Taking Action Towards Optimal Stroke Care

Acute Nursing Care and Preventing Complications

Acute Stroke Best Practices Workshop
"Advancing Best Practices in Acute Stroke Care"

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Learning Objectives

- Identify the goals of acute stroke unit care
- Review the components of acute inpatient care based on Canadian Stroke Best Practice Recommendations
- Review recommendations to reduce complications following onset of acute stroke
- Increase your knowledge of evidence based practice in acute stroke care

Stroke in Canada

- Stroke is the third leading cause of death in Canada
  - Estimated 62,000 strokes in Canada each year
  - One stroke/TIA every 9 minutes
- One in two Canadians report having a close friend or family member who is a stroke survivor
- One in five Canadians report being directly involved in the support and care of a stroke survivor
- There are currently 1.6 million Canadians living with the effects of stoke

Source: Heart and Stroke Foundation Stroke Report 2015

Stroke in Canada

It is estimated that for each symptomatic stroke, there are nine **SILENT** strokes that result in subtle changes in cognitive function and processes.

Source: Heart and Stroke Foundation Stroke Report 2015

Stroke in Canada

- Nine Canadians in 10 have at least one risk factor for stroke
- Four in 10 have 3 or more!
- Canadians can add as many as 10 years of health by eliminating what 5 risk factors?
  - Smoking
  - Unhealthy alcohol consumption
  - Physical Inactivity
  - Poor diet
  - High stress

Source: Heart and Stroke Foundation Stroke Report 2015

Canadian Stroke Best Practice Recommendations (CSBPR)

- Provide up to date evidence based guidelines for the management of stroke
- Promote optimal recovery for patients, families and caregivers.
- Updated and released every 2-3 years
- Most recently updated in 2015
- Published in the International Journal of Stroke, 2016

Highlights of CSBPR (2015) for Acute Inpatient Stroke Care

- Further emphasis on importance of stroke unit care
- Improving response time to acute stroke in already hospitalized patients
- Reducing post stroke complications
- Incorporating findings from CLOT 3 trial into VTE prophylaxis
- Early mobilization findings from AVERT trial
- Enhanced advance care planning and palliative care content

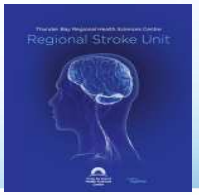
What Is Acute Stroke Care?

- Refers to “key interventions involved in the assessment, treatment or management, and early recovery in the first days after stroke onset”
- Occurs within an inpatient hospital setting
- First days to weeks of inpatient treatment transitioning to inpatient rehabilitation, community based rehab services, continuing care or palliative care
- Usually considered to have ended at the time of discharge from acute inpatient care or by 30 days of hospital admission

Canadian Stroke Best Practice Recommendations,2015

What is an Acute Stroke Unit?

- "A specialized, geographically defined hospital unit dedicated to the management of stroke patients"
- April 2015 saw the opening of the Regional Stroke Unit (RSU) at Thunder Bay Regional Health Sciences Centre
- Twelve bed specialized unit located within the footprint of 2C
- Serves the region of Northwestern Ontario
- "Always Open to Stroke"



Acute Stroke Unit Care

- Characterized by an experienced interprofessional stroke team:
  - Physicians
  - Nurses
  - Physiotherapists
  - Occupational Therapists
  - Speech and Language Pathologists
  - Pharmacists
  - Social Workers
  - Dietitians
  - Discharge Planners

Stroke Unit Interprofessional Teams:

- Are composed of staff members who have an interest in stroke care
- Conduct routine team meetings
- Provide continuing education/training opportunities
- Promote early engagement in the rehabilitation process

Canadian Stroke Best Practice Guidelines, 2015

Stroke Unit Care

- Allows rapid transfer of stroke patients from the Emergency Department to a specialized stroke unit as soon as possible after hospital arrival
  - Ideally within the first 6 hours
- Patients should be assessed by the interprofessional team within 48 hours of admission to the hospital
- Standardized, validated assessment tools are used to evaluate stroke related impairments and functional status
- Assessment components should include dysphagia, mood and cognition, mobility, functional assessment, temperature, nutrition, bowel and bladder function, skin breakdown, discharge planning, prevention therapies, venous thromboembolism prophylaxis.

