoPs by the Centers for Medicare and Medicaid Services (CMS). Compliance with the CMS CoPs may be demonstrated by maintaining accreditation with DNVGLHC or another accreditation organization, approved by CMS to deem healthcare organizations in compliance with the CoPs.

This Certification Program addresses healthcare organizations that are either applying for DNV GL – Healthcare USA, Inc. for certification of the Comprehensive Stroke Certification (CSC) Program or are currently certified by DNVGLHC. When a healthcare organization has applied for but not received DNVGLHC certification, it is referred to as an "Applicant Organization." When a healthcare organization is currently certified by DNVGLHC, it is referred to as a "Certified Organization."

The Certification Assessment is conducted separate and apart to a DNV GL Accreditation Survey. The CSC will be provided advance notice of the upcoming survey approximately one month prior to the assessment of the CSC.

Eligibility

CSC applicant organizations must be able to demonstrate that they:

- Meet the requirements of a Primary Stroke Center and have current certification.
- Are in current compliance with all Medicare Conditions of Participation at the time of application and at the time of the survey.
- Validate adequate case volume for the initial application year.
- Provide care to 20 or more patients per year with a diagnosis of subarachnoid hemorrhage.
- Accomplished greater than or equal to 10 endovascular coiling or surgical clipping procedures per year for aneurysm treatment.
- Have administered IV tPA to an average of 25 eligible patients over a two year time frame.

Note: IV tPA that was 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. (These cases must be added to the programs indicators tracking to be included in the eligibility numbers.)

Have advanced imaging capabilities:

- CT scanning capability 24/7/365
- CT angiography available on site 24/7/365
- Magnetic resonance imaging (MRI) including diffusion weighted 24/7/365
- Magnetic resonance angiography (MRA) 24/7/365
- Carotid duplex ultrasound
- Extracranial ultrasonography
- Transcranial Doppler
- Transesophageal echocardiography
- Transthoracic echocardiography

In addition the applicant organization will:

- Have a dedicated neuro-intensive care unit (ICU) / beds for complex stroke patients that include staff and licensed independent practitioners with the expertise and experience to provide neuro-critical care
- Participate in a stroke registry such as *INSTOR, GWTG, etc.*
- Participate in IRB stroke research.

Surveyor Information Gathering and Investigation

Surveyors assess the CSC's compliance with the CSC Certification Requirements for services and locations in which the CSC operates for patient care services. The objective of assessment activities is to determine the CSC's compliance with the requirements through observations, interviews and document review.

- The surveyors will focus attention on actual and potential patient outcomes, as well as required processes.
- The surveyors will assess the care and services provided, including the appropriateness of the care and services within the context of the certification requirements.
- The surveyors will visit the emergency room, imaging locations, ICU, designated inpatient units, rehabilitation areas and other patient care settings as appropriate to the level of services provided by the CSC.
- The surveyors will review clinical records, staff records, and other documentation necessary to validate information gained from observations and interviews.
- The surveyors will review transfer agreements, telemedicine/tele-stroke capabilities and equipment.

Note: DNV GL is committed to being a partner with organizations who are striving to improve their Door to Needle times. Therefore we are encouraging our partnerorganizations to adopt the Target Stroke Phase II challenge of:

- **Achieving Door to Needle times (time of bolus administration) within 60 minutes in 75% or more of acute ischemic stroke patients treated with IV tPA**

AND

- **Achieving Door to Needle times (time of bolus administration) within 45 minutes in 50% or more of acute ischemic stroke patients treated with IV tPA**

Abbreviations and Definitions

AANN	American Association of Neuroscience Nurses
ABNN	American Board of Neuroscience Nursing
Acute care phase	includes critical care units, intermediate care units, stroke units, and general medical units
AHA	American Heart Association
AIS	Acute Ischemic Stroke
ASR	Acute Stroke Ready Organization that can provide timely access to stroke care but not able to meet all of the criteria of PSCs or CSCs
AMA	American Medical Association
AVM	Arteriovenous malformation
BAC	Brain Attack Coalition
CDC	Centers for Disease Control and Prevention
CEA	Carotid Endarterectomy
CEO	Chief Executive Officer
CFR	Code of Federal Regulations
CMS	Centers for Medicare Medicaid Services
CNRN	Certified Neuroscience Registered Nurse
CR	Certification Requirement.
CSC	Comprehensive Stroke Center
CSRN	Certified Stroke Registered Nurse
DEA	Drug Enforcement Administration
EMS	Emergency Medical Services
FDA	Food and Drug Administration
GCS	Glasgow Coma Scale score
HHA	Home Health Agency

Hyper acute	includes the pre-hospital setting and the emergency department
IAT	Rapid local delivery of thrombolytic agent through a micro catheter placed near the site of occlusion
ICH	Intracerebral hemorrhage
ISMP	Institute for Safe Medication Practices
ISO	International Organization of Standardization
Life Safety Code®	National Fire Protection Association
MRA	Magnetic Resonance Angiography
mRs	Modified Rankin Scale
NIHSS	National Institutes of Health Stroke Scale
NFPA	National Fire Protection Association
PRN (prn)	Pro re nata, as the occasion arises, when necessary
PSC	Primary Stroke Center
PWI	Perfusion weighted imaging
QMS	Quality Management System
SAH	Subarachnoid hemorrhage
SCRN	Stroke Certified Registered Nurse
Tele-stroke/ Tele-medicine	is an approach to treating vascular disease that allows a neurologist to provide remote treatment for a stroke victim. Electronic communications may include telephone, internet or video conferencing, providing consultation and diagnostic services.
TIA	Transient Ischemic Attack
tPA	tissue plasminogen activator (thrombolytic medication)
Troponin	Complex of three regulatory proteins (**troponin** C, **troponin** I, and **troponin** T) that is integral to muscle contraction in skeletal muscle and cardiac muscle. Often elevated after stroke.

Program Management (PM)

The CSC shall establish, document, implement and maintain the CSC Program and continually improve its effectiveness in accordance with the requirements of this Certification Program.

PM.1 SENIOR MANAGEMENT

CR.1 Senior management is responsible and accountable for ensuring the following:

CR.1a The CSC is in compliance with all applicable Federal and State laws regarding the health and safety of its patients;

CR.1b The CSC is licensed by the appropriate State or local authority responsible for licensing of CSC (if applicable);

CR.1c Criteria that includes aspects of individual character, competence, training, experience and judgment is established for the selection of individuals working for the CSC, directly or under contract; and,

CR.1d The personnel working in the CSC are properly licensed or otherwise meet all applicable Federal, State and local laws.

CR.1e Responsibilities and authorities are defined and communicated within the CSC.

CR.1f Appointment and qualifications of the medical director for the CSC.

CR.2 The medical director for the CSC must have significant amount of training and expertise knowledge and be a neurologist, neurosurgeon or other medical professional.

Qualifications for the CSC Director shall include greater than or equal to 2 of the following:

CR.2a Board-certified neurologist, neurosurgeon or Interventional Neuroradiologist that has completed a stroke fellowship, Interventional Neuroradiology fellowship or vascular neurosurgery fellowship or has equivalent experience

CR.2b Completion of a vascular neurology fellowship or board certified in vascular neurology,

CR.2c A clinician who diagnoses and treats greater than or equal to 50 patients with cerebrovascular disease annually,

CR.2d A clinician with greater than or equal to 5-10 peer-reviewed publications dealing with cerebrovascular disease;

CR.2e A clinician with greater than or equal to 12 continuing medical education (CME) credits each year in areas directly related to cebrovascular disease, and

CR.2f Other criteria agreed on by the medical staff and the host hospital governing body or other criteria as determined by the local health care system.

CR.3 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.

CR.4 The director shall be involved in the assessment of patients and provide consultative advice to other treating physicians.

PM.2 MANAGEMENT COMMITMENT

Senior management shall provide evidence of its commitment to the development and implementation of the CSC Program and continually improving its effectiveness by:

CR.1 Communicating to the CSC the importance of meeting customer as well as statutory and regulatory requirements,

CR.2 Establishing the CSC Program and ensuring that objectives are established,

CR.3 Conducting Program reviews and ensuring the availability of resources.

PM.3 PROGRAM LEADERSHIP

The CSC program leadership shall:

CR.1 Determine the processes needed for the CSC Program and their application throughout the CSC,

CR.2 Determine criteria and methods needed to ensure that both the operation and control of these processes is effective,

CR.3 Ensure the availability of resources and information necessary to support the operation and monitoring of these processes,

CR.4 Monitor, measure where applicable, and analyze these processes, and

CR.5 Implement actions necessary to achieve planned results and continual improvement of these processes.

Quality Management (QM)

QM.1 MANAGEMENT

The governing body (or organized group or individual who assumes full legal authority and responsibility for operations of the Comprehensive Stroke Center (CSC)), medical staff, and administrative officials are responsible and accountable for ensuring that the CSC implements and maintains an effective quality management system. The host hospital will assure that adequate resources are allocated for measuring, assessing, improving, and sustaining the CSCs performance and reducing risk to patients.

CR.1 The CSC must be involved in and implement the host hospitals method for maintaining an ongoing system for managing quality and patient safety.

CR.2 The CSC must implement quality assessment and performance improvement efforts to address priorities for improved quality of care and patient safety and that corrective and preventive actions are implemented and evaluated for effectiveness.

