Quality ID #187: Stroke and Stroke Rehabilitation: Thrombolytic Therapy

2025 COLLECTION TYPE:
MIPS CLINICAL QUALITY MEASURES (CQMS)

MEASURE TYPE:
Process

DESCRIPTION:
Percentage of patients aged 18 years and older with a diagnosis of acute ischemic stroke who arrive at the hospital within 3.5 hours of time last known well and for whom IV thrombolytic therapy was initiated within 4.5 hours of time last known well.

INSTRUCTIONS:
This measure is to be submitted for each episode of acute ischemic stroke for patients who arrive at the hospital within 3.5 hours of time last known well and for whom IV thrombolytic therapy was initiated within 4.5 hours of time last known well. It is anticipated that Merit-based Incentive Payment System (MIPS) eligible clinicians providing care for patients with acute ischemic stroke in the hospital setting will submit this measure.

Measure Submission Type:
Measure data may be submitted by individual MIPS eligible clinicians, groups, or third-party intermediaries. The listed denominator criteria are used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions as allowed by the measure. The quality data codes listed do not need to be submitted by MIPS eligible clinicians, groups, or third-party intermediaries that utilize this modality for submissions; however, these codes may be submitted for those third-party intermediaries that utilize Medicare Part B claims data. For more information regarding Application Programming Interface (API), please refer to the Quality Payment Program (QPP) website.

DENOMINATOR:
All patients aged 18 years and older with a diagnosis of acute ischemic stroke whose time of arrival is within 3.5 hours (≤ 210 minutes) of time last known well

Denominator Criteria (Eligible Cases):
Patients aged ≥ 18 years on date of encounter
AND
Diagnosis for ischemic stroke (ICD-10-CM): I63.00, I63.011, I63.012, I63.013, I63.019, I63.02, I63.031, I63.032, I63.033, I63.039, I63.09, I63.10, I63.111, I63.112, I63.113, I63.119, I63.12, I63.131, I63.132, I63.133, I63.139, I63.19, I63.20, I63.211, I63.212, I63.213, I63.219, I63.22, I63.231, I63.232, I63.233, I63.239, I63.29, I63.30, I63.311, I63.312, I63.313, I63.319, I63.321, I63.322, I63.323, I63.329, I63.331, I63.332, I63.333, I63.339, I63.341, I63.342, I63.343, I63.349, I63.39, I63.40, I63.411, I63.412, I63.413, I63.419, I63.421, I63.422, I63.423, I63.429, I63.431, I63.432, I63.433, I63.439, I63.441, I63.442, I63.443, I63.449, I63.49, I63.50, I63.511, I63.512, I63.513, I63.519, I63.521, I63.522, I63.523, I63.529, I63.531, I63.532, I63.533, I63.539, I63.541, I63.542, I63.543, I63.549, I63.59, I63.6, I63.81, I63.89, I63.9
AND
Patient encounter during performance period (CPT): 99221, 99222, 99223, 99231, 99232, 99233, 99281, 99282, 99283, 99284, 99285, 99291
WITHOUT
Telehealth Modifier (including but not limited to): GQ, GT, POS 02, POS 10
AND
Time last known well to hospital arrival less than or equal to 3.5 hours (≤ 210 minutes)

NUMERATOR:

Patients for whom IV thrombolytic therapy was initiated at the hospital within 4.5 hours (≤ 270 minutes) of time last known well

Definition:
Last Known Well – The date and time prior to hospital arrival at which it was witnessed or reported that the patient was last known to be without the signs and symptoms of the current stroke or at his or her baseline state of health.

NUMERATOR NOTE: Current clinical practice guidelines recommend this extended timeframe for thrombolytics, however, earlier intervention is preferred and leads to better outcomes. Patients who are eligible for thrombolytics should receive treatment as quickly as possible after arrival at the hospital.

Numerator Options:

Performance Met:	IV thrombolytic therapy initiated within 4.5 hours (≤ 270 minutes) of time last known well (G8600)
OR	
Denominator Exception:	IV thrombolytic therapy not initiated within 4.5 hours (≤ 270 minutes) of time last known well for reasons documented by clinician (e.g. patient enrolled in clinical trial for stroke, patient admitted for elective carotid intervention) (G8601)
OR	
Performance Not Met:	IV thrombolytic therapy not initiated within 4.5 hours (≤ 270 minutes) of time last known well, reason not given (G8602)

RATIONALE:
One trial (ECASS III) specifically evaluating the efficacy of IV alteplase within 3 and 4.5 hours after symptom onset and pooled analysis of multiple trials testing IV alteplase within various time windows support the efficacy of IV alteplase up to 4.5 hours after symptom onset. European Cooperative Acute Stroke Study (ECASS) III excluded octogenarians, patients taking warfarin regardless of international normalized ratio, patients with combined history of diabetes mellitus and previous ischemic stroke, and patients with very severe strokes (National Institutes of Health Stroke Scale [NIHSS] score >25) because of a perceived excessive risk of intracranial hemorrhage in those cases. However, careful analysis of available published data summarized in an AHA/American Stroke Association (ASA) scientific statement indicates that these exclusion criteria from the trial may not be justified in practice.

