



دائرة الصحة
DEPARTMENT OF HEALTH

Stroke (STK) Service Jawda Guidance

Version 7

Stroke (STK) Service JAWDA Performance Indicators

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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

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 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 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.

Stroke (STK) Service JAWDA Performance Indicators

Type Quality Indicator

Indicator Number: STK001

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

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK002

KPI Description (title):	Stroke (STK): Admission to the Stroke or Neuro Intensive Care Unit within 3 hours of arrival at hospital
Domain	Timeliness
Indicator Type	Process
Definition:	Patients presenting with acute stroke symptoms admitted to stroke unit or neuro intensive care bed within 3 hours of arrival at hospital emergency department.
Calculation	<p>Numerator: Total number of adults 18 years or older presenting with a principal discharge diagnosis of ischaemic or haemorrhagic who were admitted to a stroke or neuro intensive care unit within 3 hours of arrival at hospital emergency department.</p> <p><i>Acute Stroke: Patients with acute onset of a focal neurological deficit within ≤24 hours</i></p> <p>Denominator: Total adult 18 years or older with a principal discharge diagnosis of ischemic or haemorrhagic stroke who were admitted via the hospital emergency department with acute stroke symptoms. (See Appendix A – for stroke ICD_10 Diagnosis Codes)</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> • Patients who left against medical advice • Patients less than 18 years of age • Patient who present with non-stroke related symptoms • Patients who are admitted to procedural area for stroke intervention prior to transfer to hospital bed (Appendix B with Service codes: 20, 20-01, 20-02) • Patient requires MRI prior to admission to inpatient unit • Episodes with a discharge of death <p>Guidance note: <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>
Reporting Frequency:	Quarterly
Unit of Measure:	% admitted to Stroke or Neuro Intensive Care unit within target time.
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK003

KPI Description (title):	Stroke (STK): Venous Thromboembolism (VTE) Prophylaxis
Domain	Safety
Indicator Type	Process
Definition:	Ischemic and haemorrhagic stroke patients who received VTE prophylaxis the day of or the day after hospital admission.
Calculation	<p>Numerator: Total number of ischemic and haemorrhagic 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>Denominator: Total adult patients with a principal discharge diagnosis of ischemic or haemorrhagic stroke. (See Appendix A – for stroke ICD-10 Diagnosis Codes)</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> Patients less than 18 years of age Patients with length of stay <2 days Patient with length of stay >120 days Patients admitted for an Elective Carotid Intervention (<i>refer to Appendix-B</i>)
Reporting Frequency:	Quarterly
Unit of Measure:	% of VTE prophylaxis
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK004

KPI Description (title):	Stroke (STK): Discharged on Antithrombotic Therapy
Domain	Effectiveness
Indicator Type	Process
Definition:	Ischemic stroke patients prescribed antithrombotic therapy at hospital discharge.
Calculation	<p>Numerator: Total number of ischemic stroke patients (18 years or older) who were prescribed antithrombotic therapy at hospital discharge.</p> <p>Denominator: Total adult patients with a principal discharge diagnosis of Ischemic stroke. (See Appendix- A for stroke ICD_10 Diagnosis Codes)</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> • Less than 18 years of age • Length of stay >120 days • Patients who left against medical advice • Patients discharged to another acute care hospital • Patients who deceased • Patients discharged on hospice care • Patients admitted for an Elective Carotid Intervention (<i>refer to Appendix-B</i>) • Patients with documented reason for not prescribing antithrombotic therapy at discharge, examples: (<i>codes not limited to</i>) • Allergy to all antithrombotic medications • Aortic dissection ICD-10CM: I71.00, I71.01, I71.02, I71.03 • At increased risk of bleeding • Haemorrhage any type (Appendix C) • Extensive/metastatic cancer • Unrepaired intracranial aneurysm ICD-10CM: I67.1 • Planned surgery within 7 days of discharge • Patient/family refusal of antithrombotic medication • Peptic ulcer ICD-10CM K27.0, K27.2, K27.3, K27.4, K27.6, K27.7, K27.9, K27.1, K27.5 • Haemorrhagic transformation of infarct
Reporting Frequency:	Quarterly
Unit of Measure:	% of discharged on antithrombotic therapy
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK005