CR.3 The CSC has established programmatic measurable quality objectives and the results are analyzed addressed; and

CR.4 Appropriate information from the CSC has been submitted to the host hospital oversight group for quality management.

QM.2 QUALITY OUTLINE/PLAN

The CSC shall clearly outline its methodology, practice and related policies for addressing how quality and performance are measured, monitored, analyzed and continually improved to improve health outcomes and reduce risks for patients.

QM.3 QUALITY OBJECTIVES

Senior management shall ensure that CSC Program quality objectives, including those needed to meet requirements for the CSC Program are established. The quality objectives shall be measurable and consistent with the requirements of the CSC Certification Program.

QM.4 QUALITY REPRESENTATIVE

A quality representative shall be designated and shall have the responsibility and authority for ensuring that the monitoring requirements of the CSC program are implemented and maintained.

QM.5 DOCUMENTATION AND PROGRAM REVIEW

CR.1 Variations, deficiencies or non-conformities identified by the CSC shall be addressed by the stroke committee. Appropriate actions will be determined, applied, and documented.

CR.2 Review performed at regular intervals, at a minimum of once a quarter, with an annual evaluation of the effectiveness of the CSC program components and metrics.

Note: Documentation of activities may take the form of a Failure, Mode and Effect Analysis, Root Cause Analysis, Performance Report, Non-Conformity Report, specific Improvement Project analysis, etc.

QM.6 SYSTEM REQUIREMENTS

The CSC will participate in and follow the system requirements of the host hospital in establishing a quality system, the CSC will be required to have the following as a part of this system:

CR.1 An Interdisciplinary group to oversee the CSC specific quality data that includes the medical director of the CSC, the nurse stroke coordinator (or nurse practitioner or physician's assistant) and a quality facilitator. Other discipline representatives and practitioners members are at the discretion of the CSC. This interdisciplinary group shall conduct quality and programmatic reviews;

CR.2 There shall be a written document defining the quality oversight process, to include all components of the CSC clinical and non-clinical services, as needed.

CR.3 Measurable Quality Objectives; and,

CR.4 Goal Measurement / Prioritization of activities based in some manner to:

CR.4a problem-prone areas, processes or functions,

CR.4b consider the incidence, prevalence and severity of problems in these areas, processes or functions,

CR.4c and effect on health outcomes; improve patient safety and quality of care.

Note: This interdisciplinary group may be considered as the "core" members of the Acute Stroke Team (AST) as opposed to the "response" members. Some members may be in both roles.

QM.7 MEASUREMENT, MONITORING, ANALYSIS

The CSC should strive to optimize its overall effectiveness of processes and systems of the service. This goal should be accomplished by identifying Comprehensive performance measures for each component and for the system function as a whole (both process and outcomes measures).

Evaluations of the CSC should encompass overall patient outcomes, linkages among key components of the CSC, potential problems that impede the care provided under the CSC.

Measurement, monitoring and analysis of processes of the CSC require established measures that have the ability to detect variation identify problem processes, identify both positive and negative outcomes, and effectiveness of actions taken to improve performance and/or reduce risks. The CSC must define the frequency and detail of the measurement.

Furthermore, the CSC shall develop performance measures and strategies for measuring, refining and reassessing, at a minimum, the following key system components:

CR.1 Notification and EMS; including data exchange between EMS, ED and the Stroke Team so that relevant pre-hospital data can be incorporated into the evaluation of effectiveness of the CSC.

Note: This data will capture stroke team response time to acute stroke patients, treatments used and patient disposition. It is the discretion of the CSC to determine the collection of this data as to whether this is through written or electronic means and/or may be done retrospectively through chart reviews.

CR.2 Hyper acute stroke treatment shall have performance measures involving the timeliness and effectiveness of the acute treatment of both ischemic and hemorrhagic stroke and the prevention of complications.

CR.2a Door to physician ≤10 minutes

CR.2b Door to stroke team ≤15 minutes

CR.2c Door to CT/MRI initiation ≤25 minutes (Target: ≤ 20 minutes)

CR.2d Door to CT interpretation ≤45 minutes (Target: ≤ 35 minutes)

CR.2e Order to lab results ≤45 minutes, if ordered (Target: ≤ 30 minutes)

CR.2f Connected computer linkage (or on phone) to telemedicine consultant from when determined medically necessary by ED physician ≤20 minutes

CR.2g Door to IV tPA bolus (≥75% compliance) ≤60 minutes

AND

Door to IV tPA bolus (≥50% compliance) ≤45 minutes (Target)

CR.2h Transfer of patients to CSC ≤2 hours of sending ED arrival (or when medically stable)

CR.2i Door to monitored bed admission ≤3 hours

Note: Target stroke time goals are noted on each appropriate parameter above.

Monitored bed has the capability to have continuous monitoring of vital signs, pulse oximetry and other requirements, as needed.

CR.3 There shall be sub-acute care and secondary prevention measures of patient outcomes and avoidance of complications and recurrent strokes.

Note: This will include current Core Measures as required per CMS, Only applicable for patients who are admitted.

CR.4 There shall be rehabilitation performance measures to evaluate patient outcomes (mortality, functional status, and community discharge) and the percentage of stroke patients who receive the appropriate level of rehabilitation services in the system. (Only applicable for patients who are admitted)

CR.5 There shall be community education performance measures, evaluating community outreach initiatives by measuring the knowledge in the community about the causes, signs and symptoms of stroke as well as emerging stroke prevention strategies.

CR.6 The CSC shall monitor perioperative complication rates and overall outcomes for comparison with national benchmarks after correcting for various comorbidities.

CR.7 The perioperative mortality rate for aneurysm clipping, coiling and other surgical or interventional procedures should be documented, reviewed, and compared with published outcomes. A formal M&M process shall review all cases that meet defined quality indicators.

CR.8a Records of the results of the M&M review and actions arising from the review shall be documented and maintained.

Note: Each neurosurgeon should participate in greater than or equal to 10 surgical intervention cases per year. (Examples: clipping/coiling at least ten each, when possible. This can also include -CEA, craniotomies, EVD placement, etc.)

QM.8 PATIENT SAFETY SYSTEM

CR.1 The CSC shall follow and participate in the host hospitals program for establishing clear expectations for identifying and detecting the prevalence and severity of incidents that impact or threaten patient safety.

Note: This may include data such as falls, medication errors, safety initiatives etc. Host hospital will determine data designation for inclusion in program as well as any indicators specific to the safety of the stroke programs population.

QM.9 DNVGL COMPREHENSIVE STROKE CENTER METRICS FOR MEASURING PROCESSES AND QUALITY

SEE ADDENDUM

Patient Care Services (PC)

PC.1 PLANNING FOR SERVICE DELIVERY

The CSC shall plan and develop the processes needed for CSC service delivery. Planning of the CSC service delivery shall be consistent with the certification requirements of the processes of the CSC Program. In planning CSC services delivery, the CSC shall determine the following, as appropriate:

CR.1 Quality objectives and requirements for the CSC;

CR.2 The need to establish processes and documents, and to provide resources specific to the CSC;

CR.3 Required verification, validation, monitoring, and measurement, specific to the CSC,

CR.4 Records needed to provide evidence that the processes meet requirements. The output of this planning shall be in a form suitable for the CSC's method of operations.

PC.2 REVIEW OF REQUIREMENTS RELATED TO CSC SERVICE DELIVERY

The CSC shall review the requirements related to the CSC Program. This review shall be conducted prior to the CSC's commitment to provide services to patients and shall ensure that

CR.1 CSC Program requirements are defined,

CR.2 The CSC has the ability to meet the defined requirements.

CR.3 Records of the results of review and actions shall be maintained.

CR.4 When the CSC Program requirements are changed, the CSC shall ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements.

CR.5 The CSC shall care for greater than or equal to 20 SAH patients per year.

CR.6 The CSC shall accomplish greater than or equal to 10 clippings and/or coiling's (combined) per year for aneurysm treatment.

CR.7 The CSC shall have administered IV tPA to an average of 25 eligible patients over a two year time frame. The following two conditions may be applied to the eligible patient numbers in addition to the administration of tPA at the CSC site.

Note: IV tPA that was given at another hospital based on tele- stroke recommendation by the CSC and transferred to the CSC when the patient is stable for continued care

OR

If the patient is not transferred to the CSC, there is evidence of follow up monitoring, can be counted in the eligibility number (These cases must be added to the programs indicators tracking to be included in the eligibility numbers.).

CR.8 The CSC shall provide the full spectrum of treatment options required for the treatment of AVMs, including microsurgical excision and endovascular embolization.

PC.3 CONTROL OF SERVICE DELIVERY

The CSC shall plan and carry out services under controlled conditions. Controlled conditions shall include, as applicable:

CR.1 The availability of information that describes the characteristics of the CSC Program,

CR.2 The availability of policies, procedures, protocols, as necessary,

CR.3 The availability, use, and monitoring of suitable equipment.

PC.4 EMERGENCY DEPARTMENT (ED)

CR.1 The CSC is responsible for developing and maintaining efficient pathways, protocols and processes to rapidly identify, evaluate and treat potential stroke patients.

CR.2 Emergency department practitioners and staff can demonstrate knowledge and understanding of the stroke protocol in place, including effective communication with EMS personnel, notification of the stroke team and initiation of the stroke protocol concurrent with the ED evaluation and management.

