

<p>ACUTE STROKE: ACUTE CLINICAL PATHWAY (Hospital based care)</p>
<p>The clinical pathway is based on evidence informed practice and is designed to promote timely treatment, enhance quality of care, optimize patient outcomes and support effective transition/ discharge planning. These are not orders, but provide guidance to usual care based on the most recent Canadian Stroke Best Practice Recommendations (CBSPRs): Acute Stroke Management, 7th Edition Practice Guidelines Update, 2022</p>
<p>INCLUSION CRITERIA</p>
<ul style="list-style-type: none"> • All patients admitted to hospital with a suspected diagnosis of acute ischemic stroke (AIS) non- surgical intracerebral hemorrhage (ICH), post-surgical/medical managed subarachnoid hemorrhage, transient ischemic attack (TIA) or venous sinus thrombosis. • Patients with co-morbid diagnoses where care is focused on non-stroke illness will initially be managed outside the Acute Stroke Clinical Pathway. When appropriate, the patient will continue on the Acute Stroke Clinical Pathway. <p style="text-align: center;">REMINDER: Please ensure all Stroke and TIA patients admitted to hospital are designated as "Stroke Service" in Cerner.</p>
<p>EXCLUSION CRITERIA</p>
<ul style="list-style-type: none"> • Patients with significant complications where care is focused on their non-stroke illness • Patients who do not have an acute stroke or TIA. <p>If patient is excluded please document reason in your notes.</p>
<p>TRANSFERS TO THE PROVINCIAL ACUTE STROKE UNIT</p>
<p>Transfers to the Provincial Acute Stroke Unit (PASU) should be considered high priority / expected care as per the <i>Canadian Best Practice Recommendations for Stroke Care</i>.</p> <p>Criteria and process for admission to the PASU are in the 'Admission, Discharge and Transfer Criteria – Provincial Acute Stroke Unit' policy and found in Medworxx. Please refer to most recent policy and the Stroke Admit Orderset.</p>

Canadian Best Practice Recommendations for Stroke Care:
www.strokebestpractices.ca

ACUTE STROKE: ACUTE CLINICAL PATHWAY (Hospital based care)	
PROCESS	EMERGENCY PHASE (0-3 HOURS post stroke regardless of location)
ASSESSMENT (OBSERVATIONS/ MEASUREMENTS)	Assessment within 10 minutes of hospital arrival. Relevant/ emergent co-morbidities documented. MD determination of eligibility for thrombolytics and/or Endovascular Thrombectomy (EVT). Physicians complete NIHSS (stroke severity scale)
	Canadian Neurological Scale, Glasgow Coma Scale on admission; neuro checks q 15 minutes. MD completes NIHSS as per thrombolytic protocol.
	Initial Vital signs, including SpO ₂ ; If thrombolytic (Tenectaplastase or Alteplase) therapy given assess vital signs q15min x 2hrs then q30min
	Notify physician if SBP ≥ 220 or DBP ≥ 120 for 2 or more readings 5 - 10 minutes apart <i>Note: Very high blood pressure should be treated in patients receiving thrombolytic therapy for acute ischemic stroke – target below 180/105 mmHg</i>
	Treat temps >37.5° Celsius. Notify MD for Temp > 38.5° C
	Screen for elevated blood glucose, and blood glucose below 4 mmol/L. Hypoglycemia should be corrected immediately.
	Chest assessment
	Pain assessment
	Record height and weight
	Monitor intake/ output, document urine color
	Continuous cardiac monitor/ rhythm strips interpreted and attached
	Document patient history of irregular heart rate / previous stroke
DIAGNOSTICS/ LABORATORY	CT/CTA scan of head w/o contrast within 15 minutes of hospital arrival
	ECG – Note: <i>Unless patient is hemodynamically unstable, ECG should not delay CT scan.</i>
	Portable Chest Xray if evidence of acute heart disease or pulmonary disease. Note: <i>Unless patient is hemodynamically unstable, x-ray can be deferred until after a decision regarding acute treatment; not to delay thrombolytic decision making.</i>
	Blood work (specifically CBC, APTT, INR, Electrolytes, Creatinine, Glucose, Troponin). Consider B-HCG if female <50 years of age.
TREATMENTS/ INTERVENTIONS	IV site established/ insitu and satisfactory, IV as ordered
	Avoid use of indwelling catheter
	O ₂ if needed
	Administration of IV thrombolytics as soon as possible (please refer to best practice guidelines for up to date door to needle targets: https://www.strokebestpractices.ca/recommendations/acute-stroke-management/acute-ischemic-stroke-treatment)
	Endovascular Thrombectomy (EVT) – If patient potential candidate for EVT call Halifax Neurology for consult and arrange transport if accepted

