Rehab Nursing in Acute Inpatient Stroke

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NO DISCLOSURES
Objectives

- Correlate stroke deficits with rehabilitation considerations
- Identify elements of acute inpatient nursing care that impact stroke patient outcomes and discharge placement
What defines Acute Stroke Care??

- IV Alteplase
- IR Clot Retrieval
- Rapid EMS Response
- D to N Times
- Frequent VS & Neuro checks
Inpatient Acute Care Nursing in Stroke

- Vital Signs
- Neuro Checks
- Head to Toe Assessment
- Medication administration
- Turn, bathe, feed
- Rehab???
Nursing Challenges in Inpatient Stroke

External Care Challenges:
- Heavy patients
- Aphasia
- Dysphagia
- Hemiplegia
- Incontinence
- Impulsivity

Internal Care Challenges:
- Internal biases
- Feelings about neurological deficits and QOL
- Personal or family history
GOALS of rehabilitation in the acute care setting:

- Decrease morbidity
- Maximize function
- Prevent rehospitalization
Medical and Physiological Issues in Acute Stroke
## Acute and Subacute Issues in Stroke

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Decrease Morbidity

Key Take-Away

- Acute decrease in LOC or responsiveness
- Requires astute nursing assessment hand-in-hand with aggressive medical management

- **Hemorrhage**
  - Strict blood pressure management
    - Goal 140/90
  - Decompression if brain compression and shift
  - May need ventriculostomy if develops obstructive hydrocephalus

- **Cerebral edema**
  - Patient dependent
  - Type of edema, age of brain
  - HTS 3% – rate dependent on Na+ level
    - Goal is 145-155 mEq/L, maintained until edema stable, tapered slowly over hours to days
  - Decompression if malignant edema
  - Aggressive treatment of any fever
  - Maintain ICP < 20 mmHg
Decrease Morbidity

Key Take-Away

- Acute decrease in LOC or responsiveness
- Requires astute nursing assessment hand-in-hand with acute medical management

Seizures

- 88% of all seizures occur w/in first year
  - Late onset epilepsy 6-18%
  - Early seizures 10%
    - 57% of these in first week

Hydrocephaalus

- Increased with SAH/ICH, can be acute or subacute
- Diagnosis: increased ventricle size on CT
- Treatment: ventricular shunt
- Late onset – see triad of symptoms:
  - Lethargy with decreased mental function
  - Ataxia
  - Urinary incontinence

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Decrease Morbidity

Key Take-Away
- Diligent nursing assessment and management of whole metabolic picture

- **Hyperglycemia**
  - Monitor blood glucose
  - Avoid hyper or hypoglycemia at all costs
  - Avoid IVF with dextrose

- **Electrolyte imbalance**
  - Maintain normal sodium, potassium, and magnesium
  - Can result from damage to brain, medications or IVF
  - Monitor for dehydration

- **Strict cardiac monitoring**
  - Report all new arrhythmias – atrial fibrillation
  - Monitor for ACS or MI and treat accordingly

- **Hypoxia**
  - Avoid saturations < 92%
  - Borderline saturations, check ABGs
Maximize Function / Prevent Rehospitalization

Dysphagia, Nutrition, and Hydration

- **Dysphagia** - can occur in 25-45% of elderly patients and is common in patients with facial droop/motor weakness in mouth and throat from stroke
  - **Aspiration → → → Pneumonia**
    - Chemical pneumonitis
    - Secondary bacteria infection
    - Less a problem in patients without teeth (less flora)
  - **Dehydration and Malnutrition**
- **Dysphagia screening prior to oral intake**
  - NPO if fails screening until fully evaluated by speech therapy
- **Monitored meals**: assess for fatigue, S/S aspiration, nutrition and hydration
Maximize Function

Shoulder Management
- Humeral head subluxation
- Nursing considerations
  - Proper rolling techniques
  - Never lift under arms with transfers
  - Support affected extremity when up in chair

Edema Management
- IVs in non-paretic arm
- Utilize positional elevation
- Avoid dependent positioning
- Encourage active/active assist ROM

Spasticity & Contractures
- Paretic limb: Usually flexion, adduction, and internal rotation
- Shoulder and muscle pain
- Active ROM program
- When present: Gradual prolonged stretch sustained > 30 min
Maximize Function