The Efficacy and Safety of MRI-based Thrombolysis in Wake-Up Stroke (WAKE-UP) random control trial randomized 503 patients with AIS who awoke with stroke or had unclear time of onset and could be treated with IV alteplase within 4.5 hours of stroke symptom recognition. Eligibility required magnetic resonance imaging (MRI) mismatch between abnormal signal on diffusion-weighted magnetic resonance imaging (DW-MRI) and no visible signal change on fluid-attenuated inversion recovery (FLAIR). DW-MRI lesions larger than one-third of the territory of the middle cerebral artery (MCA), NIHSS score > 25, contraindication to treatment with alteplase, or planned thrombectomy were all exclusions. Ninety-four percent were wake-up strokes. Median NIHSS score was 6. Median time from last known well to symptom recognition was ≈7 hours and to alteplase administration slightly over 10 hours. The primary end point of a modified Rankin Scale (mRS) score 0 to 1 at 90 days was achieved in 53.3% of the alteplase group and in 41.8% of the placebo group (P=0.02). Only 20% had large vessel occlusion (LVO) of the intracranial internal carotid or proximal middle cerebral arteries.

Reference: Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL; on behalf of the American Heart Association Stroke Council. Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke

Association. *Stroke*. 2019;50:e344–e418 doi: 10.1161/STR.0000000000000211. Available at: https://www.ahajournals.org/doi/abs/10.1161/STR.0000000000000211.

CLINICAL RECOMMENDATION STATEMENTS:

IV alteplase (0.9 mg/kg, maximum dose 90 mg over 60 minutes with initial 10% of dose given as bolus over 1 minute) is recommended for selected patients who may be treated within 3 hours of ischemic stroke symptom onset or patient last known well or at baseline state. (Class 1, *Level of Evidence: A*)(AHA/ASA)

Reference: 2018 AHA/ASA Acute Ischemic Stroke guidelines: Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL; on behalf of the American Heart Association Stroke Council. 2018 Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke.* 2018; 49:e46–e110.

It may be reasonable to choose tenecteplase (single IV bolus of 0.25- mg/kg, maximum 25 mg) over IV alteplase in patients without contraindications for IV fibrinolysis who are also eligible to undergo mechanical thrombectomy (Class IIB, *Level of Evidence: B-R*)

In patients eligible for IV alteplase, because benefit of therapy is time dependent, treatment should be initiated as quickly as possible and not delayed for additional multimodal neuroimaging, such as CT and MRI perfusion imaging. (Class I, *Level of Evidence: B-NR*)

IV alteplase (0.9 mg/kg, maximum dose 90 mg over 60 minutes with initial 10% of dose given as bolus over 1 minute) is also recommended for selected patients who can be treated within 3 and 4.5 hours of ischemic stroke symptom onset or patient last known well or at baseline state. Physicians should review the criteria outlined in Table 8 to determine patient eligibility. (Class I, *Level of Evidence: B-R*)

IV alteplase (0.9 mg/kg, maximum dose 90 mg over 60 minutes with initial 10% of dose given as bolus over 1 minute) administered within 4.5 hours of stroke symptom recognition can be beneficial in patients with AIS who awake with stroke symptoms or have unclear time of onset >4.5 hours from last known well or at baseline state and who have a DW-MRI lesion smaller than one-third of the MCA territory and no visible signal change on FLAIR. (Class IIa, *Level of Evidence: B-R*)

For patients >80 y of age presenting in the 3- to 4.5-h window, IV alteplase is safe and can be as effective as in younger patients. (Class IIa, *Level of Evidence: B-NR*)

For otherwise eligible patients with mild disabling stroke symptoms, IV alteplase may be reasonable for patients who can be treated within 3 and 4.5 hours of ischemic stroke symptom onset or patient last known well or at baseline state. (Class IIb, *Level of Evidence: B-NR*)

In AIS patients with prior stroke and diabetes mellitus presenting in the 3- to 4.5- h window, IV alteplase may be as effective as treatment in the 0- to 3-h window and may be a reasonable option. (Class IIb, *Level of Evidence: B-NR*)

