PURPOSE AND INTENT
To enhance the quality of care provided to persons with stroke and their families within the WRHA, the following guidelines have been adopted from the Canadian Stroke Strategy/ Canadian Best Practice Recommendations for Stroke Care (2012) and incorporated to provide evidence informed clinical practice and direction for the interprofessional team(s) with performing assessments and managing the care of the person with stroke admitted to the acute care setting.

1. PRACTICE OUTCOME
1.1. The clinical practice guideline promotes assessment and care management based on best available evidence and is intended to reduce practice variations and close the gaps between evidence and practice.
1.2. The use of these clinical practice guidelines will improve patient care outcomes and promote the efficient use of resources in the WRHA.

2. BACKGROUND
In Canada, stroke and other cerebrovascular diseases are the 3rd leading cause of death and the leading cause of adult disability resulting in admission to long term care facilities (Canadian Best Stroke Practice Recommendations, 2010).

The focus of care for persons with stroke changes throughout the inpatient stay. Screening and/or assessments in the first 48 hours are conducted to assess and prevent stroke progression, recurrent stroke and the development of common post-stroke issues, while at the same time ensuring early mobilization and rehabilitation. Initial assessments are completed and management plans developed by the interprofessional team including transition (discharge) planning.

Transition planning needs to begin early. A smooth transition from inpatient to community and outpatient care is a critical element to ensure stroke survivors and their families are well supported once they leave hospital. Transition plans shall be comprehensive and involve the patient and family, any informal caregivers, primary health care providers and other community providers in their development. The patient and family should be provided with any education, training, emotional support and community services specific to the transition they are undergoing.

3. GUIDELINES
The following guidelines incorporate best practice recommendation statements from the Canadian Stroke Strategy/ Canadian Best Practice Recommendations for Stroke Care (2012). Each recommendation in the Canadian Best Practice Recommendations for Stroke Care (2012) was evaluated against several criteria: the strength of the available research evidence to support the recommendation, the degree to which the recommendation drives system change or processes of care delivery, and the overall validity and relevance as a core recommendation for stroke care across the continuum. The definitions of levels of evidence used in these guidelines are described below:

- Level of Evidence A- Strong recommendation. Data derived from multiple randomized control trials or meta-analyses of randomized controlled trials. Desirable effects clearly outweigh undesirable effects, or vice versa.
4. COMPONENTS OF ACUTE INPATIENT CARE.

Assessment and Management
Venous thromboembolism risk, temperature, mobilization, cognition, pain, depression, continence, swallowing, nutrition, and oral care should be addressed in all hospitalized persons with stroke. Hospitalized persons with stroke are also at high risk for falls and the development of pressure ulcers.

Appropriate management strategies should be implemented for areas of concern identified during screening and assessments. Transition planning should be included as part of the initial assessment and ongoing care of patients with acute stroke. Education about stroke including available supports, and an assessment of patient/families readiness to learn should also be part of the ongoing care received.

4.1 Patients admitted to an inpatient unit with acute stroke should have an initial assessment by rehabilitation professionals (Physiotherapy, Occupational Therapy, Speech Language Pathology) as soon as possible after admission (Evidence Level A), preferably within the first 24 to 48 hours (Evidence Level C).

- The initial assessment should include assessment of patient function; safety and risk; physical readiness and ability to learn and participate; and transition planning.
- Unit teams should conduct at least one formal interprofessional meeting per week to discuss progress and problems, rehabilitation goals and discharge arrangements (Evidence Level B).
- Clinicians should use standardized, valid assessment tools to evaluate the patient’s stroke-related impairments and functional status (Evidence Level B).
- Patients should receive the intensity and duration of clinically relevant therapy defined in their individualized rehabilitation plan and appropriate to their needs and tolerance levels (Evidence Level A). Section 5 for details on the provision of stroke rehabilitation throughout the continuum of care http://www.strokebestpractices.ca/.
- The team should promote the practice of skills gained in therapy into the patient’s daily routine in a consistent manner (Evidence Level A). Refer to the Canadian Best Practice Recommendations for Stroke Care (2012) Section 5 for details on the provision of stroke rehabilitation throughout the continuum of care http://www.strokebestpractices.ca/.
4.2 Neurological Assessment – A neurological assessment should be conducted on admission, and when there is a change in patient status, using a validated tool that measures stroke impairments (such as the Canadian Neurological Scale, National Institute of Health Stroke Scale, etc). The patient’s neurological status should be monitored and assessed on an ongoing basis and should include at minimum:

