Nursing Best Practice for the Stroke Patient

Complication Prevention

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Learning Objectives

• Translate quality improvement opportunities into viable solutions to improve patient outcomes

• Discuss three major areas in which patients experience complications due to the side effects of stroke
  • Falls
  • Venous thromboembolism (VTE)
  • Catheter Associated Urinary Tract Infections (CAUTI)
Stroke

• Leading cause of disability
• Consequences can be physical, cognitive and/or psychological
• Due to deficits, patients are at higher risk for falling, developing a venous thromboembolism, and/or a catheter associated urinary tract infection
Falls after Stroke

- 14-65% of stroke patients fall while in the hospital
- Up to 73% fall in the first six months post discharge
- Stroke patients are four times more likely to sustain a fracture
- Falls can occur at any stage
  - Acute
  - Rehabilitative
  - Chronic
- Fall risk increases related to the severity of the stroke
Attributable Factors

• Stroke-related motor, sensory and visual deficits:
  • Decreased strength/deconditioning
  • Sensory loss
  • Visual/balance deficits
  • Incontinence
  • Hemineglect
  • Inattention

• Impairments prior to stroke
• Repeat fallers

Care should be planned around these factors to minimize the risk of a fall
Preventing falls in these patients can:

- Prevent injury *(ranging from minor to major or death)*
- Improve quality of life
- Decrease fear of falling
- Decrease likelihood of activity restriction
- Overall better patient outcomes
Literature Review

• Limited studies
  • Varying in sample size
  • Studies related to falls are performed at varying time frames post stroke (i.e. one week versus six months)

• Limited evidence on interventions to reduce falls in this population

• Few studies in the acute care setting showed falls to occur during the day in the patient’s room or bathroom/toilet

• Similar was found to be true for inpatient rehabilitation settings
Fall Prevention Post Stroke

• Systematic review/meta-analysis revealed Vitamin D to be effective in reducing fall rates and percentages

• Large majority of published intervention studies examined the effects of supervised exercise but could not directly correlate with fall reduction

• Other methods discussed in the literature
  • Medications to alleviate symptomatology
  • Environmental and/or assistive technology
  • Social environment
  • Sunlight exposure
General Fall Prevention Interventions

- Utilizing a fall risk assessment tool
  - Ongoing assessment for existing and new risk factors
- Exercise to increase balance and strength
- Technology
  - Bed or chair sensors/alarms
  - Video monitoring
  - Wireless connectivity and alerts to staff
- Fall alert identification
- Non-skid socks/slippers/shoes
- Focused rounding
- Proactive toileting
- Maintain a safe environment
- Call bell and belongings within reach
- PT/OT/ST evaluation and treatment
Venous Thromboembolism (VTE)

- VTE is a blood clot that forms, in a vein breaks loose and travels in the blood
  - Results from a combination of hereditary, acquired risk factors, vessel wall damage, venous stasis and increased activation of clotting factors

- VTE includes both deep vein thrombosis (DVT) and pulmonary embolism (PE)
  - DVT is a condition when a blood clot forms in a deep vein of the body
  - PE is a blockage of the main pulmonary artery of the lung or one of its branches by a substance that has travelled from elsewhere in the body through the blood stream

- Preventable cause of death and morbidity in hospitalized patients

- 20-42% of hospitalized stroke patients have been diagnosed with a VTE
Attributable Factors

• Age
• Immobility
• Possible dehydration

• Comorbidities:
  • Malignancies
  • Heart failure
  • Atrial fibrillation
VTE Prevention in Ischemic and Hemorrhagic Stroke Patients

• Evidenced-Based risk assessments should be conducted upon admission to the hospital
• Initiation of prophylaxis in high risk patients
  • Non-pharmacological
    • Early ambulation
    • Elastic compression stockings
    • Intermittent pneumatic compression
  • Pharmacological
    • Antiplatelet agents
    • Anticoagulants
  • Procedural
    • Inferior vena cava filter
**VTE Prevention in Ischemic and Hemorrhagic Stroke Patients**