KPI Description (title):	Stroke (STK): Antithrombotic Therapy by End of Hospital Day Two
Domain	Timeliness
Indicator Type	Process
Definition:	Ischemic stroke patients who received antithrombotic therapy by the end of hospital day two.
Calculation	<p><u>Numerator:</u> Total number of ischemic stroke patients (18 years or older) who received antithrombotic therapy by the end of hospital day two.</p> <p><u>Denominator:</u> Total adult patients with a principal discharge diagnosis of ischemic stroke. (See Appendix- A-for stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions:</u></p> <ul style="list-style-type: none"> • Patients less than 18 years of age • Length of stay <2 days • Length of stay >120 days • Patients discharged prior to the end of hospital day 2 • Admitted for Elective Carotid Intervention (<i>refer to Appendix-B</i>) • IV or IA Thrombolytic (t-PA) therapy administered during this admission or within 24 hours of admission • Patients with documented reason for not prescribing antithrombotic therapy prior to end of hospital day two, examples: (<i>codes not limited to</i>) • Allergy to all antithrombotic medications • Aortic dissection ICD-10CM: I71.00, I71.01, I71.02, I71.03 • At increased risk of bleeding • Extensive/metastatic cancer • Haemorrhage any type (<i>Appendix C</i>) • Haemorrhagic transformation • Peptic ulcer ICD-10CM K27.0, K27.2, K27.3, K27.4, K27.6, K27.7, K27.9, K27.1, K27.5
Reporting Frequency:	Quarterly
Unit of Measure:	% Antithrombotic Therapy
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	-Patient's records -Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK006

KPI Description (title):	Stroke (STK): Discharged on Statin Medication
Domain	Effectiveness
Indicator Type	Process
Definition:	Ischemic stroke patients who are prescribed statin medication at hospital discharge
Calculation	<p>Numerator: Total number of Ischemic stroke patients (18 years or older) who are prescribed statin medication at hospital discharge.</p> <p>Denominator: Total adult patients with a principal discharge diagnosis of Ischemic stroke. (See Appendix A – for stroke ICD-10 Diagnosis Codes)</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> • Less than 18 years of age • Length of stay >120 days • Patients with discharge disposition of deceased • Principal diagnosis of cerebral venous thrombosis • Patients who left against medical advice • Patients discharged to another acute care hospital • Patients admitted for Elective Carotid Intervention (<i>refer to Appendix-B</i>) • Patients with documented reason for not prescribing statin medications at discharge, examples: <ul style="list-style-type: none"> ○ Documentation of an allergy/sensitivity ○ Patient/family refusal of statin medications ○ Liver dysfunction
Reporting Frequency:	Quarterly
Unit of Measure:	% of discharged statin medication
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	<ul style="list-style-type: none"> • Patient’s records • Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK007

KPI Description (title):	Stroke (STK): Stroke Education
Domain	Patient-centeredness
Indicator Type	Process
Definition:	Ischemic or Haemorrhagic stroke patients or their caregiver were given education and/or educational materials during the hospital stay addressing the five elements of stroke education
Calculation	<p>Numerator: Total number of ischemic and haemorrhagic 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> <ul style="list-style-type: none"> • Activation of emergency medical system (999) • Follow-up after discharge • Medications prescribed at discharge • Risk factors for stroke • Warning signs and symptoms of stroke <p>Denominator: Total adult patients with a principal discharge diagnosis of ischemic or haemorrhagic stroke. (See Appendix- A for stroke ICD_10 Diagnosis Codes)</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> • Patients with discharge disposition of deceased • Patients who left against medical advice • Patients discharged to another acute care hospital • Patients discharged to another healthcare facility (long-term care, transitional care unit, rehabilitation center). • Patients less than 18 years of age • Length of stay >120 days • Admitted for Elective Carotid Intervention
Reporting Frequency:	Quarterly
Unit of Measure:	% of Stroke Education
International comparison if available	The Joint Commission European Stroke Organization
Target	≥90%
Notes for all providers	
Data sources and guidance:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK008

