



دائرة الصحة  
DEPARTMENT OF HEALTH

# **JAWDA Quarterly Guidelines for Stroke (STK) Service Care Providers**

**Issue: October 2019**

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## Executive Summary

The Department of Health– Abu Dhabi (DOH) is the regulatory body of the healthcare sector in the Emirate of Abu Dhabi and ensures excellence in healthcare for the community by monitoring the health status of its population.

The Emirate of Abu Dhabi is experiencing a substantial growth in the number of hospitals, centers and clinics. This is ranging from school clinics and mobile units to internationally renowned specialist and tertiary academic centers. Although, access and quality of care has improved dramatically over the last couple of decades, mirroring the economic upturn and population boom of Emirate of Abu Dhabi, however challenges remain in addressing further improvements.

The main challenges that are presented with increasingly dynamic population include an aging population with increased expectation for treatment, utilization of technology and diverse workforce leading to increased complexity of healthcare provision in Abu Dhabi. All of this results in an increased and inherent risk to quality and patient safety.

DOH has developed dynamic and comprehensive quality framework in order to bring about improvements across the health sector. This guidance relates to the quality indicators that DOH is mandating the quarterly reporting against by the operating general and specialist hospitals in Abu Dhabi.

The guidance sets out the full definition and method of calculation for patient safety and clinical effectiveness indicators. For enquiries about this guidance, please contact [jawda@doh.gov.ae](mailto:jawda@doh.gov.ae)

This document is subject for review and therefore it is advisable to utilize online versions available on the DOH website at all times.

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### About this Guidance

The guidance sets out the definitions and reporting frequency of JAWDA Stroke (STK) performance indicators. Department of Health (DoH) with consultation of local and international cardiovascular diseases and stroke quality of care expertise developed stroke performance indicators that are aimed for assessing the degree to which a provider competently and safely delivers the appropriate clinical services to the patient within the optimal time period.

The stroke performance indicators in this guidance include measures to monitor morbidity and mortality among stroke patients i.e., (acute treatment, prevention of recurrence, prevention and treatment of common medical complications, rehabilitation, and patient education, and counselling). Healthcare providers are the most qualified professionals to develop and evaluate quality of care measures for adults hospitalized with Acute Ischemic Stroke. Therefore, it is crucial that clinicians retain a leadership position in defining Stroke quality of care.

### Who is this guidance for?

All DoH licensed healthcare facilities providing care for stroke services (general and specialist hospitals) in the Emirate of Abu Dhabi.

### How do I follow this guidance?

Each provider will nominate one member of staff to coordinate, collect, monitor and report stroke quality performance indicators data as per communicated dates. The nominated healthcare facility lead must in the first instance e-mail their contact details (if different from previous submission) to [jawda@doh.gov.ae](mailto:jawda@doh.gov.ae) and submit the required quarterly quality performance indicators through Jawda online portal.

### What are the Regulation related to this guidance?

- Legislation establishing the Health Sector
- As per [DoH Policy for Quality and Patient Safety](#) issued January 15th 2017, this guidance applies to all DOH Licensed Hospital Healthcare Facilities in the Emirate of Abu Dhabi in accordance with the requirements set out in this Standard.

**Department of Health JAWDA Stroke Quality Performance Indicators**

Type Quality Indicator

Indicator Number: STK001

<b>KPI Description (title):</b>	Stroke (STK): Time to intravenous thrombolytic therapy (door-to-needle time) of ≤60 min
<b>Domain</b>	Process
<b>Sub-Domain</b>	Timeliness
<b>Definition:</b>	Ischemic stroke patients receiving intravenous tPA therapy ≤60 min of emergency department arrival.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic stroke patients (18 years or older) for whom IV thrombolytic therapy was initiated within ≤60 minutes of arrival.</p> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of ischemic stroke whose time of arrival is within 3.5 hours (less than or equal to 210 minutes) of time last known well (<b>See Appendix- A for stroke ICD_10 Diagnosis Codes</b>)</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Patients admitted for Elective Carotid Intervention (<i>refer to Appendix-B</i>)</li> <li>• Time Last Known Well to arrival in the Emergency Department greater than 3.5 hours</li> <li>• Patients with a documented reason for extending the initiation of IV Thrombolytic</li> <li>• Patients with a documented reason for not initiating IV Thrombolytic</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of initiated IV thrombolytic therapy within target time.
<b>International comparison if available</b>	<a href="#">The Joint Commission</a> <a href="#">European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK002