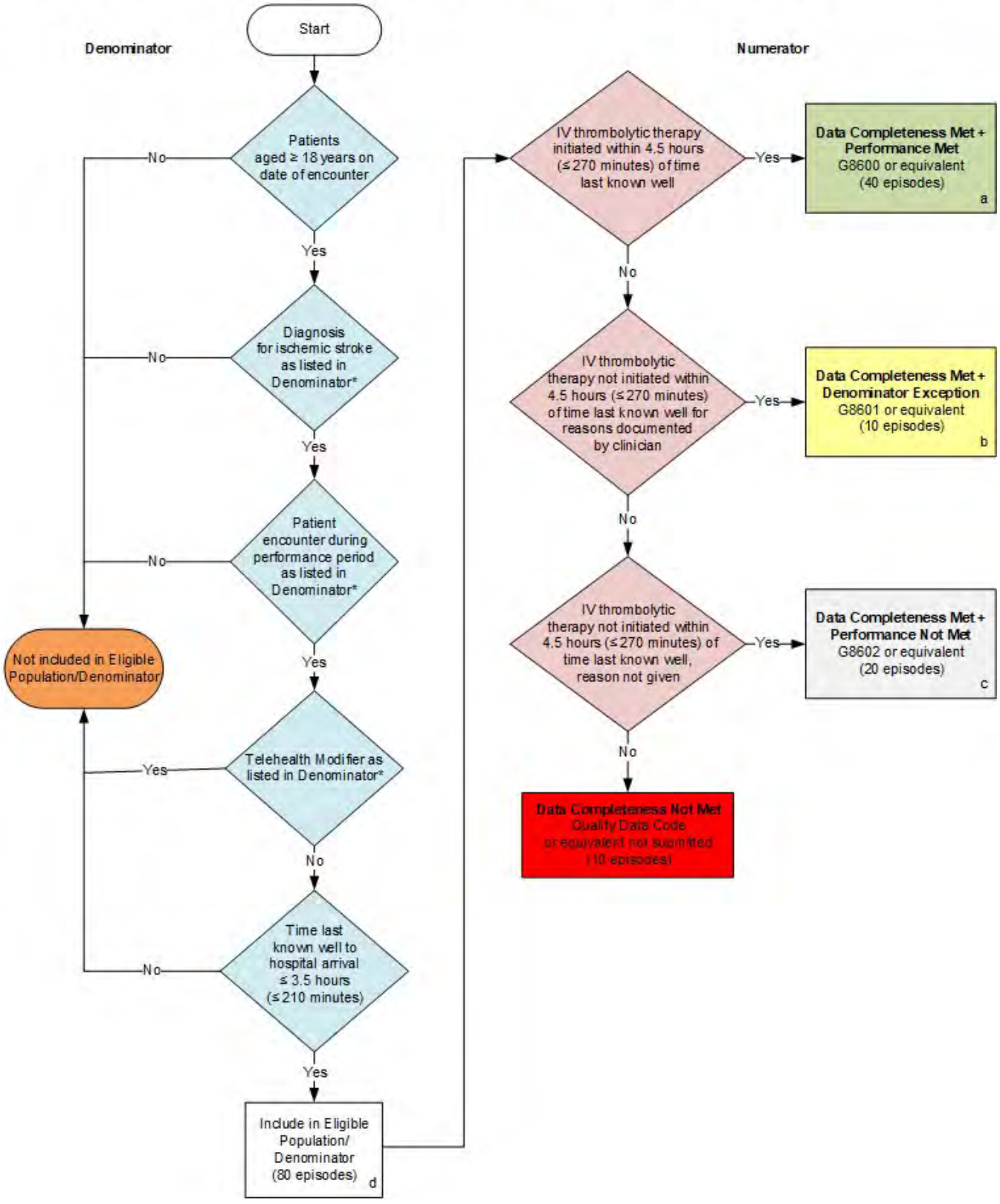
The benefit of IV alteplase between 3 and 4.5 h from symptom onset for patients with very severe stroke symptoms (NIHSS score >25) is uncertain. *(*Class IIb*, Level of Evidence: C-LD)*

Reference: Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association: Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM,

Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch E.C, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL. Stroke. 2019;50:e344–e418

2025 Clinical Quality Measure Flow for Quality ID #187: Stroke and Stroke Rehabilitation: Thrombolytic Therapy

Disclaimer: *Refer to the measure specification for specific coding and instructions to submit this measure.*



SAMPLE CALCULATIONS

Data Completeness=

Performance Met (a=40 episodes) + Denominator Exception (b=10 episodes) + Performance Not Met (c=20 episodes) = 70 episodes = **87.50%**
Eligible Population / Denominator (d=80 episodes) = 80 episodes

Performance Rate=

Performance Met (a=40 episodes) = 40 episodes = **66.67%**
Data Completeness Numerator (70 episodes) – Denominator Exception (b=10 episodes) = 60 episodes

*See the posted measure specification for specific coding and instructions to submit this measure.
NOTE: Submission Frequency: Episode

2025 Clinical Quality Measure Flow Narrative for Quality ID #187: Stroke and Stroke Rehabilitation: Thrombolytic Therapy

Disclaimer: Refer to the measure specification for specific coding and instructions to submit this measure.