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

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK009

KPI Description (title):	Stroke (STK): All cause 30-day Unplanned Hospital Readmissions After Ischemic Stroke
Domain	Effectiveness
Indicator Type	Outcome
Definition:	Ischemic stroke patients (18 years or older) re-admitted unplanned to the hospital within 30 days of discharge from index stroke discharge.
Calculation	<p>Numerator: 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>Numerator guidance: If patient has multiple readmissions within 30 days of index discharge, only count as a single readmission.</p> <p>Denominator: Total number of patients (18 years or older) with principal discharge diagnosis of ischemic stroke during index admission. (See Appendix- A for stroke ICD_10 Diagnosis Codes)</p> <p>Denominator Guidance: All index stroke admissions are counted in the denominator, but it is only the index admission (and not the readmission) which is counted in the denominator. In case of multiple readmissions the index admission is only counted once</p> <p>Denominator Exclusions:</p> <ul style="list-style-type: none"> • Patients with discharge disposition of deceased • Patients who left against medical advice • Patients less than 18 years of age • Length of stay >120 days • Patients that were transferred to another acute care facility
Reporting Frequency:	Quarterly
Unit of Measure:	% of stroke readmission
International comparison if available	The Joint Commission European Stroke Organization
Target	≤12%
Notes for all providers	
Data sources and guidance:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK010

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

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK011

KPI Description (title):	Rate of death occurring within 30 days of stroke Diagnosis
Domain	Effectiveness
Indicator Type	Outcome
Definition:	Rate of death occurring within 30 days of first admission to an acute care hospital with a principal diagnosis of Haemorrhagic or Ischemic stroke.
Calculation:	<p><u>Numerator:</u> Number of deaths occurring among adult stroke patients (18 years or older) within 30 days of principal diagnosis of Haemorrhagic or Ischemic stroke to an acute care hospital</p> <p><u>Denominator:</u> Total adult patients discharges with principle diagnosis of Ischemic or Haemorrhagic stroke during a reporting period. (See Appendix- A for stroke ICD_10 Diagnosis Codes)</p>
Reporting Frequency:	Quarterly
Unit of Measure:	Rate per 100 deaths
International comparison if available	<i>OECD, AHRQ</i>
Desired direction:	Lower is better
Notes for all facilities	
Data Source/ Report Name:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK012

KPI Description (title):	Symptomatic intracranial haemorrhage after IV thrombolysis
Domain	Safety
Indicator Type	Outcome
Definition:	Ischemic stroke patients who develop a symptomatic intracranial haemorrhage (i.e., clinical deterioration \geq 4 point increase on NIHSS and brain image finding of parenchymal hematoma, or subarachnoid haemorrhage, or intraventricular haemorrhage) within (\leq) 36 hours after the onset of treatment with intra-venous (IV) thrombolytic (t-PA) therapy only
Calculation:	<p><u>Numerator:</u> Total number of Ischemic stroke patients (18 years and older) who develop a symptomatic intracranial haemorrhage \leq 36 hours after the onset of treatment with IV thrombolytic (t-PA) therapy only (IVO)</p> <p><u>Denominator:</u> Total number of adult (18 years or older) with principal discharge diagnosis of ischemic stroke patients who received only IV thrombolysis treatment during a reporting period.</p> <p>(See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions:</u></p> <ul style="list-style-type: none"> • Patients less than 18 years of age • Patients with length of stay > 120 days • Patients admitted for Elective Carotid Intervention • Patients who receive BOTH iv-tPA AND mechanical thrombectomy • Patients transferred to this hospital following treatment with IV thrombolytic therapy or mechanical endovascular reperfusion therapy initiated prior to arrival • Patients who haemorrhage prior to onset of therapy
Reporting Frequency:	Quarterly
Unit of Measure:	% of Symptomatic intracranial haemorrhage after IV thrombolysis
International comparison if available	<i>OECD, AHRQ</i>
Desired direction:	Lower is better
Notes for all facilities	
Data Source/ Report Name:	- Patient's records - Claim data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK013

