2016 Stroke and Stroke Rehabilitation Measure Specifications
Intravenous Fibrinolytic Treatment Measure Bundle

**Measure Description**
Percentage of patients aged 18 years and older with a diagnosis of acute ischemic stroke presenting within 4.5 hours from last known well (LKW) who received optimal intravenous fibrinolytic treatment evaluation and management based upon their eligibility for all 5 performance components.

### Measure Specifications

<table>
<thead>
<tr>
<th>Numerator Statement</th>
<th>Patients aged 18 years and older with a diagnosis of ischemic stroke presenting within 4.5 hours from LKW and received all 5 evaluation and management treatment components:</th>
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</thead>
<tbody>
<tr>
<td><strong>Component 1:</strong> NIH Stroke Scale (NIHSS) documented</td>
<td>Documentation of NIHSS on presentation, or prior to the initiation of intravenous fibrinolytic treatment</td>
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<tr>
<td><strong>Component 2:</strong> Intravenous fibrinolytic treatment eligibility assessment documented</td>
<td>Documentation of eligibility for intravenous fibrinolytic treatment.</td>
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<tr>
<td><strong>Component 3:</strong> Intravenous fibrinolytic treatment documentation</td>
<td>Documentation of time to initiation of intravenous fibrinolytic therapy. If not eligible, documentation of appropriate exclusion criteria fulfills this component.</td>
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</tbody>
</table>
| **Component 4:** Intravenous fibrinolytic treatment initiated within 60 minutes from presentation (i.e., arrival to ED or discovery of symptoms if in-patient stroke) | Initiation of intravenous fibrinolysis treatment less than 60 minutes from presentation  
  - If initiation greater than 60 minutes from presentation, documentation of appropriate reason for delay. See below technical specifications for acceptable and NOT acceptable reasons.  
  - If not patient eligible, documentation of appropriate exclusion criteria fulfills this component. |
| **Component 5:** Non-contrast brain CT or MRI interpreted within 45 minutes from presentation | Documentation of CT or MRI brain imaging interpretation within 45 minutes of presentation |

| Denominator Statement | All acute ischemic stroke patients aged 18 years and older presenting within 4.5 hours from LKW |

| Denominator Exceptions | Component 4 only  
- Patients presenting after 3.5 hours from LKW as the 60-minute window to treatment is not available to them.  
- Patients presenting from outside hospital who already received intravenous fibrinolytic therapy |

| Exception Justification | An exception is needed as patients presenting after 3.5 hours from LKW may not be eligible for intravenous fibrinolytic therapy as they would potentially fall out of time window for treatment. Patients presenting from outside hospital who already received intravenous fibrinolytic therapy are not appropriate for the current measure given care received impacts timing of measure components. |

| Supporting Guideline & | The following clinical recommendation statements are quoted verbatim from the referenced clinical guidelines and represent the evidence base for the measure: |
### Other References

**Component 1: NIHSS documented**
- “The use of a stroke rating scale, preferably the NIHSS, is recommended (Class I; Level of Evidence B).” (1)

**Component 2: Intravenous fibrinolytic treatment eligibility assessment documented**
- “Intravenous rtPA (0.9 mg/kg, maximum dose 90 mg) is recommended for selected patients who may be treated within 3 hours of onset of ischemic stroke (Class I; Level of Evidence A). Physicians should review the criteria outlined in Tables 10 and 11 (which are modeled on those used in the NINDS Trial) to determine the eligibility of the patient.” (1)

**Component 3: Intravenous fibrinolytic treatment documentation**
- “In patients eligible for intravenous rtPA, benefit of therapy is time dependent, and treatment should be initiated as quickly as possible.” (1)

**Component 4: Intravenous fibrinolytic treatment initiated within 60 minutes from presentation (i.e. arrival to ED or discovery of symptoms if in-patient stroke)**
- “The door-to-needle time (time of bolus administration) should be within 60 minutes from hospital arrival (Class I; Level of Evidence A).” (1)
- “Intravenous rtPA is reasonable in patients whose blood pressure can be lowered safely (to below 185/110 mm Hg) with antihypertensive agents, with the physician assessing the stability of the blood pressure before starting intravenous rtPA (Class I; Level of Evidence B).” (1)

**Component 5: Non-Contrast Brain CT or MRI Interpreted within 45 minutes from presentation**
- “Emergency imaging of the brain is recommended before initiating any specific therapy to treat acute ischemic stroke (Class I; Level of Evidence A). In most instances, NECT will provide the necessary information to make decisions about emergency management.” (1)
- “Either NECT or MRI is recommended before intravenous rtPA administration to exclude ICH (absolute contraindication) and to determine whether CT hypodensity or MRI hyperintensity of ischemia is present (Class I; Level of Evidence A).” (1)
- “In intravenous fibrinolysis candidates, the brain imaging study should be interpreted within 45 minutes of patient arrival in the ED by a physician with expertise in reading CT and MRI studies of the brain parenchyma (Class I; Level of Evidence C).” (1)

### Relationship to Desired Outcome

**Component 1:** The NIHSS is a validated tool for assessing the initial stroke severity. An objective, standardized assessment of stroke severity is essential for determining eligibility for thrombolytic therapy, is the main determinant of short-term and long-term prognosis from stroke, and facilitates communication of stroke severity between health care providers. NIHSS assessment should improve patient outcome by enabling other processes of care when appropriate. (2)