- Level of consciousness;
- Orientation;
- Pupillary response;
- Motor response (strength, movement, pronator drift, balance and coordination);
- Speech and comprehension;
- Vital signs (T, HR, RR, BP, Sp02);
- Glucose;

4.3 Temperature, Blood Pressure and Blood Glucose Management

Temperature- 
- Should be monitored as part of routine vital sign assessments (every 4 hours for first 48 hours and then as per unit routine or based on clinical judgment) (Evidence Level C).
- For temperatures more than 37.5°C, increase monitoring frequency, initiate temperature reducing measures, investigate possible infection such as pneumonia or urinary tract infection (Evidence Level C), initiate antipyretic and an antimicrobial therapy as required (Evidence Level B).

Blood Pressure- 
- Should be monitored as part of routine vital signs assessment.
- Hypertension is a common occurrence with stroke and is often transient.
- Pharmacological agents and routes of administration should be chosen to avoid precipitous falls in blood pressure. The following recommendation reflect current evidence:
  - The treatment of hypertension in the acute ischemic stroke patient not eligible for thrombolytic therapy should not be routinely undertaken
  - Extreme blood pressure elevation (Systolic Blood Pressure (SBP) > 220 and Diastolic Blood Pressure (DBP) > 120) should be treated and only reduce by 15-25 %;
  - Ischemic stroke patients that are eligible or have received thrombolytic therapy should aim to have a blood pressure of SBP < 185 and DBP < 110 in order to reduce the risk for secondary intracranial hemorrhage
  - In the setting of hemorrhagic stroke blood pressure should be treated to achieve < 140/90 or in diabetic patients < 130/90

Glucose Management- 
- All patients with stroke should have their blood glucose checked on arrival.
- If first random glucose is elevated > 10 mmol/ L repeat and if elevated, the use of anti-hyperglycemic agents should be considered by the team.

4.4 Acute Aspirin (Antiplatelet) Therapy – After brain imaging has excluded intracranial hemorrhage all acute stroke patients should be given at least 160 mg of acetylsalicylic acid (ASA) immediately as a one time loading dose (Evidence Level A).
- In patients treated with rt-PA, ASA should be delayed until after the 24-hour post-thrombolysis scan has excluded intracranial hemorrhage. (Evidence Level B).
- ASA (80-325 mg daily) should then be continued indefinitely or until an alternative antithrombotic regime is started (Evidence Level A).
- In patients with dysphagia, ASA may be given by enteral tube or by rectal suppository. (Evidence Level A).
- In patients already on ASA prior to ischemic stroke or transient ischemic attack, clopidigrel may be considered as an alternative (Evidence Level B). If rapid action is required then a loading dose of 300 mg of clopidigrel could be considered, followed by a maintenance dose of 75mg once a day
- Refer to Canadian Best Practice Guidelines (2012) Section 2.5 and 2.6 for additional information and details on antiplatelet therapy at [http://www.strokebestpractices.ca/](http://www.strokebestpractices.ca/)