CR.3 The emergency department practitioners and staff demonstrate knowledge in the delivery of acute therapies that can improve a patient's outcome with a variety of strokes, when indicated, including, but not limited to:

- Intravenous tPA
- Reversal of coagulopathies
- Control and reduction of elevated intracranial pressure
- Control of seizures
- Blood pressure management

CR.4 Documentation supports (that):

CR.4a The patient has been assessed and treatment decisions have been made within 60 minutes of the arrival to the emergency department (45 for Target Stroke),

CR.4b Times of all assessments,

CR.4c The patient has been screened for dysphagia before receiving any oral medications, food or fluids,

CR.4d The patient has been tested for blood glucose levels before tPA eligibility is determined,

CR.4e The emergent ischemic patient has been assessed with the NIHSS by a qualified member of the AST,

CR.4f Intravenous tPA for eligible patients within 3-4.5 hours of onset of ischemic stroke.

CR.4g The assessment and treatment of signs and symptoms of blood pressure and neurological deterioration during and post IV thrombolytic therapy per current AHA/ASA guidelines are as follows:

tPA Monitoring Requirements	Pre Bolus	During Infusion	Post Infusion
Neurological assessment	No more than 15 minutes before bolus	every 15 minutes during the one hour infusion	Every 15 minutes for the first hour after infusion
			Every 30 minutes for next 6 hours
			Hourly from eighth post infusion hour until 24 hours after infusion
Vital Signs	No more than 15 minutes before bolus	every 15 minutes during the one hour infusion	every 15 minutes for the first 1 hour after infusion
			Every 30 minutes for the next 6 hours
			Hourly from eighth post infusion hour until 24 hours after infusion

CR.4h Recognition, assessment, and management of complications of acute stroke (vital signs, neuro status) and the process for notification of deterioration to medical staff and others.

CR.4i In the event an eligible patient with ischemic stroke does not receive IV thrombolytic therapy, documentation will support the rationale.

CR.5 Patients are assessed for endovascular treatment options upon receiving tPA or if they are not a candidate for tPA.

CR.6 There are specified timeframes related to the assessment and initial treatment that have been addressed with the stroke protocols, as applicable to the emergency department. (See QM.7 CR.2)

CR.7 Maintain a current and complete call schedule with contact information of the physicians on staff and/or available for the CSC.

CR.8 The Emergency department will maintain a log that includes:

CR.8a A log documenting call times, response times, patient diagnoses, treatments, outcomes and dispositions will be kept and used for quality data review.

CR.8b Door to needle-time for administration of intravenous tissue plasminogen activator (tPA) to eligible ischemic stroke patients shall have as its goal a time of ≤60 minutes (Target: ≤45 minutes). Documentation of these results shall be maintained in a log, database or registry and reviewed by the stroke team regularly.

CR.8c CSCs must keep a log of times it notifies EMS that it is unable to provide services for stroke patients in accordance with local policies and procedures.

CR.8d CSCs must keep a log of times that it is notified that referral CSCs were not able to provide coverage Neurosurgical and/or Endovascular services.

PC.5 EMERGENCY MEDICAL SERVICES

The Emergency Medical Service plays a key role with the timely recognition, treatment, transfer, and outcomes of patients with acute stroke. The Comprehensive stroke center has established a strong relationship with the community Emergency Medical Services (EMS). Interagency collaboration with development and review of policies/procedures and education is strongly encouraged.

CR.1 A document of cooperation between the CSC and the EMS is in place. This document is a written plan for transporting and receiving patients with stroke symptoms via the EMS system.

CR.2 The hospital collaborates with emergency medical services (EMS) providers to make certain of the following:

CR.2a The program has a relationship with EMS providers that include notification when a patient with a suspected stroke is being transported to the hospital in order to activate the stroke alert (Refer to applicable state limitations on notification in transit).

CR.2b The program has access to treatment protocols utilized by EMS providers and pre-hospital personnel in response to patients reporting symptoms of stroke

CR.2c The program has stroke patient priority destination protocols utilized by EMS providers that address transport of stroke patients, in accordance with law and regulation

CR.2d The program works collaboratively with EMS to establish that personnel have specific training in the use of at least one accepted field assessment tool such as the Cincinnati Pre-hospital Stroke Scale, Los Angeles Pre-hospital Stroke Screen or other accepted tool.

CR.2e The program and EMS determine circumstances and alternate protocols in which the CSC would be on diversion and not able to accept patients.

CR.2f The program works collaboratively with EMS to establish that personnel have at least two hours of annual training in stroke diagnosis and treatment. This EMS training may be co-sponsored with other healthcare facilities in the community.

Training could address:

- Reliable identification of stroke patients using a standardized assessment tool.

- Conditions that mimic acute stroke symptoms, such as patients presenting with:

a) Hypoglycemia
b) Alcohol and drug intoxication,
c) Postictal hemiparesis
d) Other non-stroke causes of acute neurological deficits

Note: EMS providers should be able to provide early pre- notification to receiving hospitals when a stroke is recognized in the field. This action may reduce door to needle time and increase the numbers of eligible patients to be treated.

PC.6 TELEMEDICINE/TELESTROKE

CR.1 The organization must have a written description of the type of telemedicine technologies available on site at the CSC.

Note: This may be a range of technologies from a phone call to live interactive physical exam with real time viewing of the patient and/or their neuroimaging studies.

CR.2 There will be a description of the technical requirements (such as speed and resolution) of equipment both at the sending and receiving site.

CR.3 The medical professionals providing remote medical guidance will have evidence of training and expertise that is required.

CR.4 The telestroke link should be fully established within 20 minutes of when it is considered necessary by the ASR or PSC physician, in order to meet the less than

or equal to 60 minute door to needle time (Target: equal to or less than 45 minutes).

Note: In other less urgent cases, the time frame may be defined to a longer time.

PC.7 ACUTE STROKE TEAM (AST)

CR.1 The organization must have a designated interdisciplinary Core Stroke team with trained personnel. All members of the stroke team should have current job descriptions available that contain the experience, educational and physical requirements, and performance expectations for their role on the stroke team.

Note: This may be an addendum to a job description, program narrative and/or in program specific competencies.

CR.1a The CSC shall define the criteria and qualifications (through plan, policy or procedure) required for designation of qualified practitioners, professionals and other personnel assigned to the Acute Stroke Team (AST).

CR.1b The Acute Stroke Team will be comprised of personnel that may be employed, contracted or otherwise available in some manner to the CSC to encompass the following areas of expertise:

- Neurologist or Neurosurgeon, board certified or eligible;
- Surgeons with expertise performing carotid endarterectomys (CEA),
- Physician with expertise in cerebrovascular disease;
- Emergency department personnel and emergency medical services,
- Nursing staff trained in the care of acute stroke patients,
- Diagnostic Radiologists
- Radiology technologists (including MRI and CT technologists),
- Rehabilitation therapists with expertise in treatment of acute stroke patients,
- Case manager or social worker,
- Other qualified professional with expertise defined by the medical staff and CSC team.

CR.2 The acute stroke team is available and on call 24/7.

CR.2a The AST should respond to suspected patients with an acute stroke who are in the Emergency department or on an inpatient unit in the host hospital.

Note: AST may be a separate team or the rapid response team in the hospital

Note: Although their presence in the hospital is preferred, members of the AST may reside outside of the hospital as long as they can be at the bedside within 15 minutes of being called.

CR.3 Members of the Stroke Team will receive initial and ongoing education and trainings that are related to or focused on cerebrovascular disease and treatment of acute stroke patients to ensure competence of personnel.

CR.3a The CSC will require 8 hours of education and training to the core members of the Stroke Team personnel, initially and annually.

Note: The CSC may determine the personnel assigned to the AST that could be required to receive less than the minimal required hours of education and training. This will be at the discretion of the CSC to exclude any personnel, with justification, when they are not specifically dedicated to the CSC (See SM.2 CR.7 for detailed requirements).

CR.4 The CSC shall include an Advanced Practice Nurse as part of the CSC team.

Note: APN designation could include a nurse practitioner; a master's prepared clinical nurse specialist, or American Board of Neuroscience Nurses-certified nurse.

PC.8 PROTOCOLS

CR.1 The CSC shall develop stroke protocols (pathways), based on current evidence based practice for the treatment of emergent and ongoing care for acute stroke patients. This will be shared with emergency department practitioners, EMS providers and ICU and/or Stroke Unit for the care of acute stroke patients.

There shall be written protocols for:

CR.1a TIA

CR.1b Ischemic stroke

CR.1c Hemorrhagic stroke

CR.1d Telemedicine/Telestroke consultation

CR.1e tPA therapy administration and post monitoring

CR.1f Dysphagia screening (evidence based tool)

CR.1g Blood pressure and oxygenation management

CR.1h Transfer (both receiving to the CSC and out to another CSC, if indicated)

CR.1i In house stroke alert

Note: Protocols and or pathways used to rapidly identify and evaluate potential stroke patients shall be available in the ED, acute care areas and stroke designated beds/units and reviewed and updated, as needed, at least annually.

CR.2 The response process shall include an early implementation of stroke pathway (protocol) and one call notification to the Stroke Team upon entry to the ED or prior upon notification from EMS personnel.

CR.3 The stroke protocols (pathways) will include standardized order sets for the diagnosis, evaluation and management of the acute stroke patient following current AHA guidelines that address:

CR.3a Vital signs and neurological function check parameters

CR.3b Blood pressure management parameters

CR.3c Blood glucose control

CR.3d Parameters to treat fever

CR.3e Oxygenation management parameters

CR.3f Blood tests (including point of care)

CR.3g Brain imaging

CR.3h Inclusion and exclusion criteria

Note: Recent AHA guidelines for emergency cardiovascular care for stroke patients recommend administration of oxygen to hypoxemic patients to maintain oxygen saturation >94%.