<b>KPI Description (title):</b>	Stroke (STK): Admission to the Stroke or Neuro Intensive Care Unit within 3 hours of arrival at hospital
<b>Domain</b>	Process
<b>Sub-Domain</b>	Timeliness
<b>Definition:</b>	Patients presenting with acute stroke symptoms admitted to stroke unit or neuro intensive care bed within 3 hours of arrival at hospital emergency department.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of adults 18 years or older presenting with acute stroke symptoms who were admitted to a stroke or neuro intensive care unit within 3 hours of arrival at hospital emergency department.</p> <p><b>Acute Stroke: Patients with acute onset of a focal neurological deficit within ≤24 hours</b></p> <p><b>Denominator:</b> Total adult 18 years or older with a principal discharge diagnosis of ischemic or hemorrhagic stroke who were admitted via the hospital emergency department. (See <b>Appendix- A- for stroke ICD_10 Diagnosis Codes</b>)</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients who left against medical advice</li> <li>• Patients less than 18 years of age</li> <li>• Patient who present with non-stroke related symptoms</li> <li>• Patients who are admitted to procedural area for stroke intervention prior to transfer to hospital bed</li> <li>• Patient requires MRI prior to admission to inpatient unit</li> <li>• Episodes with a discharge of death</li> </ul> <p><b>Guidance note:</b> <i>This KPI applies to all hospitals who admit stroke patients, irrespective of admission to a designated stroke unit or intensive care bed.</i></p>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% admitted to Stroke or Neuro Intensive Care unit within target time.
<b>International comparison if available</b>	<a href="#">The Joint Commission</a> <a href="#">European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK003

<b>KPI Description (title):</b>	Stroke (STK): Venous Thromboembolism (VTE) Prophylaxis
<b>Domain</b>	Process
<b>Sub-Domain</b>	Prevention
<b>Definition:</b>	Ischemic and hemorrhagic stroke patients who received VTE prophylaxis the day of or the day after hospital admission.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic and hemorrhagic stroke patients (18 years or older) who received VTE prophylaxis or have a documented reason for not ordering both mechanical and pharmacologic prophylaxis the day of or the day after hospital admission.</p> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of ischemic or hemorrhagic stroke. <b>(See Appendix-A for stroke ICD_10 Diagnosis Codes)</b></p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients less than 18 years of age</li> <li>• Patients with length of stay &lt;2 days</li> <li>• Patient with length of stay &gt;120 days</li> <li>• Patients admitted for an Elective Carotid Intervention (<i>refer to Appendix-B</i>)</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of VTE prophylaxis
<b>International comparison if available</b>	<a href="#">The Joint Commission European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	- Patient's records - Claim data

**Department of Health JAWDA Stroke Quality Performance Indicators**

Type: Quality Indicator

Indicator Number: STK004

<b>KPI Description (title):</b>	Stroke (STK): Discharged on Antithrombotic Therapy
<b>Domain</b>	Process
<b>Sub-Domain</b>	Prevention
<b>Definition:</b>	Ischemic stroke patients prescribed antithrombotic therapy at hospital discharge.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic stroke patients (18 years or older) who were prescribed antithrombotic therapy at hospital discharge. <b>Denominator:</b> Total adult patients with a principal discharge diagnosis of Ischemic stroke. <b>(See Appendix- A for stroke ICD_10 Diagnosis Codes) Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Patients who left against medical advice</li> <li>• Patients discharged to another acute care hospital • Patients who deceased</li> <li>• Patients discharged on hospice care</li> <li>• Patients admitted for an Elective Carotid Intervention (<i>refer to Appendix-B</i>)</li> <li>• Patients with documented reason for not prescribing antithrombotic therapy at discharge. (examples include):             <ul style="list-style-type: none"> <li>○ Allergy to all antithrombotic medications ○ Aortic dissection</li> <li>○ At increased risk of bleeding ○ Hemorrhage any type</li> <li>○ Extensive/metastatic cancer</li> <li>○ Unrepaired intracranial aneurysm</li> <li>○ Planned surgery within 7 days of discharge</li> <li>○ Patient/family refusal of antithrombotic medication ○ Peptic ulcer</li> </ul> </li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of discharged on antithrombotic therapy
<b>International comparison if available</b>	<a href="#">The Joint Commission European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	- Patient's records - Claim data

**Department of Health JAWDA Stroke Quality Performance Indicators**

Type: Quality Indicator

Indicator Number: STK005

<b>KPI Description (title):</b>	Stroke (STK): Antithrombotic Therapy by End of Hospital Day Two
<b>Domain</b>	Process
<b>Sub-Domain</b>	Prevention
<b>Definition:</b>	Ischemic stroke patients who received antithrombotic therapy by the end of hospital day two.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic stroke patients (18 years or older) who received antithrombotic therapy by the end of hospital day two.</p> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of ischemic stroke. (See Appendix- A-for stroke ICD_10 Diagnosis Codes)</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients less than 18 years of age</li> <li>• Length of stay &lt;2 days</li> <li>• Length of stay &gt;120 days</li> <li>• Patients discharged prior to the end of hospital day 2</li> <li>• Admitted for Elective Carotid Intervention (<b>refer to Appendix-B</b>)</li> <li>• IV or IA Thrombolytic (t-PA) therapy administered during this admission or within 24 hours of admission</li> <li>• Patients with documented reason for not prescribing antithrombotic therapy prior to end of hospital day two (examples include):             <ul style="list-style-type: none"> <li>• Allergy to all antithrombotic medications</li> <li>• Aortic dissection</li> <li>• At increased risk of bleeding</li> <li>• Extensive/metastatic cancer</li> <li>• Hemorrhage, any type</li> <li>• Hemorrhagic transformation</li> <li>• Peptic ulcer</li> </ul> </li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% Antithrombotic Therapy
<b>International comparison if available</b>	<a href="#">The Joint Commission European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>-Patient's records</li> <li>-Claim data</li> </ul>