MEDICATIONS	Medication history
	Acetaminophen 650 mg PO/PR q4hrs for temperature $\geq 37.5^{\circ}$ C or for analgesia (max 4,000 mg in 24 hrs)
	Ischemic non-thrombolytic and non-hemorrhagic stroke ONLY : ASA 160mg post CT, consider combination treatment with ASA and clopidogrel
MOBILITY/ACTIVITY	Bed Rest (0-3 hours)
NUTRITION	NPO until TOR-BSST dysphagia screening completed by trained staff. If passes TOR-BSST – order regular heart healthy diet.
	Determine alternate routes for meds if NPO
PSYCHOSOCIAL SUPPORT/ EDUCATION	Inform patient and caregiver(s) of diagnosis/ reason for admission
	Advance directive discussion addressed
	Address immediate concerns
TRANSITION PLANNING	If thrombolytic therapy given or patient is medically unstable, transfer to critical care unit where there is appropriate monitoring and nursing staff ratios
	If hemorrhagic or pediatric stroke: consider Out of Province transfer
	All other stroke/TIA admissions transfer to the Provincial Acute Stroke Unit; as soon as possible; ideally within 24 hours of hospital arrival
	If staying longer than 3 hours in emergency department activate CCU or Acute Care Phase
	Designate as " Stroke Service " for all Stroke and TIA hospital admissions. This is critical for insuring patients are followed/tracked by stroke services.
	If patient deemed palliative as the result of severe stroke or complications, patient to be transferred to location/unit for appropriate palliative/comfort care
	IF discharged directly from ED: TIA and Stroke - referral to Secondary Stroke Prevention Clinic (located at Polyclinic Charlottetown) <ul style="list-style-type: none"> Ensure patient / caregiver has the PSSPC TIA booklet Stroke – referral to Provincial Ambulatory Stroke Rehabilitation Clinic (located at QEH). <ul style="list-style-type: none"> Ensure patient and caregiver(s) are aware of follow up referrals and applicable appointments (e.g. Holter, blood work), Provincial Ambulatory Stroke Rehabilitation Services (PASRC), Provincial Secondary Stroke Prevention Clinic (PSSPC), Stroke Navigator contact information, and community support services. Review Driving status and give "Driving After a Stroke in PEI" NOTE: Dept. Highway Safety – minimum 1 month suspended license post Stroke diagnosis (not TIA) and reassess Complete ED note / transition plan and ensure primary care practitioner is aware of management plans. Patients and caregivers aware to make follow-up appointment with primary care practitioner.

ACUTE STROKE: ACUTE CLINICAL PATHWAY (Hospital based care)	
PROCESS	CRITICAL CARE PHASE
ADMISSION CRITICAL CARE UNIT	<p>Patients may require critical care support for post thrombolytic monitoring and/or significant medical issues related to their stroke e.g. blood pressure management. Patients should be reviewed for admission to a critical care unit (CCU) on a case-by-case basis with discussion between ED physician, physician on call, and other potential accepting physicians (e.g. hospitalist or family medicine).</p> <p>Factors that may preclude admission to CCU include:</p> <ol style="list-style-type: none"> 1. Patient is palliative because of the stroke, or due to other pre-morbid terminal illnesses (e.g. known terminal cancer and already designated comfort/palliative care measures) 2. They have other conditions that would preclude them from receiving critical care treatments if their condition were to worsen after thrombolysis (e.g. high frailty, or other severe comorbidities). These patients would not be candidates for advanced life-saving procedures such as hemicraniectomy, etc. <p>If a post thrombolytic patient is not being admitted to CCU, there must be clear communication to the patient and their family regarding the next possible steps in care if their condition declines after thrombolysis.</p>
ASSESSMENT (OBSERVATIONS/ MEASUREMENTS)	<p>Toronto Bedside Swallowing Screening Test (TOR-BSST) by trained staff if not already done in ER</p> <p>Neurological assessment q1hr x 12hrs, then q 2 hrs X 12hrs. Report any changes in neuro status to MD</p> <p>Vital signs, including SpO2: Baseline, then q15min x 2hrs; q30min x 6hrs; q1hr x 4hrs; q2hrs x 12hrs</p> <p>Notify MD if SBP > 180 mmHg OR if DBP > 110 mmHg for 2 or more readings 5 -10 min apart. Avoid BP in arm with IV or venipuncture if possible.</p> <p>Blood Glucose monitoring q6hrs. Call MD if Blood Glucose is ≥ 12 mmol/L If patient passes TOR-BSST[®] and on modified diet – blood glucose qid</p> <p>Record regularity of heart rate (Note if patient aware of any past anomalies)</p> <p>Temp q4h x 24hrs; treat temps >37.5 Celsius</p> <p>Chest assessment (nursing assessment)</p> <p>Pain assessment (nursing assessment)</p> <p>Monitor intake/ output q shift, document urine color. Assess all body excretions for blood</p> <p>Braden risk assessment completed on admission</p> <p>TLR assessment completed on admission</p> <p>Assess Risk/Need for Venous thromboembolism (VTE) Prophylaxis with MD</p> <p>If the patient is not admitted to CCU, then vital signs and neurological assessments should be completed q4h x 24h. Other monitoring parameters are unchanged.</p>