KPI Description (title):	National Institutes of Health Stroke Scale (NIHSS Score Performed for Ischemic Stroke Patients)
Domain	Patient-centeredness
Indicator Type	Outcome
Definition:	This measure addresses acute Ischemic stroke patients, who reach the ED within 24h of onset of symptoms, for whom an initial NIHSS score is performed prior to any acute recanalization therapy (i.e., IV thrombolytic (t-PA) therapy, or IA thrombolytic (t-PA) therapy, or mechanical endovascular reperfusion therapy) in patients undergoing recanalization therapy and documented in the medical record, OR documented within 12 hours of arrival at the hospital emergency department for patients who DO NOT undergo recanalization therapy.
Calculation:	<p><u>Numerator</u> Patients with a principle discharge diagnosis of ischemic stroke, who reach the ED within 24h of onset of the stroke symptoms, and for whom a NIHSS score is performed and documented in the medical record, prior to any acute recanalization therapy in patients undergoing recanalization therapy OR performed within 12 hours of hospital arrival and documented in the medical record, for patients who do not undergo recanalization therapy.</p> <p><u>Denominator</u> Number of patients with a principle discharge diagnosis of acute ischemic stroke, patients who reach the ED within 24 hours of onset of symptoms during the reporting period (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients less than 18 years of age • Patients who are not admitted with a principle diagnosis of acute ischemic stroke • Patients with acute stroke symptoms identified more than 24 hours prior to reaching the ED • Patients admitted for Elective Carotid Intervention • Patients who have a Length of Stay > 120 days • Patients with Comfort Measures Only documented on the day of or day after hospital arrival • Patients who do not undergo recanalization therapy and are discharged within 12 hours of arrival at this hospital
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association CSTK-01 (v2020A) (jointcommission.org)
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK014

KPI Description (title):	Severity Measurement Performed for SAH and ICH Patients (Overall Rate)
Domain	Effectiveness
Indicator Type	Process
Definition:	The measure addresses subarachnoid haemorrhage (SAH) and intracerebral haemorrhage (ICH) stroke patients for whom a severity measurement (i.e., Hunt and Hess Scale for SAH patients or ICH Score for ICH patients) is performed prior to surgical intervention (e.g. clipping, coiling, or any surgical intervention) in patients undergoing surgical intervention and documented in the medical record; or documented within 6 hours of arrival at the hospital emergency department for patients who do not undergo surgical intervention.
Calculation:	<p><u>Numerator</u> The number of SAH and ICH stroke patients for whom a severity measurement is performed prior to surgical intervention in patients undergoing surgical intervention and documented in the medical record; OR documented within 6 hours of arrival at the hospital emergency department for patients who do not undergo surgical intervention.</p> <p><i>Numerator guidance: (Report Separately below condition group)</i> The number of SAH patients for whom a Hunt and Hess Scale is performed prior to surgical intervention in patients undergoing surgical intervention and documented in the medical record; or documented within 6 hours of hospital arrival for patients who do not undergo surgical intervention.</p> <p>The number of ICH stroke patients for whom an ICH Score is performed prior to surgical intervention in patients undergoing surgical intervention and documented in the medical record; or documented within 6 hours of hospital arrival for patients who do not undergo surgical intervention.</p> <p><u>Denominator</u> Patients with principle discharge diagnosis of acute SAH and ICH stroke patients who arrive at this hospital emergency department (ED). (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients less than 18 years of age • Patients who have a Length of Stay > 120 days • Patients with Comfort Measures Only documented on the day of or day after hospital arrival • Non-surgical patients discharged within 6 hours of arrival at this hospital • Patients with admitting diagnosis of traumatic brain injury (TBI), (S06) • unruptured arteriovenous malformation (AVM), (Q28.2) and non-traumatic subdural hematoma (162.00/162.01/162.02/162.03) • Patients admitted for elective treatment of prior SAH or aneurysm
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage

Stroke (STK) Service JAWDA Performance Indicators

International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Type: Quality Indicator

Indicator Number: STK015

KPI Description (title):	Nimodipine Treatment Administered in aneurysmal SAH
Domain	Safety
Indicator Type	Process
Definition:	aneurysmal Subarachnoid haemorrhage (SAH) patients for whom nimodipine treatment was administered within 24 hours of arrival at this hospital.
Calculation:	<p><u>Numerator</u> aneurysmal SAH patients for whom nimodipine treatment was administered within 24 hours of arrival at this hospital.</p> <p><u>Denominator</u> Total Number of discharged patients with principal diagnosis of aneurysmal subarachnoid hemorrhage (SAH) patients during the reporting period (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients less than 18 years of age • Patients who have a Length of Stay > 120 days • Patients with Comfort Measures Only documented on day of or after hospital arrival • Patients enrolled in clinical trials • Patients discharged within 24 hours of arrival at this hospital • Left against medical advice
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK016