Canadian Stroke Best Practice Recommendations,2015

Why Is This Important?

- **Patients cared for on a stroke unit:**
  - are more likely to return to work/home
  - are less likely to die
  - are mobilized earlier
  - have earlier access to rehabilitation
  - are less likely to suffer complications such as pneumonia or pulmonary embolism
  - are more likely to have better quality of life at 5 years
  - cost the system less by requiring a shorter in-patient stay

Lindsay and Glasser, 2015

What about those who experience a stroke while already in the hospital?

- **Estimates of persons who experience a stroke while already hospitalized range from 7% to 14%**
- **Many have pre existing stroke risk factors such as hypertension, diabetes, cardiac disease and dyslipidemia**
- **Often occur following cardiac and orthopedic procedures and usually within seven days of surgery**

Did You Know?

- **Evidence suggests that hospital inpatients who experience a stroke compared to persons who experience stroke in the community:**
  - have more severe strokes
  - have worse outcomes
  - do not receive care in a timely fashion

Canadian Stroke Best Practice Recommendations,2015

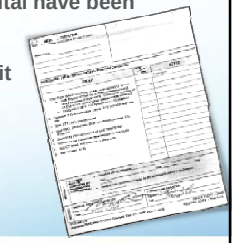
What Needs to Happen?

- **findings emphasize the need for ALL healthcare providers to be educated in symptom recognition.**

Canadian Stroke Best Practice Recommendations,2

CODE STROKE at TBRHSC

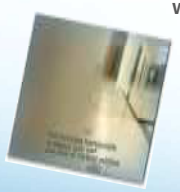
- protocols for rapid recognition and management of patients who experience stroke while in hospital have been developed
- located in the blue stroke folders on every unit
- is initiated by the nurse



CODE STROKE

Patient Criteria:

- unilateral arm and/or leg weakness
- sudden slurred speech, difficulty expressing words, word finding or difficulty understanding
- unilateral facial droop
- acute visual field loss



CODE STROKE:

CONTRAINDICATIONS

- patient is terminally ill
- patient is palliative
- patient is unconscious
- time last seen normal is greater than 4.0 hours

What Happens?

The Nurse will assess the patient and determine that the situation meets the criteria for "Code Stroke"

Stroke : Time lost is brain lost

The Nurse will place a STAT call to switchboard by dialing "55" and initiating CODE STROKE providing location and room number

The Nurse or delegate will follow and complete the "Code Stroke: Medical Directive (PCS-MD-25) and enter orders into Meditech promptly under the acute stroke physician on-call.

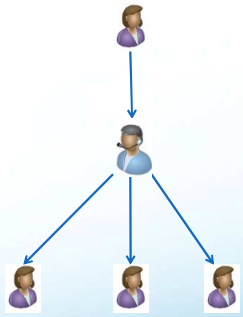
Note: The Nurse will inform the MRP of the change in patient's condition and that Code Stroke was activated

What Next?

Switchboard will page overhead "Your attention please - Code Stroke – Location 3C Neuro – Room Number 275-2"

Switchboard will page the Acute Stroke Physician on-call and Clinical Stroke Nurse.

Switchboard will page the CT Technologist.
*Another Nurse should stay by the phone when CT and the Acute Stroke Physician calls back



What Is the Nurse's Role?

- **Assess your patient: ABCs, vital signs, CNSS**
- **Make sure Code Stroke orders are entered**
  - Blood work drawn prior to leaving for CT scan
- **Speak with Acute Stroke Physician regarding deficits and onset symptoms**
- **Transport your patient to CT when advised by technician**
- **If patient is to receive tPA, transport to ICU**
- **If no tPA is to be given, return to home unit with your patient**

Next Step for Your Patient

Canadian Stroke Best Practice Recommendations (2015) state:

"Hospital inpatients who have a diagnosis of a new stroke confirmed, should be assessed in a timely fashion and receive appropriate access to acute inpatient stroke care dependent upon their level of stroke-related impairment and other presenting medical/surgical conditions."

- Some TBRHSC patients will be transferred to the Regional Stroke Unit (RSU) under the Stroke Unit MRP while others may remain on their original units under the care of their admitting physicians.