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK006

<b>KPI Description (title):</b>	Stroke (STK): Discharged on Statin Medication
<b>Domain</b>	Process
<b>Sub-Domain</b>	Prevention
<b>Definition:</b>	Ischemic stroke patients who are prescribed statin medication at hospital discharge
<b>Calculation</b>	<p><b>Numerator:</b> Total number of Ischemic stroke patients (18 years or older) who are prescribed statin medication at hospital discharge.</p> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of Ischemic stroke. <b>(See Appendix- A for stroke ICD_10 Diagnosis Codes)</b></p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Patients with discharge disposition of deceased</li> <li>• Patients who left against medical advice</li> <li>• Patients discharged to another acute care hospital</li> <li>• Patients admitted for Elective Carotid Intervention (refer to Appendix-B)</li> <li>• Patients with documented reason for not prescribing statin medications at discharge (examples include):             <ul style="list-style-type: none"> <li>○ Documentation of an allergy/sensitivity</li> <li>○ Patient/family refusal of statin medications</li> </ul> </li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of discharged statin medication
<b>International comparison if available</b>	<a href="#">The Joint Commission European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	- Patient's records - Claim data

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK007

<b>KPI Description (title):</b>	Stroke (STK): Stroke Education
<b>Domain</b>	Process
<b>Sub-Domain</b>	Prevention
<b>Definition:</b>	Ischemic or Hemorrhagic stroke patients or their caregiver were given education and/or educational materials during the hospital stay addressing the five elements of stroke education
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic and hemorrhagic stroke patients (18 years or older) or their caregiver who were given or have documentation of refusal of the written educational material addressing the following risk factors for stroke.</p> <ol style="list-style-type: none"> <li>1. Activation of emergency medical system (999)</li> <li>2. Follow-up after discharge</li> <li>3. Medications prescribed at discharge</li> <li>4. Risk factors for stroke</li> <li>5. Warning signs and symptoms of stroke</li> </ol> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of ischemic or hemorrhagic stroke. <b>(See Appendix- A for stroke ICD_10 Diagnosis Codes)</b></p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients with discharge disposition of deceased</li> <li>• Patients who left against medical advice</li> <li>• Patients discharged to another acute care hospital</li> <li>• Patients discharged to another healthcare facility (long-term care, transitional care unit, rehabilitation center).</li> <li>• Patients less than 18 years of age</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of Stroke Education
<b>International comparison if available</b>	<a href="#">The Joint Commission</a> <a href="#">European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK008

<b>KPI Description (title):</b>	Stroke (STK): Assessed for Rehabilitation
<b>Domain</b>	Process
<b>Sub-Domain</b>	Clinical effectiveness
<b>Definition:</b>	Ischemic and Hemorrhagic stroke patients who were assessed for or received rehabilitation services.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic and hemorrhagic stroke patients (18 years or older) who were assessed for/received, or there is documentation of refusal of rehabilitation services.</p> <p><b>Denominator:</b> Total adult patients with a principal discharge diagnosis of ischemic or hemorrhagic stroke. (See Appendix- A for stroke ICD_10 Diagnosis Codes)</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Admitted for Elective Carotid Intervention (refer to Appendix-B)</li> <li>• Patients with discharge disposition of deceased</li> <li>• Patients who left against medical advice</li> <li>• Patients discharged on hospice care</li> <li>• Patients discharged to another acute care hospital</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of assessed rehabilitation
<b>International comparison if available</b>	<a href="#">The Joint Commission European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	- Patient's records - Claim data

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK009

<b>KPI Description (title):</b>	Stroke (STK): All cause 30-day Unplanned Hospital Readmissions After Ischemic Stroke
<b>Domain</b>	Outcome
<b>Sub-Domain</b>	Complications
<b>Definition:</b>	Ischemic stroke patients (18 years or older) re-admitted unplanned to the hospital within 30 days of discharge from index stroke discharge.
<b>Calculation</b>	<p><b>Numerator:</b> Total number of ischemic stroke patients (18 years or older) with unplanned readmission to the hospital within 30 days of discharge from index ischemic stroke encounter.</p> <p><b>Numerator guidance:</b> If patient has multiple readmissions within 30 days of index discharge, only count as a single readmission.</p> <p><b>Denominator:</b> Total number of patients (18 years or older) with principal discharge diagnosis of ischemic stroke during index admission. <b>(See Appendix- A for stroke ICD_10 Diagnosis Codes)</b></p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients with discharge disposition of deceased</li> <li>• Patients who left against medical advice</li> <li>• Patients less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Patients that were transferred to another acute care facility</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of stroke readmission
<b>International comparison if available</b>	<a href="#">The Joint Commission</a> <a href="#">European Stroke Organization</a>
<b>Target</b>	≤12%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