Osteoporosis
- Bone loss can begin within 30 hours of immobility
- With bedrest can be as high as 25-45% in 30-36 weeks
- Hip fractures higher on affected side
- Prevention: Active weight bearing, active muscle contraction

Skin Breakdown
- Contributing factors: altered sensation, contracture, malnutrition, immobility, muscle/soft tissue atrophy
- Goal: PREVENTION
  - Frequent repositioning
  - Clean, dry skin
  - Nutrition
  - Pressure relief mattress in high risk

Heterotopic Ossification
- Deposition of CA++ in the form of mature bone in the soft tissues
- Less common in stroke than TBI/SCI
- Sx: Pain, ↓ ROM, ↑ alkaline phosphatase levels, (+) bone scan
- Rx: etidronate disodium, NSAIDS, radiation rx, possible surgical excision
Maximize Function: Urinary Dysfunction

- 51-60% have urinary incontinence
  - Can persist months after stroke

Causes
- Disruption in neuromicturition pathways
  - Associated with large cortical strokes
  - Bladder hyperreflexia and urgency incontinence
  - Bladder hyporeflexia
- Incontinence due to cognitive and language deficits
- Concurrent neuropathy and medication use
- Long term requires urology consultation and management

Goal to normalize bladder functioning and prevent secondary UTI

Management:
- Timed voiding
- Intermittant catherization
- Anticholinergic medications (hyperreflexia)
  - Inhibit involuntary detrusor contractions.
  - Ex: Oxybutinin (Ditropan XL)
- Cholinergic medications (hyporeflexia)
  - Stimulate cholinergic receptors in the smooth muscle of the urinary bladder resulting in increased peristalsis that treats urinary retention
  - Bethanechol hydrochloride (Urechoine)
Maximize Function: Visual Dysfunction

SAFETY issue with your patient!!

- **Visual Spatial Inattention (Neglect)**
  - Parietal lobe lesions
  - Rehabilitation:
    - Scanning
    - Spatial therapy

- **Double vision (diplopia)**
  - Brainstem lesions
  - Loss of depth perception
  - Rehabilitation determined by location and cause

- **Jerky eyes (oculomotor dysfunction)**
  - Rehabilitation specifically determined by optometrists and therapists

- **Visual field cuts (hemianopsia)**
  - Damage to optic nerve as it crosses in the optic chiasm
  - Rehabilitation:
    - Scanning
Maximize Function / Prevent Rehospitalization

DVT
- Incidence 23-75%
- **STASIS**
  - 10 times more common in paretic leg
  - Often starts in calf; can occur in LE, pelvis, or proximal upper extremity
  - Ambulation alone is not preventative
- **PREVENTION!!**
  - SQ Heparin or LMWH and external SCDs
  - If positive, transition to warfarin
  - Continue well into subacute phase – 3 months
  - Dextran, ASA, compression stockings not effective

VTE / PE
- Incidence 10-29%
- 30% from clinically positive DVT
- 10% mortality with VTE
- 20% mortality with symptomatic PE
- **SX:** tachypnea, tachycardia, fine crackles in lung, hemoptysis, pleuritic chest pain (subclavicular or suprascapular), malaise, pleural effusion, fever
- Dx: Spiral CT, VQ scan (older)
- Rx:
  - IV Heparin if no contraindications
  - Bedrest; mobilize after PTT therapeutic
  - Transition to warfarin – 6 months
Maximize Function: Effects Stroke and of Deconditioning

- **Musculoskeletal atrophy**
  - Decreased lean body mass, increased body fat

- **Cardiovascular deconditioning**
  - Decreased stroke volume, increased HR, decreased VO2 max, increased RR, orthostatic hypotension

- **Endocrine**
  - Impaired glucose tolerance, altered regulation of hormones

- **Body metabolism**
  - Nitrogen, calcium, potassium, phosphorus and sulfur loss

- **Neuro emotional/Psychiatric**
  - Sensory deprivation, decreased balance, decreased coordination, fatigue
  - Bereavement, adjustment to loss