Inpatient Stroke Management and Prevention of Complications

- **A few facts to ponder:**
  - Acute stroke is responsible for prolonged lengths of stay compared to other causes of hospitalization
  - The burden on inpatient resources increases when complications arise
  - In 2014, median length of stay for an acute stroke patient was six days with a range of 3 to 15 days (longest length of stay in Canadian hospitals)
  - Acute stroke patients are at risk for complications during this early phase of recovery

Canadian Stroke Best Practice Recommendations,2

What are the Priorities?

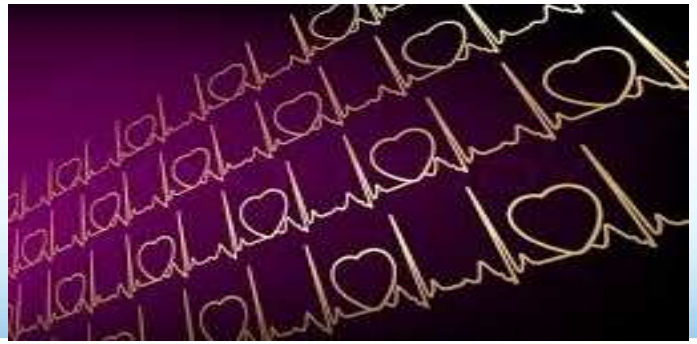
- Management of stroke sequelae to optimize recovery
- Prevention of post-stroke complications that may interfere with the recovery process
- Prevention of stroke reoccurrence
- Provide palliative care when required
- Educate and support patients and families

Canadian Stroke Best Practice Recommendations,2015

2015 CSBPR for Acute Care

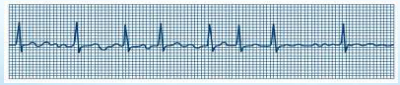
- **Include recommendations for:**
  - Cardiovascular Investigations
  - Venous Thromboembolism Prophylaxis
  - Temperature Management
  - Continence
  - Nutrition and Dysphagia
  - Oral care
  - Seizure Management
  - Palliative and End of Life Care

Cardiovascular Investigations



Stroke and Atrial Fibrillation

- Atrial Fibrillation (AF) is a well established risk factor for embolic ischemic stroke
- Investigations at present include serial ECGs or 24-48 hour holter monitoring or telemetry
- Difficulty with short term ECG monitoring for detecting AF is rarity of episodes (paroxysmal AF)

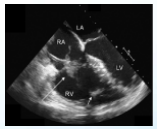


Larsen et al., Journal of American College of Cardiology, June 2015

2015 Guidelines

- **New recommendations based on EMBRACE (2014) and CRYSTAL AF (2014) trials which looked at the relationship between AF and cryptogenic stroke**

- **in cases were initial monitoring does not show AF but a cardioembolic mechanism is suspected:**
  - Loop recorder (up to 30 days duration)
    - looking for paroxysmal AF
  - Echocardiography
    - 2D or TEE
      - for patients with suspected embolic stroke and normal neurovascular imaging
      - especially relevant for younger adults with unknown etiology



CLOTS 3 Trial

- **Clots in Legs Or sTockings after Stroke**

- looked at the effectiveness of intermittent pneumatic compression (IPC) in reduction of risk of deep vein thrombosis in patients who have had a stock
- published in 2013 in LANCET
- 2876 patients in 94 centres in UK
- Conclusion: IPC is an effective method of reducing the risk of DVT and possibly improving survival in a wide variety of patients who are immobile after stroke.

Lancet, Vol. 382, July 2013

Venous Thromboembolism Prophylaxis

- **All stroke patients should be assessed for their risk of developing venous thromboembolism**
  - Either DVT or pulmonary embolism (PE)

  - High risk patients include those:
    - unable to move one or both lower limbs
    - unable to mobilize independently
    - with previous history of VTE
    - with dehydration
    - with comorbidities such as cancer

Canadian Stroke Best Practice Recommendations,2

2015 Recommendations

- Patients at high risk of VTE should be started on thigh high IPC devices or pharmacological prophylaxis immediately.
- What would be a contraindication of using pharmacological agents?
  - Systemic or intracranial hemorrhage

Canadian Stroke Best Practice Recommendations,2015

IPC Guidelines

- Should be applied as soon as possible and within the first 24 hours after admission
  - discontinued when pt is ambulating independently, at discharge from hospital, if patient develops adverse effects or by day 30.
- Assess skin integrity daily
- Consult wound care specialist if skin breakdown begins
- If IPC are considered after the first 24 hours of admission, venous dopplers of the legs should be considered.