4.5 Venous thromboembolism (VTE) prophylaxis
- All persons with stroke should be assessed for their risk of developing venous thromboembolism. High risk patients include patients with inability to move one or both lower limbs and those patients unable to mobilize independently; a previous history of venous thromboembolism; dehydration; and comorbidities such as malignant disease.
- Early mobilization and adequate hydration should be encouraged for all persons with acute stroke to help prevent venous thromboembolism (Evidence Level C).
- Patients who are identified as high risk for venous thromboembolism should be started on venous thromboembolism prophylaxis immediately (Evidence Level A):
  - Low molecular weight heparin (with appropriate prophylactic doses per agent) should be considered for patients with acute ischemic stroke at high risk of VTE or unfractionated heparin for patients with renal failure (Evidence Level A);
  - The use of anti-embolic stockings alone for post-stroke venous thrombo-embolism prophylaxis is not recommended (Evidence Level A).
  - There is insufficient evidence on the safety and efficacy of anticoagulation deep vein thrombosis prophylaxis after intracerebral hemorrhage. Antithrombotic and anticoagulant use should be avoided for at least 48 hours after onset (Evidence Level C).
- In addition to secondary stroke prevention, antiplatelet therapy should be used for people with ischemic stroke to prevent VTE (Evidence Level A). Refer to Refer to Canadian Best Practice Guidelines (2012) Section 2.5 and 2.6 for additional information and details on antiplatelet therapy at [http://www.strokebestpractices.ca/](http://www.strokebestpractices.ca/)

4.6 Language and Cognition
All patients admitted to acute care with stroke are considered at high risk for cognitive and perceptual impairment and should be screened for impairment using a validated screening tool (Evidence Level B).

Screening should occur at various transition points along the continuum of care, including upon admission to acute care, particularly if any evidence of delirium is noted, and before discharge to the community or prior to transfer to alternate setting of care. Refer to WRHA Delirium Protocol: [link]

Screening to investigate a person’s cognitive status should address arousal, alertness, attention, orientation, memory, language, agnosia, visual-spatial/perceptual function, praxis, executive functions such as insight, judgment, social cognition, problem-solving, abstract reasoning, initiation, planning and organization (Evidence Level C).

Additional assessment by a Speech Language Pathologist will be required when communication and language is impaired to investigate language modalities.

The Montreal Cognitive Assessment is considered more sensitive to cognitive impairment than the Mini Mental Status Exam in patients with vascular cognitive impairment. Its use is recommended when vascular cognitive impairment is suspected (Evidence Level B).

Post-stroke patients who demonstrate cognitive impairments in the screening process should be referred and followed by a healthcare professional with specific expertise in this area, such as occupational therapist for additional cognitive, perceptual and functional assessments, and a speech-language pathologist for cognitive-communication assessments; and where necessary, to a neuropsychologist for neuropsychological assessments to further guide management (Evidence Level B).

Additional assessments should be undertaken to determine the severity of impairment and impact of deficits on function and safety of activities of daily living and instrumental activities of daily living, and to implement appropriate remedial, compensatory and/or adaptive intervention strategies (Evidence Level B).

A team approach is recommended and health care professionals may include and occupational therapist, speech-language pathologist, neuropsychologist, psychiatrist, neurologist, geriatrician and social worker (Evidence Level C).

Patients with evidence of vascular cognitive impairment should be referred to a physician with expertise in vascular cognitive impairment for further assessment and recommendations regarding pharmacotherapy (Evidence Level C).

4.7 Mobilization

Patients with acute stroke should be mobilized as early and as frequently as possible (Evidence Level B), and preferably within 24 hours of stroke symptom onset, unless contraindicated (Evidence Level C). Mobilization is defined as the process of getting a patient to move in the bed, sit up, stand and eventually walk. Ongoing assessments include:

- Ability in activities of daily living, level of independence and safety. This assessment should be completed and reassessed regularly;
- Falls Risk. Based on the risk assessment findings, an individualized falls prevention plan should be implemented for each patient (Evidence Level B). Please refer to WHRA Falls Prevention and Management Guidelines for Acute Care Facilities: [link]
• Mobility, Transfers, Repositioning and Handling: Assessment of the appropriate moving, handling and positioning of the patient with stroke with respect to the patient’s abilities and need for assistance. Please refer to WRHA Safe Patient Handling & Movement procedures - http://www/wrha.mb.ca/professionals/safety/files/Manual.pdf

• Depending on patient condition, BP, 02 saturation and heart rate should be monitored as appropriate before and during mobilization.