- Early ambulation
  - May be restricted
  - Poor efficacy in prevention of VTE
- Elastic compression stockings
  - Do not significantly reduce VTE risk
  - Associated with skin breakdown
- Intermittent pneumatic compression
  - Routinely utilized
  - CLOTS 3 trial showed Intermittent Pneumatic Compression (IPC) application to immobile stroke patients is safe and reduces the risk of DVT and its symptomatology
- Pharmacological
  - Increased risk of bleeding complications
- Inferior vena cava filter
  - No clear guideline
  - May be considered to prevent PE in stroke patients with DVT
Stroke VTE Safety Recommendations for Ischemic and Hemorrhagic Stroke Patients

Physician-Patient Alliance for Health & Safety recommends:

• Assess and document risk factor assessment on all stroke and rule out stroke patients

• Mechanical and pharmacological therapy is required for stroke core measures unless documented as contraindicated
  • Ambulation progression
  • Mechanical prophylaxis
    • Intermittent pneumatic compression
    • Venous foot pump
    • Anti-embolism stockings
  • Chemical prophylaxis
    • UFH
    • LMWH

• Reassess and document
  • Prior to any procedure
  • Change in patient’s condition

• Continue appropriate prescribed therapy upon transfer or discharge
Catheter-Associated Urinary Tract Infections (CAUTI)

- CAUTI is the #1 healthcare acquired infection (HAI)
  - Representing as much as 80% of HAIs
  - Leading cause of secondary nosocomial bloodstream infections
- In July 2011, The Joint Commission (TJC) announced a new National Patient Safety Goal (NPSG) for 2012 for CAUTI surveillance
- Identified by the Centers for Medicare and Medicaid Services as a preventable condition this reimbursement will not be received for it’s treatment
CDC defines a CAUTI as a urinary tract infection with:
- an indwelling urinary catheter in place for >2 calendar days on the date of the infection
- one of the following symptoms
  - Fever >100.4
  - Suprapubic tenderness
  - Costovertebral angle pain or tenderness
  - Urine culture with no more than two species of organisms, at least one of which is a bacteria of $\geq 10^5$ CFU/ml

Approximately 75% of hospital acquired UTIs are associated with a urinary catheter

The most important risk factor is prolonged use of urinary catheter
CAUTI in Stroke Patients

• Most frequent complication of stroke
  • 1-24% of patients develop a UTI within the 1 to 4 weeks post stroke

• Extend hospital stay

• Worsen stroke outcomes

• Increase cost of care

There is limited research specific to Foley catheter related UTIs for stroke patients
Attributable Factors

- Double odds of acquiring a urinary tract infection than general medical/surgical patients
- Immunosuppression
  - Brain injury may initially cause both local and systemic inflammation
  - Possible systemic signaling of lymphoid organs
- Increased bladder dysfunction in 29%-58% of patients
  - Urinary incontinence
  - Urinary retention
- Aphasia, cognitive impairment, and severe functional impairment are independently associated with bladder dysfunction
- Increased likelihood of having an indwelling urinary catheter due to:
  - Characteristics of a stroke patient
  - Speech dysfunction and altered mental status alter means of communicating the need to void
  - Limited mobility
CAUTI Prevention Post Stroke

• Reduce urinary catheter usage
• Insert urinary catheters based ONLY on defined CDC criteria:
  • Acute urinary retention (sudden and painful inability to urinate or bladder outlet obstruction)
  • To improve comfort for end-of-life care if needed
  • Critically ill and need for accurate measurements of I&O (i.e. hourly monitoring)
  • Selected surgical procedures (GU surgery/colorectal surgery)
  • To assist in healing open sacral or perineal wound in the incontinent patient
  • Need for intraoperative monitoring of urinary output during surgery or large volumes of fluid or diuretics anticipated
  • Prolonged immobilization (potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
CAUTI Prevention Post Stroke

- Ensure individuals inserting catheters have been properly trained
- Insert catheters utilizing sterile technique/bundles
- Maintain a closed drainage system
- Maintain unobstructed urine flow
  - Avoid dependent loops
- Perform perineal care at least twice daily and after each bowel movement
- Leave catheters in place *only as long as required*
  - Daily discussion of removal of catheter
- Maintain hand hygiene and follow standard infection control precautions
- Prophylactic antibiotic utilization
- Utilize maintenance bundles
Next steps, upon discontinuation of urinary catheter:

• Develop individualized toileting plan with interdisciplinary input (prompted voiding, use of commodes, etc.)

• Use external catheters

• Hourly rounding with proactive toileting

• Bladder scan/straight catheterization as necessary for retention
REFERENCES