Canadian Stroke Best Practice Recommendations, 2015

Pharmacological Therapy

- Low-molecular weight heparin should be considered for patients with acute ischemic stroke with high risk of VTE
- Unfractionated heparin should be used for renal patients
- Stroke patients admitted to hospital and remain immobile for longer than 30 days should receive ongoing VTE prophylaxis

Canadian Stroke Best Practice Recommendations,20

VTE Prophylaxis

- Use of anti-embolism stockings alone is not recommended
- Early mobilization and adequate hydration should be encouraged
- Some evidence regarding the safety and efficacy of anticoagulant therapy for DVT prophylaxis after intracerebral hemorrhage (ICH)
  - Antiplatelet agents and anticoagulants should be avoided for at least 48 hours after onset
- Patients with ICH may be treated after 48 hours after careful risk assessment and repeat brain imaging showing stability of hematoma

Canadian Stroke Best Practice Recommendations,2015

Temperature Management

Temperature Management

- **Temperature Management and Nursing Care of the Ischemic Patient with Ischemic Stroke (published in Stroke June, 2015)**
  - Body temperature is an important predictor of clinical outcome after stroke
  - Evidence suggests that fever is associated with worse outcomes, higher mortality rates, disability, loss of function and longer hospital stays
  - Targeted temperature management is being explored as a means of neuroprotection

Food for Thought

- **Fever in the first 24 hours of ischemic stroke onset is associated with <u>almost twice</u> the risk of short term mortality**
- **A decrease of 1 C corresponds to <u>almost doubling</u> the likelihood of a good recovery**

Lakhan and Pamploma, 2012

2015 Recommendations

- **temperature should be monitored every 4 hours for the first 48 hours and then as per unit routine or based on clinical judgement**
- **for temperatures greater than 37.5 C:**
  - increase the frequency of monitoring
  - initiate temperature reducing measures
  - investigate possible sources of infection
    - UTI
    - pneumonia
  - Initiate antipyretic and antimicrobial therapy

Canadian Stroke Best Practice Recommendations, 2015

Mobilization

- Mobilization is defined as *"the process of getting a patient to move in the bed, sit up, stand, and eventually walk."*

AVERT trial

- "Efficacy and safety of very early mobilization within 24 hours of stroke onset"
- Randomized controlled trial at 56 acute stroke units in 5 countries
- Very early mobilization group: began within 24 hours of stroke onset, focus was on out of bed activity, three extra sessions daily
- Early mobilization group: began after 24 hours of stroke onset with less intensity and lower frequency

Lancet, Vol. 386, July 2015

AVERT Results

- Results show that very early, intensive out of bed activity has less favourable results than early less intensive mobilization
- Within the first 3 days after stroke, blood pressure, oxygen saturation and heart rate should be monitored before each mobilization
- If, during mobilization, blood pressure drops more than 30mmHg then the mobilization should cease.
- If this drop occurs on 3 consecutive attempts, further medical assessment is needed

Lancet, Vol. 386, July 2015

2015 Recommendations

- All patients admitted with acute stroke should be assessed by rehabilitation professionals within the first 48 hours of admission
- Frequent out-of-bed activity in the first 24 hours is not recommended
- All patients admitted with acute stroke should start to be mobilized between 24 and 48 hours of stroke onset if there are no contraindications

Canadian Stroke Best Practice Recommendations, 2015

Contraindications to Mobilization

- oxygen saturation of less than 92% with supplementation
- resting heart rate of less than 40 or greater than 110 bpm
- temperature greater than 38.5 C
- unstable coronary or other medical condition
- suspected or confirmed lower limb fracture
- systolic blood pressure less than 110 or greater than 220mmHg
- immediate surgery
- clinical decision for palliative treatment