Note: Recent AHA guidelines for specific blood pressure management recommendations have been established for acute ischemic stroke patients being considered for fibrinolytic therapy.

These recommendations include bringing the blood pressure below 185/110 mm Hg to qualify for fibrinolytic therapy with intravenous tPA. Once intravenous tPA is given, blood pressure must be maintained below 180/105 mm Hg to limit the risk of ICH.

Note: Recent AHA guidelines for Hypoglycemia (blood glucose <60 mg/dL) should be treated in patients with acute ischemic stroke.

These recommendations indicate that persistent in-hospital hyperglycemia during the first 24 hours after stroke is associated with worse outcomes than normo glycemia, and thus, it is reasonable to treat hyperglycemia to achieve blood glucose levels in a range of 140 to 180 mg/dL and to closely monitor to prevent hypoglycemia in patients with acute ischemic stroke

CR.4 If the CSC does not transfer patients for neurosurgical emergencies, the CSC shall have a fully functioning operating room 24/7 and appropriate qualified neurosurgical staff within a maximum of two hours when determined to be immediately needed by the patient.

CR.5 If the CSC does transfer patients for neurosurgical emergencies, there is a written protocol for rapid transfer.

CR.5a There is documentation for any event in which neurosurgical services were not available within 90 minutes of identified need from the collaborating CSC stroke center.

PC.9 TRANSFER AGREEMENT

The CSC has evidence to support that coverage for neurosurgical services is in place or arrangements (transfer agreements) have been made with another facility when providing these services.

CR.1 The CSC has a written transfer agreement (or understanding) with each PSC or ASR that the CSC provides services.

The transfer agreement will include:

CR.1a Contact names and phone numbers,

CR.1b Hours of operation,

CR.1c Transportation options (ground, air),

CR.1d Address 24/7 basis,

CR.1e Bypass or diversion plan for additional receiving hospital,

CR.1f Monitoring personnel required during transfer, dependent on patient's condition and related to the therapy used.

CR.2 There is a written document/ transfer agreement with a transportation vendor that cover both ground ambulance and air ambulance transfer options.

CR.3 There shall be a transfer agreement with another CSC, in the event that a CSC cannot provide services within two hours.

PC.10 PLAN OF CARE

CR.1 Nursing staff shall develop a standardized plan of care for the emergent/ hyper acute stroke patient which will include identified individual needs for the patient based on their condition and the family's needs. Documentation of these interdisciplinary findings, including pain management shall be included in the plan

of care, as appropriate. (See CR.2 a-q for consideration of inclusion of appropriate items for emergent patients)

CR.2. Nursing staff shall establish an initial plan of care immediately upon admission. Nursing staff will complete and maintain a plan of care prepared by qualified individuals for each patient within 24 hours of admission that reflects the input of other disciplines, as appropriate documentation of interdisciplinary findings and plans, including but not limited to as indicated:

CR.2a Pain assessment and management, as appropriate

CR.2b Vital signs and neurological time frames and parameters for management

CR.2b (1) Temperature monitoring and management
CR.2b (2) Blood pressure evaluation and management
CR.2b (3) Neuros and/or NIHSS status

CR.2c Cardiac monitoring

CR.2d Positioning of head of bed

CR.2e Oxygenation

CR.2f Fluid intake

CR.2g Patient/family education

CR.2h Potential complications specific to treatment (i.e. bleeding with tPA)

CR.2i Blood Glucose Monitoring

CR.2j Infection prevention

CR.2k Bowel/Bladder care

CR.2l Mobility

CR.2mPulmonary Embolism/DVT

CR.2n Falls

CR.2o Skin Care

CR.2p Dysphagia/Prevention of Aspiration

CR.2q Nutrition

CR.3 The plan of care will include relevant co-morbidities, as indicated.

CR.4 The plan of care is updated at each phase of care and as patient's conditions changes.

CR.5 Patient and Family members (or identified significant others) are involved in the planning of care and in discharge planning.

CR.6 The plan of care will include initial discharge planning for continuing care and treatment based on needs, condition and prognosis of the patient.

Note: The plan of care may be in many forms such as included in established interdisciplinary protocols, a separate document or standardized format within nursing/admission notes.

PC.11 MEDICATION MANAGEMENT

CR.1 The CSC shall have a pharmacy service that meets the needs of the patients. Medications will be administered in accordance with accepted professional principles. The pharmacy service must have an adequate number of qualified personnel to ensure effective medication management services, including emergency services.

CR.2 All medications shall be administered by or under the supervision of nursing or other qualified personnel in accordance with applicable Federal and State laws. All drugs and biologicals shall be administered only upon the orders of the practitioner responsible for the care of the patient in accordance with approved medical staff policies and procedures, and accepted standards of practice.

CR.3 All compounding, packaging, and dispensing of medication shall be under the supervision of a pharmacist.

CR.4 The CSC (through the medical staff or pharmaceutical oversight group) shall select a list of medications to be available for the CSC. The list shall be available to all appropriate staff at all times.

CR.4a Medications available to the CSC (identified within the formulary) will include IV thrombolytic therapy medications for treatment of ischemic stroke.

CR.4b The CSC (through the pharmacy oversight) has protocols in place to ensure that IV thrombolytic therapy for treatment of stroke is being using in accordance with established guidelines for administration.

CR.5 Emergency department practitioners will have access to appropriately qualified personnel for consultation regarding the use of IV thrombolytic therapy, when obtained from a physician competent and privileged in the diagnosis and treatment of ischemic stroke.

CR.6 Emergency department practitioners can demonstrate safe use of tPA:

CR.6a Safe time frames for administration of tPA

CR.6b Indications for use

CR.6c Exclusion /contraindication criteria

CR.6d Dosage and mixing instructions

CR.6e Monitoring protocols for identification of post tPA neurological deterioration

Note: A useful strategy is to mix drug and set up the bolus drip and one hour infusion as soon as a patient is recognized as a possible tPA candidate. Drug manufacturers may replace, free of charge, medications that are mixed but not used.

Note: Dosing charts and standardized order sets can facilitate timely administration and minimize dosing errors.

Note: If the patient's weight is not known and cannot be quickly ascertained from self-report or by other means such as prior records, two healthcare workers should independently estimate the patient's weight and the resulting average estimate should be used as the approximate weight for drug administration.

PC.12 DIAGNOSTIC TESTS

CR.1 Laboratory services must be in house and available 24/7 to complete and interpret initial tests within 45 minutes of being ordered.

CR.1a Documentation should include completed diagnostic studies including complete blood count, chemistries, coagulation studies, troponin, as ordered, and, when indicated, an ECG, chest x-ray, pregnancy test, etc. as indicated.

Note: If laboratory turnaround times cannot meet this target, point-of-care testing may be performed in the emergency department, according to CSC policy.

Note: Glucose testing performed by EMS prior to arrival may be accepted, according with the policy of the CSC and EMS services.

CR.2 Non-contrast computed tomography (CT) and Basic Magnetic Resonance Imaging (MRI) must be available 24/7. A radiology technologist trained in CT techniques must be available for the CSC, in house, 24/7.

CR.2a An MRI technologist may be on call and available in house within these parameters:

i. If using for critical decision rather than a CT, the same time frame as written for CT so must be available in house.
ii. If using for acute treatment decision, then two hours from the order is the standard.
iii. For all other purposes, the hospital can make its own determination of time frame.

CR.2b Documentation should include completed and interpreted CT/MRI exams for patients who are candidates for the treatment of tPA within 45 minutes.

CR.2c The brain imaging study should be interpreted by a physician with expertise in reading CT or MRI Studies.

CR.2d A diffusion-weighted MRI shall be completed within 2 hours of the test being ordered if for emergent patients. These services shall be made available 24/7.

CR.2e MR angiography (MRA) shall be completed within 2 hours of the test being ordered, if emergent. These services shall be made available 24/7.

CR.2f Catheter Angiography (CA) shall be started within 120 minutes of being ordered (goal).

CR.2g Extracranial Ultrasonography (U/S) shall be available and adhere to proficiency guidelines by the Intersocietal Committee for the Accreditation of Vascular Laboratories (ICAVL) or a similar credentialing organization.

CR.2h Transcranial Doppler (TCD) shall be available and adhere to proficiency guidelines by the Intersocietal Committee for the Accreditation of Vascular Laboratories (ICAVL) or a similar credentialing organization.

CR.2i Transthoracic (TTE) and Transesophageal Echocardiography (TEE) shall be available.

CR.2j Cerebral Blood Flow and Metabolism tests may be useful for guiding acute therapy but are not required on an emergent basis.

CR.3 The physician's evaluation, diagnostic testing including neuroimaging and contact with a physician with stroke expertise should be performed concurrently.

CR.3a Concurrent conditions shall be communicated to the consulting physician as well as the stroke assessment findings.

PC.13 REHABILITATION SERVICES

Rehabilitation services should be implemented as soon as possible. Mobilization of the stroke survivor and resumption of self-care activities should occur as soon as medically feasible. Both inpatient and outpatient rehabilitation programs can improve outcomes and prevent deterioration.