PATIENT SAFETY CUES	Conley falls risk assessment completed on admission and PRN
	TLR cue cards in place in room
CONSULTS	<p>Consults to: neurologist (consider). Physiotherapist (PT), occupational therapist (OT), speech language pathologist (SLP), dietitian and social worker initial assessment within 48 hours of hospital admission.</p> <p>Stroke Admit orderset insures consultation to the stroke rehab team.</p>
DIAGNOSTICS/ LABORATORY	CT scan of head w/o contrast after 24 hours
	MRI if ordered
	ECG if not already completed in ER
	Portable Chest Xray if evidence of acute heart disease or pulmonary disease.
	Carotid imaging if ordered
	Echocardiogram if ordered
	Blood work as ordered if not already done in ER
MEDICATIONS	Best possible medication history if not already done
	Determine alternate routes for meds if patient is NPO
	Acetaminophen 650 mg PO/PR q4hrs for temperature $\geq 37.5^{\circ}$ C or for analgesia (max 4,000 mg in 24 hrs)
	No antiplatelets or anticoagulants for 24 hours
TREATMENTS/ INTERVENTIONS	Oxygen to keep SpO ₂ > 90%
	IV and/or intermittent set observation and site care q 1 hour. Minimize venous or arterial sticks if possible.
	VTE protocol (as applicable).
	Oral Care protocol
	Avoid use of indwelling catheter
MOBILITY/ACTIVITY	CSBPR 2022 – “Early prolonged mobilization of patients within the first 24-48 hour after a stroke, especially a severe stroke, is not recommended” refer to CSBPR Rehab & Recovery following Stroke for further detailed information.
	Head of bed raised 30-60 degrees, unless contraindicated.
	Use positioning techniques to maintain proper body alignment.
NUTRITION	NPO until TOR-BSST dysphagia screening completed by trained staff or SLP assessment
	Avoid NG Tube placement for 24 hours
	Therapeutic diet as per Dietitian and SLP recommendations
PSYCHOSOCIAL SUPPORT/ EDUCATION	Orientation to unit and procedures, review visiting guidelines
	Introduce patient pathway and review “The Pathway through Stroke Care and Recovery”

	<p>Encourage patient and caregiver(s) to ask questions. Address patient and family concerns</p>
	<p>All disciplines provide patient centered education as per best practice recommendations and complete Stroke Education Form on Cerner or in paper chart.</p>
<p>TRANSITION PLANNING</p>	<p>Transfer to Provincial Acute Stroke Unit after 24 hours post thrombolytics is standard care based on recommended post treatment monitoring. Consideration for earlier transfer to PASU between 12-24 hours post tPA in select patients who are low risk for complications and medically stable and CCU capacity is limited. Patients who are being transferred out of CCU between 12-24h should be determined on a case-by-case basis. Discussion should occur between the CCU physician and the accepting physician (either hospitalist or family medicine). Both the CCU physician and the accepting physician must agree to the transfer.</p>
	<p>Designate as "Stroke Service" for all Stroke and TIA hospital admissions. This is critical for insuring patients are followed/tracked by stroke services.</p>
	<p>If discharged "home" directly (<u>NOT</u> usual stroke care pathway from CCU): TIA and Stroke – assess need for referral to Secondary Stroke Prevention Clinic (located at Polyclinic Charlottetown) Stroke – referral to Provincial Ambulatory Stroke Rehabilitation Clinic (located at QEH).</p> <ul style="list-style-type: none"> • Ensure patient and caregiver(s) are aware of follow up referrals and applicable appointments (blood work, Provincial Ambulatory Stroke Rehabilitation Services (PASRC), Provincial Secondary Stroke Prevention Clinic (PSSPC), Stroke Navigator contact information, and community support services. • Review driving status and give patient information: "Driving After a Stroke in PEI" NOTE: Dept. Highway Safety – 1 month suspended license post stroke diagnosis • Complete discharge/ transition summaries and ensure primary care practitioner is aware of management plans • Patient and caregiver aware of follow-up with primary care practitioner; secondary prevention follow-up