1. Start with Denominator
2. Check *Patients aged greater than or equal to 18 years on date of encounter*:
    a. If *Patients aged greater than or equal to 18 years on date of encounter* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Patients aged greater than or equal to 18 years on date of encounter* equals Yes, proceed to check *Diagnosis for ischemic stroke as listed in Denominator**.
3. Check *Diagnosis for ischemic stroke as listed in Denominator**:
    a. If *Diagnosis for ischemic stroke as listed in Denominator** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Diagnosis for ischemic stroke as listed in Denominator** equals Yes, proceed to check *Patient encounter during performance period as listed in Denominator**.
4. Check *Patient encounter during performance period as listed in Denominator**:
    a. If *Patient encounter during performance period as listed in Denominator** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Patient encounter during performance period as listed in Denominator** equals Yes, proceed to check *Telehealth Modifier as listed in Denominator**.
5. Check *Telehealth Modifier as listed in Denominator**:
    a. If *Telehealth Modifier as listed in Denominator** equals Yes, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Telehealth Modifier as listed in Denominator** equals No, proceed to check *Time last known well to hospital arrival less than or equal to three and a half hours (less than or equal to 210 minutes)*.
6. Check *Time last known well to hospital arrival less than or equal to three and a half hours (less than or equal to 210 minutes)*:
    a. If *Time last known well to hospital arrival less than or equal to three and a half hours (less than or equal to 210 minutes)* equals No, do not include in *Eligible Population/Denominator*. Stop processing.
    b. If *Time last known well to hospital arrival less than or equal to three and a half hours (less than or equal to 210 minutes)* equals Yes, include in *Eligible Population/Denominator*.
7. Denominator Population:
    - Denominator population is all Eligible Episodes in the Denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 80 episodes in the Sample Calculation.
8. Start Numerator

9. Check *IV thrombolytic therapy initiated within four and a half hours (less than or equal to 270 minutes) of time last known well*:

    a. If *IV thrombolytic therapy initiated within four and a half hours (less than or equal to 270 minutes) of time last known well* equals Yes, include in *Data Completeness Met and Performance Met*.

        - *Data Completeness Met and Performance Met* is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 40 episodes in Sample Calculation.

    b. If *IV thrombolytic therapy initiated within four and a half hours (less than or equal to 270 minutes) of time last known well* equals No, proceed to check *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well for reasons documented by clinician*.

10. Check *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well for reasons documented by clinician*:

    a. If *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well for reasons documented by clinician* equals Yes, include in *Data Completeness Met and Denominator Exception*.

        - *Data Completeness Met and Denominator Exception* is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter b equals 10 episodes in the Sample Calculation.

    b. If *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well for reasons documented by clinician* equals No, proceed to check *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well, reason not given*.

11. Check *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well, reason not given*:

    a. If *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well, reason not given* equals Yes, include in *Data Completeness Met and Performance Not Met*.

        - *Data Completeness Met and Performance Not Met* is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 20 episodes in the Sample Calculation.

    b. If *IV thrombolytic therapy not initiated within four and a half hours (less than or equal to 270 minutes) of time last known well, reason not given* equals No, proceed to check *Data Completeness Not Met*.

12. Check *Data Completeness Not Met*:

    - If *Data Completeness Not Met*, the Quality Data Code or equivalent was not submitted. 10 episodes have been subtracted from the Data Completeness Numerator in the Sample Calculation.

Sample Calculations

Data Completeness equals Performance Met (a equals 40 episodes) plus Denominator Exception (b equals 10 episodes) plus Performance Not Met (c equals 20 episodes) divided by Eligible Population/Denominator (d equals 80 episodes). All equals 70 episodes divided by 80 episodes. All equals 87.50 percent.

Performance Rate equals Performance Met (a equals 40 episodes) divided by Data Completeness Numerator (70 episodes) minus Denominator Exception (b equals 10 episodes). All equals 40 episodes divided by 60 episodes. All equals 66.67 percent.

*See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Episode

The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.