CR.1 The CSC provides rehabilitation, physical therapy, and audiology or speech pathology services. The service(s) shall be provided in a manner that ensures the patient's health and safety.

CR.2 Post Stroke rehabilitation shall focus on

CR.2a Training for maximum recovery,

CR.2b Prevent and treat comorbid conditions,

CR.2c Enhance psychosocial coping,

CR.2d Promote integration into the community,

CR.2e Prevent recurrent strokes and other vascular events, and

CR.2f Enhance quality of life.

CR.3 Rehabilitation Services, as defined by the medical staff and CSC, and consistent with State and Federal law, shall be performed by competent physical therapists, physical therapy assistants, occupational therapists, occupational therapy assistants, speech-language pathologists, or audiologists. Staff shall have experience in the treatment of stroke patients.

CR.4 Rehabilitation Services should be directed by a physician with board certification in physical medicine and rehabilitation (i.e. physiatrist) or properly trained individuals (i.e. neurologist experienced in stroke rehabilitation or other physicians or PhDs with fellowship training in rehabilitation).

CR.5 Therapists, social workers, and nurse case managers must meet requirements for state licensure and have at least one year of experience in the treatment of stroke survivors.

CR.6 The CSC shall require physical, occupational and speech therapists to be readily available by consultation for patient assessment and therapy during the patient hospitalization. Consults and assessments will be performed and documented within 24 hours of admission or when feasible once the patient is medically stable.

CR.6a Documentation in the medical record of attempts to perform a patient assessment and reason why it was not able to be performed is required.

CR.6b If the CSC does not have inpatient rehabilitation services on site, there shall be a documented referral protocol in place and knowledge of nearby facilities offering this service. Documentation of referrals shall be in the medical record.

CR.7 The nurse care managers and social workers must have an adequate knowledge of inpatient rehabilitation facilities and community resources in their geographic regions.

CR.7a Nurse case managers and Social workers must have a demonstrated expertise regarding neurology/stroke care, care coordination, levels of rehabilitation and community resources in their geographic regions.

CR.8 The organization shall have a written treatment plan that is in accordance with orders from practitioner's who are authorized by the medical staff to order rehabilitation services. The orders, treatment plan and results, notes and other related documentation shall be maintained in the patient's medical record.

CR.9 The treatment plan and the personnel qualifications must be in accordance with national acceptable standards of practice.

PC.14 PATIENT/FAMILY/COMMUNITY EDUCATION

CR.1 The CSC Program will ensure that it provides for the involvement of patients and/or family members in:

CR.1a Making decisions about the plan of care goals during hospitalization,

CR.1b Discussing and planning for lifestyle changes to manage disease/condition,

CR.1c Discussing and planning for post hospital care and needs, including possible placement.

CR.2 The CSC shall offer at least 2 annual programs to educate the public about stroke prevention, diagnosis, and/or the availability of acute therapies.

CR.3 Community outreach education programs are designed to be delivered through various means to address:

- Risk factors, signs, symptoms for stroke or other cardiovascular diseases,
- General prevention efforts that target smoking cessation, obesity, and diabetes,
- Management of hypertension, lipid levels, atrial fibrillation, and medication adherence,
- Other issues as identified by the CSC.

CR.4 The CSC shall evaluate the community outreach initiatives by measuring the knowledge in the community about the causes, signs and symptoms of stroke as well as emerging stroke prevention strategies. (See QM.7 CR.5)

Medical Staff (MS)

MS.1 ADMISSION REQUIREMENTS

Patients are admitted to the Stroke Unit/designated stroke beds only on the recommendation of a licensed practitioner permitted by the State to admit patients to the CSC.

CR.1 The CSC shall ensure that every patient is under the care of a:

CR.1a Doctor of medicine or osteopathy who may delegate such care to other qualified health care professionals to the extent allowed by State law and qualified as;

CR.1a (1) A Neurologist or Neurosurgeon, board certified or eligible; or

CR.1a (2) Physician with expertise in cerebrovascular disease; or

CR.1a (3) Other qualified professional with expertise defined by the medical staff.

CR.2 The CSC shall ensure that:

CR.2a A doctor of medicine or osteopathy is on duty or on call at all times;

CR.2a (1) With expertise in cerebrovascular disease.

CR.2b A doctor of medicine or osteopathy is responsible for the care of each patient presenting to the CSC with a confirmed diagnosis or signs of acute stroke at the time of admission or that develops during hospitalization.

MS.2 CONSULTATION

CR.1 Medical professionals providing remote consultations have training and expertise to meet the host hospital requirements for telemedicine consultations.

CR.2 The medical staff shall define in its bylaws the circumstances and criteria under which consultation or management by a physician or other qualified licensed independent practitioner is required to address any co-morbidities of the patients under the care of the CSC as required.

CR.3 Emergency room physicians have 24 hour access to a consultation about use of tPA from a physician privileged in the diagnosis and treatment of ischemic stroke.

Note: May be in person or by telemedicine/telestroke.

CR.4 The CSC should have at least one or additional physicians with expertise in cerebrovascular disease on staff in order to ensure 24 hours per day, 7 days per week coverage.

CR.4a One or more neurologists (preferably) with fellowship training in vascular neurology;

CR.4b Neurologist should be available to answer emergency calls per telephone/tele-video within 20 minutes; and,

CR.4c Is available in-house within 45 minutes if needed.

MS.3 NEUROSURGICAL COVERAGE

CR.1 Neurosurgical coverage is described in a written plan that includes the types of practitioners and services provided by covering neurosurgeon and any involved facilities.

CR.2 A Neurosurgical call schedule is available in the emergency room department.

CR.3 If the CSC needs to transfer patients for neurosurgical services, they are available within three hours of it being determined as necessary.

CR.4 Written protocols for transfer include communication from other facilities that are transferring in as well as a transfer out to another CSC facility.

CR.5 If the CSC does not transfer patients for neurosurgical emergencies, the CSC shall have a fully functioning operating room 24/7 and appropriate qualified neurosurgical staff within a maximum of two hours when determined to be immediately needed by the patient.

CR.6 Each neurosurgeon should participate in greater than or equal to 10 surgical intervention cases per year. (Examples: clipping/coiling at least ten each, when possible. This can also include -CEA, craniotomies, EVD placement, etc.)

MS.4 PROGRAM MEDICAL DIRECTOR

CR.1 The medical director for the CSC must have significant amount of training and expertise knowledge as delineated in PM.1 CR.2.

CR.2 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.

CR.3 The director shall be involved in the assessment of patients and provide consultative advice to other treating physicians.

MS.5 ICU / CRITICAL CARE MANAGEMENT AND COVERAGE

CR.1 The CSC should have physicians with training in critical care medicine or neurocritical care for managing patient care in the ICU or neuroscience ICU in order to care for complex ischemic stroke patient s as well as for hemorrhagic stroke cases and others. These clinicians should have the following:

CR.1a Board-certified or board eligible neurologist, neurosurgeon, anesthesiologist or internist who has completed either a critical care fellowship or neuro critical care fellowship; and,

CR.1b Care for at least 20 patients with acute strokes per year; and,

CR.1c Attend greater than or equal to 4 hours per year of CME activities (or similar educational programs) related to or focused on cerebrovascular disease.

CR.2 Intensivists that meet criteria set by the medical staff, may staff the ICU that contains the dedicated neuro beds under the condition that there is a neurologist on call for consultation 24/7 and can be in house within 45 minutes.

CR.2a Criteria set by medical staff shall be in writing.

CR.2b There shall be documentation of review of individual intensivist meeting criteria and peer review of cases.

MS.6 ENDOVASCULAR SERVICES

CR.1 CSC shall have the ability and equipment to perform revascularization procedures and microvascular surgery The CSC will provide neurosurgical and endovascular Services for the treatment of cerebrovascular diseases including the following:

CR.1a Microsurgical neurovascular clipping and/or neuro endovascular coiling,

CR.1b Intracranial angioplasty or IA infusions of vasodilators.

CR.2 CSC shall have the ability and equipment to perform revascularization procedures and microvascular surgery. Perioperative complications shall be tracked prospectively.

Note: Extra cranial carotid angioplasty and stenting is considered optional for the CSC.

Nursing Services (NS)

NS.1 NURSING SERVICE

CR.1 The CSC must have a well-organized nursing service with a plan of administrative authority and delineation of responsibilities for delivery of patient care for patients under the CSC.

CR.2 There shall be 24-hour nursing services and a registered nurse must supervise and evaluate the nursing care for each CSC patient. A registered nurse shall be on duty at all times.

CR.2a Nursing staff assigned to the response stroke team should have current job description available that contains the experience, educational and physical requirements, and performance expectations, including continuing education regarding the care of acute stroke patients.

Note: May be in form of addendum to job description or in program specific competencies.

CR.2b CSC nurses required training will include but not be limited to:

CR.2b (1) Nursing assessment and management of the function of ventriculostomy and external ventricular monitoring and drainage apparatus,
CR.2b (2) Treatment of increased intracranial pressure,
CR.2b (3) Nursing care of patients with ICH and SAH,
CR.2b (4) Nursing care of patients receiving tPA and after thrombolytic therapy,
CR.2b (5) Treatment of blood pressure abnormalities with parenteral vasoactive agents,
CR.2b (6) Management of intubated/ventilated patients, and
CR.2b (7) Detailed neurologic assessments and scales (i.e. NIHSS, Glasgow Coma Scale).