ACUTE STROKE: ACUTE CLINICAL PATHWAY (Hospital based care)	
PROCESS	ACUTE CARE PHASE (> 3 hours inpatient acute care regardless of location)
ADMISSION Provincial Acute Stroke Care Unit (PASU)	<p>Patients admitted to hospital with an acute stroke or transient ischemic attack (TIA) should be treated on an inpatient stroke unit as soon as possible; ideally within 24 hours of hospital arrival. (CSBPR 2022)</p> <p>Transfer to Provincial Acute Stroke Unit after 24 hours post thrombolytics is standard care based on recommended post treatment monitoring. Consideration given for earlier transfer to PASU between 12-24 hours post thrombolytics in select patients who are low risk for complications and medically stable and CCU capacity is limited. Patients who are being transferred out of CCU between 12-24h should be determined on a case-by-case basis. Discussion should occur between the CCU physician and the accepting physician (either hospitalist or family medicine). Both the CCU physician and the accepting physician must agree to the transfer.</p>
ASSESSMENT (OBSERVATIONS/ MEASUREMENTS)	<p>Toronto Bedside Swallowing Screening Test (TOR-BSST) by trained staff if not already done in ED/ CCU</p> <p>Neurological assessment q 4hrs x 48 hrs, then q8 hrs until stable.</p> <p>Vital signs, including SpO2 q4hrs x 48hrs (include CCU time), then QID x 48hrs, then BID when stable</p> <p>Notify MD if SBP ≥ 220 mmHg OR if DBP ≥ 120 mmHg for 2 or more readings 5 -10 min apart</p> <p>Record regularity/ irregularity of heart rate (Note if patient aware of any past anomalies)</p> <p>Temp q4hrs x 48 hrs (include CCU time), then BID when stable; treat temps >37.5 C</p> <p>Chest Assessment q shift and as needed</p> <p>Pain Assessment using 10 point Likert Analog Scale</p> <p>Height and weight on admission if not already completed</p> <p>Monitor Intake and Output q shift, document urine color</p> <p>Modified Rankin Scale on admission from acute care or prior to admission to rehabilitation unit</p> <p>Braden risk assessment on admission and PRN</p> <p>TLR assessment on admission, weekly or PRN</p> <p>Venous thromboembolism (VTE) Prophylaxis assessment</p> <p>Hospital Anxiety Depression Screen (HADS)</p> <p>Alpha FIM assessment on admission to Provincial Acute Stroke Unit</p> <p>Oral Care assessment</p> <p>Bladder and Bowel Assessment</p>

	Nutritional and hydration status screened within 48 hrs of admission
PATIENT SAFETY CUES	Conley falls risk assessment completed on admission and PRN
	TLR cue cards in place in room
CONSULTS	Neurologist, Physiotherapist (PT), Occupational Therapist (OT), Speech Language Pathologist (SLP), Dietitian and Social Worker initial assessment within 48 hrs of hospital admission. Stroke Admit orderset insures consultation to the stroke rehab team.
	Rehabilitation consult within 4 days if appropriate (screening tool Alpha FIM)
DIAGNOSTICS/ LABORATORY	CT scan of head w/o contrast if not already done in ER / CCU
	MRI if ordered
	ECG if not already completed in ER/ CCU
	Portable Chest Xray if evidence of acute heart disease or pulmonary disease.
	Carotid imaging if indicated
	Echocardiogram if indicated
	Blood work as ordered if not already done in ER/ CCU
MEDICATIONS	Holter if indicated
	Best possible medication history if not already done
	Determine alternate routes for meds if patient NPO
TREATMENTS/ INTERVENTIONS	Acetaminophen 650 mg PO/PR q4hrs for temperature $\geq 37.5^{\circ}$ C or for analgesia (max 4,000 mg in 24 hrs)
	IV care
	Remove urinary catheter if present
	VTE protocol
	Oral Care protocol
	Bladder/ Bowel protocol
	Conley Falls Risk interventions
Therapeutic activities and recommended equipment as per PT, OT and SLP recommendations	
MOBILITY/ACTIVITY	CSBPR 2022 – “Early prolonged mobilization of patients within the first 24-48 hour after a stroke, especially a severe stroke, is not recommended” refer to CSBPR Rehab & Recovery following stroke for further detailed information.
	Head of bed raised 30-60, unless contraindicated.
	Use positioning techniques to maintain proper body alignment in bed and in chair
	Mobilize as per TLR recommendations and or PT OT recommendations