NB- Precautions to Mobilization
• Medical Instability;
• Documented decision that the patient is palliative (e.g. those with devastating stroke);
• Persons who have received rt-PA until cleared by the physician to mobilize.

NB- Shoulder Pain (Assessment and Prevention): Incidence of shoulder pain following stroke is high, with as many as 72% of adult stroke patients reporting at least one episode of shoulder pain within the first year after stroke. Careful positioning and handling of affected upper extremity (ties) must be incorporated in mobilization. The presence of pain and any exacerbating factors should be indentified early and treated appropriately (Evidence Level C)

• Joint protection strategies include:
  o Positioning and supporting the limb to minimize pain (Evidence Level B);
  o Protection and support for the limb to minimize pain during functional mobility tasks using slings, pocket, or by therapist and during wheelchair use by using hemitry or are troughs (Evidence Level C);
  o Teaching patient to respect the pain (Evidence Level C);
  o The shoulder should not be passively moved beyond 90 degrees of flexion and abduction unless the scapula is upwardly rotated and the humerous is laterally rotated (Evidence Level A);
  o Educate staff and caregivers about correct handing of hemiplegic arm (Evidence Level A). Refer to Canadian Best Practice Guidelines Section 5.4.3 for additional information regarding assessment, prevention and management of shoulder pain http://www.strokebestpractices.ca/

4.8 Continence
• All patients with stroke should be assessed for urinary incontinence and retention (with or without overflow), fecal incontinence and constipation (time and frequency) (Evidence Level C).
• The use of portable ultrasound is recommended as the preferred noninvasive painless method for assessing post-void residual and eliminates the risk of introducing urinary infection or causing urethral trauma by catheterization (Evidence Level C).
• Possible contributing factors surrounding continence management should be assessed, including medication, nutrition, diet, mobility, activity, cognition, environment and communication (Evidence Level C). This should include assessing the stroke patient for urinary tract infections to determine a possible transient cause of urinary retention (Evidence Level C).
• Appropriate intermittent catherization schedules should be established based on amount of post void residual (Evidence Level B).
• The use of indwelling catheters should be avoided due to the risk of urinary tract infection. If used, indwelling catheters should be assessed daily and removed as soon as possible. (Evidence Level A). Excellent pericare and infection prevention strategies should be implemented to minimize risk of infections (Evidence Level C).

• Patients with stroke with urinary incontinence should be assessed by trained personnel using a structured functional assessment (Evidence Level B).

• A bladder training program should be implemented in patients who are incontinent of urine (Evidence Level C), including timed and prompted toileting on a consistent schedule (Evidence Level B).

• A bowel management program should be implemented in patients with stroke with persistent constipation or bowel incontinence (Evidence Level A).

4.9 Dysphagia Screen and Assessment

• Patients with stroke should have their swallowing ability screened using a simple, valid, reliable bedside testing protocol as part of their initial assessment, and before initiating oral intake of medications, fluids or food (Evidence Level B).
  o Patients who are not alert within the first 24 hours should be monitored closely and dysphagia screening performed when clinically appropriate (Evidence Level C).
  o Patients with stroke presenting with features indicating dysphagia or pulmonary aspiration should receive a full clinical assessment of their swallowing ability by a speech language pathologist or appropriately trained specialist who should advise on safety of swallowing ability and consistency of diet and fluids (Evidence Level A).
  o Patients who are at risk of malnutrition, including those with dysphagia should be referred to a dietitian for assessment and ongoing management. Assessment of nutritional status should include the use of validated nutrition assessment tools or measures (Evidence Level C).

4.10 Nutrition

• The nutritional and hydration status of stroke patients should be screened within the first 48 hours of admission using a valid screening tool (Evidence Level B).

• Results from the screening process should guide appropriate referral to a dietitian for further assessment and the need for ongoing management of nutritional and hydration status (Evidence Level C).