KPI Description (title):	Time to Revascularization for mechanical thrombectomy ≤90 minutes
Domain	Timeliness
Indicator Type	Process
Definition:	This measure addresses time from hospital arrival to arterial puncture time to be ≤90 minutes for endovascular treatment (EVT), (i.e., intra-arterial (IA) thrombolytic (t-PA) infusion and/or mechanical embolectomy devices), of acute ischemic stroke.
Calculation:	<p><u>Numerator</u> Patients for whom arterial puncture time is ≤90 minutes after hospital arrival.</p> <p><u>Denominator</u> All patients with any vessel occlusions in the initial patient population who received mechanical endovascular reperfusion therapy during the hospital admission. 61645 (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients are less than 18 years of age • Patients who have a Length of Stay > 120 days • Patients admitted for Elective Carotid Intervention (<i>refer to Appendix-B</i>) • Patients who have a Delayed Endovascular Rescue Procedure later than 8 hours after hospital arrival • Patients who needed stabilization clinically (intubation is part of stabilization) • Refusal of consent or delayed consent, as patients or family took a long time • Patients who initially have relatively mild symptoms and are deemed NOT appropriate for mechanical thrombectomy but who subsequently deteriorate clinically resulting in delayed change in clinical decisions • Patients who require MRI prior to mechanical thrombectomy for safe selection of candidates and to reduce futile procedures • Arrived at the hospital more than 8 hours after time symptoms identified • Patients who have a primary cerebral occlusion that is not a large vessel occlusion
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK017

KPI Description (title):	Thrombolysis in Cerebral Infarction (TICI Post-Treatment Reperfusion Grade)
Domain	Effectiveness
Indicator Type	Process
Definition:	This measure addresses ischemic stroke patients with a post-treatment reperfusion grade of TICI 2B or higher in the vascular territory beyond the target arterial occlusion at the end of treatment with intra-arterial (IA) thrombolytic (t-PA) therapy and/or mechanical endovascular reperfusion therapy.
Calculation:	<p><u>Numerator</u> Ischemic stroke patients, treated with IA thrombolytic (t-PA) therapy and/or mechanical endovascular reperfusion therapy, with a post-treatment reperfusion grade of TICI 2B or higher</p> <p><u>Denominator</u> Ischemic stroke patients treated with IA thrombolytic (t-PA) therapy and/or mechanical endovascular reperfusion therapy. including failed attempt at thrombectomy. 61645 (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients are less than 18 years of age. • Patients who have a Length of Stay > 120 days. • Patients admitted for Elective Carotid Intervention. • Patients who only undergo diagnostic angiography with no attempt at thrombectomy or IA thrombolysis.
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK018

KPI Description (title):	Timelines of Reperfusion: Arrival Time to TIC1 2B or Higher
Domain	Timeliness
Indicator Type	Process
Definition:	Ischemic stroke patients with large vessel occlusion in the internal carotid artery (ICA) or ICA terminus, middle cerebral artery (MCA) M1 or M2, basilar artery, who receive mechanical endovascular reperfusion therapy within 150 minutes of hospital arrival and achieve TIC1 2B or higher at the end of treatment
Calculation:	<p><u>Numerator</u> Ischemic stroke patients who undergo mechanical thrombectomy of the distal ICA or ICA terminus, M1 or M2 segments of the MCA or of the basilar artery and who achieve TIC1 2B or higher for the primary vessel occlusion within 150 minutes of arrival.</p> <p><u>Denominator</u> Total number of adult patients (18 years old and above) with principal diagnosis of Ischemic stroke treated with mechanical endovascular reperfusion treatment for large vessel occlusion of the distal ICA or ICA terminus, M1 or M2 segments of the MCA or of the basilar artery (including failed attempt at thrombectomy). 61645 (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients are less than 18 years of age • Patients who have a Delayed Endovascular Rescue Procedure later than 8 hours after hospital arrival • Patients who needed stabilization clinically (intubation is part of stabilization) • Refusal of consent or delay consent, as patients or family took a long time • Patients who initially have relatively mild or resolved symptoms and are deemed NOT appropriate for mechanical thrombectomy but who subsequently deteriorate clinically resulting in delayed change in clinical decision • Patients who require MRI prior to mechanical thrombectomy for safe selection of candidates and to reduce futile procedures • Arrived at the hospital more than 8 hours after time symptoms identified • Patients with length of stay > 120 days • Enrolled in a clinical trial as part of their treatment for stroke • Patients admitted for Elective carotid intervention (refer to Appendix-B)
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Type: Quality Indicator