	Blood pressure, oxygen saturation and heart rate monitored prior to mobilization for the first 3 days following admission
NUTRITION	NPO until Tor-BSST dysphagia screening completed by trained staff or SLP assessment
	Therapeutic diet as per Dietitian and/or SLP recommendations
	NG feeding established if ordered
PSYCHOSOCIAL SUPPORT/ EDUCATION	Orientation to unit and procedures, review visiting guidelines (“Provincial Acute Stroke Unit Patient Information”)
	Introduce or review patient pathway (“The Pathway through Stroke Care and Recovery”)
	Provide and review “Your Stroke Journey – A Guide for People Living with Stroke” and other educational materials as appropriate.
	Encourage patient and caregiver(s) to ask questions. Address patient and family concerns
	All disciplines provide patient centered education as per best practice recommendations and Complete Stroke Education form on Cerner.
TRANSITION PLANNING	Ongoing interdisciplinary team discussions regarding appropriateness/ readiness for discharge to pre-admission residence. If appropriate target discharge within 10 days
	Ongoing interdisciplinary team discussions regarding appropriateness/ readiness for rehabilitation unit and transfer ideally between 5 to 10 days
	Involve patient and family in transition planning and organize family meeting as appropriate. Discuss anticipated discharge date.
	Ensure training for medication management for patient and caregiver(s)
	Review diet if appropriate, encourage appropriate hydration
	Ensure appropriate equipment has been arranged
	Train caregiver(s) in safe mobility and activities of daily living within functional abilities
	Review driving status and give patient information: “Driving After a Stroke in PEI”
	Review bowel and bladder routine if appropriate
	If transitioned to home: Ensure patient and caregiver(s) are aware of follow up referrals and applicable appointments (blood work, Provincial Ambulatory Stroke Rehabilitation Services (PASRC), Stroke Navigator contact information, and community support services. To ALC / medical unit/ community hospital: “warm handovers” and referral to Provincial Ambulatory Stroke Clinic
	Complete discharge/ transition summaries and ensure primary care practitioner is aware of management plans Patient and Family aware of follow-up appointment with primary care practitioner; secondary prevention recommendations

Definitions: (from CSBPR Acute Stroke Management 2022)

Acute Stroke Unit: A specialized, geographically defined hospital unit dedicated to the management of patients with stroke, staffed by an experienced interdisciplinary stroke team, and providing a complex package of evidence-based care (e.g., protocols, care pathways) for acute stroke management, early rehabilitation, and education to patients with stroke in hospital.

Hemorrhagic Stroke: A stroke caused by the rupture of a blood vessel within the brain tissue, subarachnoid space or intraventricular space.

Ischemic Stroke: An ischemic stroke is an episode of neurological dysfunction caused by focal cerebral, spinal, or retinal cell death attributable to ischemia (blockage of an artery or vein), based on pathological, imaging, or other objective (clinical) evidence of cerebral, spinal cord, or retinal focal ischemic injury based on symptoms persisting ≥ 24 hours or until death, or until other etiologies have been excluded.

Minor Stroke: A minor ischemic stroke (also sometimes referred to as mild, or non-disabling stroke) refers to a brain infarct that is typically small and associated with a mild severity of clinical deficits or disability and may not require hospitalization.

Transient Ischemic Attack (TIA): Transient ischemic attack (often called a 'mini-stroke') is a clinical diagnosis that refers to a brief episode of neurological dysfunction caused by focal brain, spinal cord, or retinal ischemia, with clinical symptoms, and without imaging evidence of infarction. Transient ischemic attack and minor acute ischemic stroke fall along a continuum. Transient ischemic attack symptoms fully resolve within 24 hours (usually within one hour). If any symptoms persist beyond 24 hours, then this would be considered a stroke, not a transient ischemic attack. A transient ischemic attack event is significant as it can be a warning of a future stroke event. Patients and healthcare professionals should respond to an acute transient ischemic attack as a potential emergency.