## Department of Health JAWDA Stroke Quality Performance Indicators

Type: Quality Indicator

Indicator Number: STK010

<b>KPI Description (title):</b>	Stroke Level Disability Assessment on discharge
<b>Domain</b>	Outcome
<b>Sub-Domain</b>	Recovery and Disability
<b>Definition:</b>	Stroke patients who are assessed for functional outcome status prior to hospital discharge
<b>Calculation</b>	<p><b>Numerator:</b> Total number of stroke patients for whom a Modified Rankin Scale (mRS) is taken prior to hospital discharge.</p> <p><b>Denominator:</b> Total adult patients with a diagnosis of ischemic or hemorrhagic stroke. ( <b>See Appendix- A for stroke ICD_10 Diagnosis Code</b>)</p> <p><b>Denominator Exclusions:</b></p> <ul style="list-style-type: none"> <li>• Patients with discharge disposition of deceased</li> <li>• Patients less than 18 years of age</li> <li>• Length of stay &gt;120 days</li> <li>• Patients admitted for Elective Carotid Intervention (refer to Appendix-B)</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of patients with mRS taken prior to discharge.
<b>International comparison if available</b>	<a href="#">The Joint Commission</a> <a href="#">European Stroke Organization</a>
<b>Target</b>	≥90%
<b>Notes for all providers</b>	
<b>Data sources and guidance:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

**Department of Health JAWDA Stroke Quality Performance Indicators**

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Type: Quality Indicator

Indicator Number: STK011

<b>KPI Description (title):</b>	Rate of death occurring within 30 days of stroke Diagnosis
<b>Domain</b>	Outcome
<b>Sub-domain</b>	Mortality
<b>Definition:</b>	Rate of death occurring within 30 days of first admission to an acute care hospital with a diagnosis of Hemorrhagic and Ischemic stroke.
<b>Calculation:</b>	<p><b><u>Numerator:</u></b> Number of deaths occurring among adult stroke patients (18 years or older) within 30 days of first admission to an acute care hospital with a diagnosis of Hemorrhagic and Ischemic stroke.</p> <p><b><u>Denominator:</u></b> Total adult patients admitted with Ischemic or Hemorrhagic during a reporting period. <b>(See Appendix- A for stroke ICD_10 Diagnosis Codes)</b></p>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	Rate per 100 deaths
<b>International comparison if available</b>	<i>OECD, AHRQ</i>
<b>Desired direction:</b>	Lower is better
<b>Notes for all facilities</b>	
<b>Data Source/ Report Name:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

**Department of Health JAWDA Stroke Quality Performance Indicators**

Type: Quality Indicator

Indicator Number: STK012

<b>KPI Description (title):</b>	Symptomatic intracranial hemorrhage after IV thrombolysis
<b>Domain</b>	Outcome
<b>Sub-domain</b>	Complication
<b>Definition:</b>	Ischemic stroke patients who develop a symptomatic intracranial hemorrhage (i.e., clinical deterioration $\geq$ 4 point increase on NIHSS and brain image finding of parenchymal hematoma, or subarachnoid hemorrhage, or intraventricular hemorrhage) within ( $\leq$ ) 36 hours after the onset of treatment with intra-venous (IV) thrombolytic (t-PA) therapy only
<b>Calculation:</b>	<p><b><i>Numerator:</i></b> Total number of Ischemic stroke patients (18 years and older) who develop a symptomatic intracranial hemorrhage <math>\leq</math> 36 hours after the onset of treatment with IV thrombolytic (t-PA) therapy only (IVO)</p> <p><b><i>Denominator:</i></b> Total number of adult (18 years or older) with principal discharge diagnosis of ischemic stroke patients who received IV thrombolysis treatment during a reporting period.</p> <p><b><i>Denominator Exclusions:</i></b></p> <ul style="list-style-type: none"> <li>• Patients less than 18 years of age</li> <li>• Patients with length of stay &gt; 120 days</li> <li>• Patients admitted for Elective Carotid Intervention</li> <li>• Patients transferred to this hospital following treatment with IV thrombolytic therapy or mechanical endovascular reperfusion therapy initiated prior to arrival</li> <li>• Patients who hemorrhage prior to onset of therapy</li> </ul>
<b>Reporting Frequency:</b>	Quarterly
<b>Unit of Measure:</b>	% of Symptomatic intracranial hemorrhage after IV thrombolysis
<b>International comparison if available</b>	<i>OECD, AHRQ</i>
<b>Desired direction:</b>	Lower is better
<b>Notes for all facilities</b>	
<b>Data Source/ Report Name:</b>	<ul style="list-style-type: none"> <li>- Patient's records</li> <li>- Claim data</li> </ul>

