PM&R Approach to Stroke Rehabilitation
A Treatment Plan for Optimum Patient Recovery
Goals of Presentation

- Improve effectiveness of stroke rehabilitation
  - identify, assess, treat
  - roles of PCP, PM&R, & other specialists
- Provide information and resources on standardized treatment
BACKGROUND
Stroke Statistics

- 600,000 strokes yearly in U.S.
- Third leading cause of death in U.S.
  - 150,000+ stroke deaths annually
  - 17%-34% mortality in first 30 days
Stroke Statistics

- Leading cause of adult disability
  - 4.4M stroke survivors with disablements
  - 25%-50% partially/totally dependent in ADL
- Costs $45.3 billion/year in care and lost earnings
Definition of Stroke

- A cerebrovascular event
- Focal or global disturbances of cerebral function
- 14+ hours duration or death
- Vascular in origin
Definition of Disablement

- Organ dysfunction (impairment)
- Difficulty with tasks (disability)
- Social disadvantage (handicap)
Elements of Stroke Rehabilitation

- Prevention
- Treatment
- Compensation
- Maintenance
- Reintegration
Goals of the Physical Medicine & Rehabilitation Specialist

- Restore patient to maximum mobilization
- Help patient regain functional independence and confidence
- Provide measures to prevent falls and ensure safety
- Educate patient and family about secondary prevention
- Facilitate psychosocial adjustment
Important Facts About Diagnosis & Treatment

Early treatment is essential for maximal recovery

- < 3-hr window for TPA
- 3-6 hr window for thrombolytic therapy
- Only 40% reach hospital in 24 hrs
- Patients most likely to benefit are least likely to arrive in time
Poor Public Awareness of Stroke

- 40% of older Americans do not know stroke occurs in brain
- 91% do not know sudden blurred/decreased vision is symptom
- 85% do not know loss of balance/coordination is symptom
Poor Public Awareness of Stroke

- Only 40% would call 911 if experiencing symptoms
- 67% are unaware of brief therapeutic window for effective treatment
BASIC PRINCIPLES OF REHABILITATION
Interdisciplinary Care

- Medical specialties
  - PM&R
  - family practice
  - geriatrics
  - neurology
  - internal medicine
  - psychiatry
Interdisciplinary Care

- Allied health team members
  - rehab nurses
  - psychologists
  - OTs
  - recreational therapists
  - PTs
  - speech pathologists
  - medical social services personnel
Patient Assessment

- Standardized protocols
  - repeated clinical examinations
  - full & consistent documentation throughout
Patient Assessment

- Assessment targets
  - neurologic impairments
  - medical problems
  - disabilities
  - living conditions and community reintegration
Stroke

Continuity of Care and Family Involvement

- Multiple care settings during recovery
- Patient and family must:
  - be fully informed & participate in decisions
  - participate actively in rehabilitation
REHABILITATION DURING ACUTE HOSPITALIZATION
Clinical Evaluation

- Where: setting that has coordinated services
- By whom:
  - acute care physician
  - rehabilitation consultants (PM&R physicians)
  - nursing staff
Clinical Evaluation

- For what purposes:
  - determine etiology, pathology, & severity
  - assess comorbidities
  - document clinical course

- When: admission & during acute hospitalization
Stroke

Mobilization

- Within 12-24 hours, if possible
- Daily active/passive ROM exercises
- Progressively increased activity
- Changes of position in bed
  - pullsheet method
  - limb positioning & support
- Encouragement to resume self-care & socialization
Measures to Prevent Recurrent Stroke

- Carotid endarterectomy in patients who have 70%–99% carotid artery obstruction.
- Anticoagulants in patients with atrial fibrillation and other nonvalvular cause of embolic stroke.
- Antiplatelet agents in patients who have had transient ischemic attack (TIA).
Preventing Deep Venous Thrombosis (DVT)

- Heparin
  - low molecular weight (LMWH), or
  - low-dose unfractionated (LDUH)

- Other effective measures
  - intermittent pneumatic compression
  - elastic stockings
Management of Dysphagia

Goals

– prevent dehydration and malnutrition
– prevent aspiration and pneumonia
– restore ability to chew and swallow safely
Management of Dysphagia

- Compensatory treatments
  - changes in posture for swallowing
  - learning new swallowing maneuvers
  - changes in food texture and bolus size
Management of Dysphagia

- Fallback measures
  - parenteral or tube feeding
  - gastrostomy for long-term tube feeding
Maintaining Skin Integrity

- Daily inspection
- Routine cleansing
- Protection from moisture
- Frequent position changes
- Maintenance of adequate hydration/nutrition
- Individual mobility-improvement measures
Managing Bowel/Bladder Function