- **Depression**
  - Depression screening
  - Antidepressants

- **Emotional lability/Anxiety/Outbursts/Aggression**
  - Reassurance, feedback, anxiolytics, psychiatric support
  - Expressive aphasia: allow time for response
  - Receptive aphasia: utilize demonstration
  - Avoid excessive frustration, remove emotional triggers, alternate easy and difficult tasks
Maximize Function:

- **Prohibitors:** hemodynamic or neurologic instability
  - Change in LOC or neuro status
  - Change in posturing, tone, pupils, speech

- **Monitor for physical intolerance to mobility**
  - HR increase > 20 beats/min, abnormal decrease in HR, change in rhythm
  - SBP ↑ ↓ >20 points
  - Worsened O2 saturations
  - Increased ICP
  - Diaphoretic

---

Mobility in the ICU

- **Graded sitting and standing**
  - Do as soon as patient medically tolerates – monitor for tolerance
  - HOB 30-40° increments – assess tolerance: orthostatic hypotension, neuro changes
  - HOB to 80° - assess tolerance: orthostatic hypotension, neuro changes

- **Engage patient in functional activities**
  - Feeding self, light grooming, upper body bathing and dressing, leisure activities
Maximize Function: From ICU to Med-Surg/Neuro

- **Positioning**
  - Reposition every 2 hours
  - Transform repositioning into a functional activity:
    - Rolling to affected and non-affected side
    - Maintaining side-lying
    - Bridging
    - Weight bearing for function

- **Splinting**
  - Prevents shortening of soft tissues, corrects biomechanical malalignment
  - Monitor skin integrity

- **Graded Sitting and Standing**
  - Progress to unsupported sitting in bed
    - Assess tolerance: orthostatic hypotension, neuro changes
  - Unsupported sitting at EOB w/ feet dangling
    - Assess tolerance: orthostatic hypotension, neuro changes

- **Sit to Stand**
  - Insure weight bearing on BLE
  - Insure appropriate blocking or support for weak LE to prevent collapse
    - Assess tolerance: orthostatic hypotension, neuro changes

- **Chair**
  - Start in short increments and increase as tolerated
    - Assess tolerance: orthostatic hypotension, neuro changes
Maximize Function:

- **Fall prevention:**
  - Balance and cognition training
    - Differentiate day to night environment, especially in the ICU
    - Reorient patient to self, surroundings, events
  - Manage environmental hazards
  - Utilize adaptive devices
  - Safety equipment: bed and chair alarms
- Fall Risk increased in right hemispheric strokes
  - Decreased balance, visual perceptions, spatial perceptions

Mobility and Fall Prevention

- **Transfers:**
  - Staff teamwork – two persons on difficult transfers
  - Maximize patient participation in transfer
  - Engage the therapy team to learn how to do transfers better

- **Grade tasks for energy expenditure**
  - Chaining tasks together demands more strength and activity tolerance

- **Progressively increase activity as patient tolerates**
  - Start with short time periods of activity
  - Plan rest periods in between activities
  - Incrementally increase activity as patient tolerates

- Fall Risk increased in right hemispheric strokes
  - Decreased balance, visual perceptions, spatial perceptions
Maximize Function: Mobility Progression in Neurologically Impaired Patients

- 24 hours
- 24-48 hours
- Day 3-4-5

- 10"
- 20"
- 15"
- 30"
- 30"
- 45"
- 45"
- 60"
Mobility Progression: Influencing Discharge Planning

- **Inpatient Rehabilitation**
  - Must be able to tolerate a minimum of 3 hours of therapy 6 days per week

- **Subacute Rehabilitation**
  - **SNF level of care**: May receive 90 minutes of therapy 5 days per week; appropriate setting for patients with more severe deficits who need longer, slower rehabilitation

- **Subacute care (LTACH)**
  - Appropriate setting for patients with more complex care needs, such as ventilator support, complex medical management
  - May be option for patients with acute care insurance but without rehab insurance
DISCHARGE GOAL:
Maximize patient functioning and tolerance to qualify for highest possible level of rehabilitation support at discharge

OVERALL GOALS:
Maximize patient’s functional outcome from stroke:
- Decrease morbidity
- Maximize function
- Prevent rehospitalization
Maximizing Stroke Outcomes Takes a Team

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<th>PT</th>
<th>OT</th>
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<th>RT</th>
<th>Dietitian</th>
<th>Social Worker/Case Manager</th>
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Thank you