## Appendix- A (Stroke ICD\_10 Diagnosis Codes)

### Ischemic Stroke ICD-10 Diagnosis Codes:

<b>Code</b>	<b>Shortened Description</b>
I6300	Cerebral infarction due to thrombosis of unspecified precerebral artery
I63011	Cerebral infarction due to thrombosis of right vertebral artery
I63012	Cerebral infarction due to thrombosis of left vertebral artery
I63.013	Cerebral infarction due to thrombosis of bilateral vertebral arteries
I63019	Cerebral infarction due to thrombosis of unspecified vertebral artery
I6302	Cerebral infarction due to thrombosis of basilar artery
I63031	Cerebral infarction due to thrombosis of right carotid artery
I63032	Cerebral infarction due to thrombosis of left carotid artery
I63.033	Cerebral infarction due to thrombosis of bilateral carotid arteries
I63039	Cerebral infarction due to thrombosis of unspecified carotid artery
I6309	Cerebral infarction due to thrombosis of other precerebral artery
I6310	Cerebral infarction due to embolism of unspecified precerebral artery
I63111	Cerebral infarction due to embolism of right vertebral artery
I63112	Cerebral infarction due to embolism of left vertebral artery
I63.113	Cerebral infarction due to embolism of bilateral vertebral arteries
I63119	Cerebral infarction due to embolism of unspecified vertebral artery
I6312	Cerebral infarction due to embolism of basilar artery
I63131	Cerebral infarction due to embolism of right carotid artery
I63132	Cerebral infarction due to embolism of left carotid artery
I63.133	Cerebral infarction due to embolism of bilateral carotid arteries
I63139	Cerebral infarction due to embolism of unspecified carotid artery
I6319	Cerebral infarction due to embolism of other precerebral artery
I6320	Cerebral infarction due to unspecified occlusion or stenosis of unspecified precerebral arteries
I63211	Cerebral infarction due to unspecified occlusion or stenosis of right vertebral artery
I63212	Cerebral infarction due to unspecified occlusion or stenosis of left vertebral artery
I63.213	Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral arteries
I63219	Cerebral infarction due to unspecified occlusion or stenosis of unspecified vertebral arteries
I6322	Cerebral infarction due to unspecified occlusion or stenosis of basilar artery
I63231	Cerebral infarction due to unspecified occlusion or stenosis of right carotid arteries
I63232	Cerebral infarction due to unspecified occlusion or stenosis of left carotid arteries
I63.233	Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries
I63239	Cerebral infarction due to unspecified occlusion or stenosis of unspecified carotid arteries
I6329	Cerebral infarction due to unspecified occlusion or stenosis of other precerebral arteries
I6330	Cerebral infarction due to thrombosis of unspecified cerebral artery
I63311	Cerebral infarction due to thrombosis of right middle cerebral artery
I63312	Cerebral infarction due to thrombosis of left middle cerebral artery
I63.313	Cerebral infarction due to thrombosis of bilateral middle cerebral arteries
I63319	Cerebral infarction due to thrombosis of unspecified middle cerebral artery
I63321	Cerebral infarction due to thrombosis of right anterior cerebral artery
I63322	Cerebral infarction due to thrombosis of left anterior cerebral artery
I63.323	Cerebral infarction due to thrombosis of bilateral anterior cerebral arteries
I63329	Cerebral infarction due to thrombosis of unspecified anterior cerebral artery

I63331	Cerebral infarction due to thrombosis of right posterior cerebral artery
I63332	Cerebral infarction due to thrombosis of left posterior cerebral artery
I63.343	Cerebral infarction to thrombosis of bilateral cerebellar arteries
I63339	Cerebral infarction due to thrombosis of unspecified posterior cerebral artery
I63341	Cerebral infarction due to thrombosis of right cerebellar artery
I63342	Cerebral infarction due to thrombosis of left cerebellar artery
I63349	Cerebral infarction due to thrombosis of unspecified cerebellar artery
I6339	Cerebral infarction due to thrombosis of other cerebral artery
I6340	Cerebral infarction due to embolism of unspecified cerebral artery
I63411	Cerebral infarction due to embolism of right middle cerebral artery
I63412	Cerebral infarction due to embolism of left middle cerebral artery
I63419	Cerebral infarction due to embolism of unspecified middle cerebral artery
I63421	Cerebral infarction due to embolism of right anterior cerebral artery
I63422	Cerebral infarction due to embolism of left anterior cerebral artery
I63429	Cerebral infarction due to embolism of unspecified anterior cerebral artery
I63431	Cerebral infarction due to embolism of right posterior cerebral artery
I63432	Cerebral infarction due to embolism of left posterior cerebral artery
I63439	Cerebral infarction due to embolism of unspecified posterior cerebral artery
I63441	Cerebral infarction due to embolism of right cerebellar artery
I63442	Cerebral infarction due to embolism of left cerebellar artery
I63449	Cerebral infarction due to embolism of unspecified cerebellar artery
I6350	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebral artery
I63511	Cerebral infarction due to unspecified occlusion or stenosis of right middle cerebral artery
I63512	Cerebral infarction due to unspecified occlusion or stenosis of left middle cerebral artery
I63519	Cerebral infarction due to unspecified occlusion or stenosis of unspecified middle cerebral artery
I63521	Cerebral infarction due to unspecified occlusion or stenosis of right anterior cerebral artery
I63522	Cerebral infarction due to unspecified occlusion or stenosis of left anterior cerebral artery
I63529	Cerebral infarction due to unspecified occlusion or stenosis of unspecified anterior cerebral artery
I63531	Cerebral infarction due to unspecified occlusion or stenosis of right posterior cerebral artery
I63532	Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery
I63539	Cerebral infarction due to unspecified occlusion or stenosis of unspecified posterior cerebral artery
I63541	Cerebral infarction due to unspecified occlusion or stenosis of right cerebellar artery
I63542	Cerebral infarction due to unspecified occlusion or stenosis of left cerebellar artery
I63549	Cerebral infarction due to unspecified occlusion or stenosis of unspecified cerebellar artery
I6359	Cerebral infarction due to unspecified occlusion or stenosis of other cerebral artery
I636	Cerebral infarction due to cerebral venous thrombosis, nonpyogenic
I638	Other cerebral infarction
I639	Cerebral infarction, unspecified
I63333	Cerebral infarction due to thrombosis of bilateral posterior cerebral arteries
I63413	Cerebral infarction due to embolism of bilateral middle cerebral arteries
I63423	Cerebral infarction due to embolism of bilateral anterior cerebral arteries
I63433	Cerebral infarction due to embolism of bilateral posterior cerebral arteries