Note: Training can be documented by attendance at in-service sessions, participation in regional or national courses, and other modalities, as established by the CSC staff and the host hospital.

CR.2c CSC nurses (as defined by the organization) should:

CR.2c (1) Be certified in NIHSS or equivalent standard neurologic assessments and scales,
CR.2c (2) Have a working knowledge of the organizations stroke protocols, and/or care maps,
CR.2c (3) Be familiar and involved in ongoing research projects, and
CR.2c (4) Be aware of new patient care techniques related to stroke.

CR.2d Nursing staff not assigned to the CSC, shall receive initial and annual education, training and direction for identifying a stroke, accessing the stroke team as well as basic emergency care of acute stroke patients.

CR.3 There shall be adequate numbers of licensed registered nurses, licensed practical nurses, supervisory, and other staff to provide nursing care to all patients of the CSC as needed. A registered nurse must be immediately available for the bedside care of every patient, as required by State law.

CR.3a The nursing: patient ratio in the Stroke Unit/dedicated beds for care of stroke patients should be 1:3 or 1:4. This may be modified accordingly based on both volume and acuity of patients.

NOTE: As staffing patterns are usually 1:2 in ICUs, the above number does not denote that a higher ratio should apply in ICU.

CR.5 A registered nurse shall make any decisions regarding delegation of nursing care to other nursing staff, based on individual patient need and staff qualifications.

CR.6 Non-employee licensed nurses who are working in the CSC must adhere to the policies and procedures of the CSC. The director of the CSC must provide for the adequate supervision and evaluation of the clinical activities of non-employee nursing personnel that occur within the responsibility of the nursing service.

CR.7 Each CSC nurse coordinator/manager should attend a national or regional meeting every year that focuses on some aspect of cerebrovascular disease.

Staffing Management (SM)

SM.1 PERSONNEL

Personnel performing work affecting conformity to the CSC Program requirements shall be competent on the basis of appropriate education, training, skills and experience.

CR.1 The CSC shall have a policy and practice for outlining and verifying that each staff member possesses a valid and current license or certification as required by the CSC and Federal and State law.

SM.2 COMPETENCE, TRAINING AND AWARENESS

The CSC shall:

CR1. Determine the necessary competencies for personnel performing work affecting conformity to CSC Program requirements,

CR.2 Have documented evidence to demonstrate initial and ongoing training in the care of acute stroke patients for individuals assigned to the CSC patients.

CR.3 Where applicable, provide training or take other actions to achieve the necessary competence,

CR.4 At least annually, provide continuing education or other equivalent educational activity to staff members assigned to the CSC, as determined appropriate by the CSC and as appropriate to the care practitioners' level of responsibility related specifically to CSC services.

CR.5 Evaluate the effectiveness of the actions taken,

CR.6 Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and

CR.7 Maintain appropriate records of education, training, skills and experience.

CR.7a Requirement of eight (8) hours of initial and annual education for the Stroke Coordinator and Medical Director.

CR.7b Requirement of eight (8) hours of initial and annual education for the ICU and ER Nurse Manager.

CR.7c Requirement of eight (8) hours of initial and annual education for staff members of a dedicated stroke unit / ICU. For a mixed ICU, eight (8) of initial and four (4) hours annual education.

CR.7d Requirement of two (2) hours of initial education and (1) hour of annual education for nursing staff not assigned to the CSC and in areas where in-house strokes may need to be identified.

CR.7e Requirement of four (4) hours of initial education and (2) hours of annual education for nurses in the ED.

CR.7f Other staff members (contracted or employed) receive two (2) hours of initial education and one (1) hour of annual education specifically related (i.e. Radiology technicians, Pharmacy, Rehabilitation, Other).

Note: This annual requirement may be met in a variety of ways, including online continuing medical credits, attendance at grand rounds, regional and national meetings and various educational courses. Education should be specifically related to diagnosis / assessment and management of acute stroke / cerebrovascular disease (may be policy / competency driven).

Note: The CSC may determine which personnel assigned to the Stroke Team are required to receive the minimum hours of education and training. It is at the discretion of the CSC to exclude any personnel, with justification, when they are not specifically dedicated to the CSC.

SM.3 DETERMINING AND MODIFYING STAFFING

CR.1 The method for determining and modifying staffing shall be validated through periodic reporting of variance from core staffing, outlining justification and linking that justification with patient and process outcomes, including any untoward patient events or process failures.

SM.4 JOB DESCRIPTION

CR.1 All personnel, whether clinical or supportive, including contract staff, shall have available a current job description that contains the experience, educational and physical requirements, and performance expectations for that position.

Note: CSC specific requirements may be in an addendum to the job description or in program specific competencies.

SM.5 ORIENTATION

CR.1 All personnel, whether clinical or supportive, including contract staff, shall receive an orientation to specific job duties and responsibilities, and their work environment, as required by Federal and State law, the host hospital, regulation and the CSC. The CSC shall determine orientation content that must take place prior to the individual functioning independently in their job.

SM.6 STAFF EVALUATIONS

CR.1 The performance/competency evaluation shall contain indicators that will objectively measure the ability of staff to perform all job duties as outlined in the job description, the host hospital policies and any additional program specific competencies.

CR.2 The staff shall be evaluated initially and on an on-going basis against indicators that measure issues and opportunities for improvement that are identified by variations and problem processes identified through the analysis of structures processes and outcomes measurement as required by the CSC.

CR.3 The CSC shall follow the host hospitals definition for a timeframe and a policy and practice for sharing the indicators measurement of individual staff members with those staff members that allows for staff feedback.

CR.4 The CSC shall follow the host hospital requirement that each staff member, including contract staff, participate in continuing education as required by individual licensure/certification, professional association, law or regulation.

Patient Rights (PR)

PR.1 SPECIFIC RIGHTS

The CSC shall protect and promote each patient's rights as required by the host hospital policies. The CSC shall inform, whenever possible, each patient and/or legal representative (as allowed under State law) of the patient's rights in advance of providing or discontinuing care and allow the patient to exercise his or her rights accordingly. The written listing of these rights shall be provided to the patient and /or family and shall include policies and procedures that address the following:

CR.1 Patient and/or family participation and means for making informed decisions regarding his/her plan of care;

CR.2 Information to the patient or family of patient care and to involve the patient and family to make informed decisions regarding their planning for care and treatment, including the requesting and/or refusing treatment, their health status, not to be construed as a demand for the provision of treatment or services deemed medically unnecessary or inappropriate;

CR.3 Personal privacy;

CR.4 Provision of care in a safe setting;

CR.5 Confidentiality of clinical records;

CR.6 Procedure for submission of a written or verbal grievance;
(See PR.5 Grievance Procedure)

CR.7 Pain Management.

PR.2 ADVANCE DIRECTIVE

The CSC must allow the patient to formulate advance directives and to have CSC staff and practitioners comply with the advance directives in accordance with the host hospital policies as well as Federal and State law, rules and regulations.

CR.1 The CSC shall document in the patient's medical record whether or not the patient has executed an advance directive.

CR.2 The CSC shall not condition the provision of care or otherwise discriminate based on the execution of the advance directive.

CR.3 The CSC, through the host hospital, shall ensure compliance with State law regarding the provision of an advance directive.

CR.4 The CSC, through the host hospital, shall provide education for staff regarding the advance directive.

CR.5 When it is determined that an advance directive exists and is not in the patient's medical record, the CSC will follow the host hospitals written policy for follow-up and compliance with the policy.

PR.3 LANGUAGE AND COMMUNICATION

The CSC shall communicate with the patient and/or legal representative in language or format that the patient and/or legal representative understand.

CR.1 The CSC, through the host hospital policy and practice, provides for competent individuals to interpret the patient's language for individuals who do not speak English or provide alternative communication aids for those who are deaf, blind, or otherwise impaired.

PR.4 INFORMED CONSENT

The CSC shall obtain an informed consent from each patient or authorized representative for the provision of medical care under the CSC. The consent shall include an explanation of risks, benefits, and alternatives for procedures, diagnostic tests, and participation in activities related to the CSC, as defined by the medical staff and State law.

CR.1 IV tPA is recognized as the standard of care and is approved by the FDA for qualified individuals who present within 3 hours of ischemic stroke onset. If the patient has decision-making capacity or a proxy decision maker is present, a physician shall document the discussion regarding risks, benefits, and alternatives to IV tPA which shall take place prior to the administration of the medication. Unless required by local practices, a signed informed consent document is not a prerequisite to the administration of IV tPA in these circumstances.

CR.2 If the patient lacks capacity and no proxy decision maker can be found after a reasonable effort, then the physician may administer the medication based on the principle of implied consent for emergency treatment. The physician and other members of the health care team should document the patient's absence of decision-making capacity, that attempts to contact a proxy decision maker were unsuccessful, and that there is an urgent medical need to proceed with treatment in the absence of consent.

CR.3 When the duration of stroke symptoms exceeds the duration indicated by standard of care for IV tPA administration, the principle of implied consent for emergency treatment is not applicable, and physicians should obtain informed consent. Local practices will determine whether a signed informed consent document is necessary in these cases. Regardless of whether written or verbal consent is required, physicians should document the informed consent discussion in the medical record.

Note: Regulatory precedents set by FDA and the Department of Health and Human Services in the United States and by the World Medical Association internationally support the use of intravenous tPA in patients lacking capacity when an alternative form of consent cannot be obtained within the treatment window.