• Patients with stroke with suspected nutritional and/or hydration deficits, including dysphagia should be referred to a dietitian for:
  o Recommendations to meet nutrient and fluid needs orally while supporting alterations in food texture and fluid consistency based on the assessment by a clinical dietician and/ or speech language pathologist and /or other trained professional (Evidence Level C);
  o Consideration of enteral nutrition support (tube feeding) within 7 days of admission for patients who are unable to meet their nutrient and fluid requirements orally. This decision should be made collaboratively with the interprofessional team, the patient, and their caregivers and families (Evidence Level B).

4.11 Oral Care
• All patients with stroke should have an oral/dental assessment, which includes screening for obvious signs of dental disease, level of oral care and appliances, upon or soon after admission (Evidence Level C)

• For patients wearing a full or partial denture it must be determined if they have the neuromotor skills to safely wear and use the appliance(s) (Evidence Level C)

• An oral care protocol should be established and include:
  o Frequency (twice per day or more – minimum);
  o Types of oral care products;
  o Strategies for patients with dysphagia;
  o Consultation with dentistry, dental hygienist, occupational therapy, and/or speech language pathology should there be concerns implementing the protocol (Evidence Level C);
  o Consultation with dentistry should there be concerns with oral health and/or appliances (Evidence Level B).

4.12 Skin and Wound Care
• All stroke patients should have an assessment of skin integrity and risk assessment for developing pressure ulcers/wounds on admission and when a change is noted

• Based on the risk assessment/ findings, an individual care plan should be implemented for each patient. Please refer to WRHA Wound Care Recommendations (http://www.wrha.mb.ca/professionals/woundcare/index.php )

4.13 Identification and Management of Post-Stroke Depression
• All patients with stroke should be considered to be at risk for depression. During the first assessment, the clinical team should determine whether the patient has a history of depression or risk factors for depression (Evidence Level B).

• All patients with stroke should be screened at all transition points along the continuum of care. Transition points in acute care may include upon admission to acute care, particularly if any evidence of depression or mood change is noted, and before discharge to the community or prior to transfer to alternate setting of care.

• Patients should be screened for depression following a stroke event using a standardized tool (e.g. Hospital Anxiety Depression Scale, Beck Depression Inventory or the Geriatric Depression Scale). Screening should be completed by trained professionals such as Nursing, Occupational Therapy and Social Work.

• Patients should be given information and advice about the impact of stroke, and the opportunity to talk about the impact on their lives (Evidence Level B).

• Patients and their caregivers should have their psychosocial and support needs reviewed on a regular basis as part of long-term stroke management (Evidence Level A) including as part of the discharge plan from acute care.

• Patients identified at risk for depression should be referred to the health care professional with expertise in diagnosis and management of depression (Evidence Level B).

5. TRANSITION PLANNING
Transition planning should be initiated as soon as possible after patient admission to hospital.
- A process should be established to ensure involvement of patients and caregivers in the development of the care plan, management and transition (discharge) planning.
- Transition planning discussions should be ongoing throughout hospitalization to support a smooth transition from acute care.
- Information about discharge issues and possible patient needs following discharge should be provided to patients and caregivers soon after admission.
- Discharge activities should include patient, family and team meetings, care plans, consults to other services, pre-discharge assessment, caregiver training, post discharge follow-up.
- Any discharge information should be clearly documented in the appropriate format (e.g. Discharge Information Sheet, WRHA Transfer form, etc) ensuring transfer of information to the next service provider (e.g. Primary Health Care Provider) in order to promote smooth transition of care throughout the continuum of care.
- The transition plan should include follow-up in the community by the most appropriate community healthcare provider according to client’s needs, progress and current goals (e.g.: Primary Health Care Provider, Home Care Program Early Supported Discharge Services, Day Hospital and/or Outpatient physiotherapy, occupational therapy, speech language pathology services, and/or Home Care Program support services, etc.) whenever indicated. Refer to Canadian Best Practice Recommendations for Stroke Care (2010) Section 5.6, 6.5, 6.6 http://www.strokebestpractices.ca/ for more details on managing transitions of care following a stroke.