I63443	Cerebral infarction due to embolism of bilateral cerebellar arteries
I6349	Cerebral infarction due to embolism of other cerebral artery
I63513	Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle cerebral arteries
I63523	Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior cerebral
I63533	Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior cerebral
I63543	Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar arteries
I6381	Other cerebral infarction due to occlusion or stenosis of small artery
I6389	Other cerebral infarction

### Hemorrhagic Stroke ICD-10 Diagnosis Codes:

<b>Code</b>	<b>Shortened Description</b>
I6000	Nontraumatic subarachnoid hemorrhage from unspecified carotid siphon and bifurcation
I6001	Nontraumatic subarachnoid hemorrhage from right carotid siphon and bifurcation
I6002	Nontraumatic subarachnoid hemorrhage from left carotid siphon and bifurcation
I6010	Nontraumatic subarachnoid hemorrhage from unspecified middle cerebral artery
I6011	Nontraumatic subarachnoid hemorrhage from right middle cerebral artery
I6012	Nontraumatic subarachnoid hemorrhage from left middle cerebral artery
I602	Nontraumatic subarachnoid hemorrhage from anterior communicating artery
I6030	Nontraumatic subarachnoid hemorrhage from unspecified posterior communicating artery
I6031	Nontraumatic subarachnoid hemorrhage from right posterior communicating artery
I6032	Nontraumatic subarachnoid hemorrhage from left posterior communicating artery
I604	Nontraumatic subarachnoid hemorrhage from basilar artery
I6050	Nontraumatic subarachnoid hemorrhage from unspecified vertebral artery
I6051	Nontraumatic subarachnoid hemorrhage from right vertebral artery
I6052	Nontraumatic subarachnoid hemorrhage from left vertebral artery
I606	Nontraumatic subarachnoid hemorrhage from other intracranial arteries
I607	Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery
I608	Other nontraumatic subarachnoid hemorrhage
I609	Nontraumatic subarachnoid hemorrhage, unspecified
I610	Nontraumatic intracerebral hemorrhage in hemisphere, subcortical
I611	Nontraumatic intracerebral hemorrhage in hemisphere, cortical
I612	Nontraumatic intracerebral hemorrhage in hemisphere, unspecified
I613	Nontraumatic intracerebral hemorrhage in brain stem
I614	Nontraumatic intracerebral hemorrhage in cerebellum
I615	Nontraumatic intracerebral hemorrhage, intraventricular
I616	Nontraumatic intracerebral hemorrhage, multiple localized
I618	Other nontraumatic intracerebral hemorrhage
I619	Nontraumatic intracerebral hemorrhage, unspecified

## Appendix- B (Elective Carotid Intervention CPT Codes)

<b>CPT Code</b>	<b>CPT Description</b>
33889	Open subclavian to carotid artery transposition performed in conjunction with endovascular repair of descending thoracic aorta, by neck incision, unilateral
33891	Bypass graft, with other than vein, transcervical retropharyngeal carotid-carotid, performed in conjunction with endovascular repair of descending thoracic aorta, by neck incision
34001	Embolectomy or thrombectomy, with or without catheter; carotid, subclavian or innominate artery, by neck incision
35001	Direct repair of aneurysm, pseudoaneurysm, or excision (partial or total) and graft insertion, with or without patch graft; for aneurysm and associated occlusive disease, carotid, subclavian artery, by neck incision
35002	Direct repair of aneurysm, pseudoaneurysm, or excision (partial or total) and graft insertion, with or without patch graft; for ruptured aneurysm, carotid, subclavian artery, by neck incision
35261	Repair blood vessel with graft other than vein; neck
35301	Thromboendarterectomy, including patch graft, if performed; carotid, vertebral, subclavian, by neck incision
35390	Reoperation, carotid, thromboendarterectomy, more than 1 month after original operation (List separately in addition to code for primary procedure)
35475	Transluminal balloon angioplasty, percutaneous; brachiocephalic trunk or branches, each vessel
35501	Bypass graft, with vein; common carotid-ipsilateral internal carotid
35506	Bypass graft, with vein; carotid-subclavian or subclavian-carotid
35508	Bypass graft, with vein; carotid-vertebral
35509	Bypass graft, with vein; carotid-contralateral carotid
35510	Bypass graft, with vein; carotid-brachial
35526	Bypass graft, with vein; aortosubclavian, aortoinnominate, or aortocarotid
35601	Bypass graft, with other than vein; common carotid-ipsilateral internal carotid
35606	Bypass graft, with other than vein; carotid-subclavian
35626	Bypass graft, with other than vein; aortosubclavian, aortoinnominate, or aortocarotid
35642	Bypass graft, with other than vein; carotid-vertebral
35691	Transposition and/or reimplantation; vertebral to carotid artery
35694	Transposition and/or reimplantation; subclavian to carotid artery
35695	Transposition and/or reimplantation; carotid to subclavian artery
35701	Exploration (not followed by surgical repair), with or without lysis of artery; carotid artery
36100	Introduction of needle or intracatheter, carotid or vertebral artery
36215	Selective catheter placement, arterial system; each first order thoracic or brachiocephalic branch, within a vascular family
36216	Selective catheter placement, arterial system; initial second order thoracic or brachiocephalic branch, within a vascular family
36217	Selective catheter placement, arterial system; initial third order or more selective thoracic or brachiocephalic branch, within a vascular family