Indicator Number: STK019

KPI Description (title):	Anticoagulation Therapy for Atrial Fibrillation / Flutter
Domain	Safety
Indicator Type	Process
Definition:	This measure addresses ischemic stroke patients with a clinical diagnosis of atrial fibrillation/flutter who are prescribed anticoagulation therapy at hospital discharge.
Calculation:	<p><u>Numerator</u> All eligible ischemic stroke patients, who received a prescription for anticoagulants at time of discharge.</p> <p><u>Denominator</u> All eligible ischemic stroke patients with atrial fibrillation. I48.- Series codes (See Appendix- A for relevant stroke ICD_10 Diagnosis Codes)</p> <p><u>Denominator Exclusions</u></p> <ul style="list-style-type: none"> • Patients with a documented reason for not prescribing anticoagulation therapy at discharge. • Examples include haemorrhagic transformation, High risk of bleeding, etc • Patients admitted for Elective Carotid Intervention. (<i>refer to Appendix-B</i>) • Patients with contraindications to anticoagulant therapy. • Patients with a length of stay greater than 120 days. • Patients transferred to another acute care facility, left Against Medical Advice, or expired. • Patients enrolled in clinical trials. • Patients under the age of 18. • Patients who refused anticoagulation therapy
Reporting Frequency:	Quarterly
Unit of Measure:	Percentage
International comparison if available	Stroke Center Certification - American Stroke Association
Desired direction:	Higher numbers are better
Data sources and guidance:	-Patient medical record -Hospital administrative data

Stroke (STK) Service JAWDA Performance Indicators

Appendix- A (Stroke ICD_10 Diagnosis Codes)

Ischemic Stroke ICD-10 Diagnosis Codes:

I63.00	I63.10	I63.20	I63.30	I63.333	I63.419	I63.443	I63.529
I63.011	I63.111	I63.211	I63.311	I63.339	I63.421	I63.449	I63.531
I63.012	I63.112	I63.212	I63.312	I63.341	I63.422	I63.49	I63.532
I63.013	I63.113	I63.213	I63.313	I63.342	I63.423	I63.50	I63.533
I63.019	I63.119	I63.219	I63.319	I63.343	I63.429	I63.511	I63.539
I63.02	I63.12	I63.22	I63.321	I63.349	I63.431	I63.512	I63.541
I63.031	I63.131	I63.231	I63.322	I63.39	I63.432	I63.513	I63.542
I63.032	I63.132	I63.232	I63.323	I63.40	I63.433	I63.519	I63.543
I63.033	I63.133	I63.233	I63.329	I63.411	I63.439	I63.521	I63.549
I63.039	I63.139	I63.239	I63.331	I63.412	I63.441	I63.522	I63.59
I63.09	I63.19	I63.29	I63.332	I63.413	I63.442	I63.523	I63.6
I63.8	I63.9						

Haemorrhagic Stroke ICD-10 Diagnosis Codes:

I60.00	I60.10	I60.2	I60.32	I60.51	I60.7	I61.0	I61.3
I60.01	I60.11	I60.30	I60.4	I60.52	I60.8	I61.1	I61.4
I60.02	I60.12	I60.31	I60.50	I60.6	I60.9	I61.2	I61.5
I61.6	I61.8	I61.9					

Appendix- B (Elective Carotid Intervention CPT Codes)

33889	35390	35601	35701	37215	61590	61613	61642
33891	35501	35606	36100	37216	61591	61624	61690
34001	35506	35626	36215	37600	61592	61626	61692
35001	35508	35642	36216	37605	61596	61630	61697
35002	35509	35691	36217	37606	61610	61635	61700
35261	35510	35694	36218	60600	61611	61640	61711
35301	35526	35695	37184	60605	61612	61641	61703
61705	61708	61710	64508	75894			

Appendix- C (Haemorrhage any type of ICD-10 Diagnosis Codes)