Lancet, Vol. 386, July 2015

Continence

Bladder and Bowel Continence

- 40 - 60% of patients have urinary incontinence at some point
- 25% will continue to have urinary incontinence on discharge
- 15% will have incontinence one year post stroke
- Urinary incontinence within 24 hours of a stroke is a predictor of functional disability
- Bowel incontinence occurs in 30% of stroke patients and 97% regain control within one year

Lindsay and Glasser, 2015

2015 Recommendations

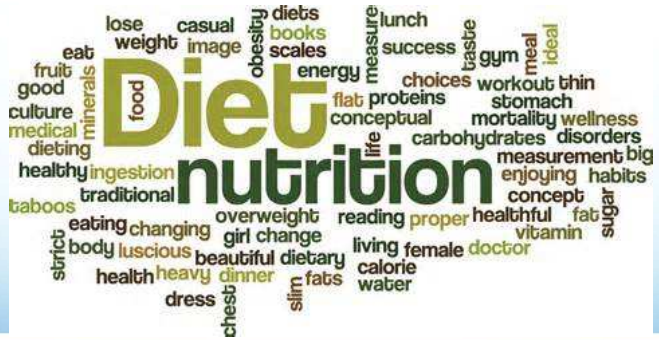
- Use of indwelling catheters should be avoided
  - If used, should be assessed daily and removed as soon as possible
- All stroke patients should be screened for urinary continence and retention, fecal incontinence and constipation
- Post void residuals should be assessed with a bladder scanner
- Catheterization schedules should be established based on post void residuals
- Bladder training programs should be implemented
  - Timed and prompted toileting on a consistent schedule
- Bowel management program should be implemented for stroke patients with persistent constipation or bowel incontinence

Canadian Stroke Best Practice Recommendations, 2015

Here's a Question?

- **Possible contributing factors to incontinence management should be assessed.**
  - **Can you name some of them?**
    - Urinary tract infections
    - Medications
    - Nutrition
    - Diet
    - Mobility
    - Activity
    - Cognition
    - Environment
    - Communication

Nutrition and Dysphagia



Dysphagia

- **Common complication following stroke**
- **has been associated with medical complications such as pneumonia which can lead to death**
- **studies show that pneumonia occurs less frequently in patients screened with a bedside screening tool**

Hinchey et al., 2011

Swallowing Screening

- **Interprofessional team members should be trained to complete initial swallowing screen to ensure all stroke patients are screened in a timely manner**
- **Swallowing, nutritional and hydration status should be screened ideally on the day of admission using validated screening tools**
- **Abnormal results from the swallowing screening should prompt referral to speech-language pathologist for more detailed assessment**

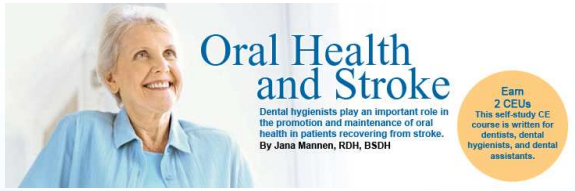
Canadian Stroke Best Practice Recommendation, 2015

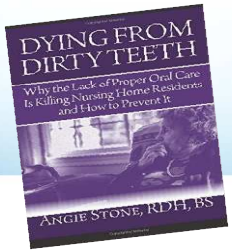
Nutrition

- Malnourishment is a predictor for increased dependency and poor outcome post stroke
- Dysphagia impairs swallowing and thus the ability to take in sufficient calories and protein
- Referral to dietitian to meet nutrient and fluid needs
- Decision to use enteral feedings should be made within first 3 days of admission
  - studies show early nutritional support leads to lower risk of poor outcome and death
- Collaboration with patient and family is imperative

Lindsay and Glasser, 2015

Oral Care





http://www.google.ca/search?q=nurse+mouth+care

Oral Care

- High risk for aspiration pneumonia due to reduced cough sensation, bacterial colonization and the potential to aspirate on their own saliva
- Physical weakness may prevent independent completion of ADLs
- Oral care protocol should be used after meals and at bedtime
- Poor oral hygiene puts patient at risk for nutritional and swallowing complications