**Component 2:** Appropriate selection of patients using validated inclusion and exclusion criteria ensures safe administration of intravenous fibrinolytic therapy.
Component 3: Excellent outcomes on individual functional measures were more frequent with intravenous fibrinolytic treatment for global disability (40% vs 28%), global outcome (43% vs 32%), activities of daily living (53% vs 38%) and neurological deficit (34% vs 20%) compared with no treatment.(1)

Component 4: Mounting evidence suggests that the earlier the time to treatment, the greater the treatment effect of intravenous fibrinolytic therapy

Component 5: Timely brain imaging and interpretation is critical to the rapid evaluation and management of patients with ischemic stroke, affecting immediate and long term treatment decisions.

<table>
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<th>Opportunity for Improvement</th>
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| A collaborative national quality improvement initiative report showed that the median door to needle time for tPA administration was 77 minutes (IQR 60-98) and door to needle time for tPA administration of 60 minutes or less was only 26.5% of patients, improving to 67 minutes and 41.3% during post intervention period. This improvement was associated with reduced in-hospital mortality, symptomatic intracranial hemorrhage and increased discharge to home.(3) Further improvement in patient outcome is expected with improving door to needle time.

Unintended consequences of measure use were evaluated, as there is a potential for stroke mimics to receive inappropriate thrombolytic care. Currently, rapid treatment is justified given the risk of harm is low for those with stroke mimics(4), and potential consequences of not receiving tPA for those who are clinically appropriate. The work group did not create an exception for those receiving intravenous treatment only given current evidence supports improved functional independence when mechanical thrombectomy is combined with standard intravenous thrombolysis.(5) Unintended consequences will continue to be monitored and evaluated during the next update of this stroke measurement set.

The work group notes that individual components will occur in emergency department and inpatient care settings and that performance scores will be comprised of total performance across care teams, and not isolated to one area of care.

<table>
<thead>
<tr>
<th>National Quality Strategy Domains</th>
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<tbody>
<tr>
<td>☐ Patient and Family Engagement</td>
</tr>
<tr>
<td>☐ Patient Safety</td>
</tr>
<tr>
<td>☐ Care Coordination</td>
</tr>
<tr>
<td>☐ Population/Public Health</td>
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<tr>
<td>☐ Efficient Use of Healthcare Resources</td>
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<tr>
<td>☑ Clinical Process/Effectiveness</td>
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<th>Harmonization with Existing Measures</th>
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| The definitions and specifications used in the components of this measure are similar to those collected in the commonly employed stroke measures (i.e., Joint Commission and/or AHA/ASA), ensuring parsimony in data collection strategies. A separate measure is being created to monitor global performance for quality improvement.

NQF#2864 CSTK 01: NIHSS Score Performed for Ischemic Stroke Patients. Patients for whom an initial NIHSS score performed prior to acute recanalization therapy and documented or documented within 12 hours of arrival for patients who do not undergo recanalization therapy. Measure modified for use in this measure bundle to focus on documentation of score prior to initiation of treatment.
NQF#1952 Time to Intravenous Thrombolytic Therapy. AIS patients who receive IV t-PA from time of arrival to initiation (door-to-needle time) of 60 minutes or less. Measure components were mirrored and added to bundled measure.

NQF#0437 STK 04: Thrombolytic Therapy. Measure captures proportion of AIS patients who arrive within 2 hours of LKN for whom IV t-PA was initiated within 3 hours. Measure components were mirrored and added to bundled measure.

Joint Commission AMI-7 documentation of delay language was mirrored for measure component.

NQF #0661 Head CT or MRI Scan Results for AIS or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation within 45 minutes of ED Arrival. Measure components were mirrored and added to bundled measure.

| Measure Purpose (Check all that apply) | ☒ Quality improvement  
| | ☒ Accountability |
| Type of Measure (Check all that apply) | ☒ Process  
| | ☐ Outcome  
| | ☐ Structure |
| Level of Measurement (Check all that apply) | ☐ Individual Provider  
| | ☒ Practice  
| | ☒ System |
| Care Setting (Check all that apply) | ☒ Emergency Departments  
| | ☒ Inpatient  
| | ☐ Outpatient  
| | ☐ Post-Acute Care |
| Data Source (Check all that apply) | ☒ Electronic health record (EHR) data  
| | ☒ Administrative Data/Claims  
| | ☒ Chart Review  
| | ☒ Registry |

Technical Specifications

**Component 4: Reasons for Delay**
Mirrored from Joint Commission “Reason for Delay in Fibrinolytic Therapy”(6)

System reasons for delay are NOT acceptable, regardless of any linkage to the delay in fibrinolysis/reperfusion
- Equipment-related
- Staff-related
- Consultation with other clinician

Examples of ACCEPTABLE documentation”
- “Hold on fibrinolitics. Will do CAT scan to r/o bleed.”
- “Patient waiting for family or clergy to arrive – wishes to consult with them before thrombolysis.”
- “Fibrinolysis delayed due to management of airway, breathing, or circulation emergency before administering fibrinolysis.”

References