D78.01	I69.011	I69.162	K25.6	O44.40	S06.349A	S06.374D	S06.5X1A
D78.02	I69.012	I69.163	K25.7	O44.41	S06.349D	S06.374S	S06.5X1D
D78.21	I69.013	I69.164	K25.9	O44.42	S06.349S	S06.375A	S06.5X1S
D78.22	I69.014	I69.165	K26.0	O44.43	S06.350A	S06.375D	S06.5X2A
E36.01	I69.015	I69.169	K26.2	O44.50	S06.350D	S06.375S	S06.5X2D
E36.02	I69.018	I69.190	K26.3	O44.51	S06.350S	S06.376A	S06.5X2S
E89.810	I69.019	I69.191	K26.4	O44.52	S06.351A	S06.376D	S06.5X3A
E89.811	I69.020	I69.192	K26.6	O44.53	S06.351D	S06.376S	S06.5X3D
G97.31	I69.021	I69.193	K26.7	O46.001	S06.351S	S06.377A	S06.5X3S

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G97.32	I69.022	I69.198	K26.9	O46.002	S06.352A	S06.378A	S06.5X4A
G97.51	I69.023	I69.20	K28.0	O46.003	S06.352D	S06.379A	S06.5X4D
G97.52	I69.028	I69.210	K28.2	O46.009	S06.352S	S06.379D	S06.5X4S
H05.231	I69.031	I69.211	K28.3	O46.011	S06.353A	S06.379S	S06.5X5A
H05.232	I69.032	I69.212	K28.4	O46.012	S06.353D	S06.380A	S06.5X5D
H05.233	I69.033	I69.213	K28.6	O46.013	S06.353S	S06.380D	S06.5X5S
H05.239	I69.034	I69.214	K28.7	O46.019	S06.354A	S06.380S	S06.5X6A
H11.30	I69.039	I69.215	K28.9	O46.021	S06.354D	S06.381A	S06.5X6D
H11.31	I69.041	I69.218	K55.20	O46.022	S06.354S	S06.381D	S06.5X6S
H11.32	I69.042	I69.219	K55.21	O46.023	S06.355A	S06.381S	S06.5X7A
H11.33	I69.043	I69.220	K62.5	O46.029	S06.355D	S06.382A	S06.5X8A
H31.301	I69.044	I69.221	K91.61	O46.091	S06.355S	S06.382D	S06.5X9A
H31.302	I69.049	I69.222	K91.62	O46.092	S06.356A	S06.382S	S06.5X9D
H31.303	I69.051	I69.223	K91.840	O46.093	S06.356D	S06.383A	S06.5X9S
H31.309	I69.052	I69.228	K91.841	O46.099	S06.356S	S06.383D	S06.6X0A
H31.311	I69.053	I69.231	K92.2	O46.8X1	S06.357A	S06.383S	S06.6X0D
H31.312	I69.054	I69.232	K94.01	O46.8X2	S06.358A	S06.384A	S06.6X0S
H31.313	I69.059	I69.233	K94.11	O46.8X3	S06.359A	S06.384D	S06.6X1A
H31.319	I69.061	I69.234	K94.21	O46.8X9	S06.359D	S06.384S	S06.6X1D
H35.60	I69.062	I69.239	K94.31	O46.90	S06.359S	S06.385A	S06.6X1S
H35.61	I69.063	I69.241	L76.01	O46.91	S06.360A	S06.385D	S06.6X2A
H35.62	I69.064	I69.242	L76.02	O46.92	S06.360D	S06.385S	S06.6X2D
H35.63	I69.065	I69.243	L76.21	O46.93	S06.360S	S06.386A	S06.6X2S
H43.10	I69.069	I69.244	L76.22	O67.0	S06.361A	S06.386D	S06.6X3A
H43.11	I69.090	I69.249	M96.810	O67.8	S06.361D	S06.386S	S06.6X3D
H43.12	I69.091	I69.251	M96.811	O67.9	S06.361S	S06.387A	S06.6X3S
H43.13	I69.092	I69.252	M96.830	O72.0	S06.362A	S06.388A	S06.6X4A
H47.021	I69.093	I69.253	M96.831	O72.1	S06.362D	S06.389A	S06.6X4D
H47.022	I69.098	I69.254	N42.1	O72.2	S06.362S	S06.389D	S06.6X4S
H47.023	I69.10	I69.259	N99.510	O73.0	S06.363A	S06.389S	S06.6X5A
H47.029	I69.110	I69.261	N99.520	O73.1	S06.363D	S06.4X0A	S06.6X5D
H59.111	I69.111	I69.262	N99.530	R04.1	S06.363S	S06.4X0D	S06.6X5S
H59.112	I69.112	I69.263	N99.61	R04.81	S06.364A	S06.4X0S	S06.6X6A
H59.113	I69.113	I69.264	N99.62	R04.89	S06.364D	S06.4X1A	S06.6X6D
H59.119	I69.114	I69.265	N99.820	R04.9	S06.364S	S06.4X1D	S06.6X6S
H59.121	I69.115	I69.269	N99.821	R58	S06.365A	S06.4X1S	S06.6X7A
H59.122	I69.118	I69.290	O03.1	S06.340A	S06.365D	S06.4X2A	S06.6X8A
H59.123	I69.119	I69.291	O03.6	S06.340D	S06.365S	S06.4X2D	S06.6X9A
H59.129	I69.120	I69.292	O04.6	S06.340S	S06.366A	S06.4X2S	S06.6X9D
H59.311	I69.121	I69.293	O07.1	S06.341A	S06.366D	S06.4X3A	S06.6X9S
H59.312	I69.122	I69.298	O08.1	S06.341D	S06.366S	S06.4X3D	T79.2XXA
H59.313	I69.123	I97.410	O20.8	S06.341S	S06.367A	S06.4X3S	T79.2XXD
H59.319	I69.128	I97.411	O20.9	S06.342A	S06.368A	S06.4X4A	T79.2XXS
H59.321	I69.131	I97.418	O44.00	S06.342D	S06.369A	S06.4X4D	T82.837A
H59.322	I69.132	I97.42	O44.01	S06.342S	S06.369D	S06.4X4S	T82.837D
H59.323	I69.133	I97.610	O44.02	S06.343A	S06.369S	S06.4X5A	T82.837S
H59.329	I69.134	I97.611	O44.03	S06.343D	S06.370A	S06.4X5D	T82.838A
H95.21	I69.139	I97.618	O44.10	S06.343S	S06.370D	S06.4X5S	T82.838D