Canadian Best Stroke Practice Recommendations,2015

Seizure Management

Post Stroke Seizure Management

- Incidence has been reported to range from 5-15%
- Varies between stroke etiologies, severity and location
- No evidence to support prophylactic use of anticonvulsant medications
  - some evidence to suggest possible harm
  - negative effects on neuronal recovery

Gilad et al., 2012, July 2015

2015 Recommendations

- new onset seizures should be treated using short acting medications
  - Lorazepam IV
- a single seizure occurring within the first 24 hours should not be treated with long term medications
- monitor for recurrent seizure activity
- recurrent seizures should be treated as per treatment recommendations for other neurological conditions
  - anticonvulsant medications
  - EEG

Canadian Stroke Best Practice Recommendations, 2015

Advance Care Planning

2015 Recommendations

- primary goal of advance care planning conversations is to determine the goals of care
- respectful discussion of patient's values and wishes should be balanced with information regarding medically appropriate treatment
- should include discussion of patient's preference and medical appropriateness of therapies such as:
  - Feeding tubes
  - Hydration
  - Admission to ICU
  - Ventilation
  - CPR
  - Place of care

Palliative and End of Life Care

End of Life Patient Characteristics

- **Studies show that characteristics of end of life care patients include:**
  - Diagnosis of stroke
  - Elderly
  - Documented AF
  - Dysphagia on first swallowing screen
  - Higher initial stroke severity
  - Received tPA
  - Left hemispheric strokes
  - Admitted on a weekday

San Luis et al., BMC Palliative Care, 2013

What Families Tell Us

- **High family satisfaction was associated with:**
  - Adequate nursing care
  - Family involvement in decision making
  - Respecting patient dignity
  - Being told when death was imminent
- **Things to work on:**
  - Adequate symptom control
  - Addressing the needs of the family during the final days

Blacquiere et al., Stroke 2013

2015 Recommendations

- **Palliative care approach should be used when there has been a "catastrophic" stroke or a stroke in the setting of pre existing comorbidity**
- **COMMUNICATE with patients, their families and caregivers**
  - Ensure that needs are being met
- **Palliative care specialists should be involved**
  - difficult to control symptoms
  - complex or conflicted end of life decisions
  - complex psycho social family issues

Patient and Family Teaching

Patient and Family Teaching

Health information and education can help to:

- **Prepare your patient for care whether that be ADLs, diagnostic procedures or rehabilitation therapy**
- **Manage his/her condition by knowing what to do both at the hospital and back at home.**
- **Keep patient and family informed about his/her health and care.**
- **Assist your patient to participate and become a full partner in his/her care and a member of the healthcare team.**

Tips for Teaching

- **Use a visual aid**
  - Your Stroke Journey or You've Had A TIA
- **Is this a Stroke?**
  - Explain what a stroke is
    - What types of stroke there are
    - What type of stroke your patient has had
  - Explain what determines the effects of a stroke
    - Area of the brain affected
    - Size of infarction
    - Health status of individual
    - Risk factors

Teaching Tips

- **Why did it happen?**
  - CT scan
  - MRI
  - CTA
  - Echocardiogram
  - Holter monitoring
  - Telemetry
  - AF
- **How to prevent another stroke?**
  - Medications
  - Diet
  - Exercise

Teaching Tips

- **How to prevent complications**
  - Fall prevention
  - Swallowing precautions
  - DVT prophylaxis
- **Other suggested subjects**
  - Members of the stroke team
  - Next steps on the stroke continuum

We finally made it….

In Summary

- **Reviewed evidence based actions from the first days after stroke onset and throughout inpatient care**
  - Period is crucial for patient recovery and prevention of post stroke complications
- **Reviewed the positive impact of organized stroke unit care with interprofessional stroke teams on patient outcomes following stroke**
  - What it is and how it's delivered
- **Reviewed the need for rapid action in acute stroke care**
  - Importance of in-house stroke protocols
  - Transfer of patients from ER within 6 hours to stroke unit

In Summary

- **Reviewed updates on investigations for stroke etiology and reducing complications**
  - Prolonged ECG monitoring
  - Timing of mobilization
  - Using IPC devices for VTE prophylaxis
  - Seizure Management
  - Dysphagia screening
  - Nutrition
- **Reviewed tips for patient and family teaching**

Thank You!

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