CR.4 Informed consent for IA/catheter therapy, CEA or any other surgical intervention shall follow the rules of the host hospital, state and other applicable local laws.

PR.5 GRIEVANCE PROCEDURE

The CSC shall participate in and follow the host hospital formal grievance process and procedure for submission of a patient's written or verbal grievance.

CR.1 The CSC shall follow the host hospital policies on:

- A list of who to contact,
- Review and resolution of grievances,
- Specification of reasonable timeframes for review and response to grievances,
- CSC contact person,
- Steps taken to investigate,
- Results of the grievance process; and
- Date of completion.

Medical Records (MR)

MR.1 ORGANIZATION

CR.1 Administrative responsibility for medical records shall rest with the medical record service of the host hospital.

CR.2 The CSC shall maintain the host hospitals policies on an accurately written, promptly completed medical record for each inpatient and outpatient.

CR.3 The host hospital organization shall have a process for providing services for the completion, filing, and retrieval of the medical record. The process for completion of the medical record must address timeframes.

CR.4 Authenticity and security of all record entries shall be safeguarded.

CR.5 Medical records (original or legally reproduced form) shall be retained for a period of at least five (5) years or as required by host hospital, state and local laws.

CR.6 The coding and indexing system shall be designed in such a way that allows for timely retrieval by diagnosis and procedure, in order to support medical care evaluation studies.

CR.7 Original medical records shall be released by the organization only in accordance with Federal or State laws, court orders, or subpoenas.

MR.2 CONFIDENTIALITY

CR.1 Confidentiality of patient records shall be assured.

CR.2 Individuals who are authorized by the patient to receive information from or copies of records shall follow processes designed to protect improper or inadvertent release of private information to unauthorized individuals.

CR.3 The organization shall also ensure that the medical record cannot be altered or accessed by unauthorized individuals.

MR.3 RECORD CONTENT

CR.1 The medical record shall contain information to:

CR.1a Justify treatment, admission and/or continued hospitalization;

CR.1b Support the diagnosis; and,

CR.1c Describe the patient's progress and response to medications and services.

CR.2 All entries shall be:

CR.2a Legible, complete, dated and timed; and,

CR.2b Authenticated by the person responsible for providing or evaluating the services provided consistent with the host hospital and CSC policy.

Note: Authentication may include written signatures or initials. Electronic authentication is permissible.

CR.3 The CSC shall follow the host hospital system to identify the author of each entry into the medical record.

CR.4 All orders must be dated, timed and authenticated promptly by the prescribing practitioner.

CR.5 Verbal orders must be in accordance with Federal and State law and authenticated by the practitioner, or a practitioner responsible for the care of the patient, within time frame required by the host hospital and/or State law.

CR.5a Telephone or verbal orders are to be used infrequently and when used must be accepted only by personnel authorized by the medical staff and in accordance with Federal and State law.

MR.4 REQUIRED DOCUMENTATION

All records must document the following, as appropriate

CR.1 Evidence of a physical examination, including a health history must be performed on all patients admitted for inpatient care and/or prior to surgery or procedure requiring anesthesia services, except in emergencies:

CR.2 Admitting diagnosis (if admitted),

CR.3 Results of all consultative evaluations of the patient and appropriate findings by clinical and other staff involved in the care of the patient,

CR.4 Documentation of complications, organization acquired infections, and unfavorable reactions to drugs and anesthesia,

CR.5 Properly executed informed written consent forms for procedures and treatments specified by the medical staff, or by Federal or State law if applicable, signed by the patient or his/her authorized representative (See PR.4 for tPA consent policy),

CR.6 All practitioners' orders, nursing notes, reports of treatment, medication records, radiology, and laboratory reports, and vital signs and other information necessary to monitor the patient's condition.

CR.6a Documentation indicating reason if an eligible ischemic stroke patient does not receive IV thrombolytic therapy.

CR.6b Assessments, re-assessments, interventions and monitoring (i.e. Post tPA) including date and time, per protocol and/or hospital policy.

CR.7 Discharge summary with outcome of hospitalization, disposition of case, and provisions for follow up care.

CR.8 Final diagnosis with completion of medical records within thirty, (30) days following discharge.

Physical Environment (PE)

PE.1 The CSC shall participate in the facility and safety management systems for maintaining the physical environment in place under the operation of the host hospital, including applicable National Fire Protection Association (NFPA) standards, applicable CMS Conditions of Participation and any additional accreditation organization (AO) requirements.

ADDENDUM: 2015 DNV GL Comprehensive Stroke Center Metrics for Measuring Processes and Quality

QM.9 METRICS FOR MEASURING QUALITY OF CSC CARE

CR.1 The CSC Program shall ensure that it provides the following core quality metrics that are listed in Metrics for Measuring Quality of Care in Comprehensive Stroke Centers American Heart Association/American Stroke Association Recommendations: A Statement for Healthcare Professionals from the Detailed Follow-Up to Brain Attack Coalition Comprehensive Stroke Center Stroke 2011, 42:849-877.

Required metrics are 1,2,3,4,5,7,8,9,12,13,15,18,19,23.
Metric 18 added for Jan 2015

Note: Metrics in bold and with numerator/denominator detail are the core measurements that will be required. Other metrics noted are optional at this time.

CR.1a
Metric 1: Percentage of patients who have an ischemic stroke or who have a TIA with a deficit at the time of the initial admitting note or neurology consultation note for whom an NIHSS score is documented.

Numerator:
Number of patients with ischemic stroke or TIA with a deficit at the time of the initial admitting (or neurological consultation note) for whom an NIHSS is documented.

Patients are to be included in the numerator if the NIHSS is recorded in the first admitting note (or in the first neurology consultation note), Patients with acute ischemic stroke treated with IV or IA tPA or with an acute endovascular procedure should be included in the numerator only if the NIHSS is performed before the start of these treatments.

Denominator:
All patients who have an ischemic stroke or TIA with a deficit at the time of the initial admitting or neurology consultation note or who undergo intravenous tPA or acute endovascular treatment with complete resolution of their deficit.

Note: Patients with a TIA should be included if they still have a deficit at the time of the initial admitting or consultation note.

CR.1b
Metric 2: Percentage of ischemic stroke patients eligible for intravenous thrombolysis who receive it within the appropriate time window.

Numerator:
Patients who arrive within 3 hours of last known well are candidates for tPA up to 4.5 hours since last being known to be at baseline, and are treated with tPA within this time are to be included in the numerator.

Denominator:
Patients who arrive within 3 hours of last known well and are candidates for tPA up to 4.5 hours after last known well are included in the denominator.

Note: For patients with an in- hospital stroke, the time of arrival should be the time that the deficit was first discovered.

Patients who are transferred to the CSC after tPA is started at another hospital, should be excluded from this metric for the CSC.

CR.1c
Metric 3: Percentage of patients who are treated for acute ischemic stroke with intravenous thrombolysis whose treatment is started within 60 minutes after arrival.

Numerator:
Patients treated with tPA for acute ischemic stroke whose treatment is started within 60 minutes after arrival.

Denominator:
All patients treated with intravenous thrombolysis for acute ischemic stroke.

Note: For patients with an in-hospital stroke, the time of arrival should be the time that the deficit was first discovered.

Patients who are transferred to the CSC after tPA is started at another hospital should be excluded from this metric for the CSC.

CR.1d
Metric 4: Median time from arrival to start of multimodal CT or MR brain and vascular imaging (MRI/MRA or CT/CTA) for ischemic stroke patients arriving within 6 hours of the time that they were last known well, if one of the studies have been ordered.

No numerator/ denominator.

Note: Patients should be excluded from this if there is a documented reason for not performing multimodal imaging quickly (i.e. TIA).

For patients with an in-hospital stroke, the time of arrival should be the time that the deficit was first discovered.

CR.1e
Metric 5: Percentage of Ischemic stroke patient seen within 6 hours of the time they were last known well who have documentation that an endovascular recanalization procedure either was performed or was considered and deemed not to be appropriate or possible. A reason should be documented if an endovascular procedure was not performed.

Numerator:

Number of ischemic stroke patients seen within 6 hours of the time when they were last known well who undergo an endovascular revascularization procedure or are documented not to be a candidate for such a procedure.

Denominator:
Number of ischemic stroke patients seen within 6 hours of the time when they were last known well.

Note: Allowable reasons for not performing an endovascular procedure but still including the patient in the numerator may include:

- Enrollment in a clinical trial
- Arrival time that is too late for treatment
- Deficits that are too severe or too mild
- Elevated creatinine
- Advance age
- Lack of major vessel occlusion
- Rapid improvement
- Refusal by patient/family
- Lack of appropriate surrogate to consent
- Insufficient evidence to support intervention per treating physician

CR.1f
Metric 6: Median time from arrival to start of treatment for acute ischemic stroke patients undergoing an endovascular intervention.

No Numerator/Denominator

The start of treatment is defined here as the start of intra-arterial infusion of a thrombolytic drug or the first pass with a device.

If the time that treatment was started cannot be determined accurately, centers may use the time halfway between puncture and completion of the procedure.

Note: For patients with an in- hospital stroke, the time of arrival should be the time that the deficit was first discovered.

CR.1g
Metric 7: Percentage of patients treated with intravenous thrombolysis who have a symptomatic intracranial hemorrhage within 36 hours of treatment.

Numerator:
Patients treated with intravenous thrombolysis who have a symptomatic intracranial hemorrhage in the first 36 hours after treatment.