6. **ADVANCE CARE PLANNING**
Patients surviving a stroke and their families should be approached by the health care team to participate in advance care planning (ACP).
Please refer to WRHA Policy on Advance Care Planning (ACP) Goals of Care http://www.wrha.mb.ca/professionals/acp/

7. **PALLIATIVE AND END-OF-LIFE CARE**
The palliative approach should be used with those experiencing significant morbidity or to optimize end-of-life care for dying stroke patients and their families. Communication with patients and their families should provide, on an ongoing basis, information and counseling regarding diagnosis, prognosis, and symptom management
- Palliative care specialists should be involved in the care of patients with difficult to control symptoms, complex or conflicted end-of-life decision making, or complex psycho-social family issues (Evidence Level C).
- Patients and the interprofessional team should have access to palliative care specialists for consultation on palliative patients. Please refer to WRHA Palliative Care Program http://www.wrha.mb.ca/prog/palliative/index.php or contact- 204-237-2400

8. **SUPPORTING PATIENTS, FAMILIES AND CAREGIVERS**
- Health care practitioners in all practice settings should assess the patient and their caregivers’ learning needs, abilities, learning preferences and readiness to learn. This assessment should be ongoing as the patient moves through the continuum of care to determine their needs and as education is provided
9. DOCUMENTATION
Health care professionals should document comprehensive information regarding screening and/or assessment at the time of assessment and reassessment of stroke clients, and avoid duplicating information previously documented.

10. RESOURCES
A. Manitoba Stroke Strategy Website
   - Informative link available to healthcare providers and the public that highlights what Manitoba is doing to advance stroke care. The site provides stroke information for the public, resources to reduce risk of stroke, resources to help after stroke, information for healthcare providers, links to other provincial strategies, and upcoming stroke conferences and workshops.

B. Links to Evidence-Based Clinical Resources
   - Canadian Best Practice Recommendations for Stroke Care, 2010
     - [http://www.strokebestpractices.ca/](http://www.strokebestpractices.ca/)
   - StrokEngine for Clinicians and Families
     - [http://strokengine.ca/](http://strokengine.ca/)
   - StrokEngine Assess (evidence related to outcome measures)
   - Evidence Based Review of Stroke Rehabilitation (EBRSR)
     - View different sections identified on top right corner of home page including evidence reviews, appendices, educational modules, and resources

C. Educational Materials for Clinicians to use with Clients and Caregivers
     - Published by Heart and Stroke Foundation of Ontario, 2010
     - [http://www.heartandstroke.on.ca/att/cf%7B33C6FA68-B56B-4760-ABC6-D85B2D02EE71%7D/TipsandTools_ENG.complete.pdf](http://www.heartandstroke.on.ca/att/cf%7B33C6FA68-B56B-4760-ABC6-D85B2D02EE71%7D/TipsandTools_ENG.complete.pdf)
   - Let’s Talk About Stroke
     - [http://www.heartandstroke.com/site/c.ikIQLeMWJtE/b.3882223/k.3FC6/Stroke_Lets_Talk_about_Stroke.htm](http://www.heartandstroke.com/site/c.ikIQLeMWJtE/b.3882223/k.3FC6/Stroke_Lets_Talk_about_Stroke.htm)
   - Living with Stroke, Educational Support Group
11. REFERENCES:


Practice Guideline: Inpatient Care for Patients Following an Acute Stroke

Approved By:  
Pages: 12 of 12

Approval Date:  
Supercedes: N/A


(5) RNAO Nursing Best Practice Guidelines Program. Stroke Assessment Across the Continuum of Care Guideline Supplement. 2011

12. PRIMARY AUTHOR (S)

Mary Anne Lynch  
Krista Williams  
Marlene Stern  
Susan Alcock  
Louise Nichol

Reviewed by  
Dr. Allan Jackson  
Kathleen Klaasen