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H95.22	I69.141	I97.620	O44.11	S06.344A	S06.370S	S06.4X6A	T82.838S
H95.41	I69.142	J95.01	O44.12	S06.344D	S06.371A	S06.4X6D	T83.83XA
H95.42	I69.143	J95.61	O44.13	S06.344S	S06.371D	S06.4X6S	T83.83XD
I62.00	I69.144	J95.62	O44.20	S06.345A	S06.371S	S06.4X7A	T83.83XS
I62.01	I69.149	J95.830	O44.21	S06.345D	S06.372A	S06.4X8A	T84.83XA
I62.02	I69.151	J95.831	O44.22	S06.345S	S06.372D	S06.4X9A	T84.83XD
I62.03	I69.152	K22.6	O44.23	S06.346A	S06.372S	S06.4X9D	T84.83XS
I62.1	I69.153	K25.0	O44.30	S06.346D	S06.373A	S06.4X9S	T85.830A
I62.9	I69.154	K25.2	O44.31	S06.346S	S06.373D	S06.5X0A	T85.830D
I69.00	I69.159	K25.3	O44.32	S06.347A	S06.373S	S06.5X0D	T85.830S
I69.010	I69.161	K25.4	O44.33	S06.348A	S06.374A	S06.5X0S	T85.838A
T85.838D	T85.838S						

Summary of Changes 2025

KPI #	Changes
ALL KPIs	Revised Domains and added Indicator Types based on IOM domains, removed sub-domain
STK011	Revised Denominator : Total adult patients discharge
STK013	Numerator/Denominator : Changed principal admitting diagnosis to principal discharge diagnosis
STK014	Revised Numerator: Report Separately SAH and ICH patients
STK016	Revised Denominator Exclusions : Patient who needed stabilization clinically (intubation is part of stabilization) Added Denominator specification: All patients with any vessel occlusions
STK018	Revised Denominator Exclusions : Patient who needed stabilization clinically (intubation is part of stabilization) Numerator : Changed 120 minutes to 150 minutes