36218	Selective catheter placement, arterial system; additional second order, third order, and beyond, thoracic or brachiocephalic branch, within a vascular family (List in addition to code for initial second or third order vessel as appropriate)
37184	Primary percutaneous transluminal mechanical thrombectomy, noncoronary, arterial or arterial bypass graft, including fluoroscopic guidance and intraprocedural pharmacological thrombolytic injection(s); initial vessel
37205	Transcatheter placement of an intravascular stent(s) (except coronary, carotid, vertebral, iliac, and lower extremity arteries), percutaneous; initial vessel
37206	Transcatheter placement of an intravascular stent(s) (except coronary, carotid, vertebral, iliac, and lower extremity arteries), percutaneous; each additional vessel (List separately in addition to code for primary procedure)
37207	Transcatheter placement of an intravascular stent(s) (except coronary, carotid, vertebral, iliac and lower extremity arteries), open; initial vessel
37208	Transcatheter placement of an intravascular stent(s) (except coronary, carotid, vertebral, iliac and lower extremity arteries), open; each additional vessel (List separately in addition to code for primary procedure)
37215	Transcatheter placement of intravascular stent(s), cervical carotid artery, percutaneous; with distal embolic protection
37216	Transcatheter placement of intravascular stent(s), cervical carotid artery, percutaneous; without distal embolic protection
37600	Ligation; external carotid artery
37605	Ligation; internal or common carotid artery
37606	Ligation; internal or common carotid artery, with gradual occlusion, as with Selverstone or Crutchfield clamp
60600	Excision of carotid body tumor; without excision of carotid artery
60605	Excision of carotid body tumor; with excision of carotid artery
61590	Infratemporal pre-auricular approach to middle cranial fossa (parapharyngeal space, infratemporal and midline skull base, nasopharynx), with or without disarticulation of the mandible, including parotidectomy, craniotomy, decompression and/or mobilization of the facial nerve and/or petrous carotid artery
61591	Infratemporal post-auricular approach to middle cranial fossa (internal auditory meatus, petrous apex, tentorium, cavernous sinus, parasellar area, infratemporal fossa) including mastoidectomy, resection of sigmoid sinus, with or without decompression and/or mobilization of contents of auditory canal or petrous carotid artery
61592	Orbitocranial zygomatic approach to middle cranial fossa (cavernous sinus and carotid artery, clivus, basilar artery or petrous apex) including osteotomy of zygoma, craniotomy, extra- or intradural elevation of temporal lobe
61596	Transcochlear approach to posterior cranial fossa, jugular foramen or midline skull base, including labyrinthectomy, decompression, with or without mobilization of facial nerve and/or petrous carotid artery
61609	Transection or ligation, carotid artery in cavernous sinus; without repair (List separately in addition to code for primary procedure)
61610	Transection or ligation, carotid artery in cavernous sinus; with repair by anastomosis or graft (List separately in addition to code for primary procedure)
61611	Transection or ligation, carotid artery in petrous canal; without repair (List separately in addition to code for primary procedure)
61612	Transection or ligation, carotid artery in petrous canal; with repair by anastomosis or graft (List separately in addition to code for primary procedure)
61613	Obliteration of carotid aneurysm, arteriovenous malformation, or carotid-cavernous fistula by dissection within cavernous sinus