Denominator:
All patients treated with intravenous thrombolysis.

Note: Symptomatic intracranial hemorrhage is defined by the presence of a new intracranial hemorrhage on a CT or MRI that is performed within 36 hours of the

end of treatment, with documentation in the medical record that there was clinical deterioration and that no other documentation attributes the deterioration to an alternative causation.

CR.1h

Metric 8: Percentage of acute ischemic stroke patients treated with endovascular interventions that develop significant intracranial hemorrhage within 36 hours of treatment.

Numerator:
All patients who undergo endovascular intervention for acute ischemic stroke and have a symptomatic intracranial hemorrhage in the first 36 hours after treatment.

Denominator:
All patients who undergo endovascular intervention for acute ischemic stroke.

Note: Symptomatic intracranial hemorrhage is defined by the presence of a new intracranial hemorrhage on a CT or MRI that is performed within 36 hours of the end of treatment, with documentation in the medical record that there was clinical deterioration and that no other documentation attributes the deterioration to an alternative causation.

If a center is using a protocol that treats some patients with tPA followed by an endovascular procedure, these patients should be included.

Centers should also track symptomatic intracranial hemorrhage rates separately for patients treated only with endovascular thrombolysis as well as those being treated with the tPA/endovascular procedure protocol.

CR.1i

Metric 9: Percentage of acute ischemic stroke patients who are treated with intravenous thrombolysis or who undergo endovascular recanalization procedure for whom there is documentation of a 90-day mRS score.

Numerator:
All patients with ischemic stroke acutely treated with intravenous thrombolysis or with an endovascular recanalization procedure who had an mRS performed at approximately 90 days after the stroke, either in person or by telephone if it was not possible to perform in person.

Denominator:
All patients admitted with ischemic stroke acutely treated with intravenous thrombolysis or with an endovascular recanalization procedure.

Note: The mRS should be conducted by a trained person using a standardized interview. The mRS may be based on information obtained from the patient, family member or caregiver. The mRS should be performed within 2 weeks of the date (before or after) at which it has been 90 days since stroke onset.

CR.1j

Metric 10: Percentage of patients undergoing CEA, or carotid angioplasty or stenting, with stroke or death within 30 days of the procedure.

CR.1k
Metric 11: Percentage of patients undergoing intracranial angioplasty and/or stenting for atherosclerotic disease with stroke or death within 30 days of the procedure.

CR.1l
Metric 12: Percentage of SAH, ICH, and AVM patients for whom initial severity measures are documented.

Numerator:
The number of SAH patients for whom the Hunt and Hess scale or the World Federation of Neurological Surgeons Scale is documented, the number of ICH patients without an AVM for whom the ICH score is documented, the number of AVM patients with hemorrhage for whom the ICH score and Spetzler-Martin score is documented and the number of AVM patients without hemorrhage for whom the Spetzler-Martin score is documented.

Denominator:
The sum of the number of SAH patients, the number of ICH patients without an AVM and the number of AVM patients.

Note: For a patient to be counted in the numerator, the Hunt and Hess (and GCS) or the World Federation of Neurological Surgeons Scale for SAH patients and the ICH scores for the ICH patients should be documented in the initial neurological or neurosurgical admitting or consultation note or in a separate earlier note and should be evaluated before the start of any endovascular or surgical procedure.

The ICH score and Spetzler-Martin score may be determined later after an analysis of imaging.

Note: This combined ratio should be calculated as the primary metric, but separate ratios should also be calculated for each scale.

CR.1m
Metric 13: Median time from admission to start of procedure intended to obliterate a ruptured aneurysm by surgical clipping or endovascular coiling for patients who arrive within 48 hours of the hemorrhage that led directly to admission.

No Numerator/Denominator

Note: Patients who are not treated should be excluded but the reasons that they were not treated should be recorded. Times should be recorded to the nearest hour.

CR.1n
Metric 14: Percentage of patients with aneurysmal SAH arriving within 48 hours of hemorrhage for whom a coiling or clipping procedure was not started within 36 hours of

arrival who have a documented reason for not having undergone coiling or clipping within 36 hours of arrival.

CR.1o
Metric 15: Percentage of patients with documented aneurysmal SAH for whom Nimodipine treatment (60 mg every 4 hours or 30 mg every 2 hours) is started within 24 hours of diagnosis and for whom such treatment is continued until 21 days after the hemorrhage or until discharge if they are discharged 21 days after the SAH.

Numerator:
Patients with documented aneurysmal SAH treated with Nimodipine 60 mg every 4 hours (or 30 mg every 2 hours) within 24 hours of diagnosis and who continue this treatment until 21 days after their hemorrhage, or until discharge if they are discharged <21 days after the SAH, or until they develop a contraindication to Nimodipine.

Denominator:
All patients with a diagnosis of aneurysmal SAH.

Note: Acceptable contraindications include documentation of intractable hypotension or allergy to Nimodipine.

Patients whose dose of Nimodipine is reduced because of hypotension will be considered to be in compliance with this metric.

Patients who have a known contraindication to Nimodipine and are therefore not treated with it will also be considered to be in compliance with this metric.

Patients who arrive at a CSC with documented aneurysmal SAH should receive Nimodipine within 24 hours of admission.

CR.1p
Metric 16: Percentage of SAH patients with diminished level of consciousness and ventriculomegaly who are treated with EVD.

CR.1q
Metric 17: Median frequency of noninvasive monitoring performed for surveillance for vasospasm in patients with aneurysmal SAH during the period between 3 and 14 days after SAH.

CR.1r
Metric 18: Complication rates for aneurysm coiling and clipping

Numerator:
Patients undergoing coiling or clipping of a ruptured or un- ruptured aneurysm who have complications of death, stroke or bleeds within 24 hours of the procedure or any re-bleeding and/or second treatment for residual aneurysm within 30 days of the procedure.

Denominator:

All patients undergoing coiling or clipping of a ruptured or un-ruptured cerebral aneurysm.

Metric 18a
Numerator:
Patients with unruptured cerebral aneurysms undergoing coiling with complications.

Denominator:
All patients undergoing coiling of an unruptured cerebral aneurysm

Metric 18b
Numerator:
Patients with a ruptured cerebral aneurysms undergoing coiling with complications

Denominator:
All patients undergoing coiling of a ruptured cerebral aneurysm

Metric 18c
Numerator:
Patients with unruptured cerebral aneurysms undergoing clipping with complications

Denominator:
All patients undergoing clipping of an unruptured cerebral aneurysm

Metric 18d
Numerator:
Patients with ruptured cerebral aneurysms undergoing clipping with complications

Denominator:
All patients undergoing clipping of a ruptured cerebral aneurysm

Note: Bleeding complications should be classified by pre-procedural, procedural, and post procedural if within the first 30 days. The three distinct classifications of bleeds should be tracked separately.

For ruptured aneurysms, only consider ischemic strokes and death within 24 hours of the procedure.

CR.1s
Metric 19: Median time from arrival to start of treatment to reverse the INR with a procoagulant preparation (e.g., fresh frozen plasma, recombinant factor VIIa, prothrombin complex concentrates) for patients with warfarin-associated ICH and an elevated INR (INR> 1.4).

No Numerator/denominator

Note: Patients with an elevated INR should be excluded from this if a reason is documented for not treating them, for example, if there is a decision to treat the patient with comfort measures only or if the risks of reversing anticoagulation are judged to outweigh the benefits. Times for this metric should be recorded in minutes.

CR.1t
Metric 20: Percentage of patients undergoing surgical or endovascular treatment of an AVM with stroke or death within 30 days of the procedure.

CR.1u
Metric 21: Percentage of patients with ischemic or hemorrhagic stroke or TIA transferred from another hospital to the CSC with documentation of the time from the first call from the transferring hospital to the CSC (to a member of a stroke program or to a centralized transfer center) to arrival time at the CSC.

CR.1v
Metric 22: Percentage of patients admitted to each type of unit to which patients with ischemic or hemorrhagic stroke or TIA are initially admitted (e.g., neurological/neurosurgical ICU, medical ICU, surgical ICU, general ICU, coronary care unit, burn ICU, stroke unit, other intermediate-level-of-care unit, neurology floor, or other floor). A separate percentage should be calculated for each type of unit.

CR.1w
Metric 23: Percentage of patients with stroke or death within 24 hours of diagnostic neuroangiography.

Numerator:
Patients with death or stroke after diagnostic neuroangiography within 24 hours of the procedure or before discharge, whichever comes first.

Denominator:
All patients who undergo a diagnostic neuroangiographic procedure.

Note: Exclude patients if they have undergone a therapeutic angiographic intervention as part of the same procedure or within the first 24 hours after the diagnostic procedure unless the complication is identified before the therapeutic intervention.

CR.1x
Metric 24: Percentage of patients who have a diagnosis of ischemic or hemorrhagic stroke who undergo EVD and then develop ventriculitis.

CR.1y
Metric 25: Median number of days from admission to completion of evaluations for physical therapy, occupational therapy, speech-language pathology, and rehabilitation medicine, unless there is documentation on admission that some or all of these evaluations are not needed or that the patient cannot tolerate them because of medical instability.

CR.1z
Metric 26: Percentage of patients admitted with diagnoses of ischemic stroke, SAH, AVM, intracranial hemorrhage, extracranial cervical stenosis, intracranial stenosis, or TIA who are enrolled in a clinical research study.

REFERENCE FOR CSC METRICS

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