- Timed voiding
- Clean intermittent catheterization
- Indwelling catheter as last resort
Preventing Falls

- At-admission and periodic risk assessment
- High-risk factors
  - visual neglect
  - slowness in performing tasks
  - impulsive movements
  - older age
  - history of falls
  - multiple transfer situations
REHABILITATION
AFTER THE ACUTE PHASE
Screening for Rehabilitation & Setting

- Identify patients who will benefit
- Identify problems needing treatment
- Determine appropriate rehabilitation setting as soon as patient is medically stable
Patient Characteristics Suggestive of Poor Rehabilitation Outcomes

- Severe functional/motor/cognitive deficits
- Persistent urinary/fecal incontinence
- Severe visual/spatial deficits
- Sitting imbalance
- Severe aphasia
Patient Characteristics Suggestive of Poor Rehabilitation Outcomes

- Altered level of consciousness
- Major depression
- Severe comorbidities
- Disability before stroke
- Older age
Threshold Criteria for Admission to a Rehabilitation Program

- Medically/moderately stable
- One or more persistent disabilities
- Able to learn
- Physical endurance sufficient to:
  - sit at least 1 hour per day
  - participate in rehabilitation
Criteria for Admission to an Interdisciplinary Rehabilitation Program

- Disabilities in two or more of the following
  - mobility
  - swallowing
  - pain management
  - cognition
  - bowel/bladder control
  - communication
  - performance of ADL
  - emotional function
Setting Rehabilitation Goals

- Both short- and long-term
- Realistic
- Agreed upon by all parties
- Specific about roles, tasks, and activities
Developing a Management Plan

- The management plan should identify
  - significant impairments and disabilities
  - measures to prevent recurrence
  - treatments for comorbidities
  - rehabilitation interventions
  - plans for periodic monitoring
POST-ACUTE MANAGEMENT OF SPECIFIC CONDITIONS
Managing Sensorimotor Deficits and Impaired Mobility

1. Remediation/facilitation to enhance motor recovery
2. Compensatory training to improve function
3. Adaptive devices/orthotics
Managing Cognitive and Perceptual Deficits

- Cognitive/perceptual problems require
  - goal-directed treatment plans
  - retraining
  - substitution of intact abilities
  - compensatory approaches
Diagnosing Depression

- Symptoms and history
  - diminished interest in activities
  - loss of energy/appetite/concentration
  - sleep disturbances/agitation
  - feelings of worthlessness/suicidal thoughts
  - history/observed behavior changes
Diagnosing Depression

- Causes to rule out
  - medications, e.g., sedatives
  - environmental factors
- Confirming diagnosis: clinical interview by mental health professional
Treating Depression

- Mild depression
  - attention/encouragement, therapeutic activities
  - simple environmental changes
- More severe depression
  - antidepressant medications
  - psychotherapy
Treating Speech/Language Disorders

- Aphasia
  - language retrieval
  - improved comprehension

- Dysarthria/apraxia of speech
  - reinstate normal intelligibility
  - assistive devices
Physiatrist’s Spectrum of Care

- Issues for pediatric patients
  - school re-entry
  - self-esteem
- Issues for younger adults
  - vocational considerations
  - child care
  - sexual relations
Physiatrist’s Spectrum of Care

- Issues for older adults
  - aging
  - sexual relations
  - self care; inability to remain at home
OUTCOMES

Stroke
Factors Related to Improved Functional Outcome

- Increased functional skills on admission to rehabilitation
- Early initiation of rehabilitation services
- Rehabilitation in an interdisciplinary versus a multidisciplinary setting
Poor Prognostic Indicators

- Proprioceptive facilitation (tapping) response > 9 days
- Traction response (of shoulder flexors/adductors) > 13 days
- Prolonged flaccid period
Poor Prognostic Indicators

- Onset of motion > 2-4 weeks
- Severe proximal spasticity
- Absence of voluntary hand movement
  > 4-6 weeks
Poor Prognostic Indicators

- Unilateral spatial neglect or hemineglect
- Abnormal illness behavior (AIB)
- Depression
Cognitive/Psychological Factors Associated with Better Outcomes

- Higher scores for
  - attention
  - calculations
  - judgment

- Better performance in
  - comprehension
  - short-term verbal memory
  - abstract thinking
Measures of Successful Rehabilitation

- Normalized health patterns
- Freedom from physical pain/emotional distress/impairments
- Retention of cognitive/communicative abilities
- Mobility and independence in ADL
- IMPROVED QUALITY OF LIFE
Summary: Requirements for Successful Rehabilitation

- In-depth assessment at all phases
- Appropriate patient selection
- Early introduction to rehabilitation
- Teamwork approach in multidisciplinary setting
- Shared goals and management plan
- Detailed, shared record keeping