61624	Transcatheter permanent occlusion or embolization (eg, for tumor destruction, to achieve hemostasis, to occlude a vascular malformation), percutaneous, any method; central nervous system (intracranial, spinal cord)
61626	Transcatheter permanent occlusion or embolization (eg, for tumor destruction, to achieve hemostasis, to occlude a vascular malformation), percutaneous, any method; non-central nervous system, head or neck (extracranial, brachiocephalic branch)
61630	Balloon angioplasty, intracranial (eg, atherosclerotic stenosis), percutaneous
61635	Transcatheter placement of intravascular stent(s), intracranial (eg, atherosclerotic stenosis), including balloon angioplasty, if performed
61640	Balloon dilatation of intracranial vasospasm, percutaneous; initial vessel
61641	Balloon dilatation of intracranial vasospasm, percutaneous; each additional vessel in same vascular family (List separately in addition to code for primary procedure)
61642	Balloon dilatation of intracranial vasospasm, percutaneous; each additional vessel in different vascular family (List separately in addition to code for primary procedure)
61690	Surgery of intracranial arteriovenous malformation; dural, simple
61692	Surgery of intracranial arteriovenous malformation; dural, complex
61697	Surgery of complex intracranial aneurysm, intracranial approach; carotid circulation
61700	Surgery of simple intracranial aneurysm, intracranial approach; carotid circulation
61711	Anastomosis, arterial, extracranial-intracranial (eg, middle cerebral/cortical) arteries
61703	Surgery of intracranial aneurysm, cervical approach by application of occluding clamp to cervical carotid artery (Selverstone-Crutchfield type)
61705	Surgery of aneurysm, vascular malformation or carotid-cavernous fistula; by intracranial and cervical occlusion of carotid artery
61708	Surgery of aneurysm, vascular malformation or carotid-cavernous fistula; by intracranial electrothrombosis
61710	Surgery of aneurysm, vascular malformation or carotid-cavernous fistula; by intra-arterial embolization, injection procedure, or balloon catheter
64508	Injection, anesthetic agent; carotid sinus (separate procedure)
75660	Angiography, external carotid, unilateral, selective, radiological supervision and interpretation
75662	Angiography, external carotid, bilateral, selective, radiological supervision and interpretation
75665	Angiography, carotid, cerebral, unilateral, radiological supervision and interpretation
75671	Angiography, carotid, cerebral, bilateral, radiological supervision and interpretation
75676	Angiography, carotid, cervical, unilateral, radiological supervision and interpretation
75680	Angiography, carotid, cervical, bilateral, radiological supervision and interpretation
75960	Transcatheter introduction of intravascular stent(s) (except coronary, carotid, vertebral, iliac, and lower extremity artery), percutaneous and/or open, radiological supervision and interpretation, each vessel
75962	Transluminal balloon angioplasty, peripheral artery other than cervical carotid, renal or other visceral artery, iliac or lower extremity, radiological supervision and interpretation
75964	Transluminal balloon angioplasty, each additional peripheral artery other than cervical carotid, renal or other visceral artery, iliac and lower extremity, radiological supervision and interpretation (List separately in addition to code for primary procedure)
75978	Transluminal balloon angioplasty, venous (eg, subclavian stenosis), radiological supervision and interpretation
75894	Transcatheter therapy, embolization, any method, radiological supervision and interpretation

**Department of Health JAWDA Stroke Quality Performance Indicators**

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**Summary of Code Changes Updated to 2018 ICD-10 CM  
Quarter 3 2021**

**APPENDIX A- for stroke ICD\_10 Added Diagnosis Codes**

2018 ICD	Description
I63.013	Cerebral infarction due to thrombosis of bilateral vertebral arteries
I63.033	Cerebral infarction due to thrombosis of bilateral carotid arteries
I63.113	Cerebral infarction due to embolism of bilateral vertebral arteries
I63.133	Cerebral infarction due to embolism of bilateral carotid arteries
I63.213	Cerebral infarction due to unspecified occlusion or stenosis of bilateral vertebral arteries
I63.233	Cerebral infarction due to unspecified occlusion or stenosis of bilateral carotid arteries
I63.313	Cerebral infarction due to thrombosis of bilateral middle cerebral arteries
I63.323	Cerebral infarction due to thrombosis of bilateral anterior cerebral arteries
I63.333	Cerebral infarction to thrombosis of bilateral posterior cerebral arteries
I63.343	Cerebral infarction to thrombosis of bilateral cerebellar arteries
I63.413	Cerebral infarction due to embolism of bilateral middle cerebral arteries
I63.423	Cerebral infarction due to embolism of bilateral anterior cerebral arteries
I63.433	Cerebral infarction due to embolism of bilateral posterior cerebral arteries
I63.443	Cerebral infarction due to embolism of bilateral cerebellar arteries
I63.49	Cerebral infarction due to embolism of other cerebral artery
I63.513	Cerebral infarction due to unspecified occlusion or stenosis of bilateral middle cerebral arteries
I63.523	Cerebral infarction due to unspecified occlusion or stenosis of bilateral anterior cerebral arteries
I63.533	Cerebral infarction due to unspecified occlusion or stenosis of bilateral posterior cerebral arteries
I63.543	Cerebral infarction due to unspecified occlusion or stenosis of bilateral cerebellar arteries

**Hemorrhagic ICD-10 codes: Deleted Codes**

I60.20	Nontraumatic subarachnoid hemorrhage from unspecified anterior communicating artery
I60.21	Nontraumatic subarachnoid hemorrhage from right anterior communicating artery
I60.22	Nontraumatic subarachnoid hemorrhage from left anterior communicating artery

**Hemorrhagic ICD-10 codes: Added Codes**

I60.2	Nontraumatic subarachnoid hemorrhage from anterior communicating artery
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