**Objectives**

- Introduce basic concepts on rehabilitation, including the multi-specialty approach
- Discuss some of the common therapeutic approaches used
- Enhance awareness of the potential medical problems that can arise during rehabilitation
- Discuss how to enhance rehabilitation outcomes
- Discuss how certain drugs may impair the recovery process

**Biology**

- Axon and dendritic regeneration
- Glial support
- Axon guidance
- Synaptogenesis
- Neuronopoiesis
- Cell replacement
- Gene expression, NGF
- Neuromodulation

**Rehabilitation**

- Multidisciplinary (nursing, PT, RT, ST, RT, audiology, nutrition, social work, psychiatry, psychology, chaplaincy, patient education, support groups, pet therapy, music therapy, others)
- Should begin by 48 hours after stroke
- Should actively involve family and friends
- Nutrition
**Physical Therapy**
- Lower body functions
- Gross motor skills
- Devices such as splints, canes, wheel chairs

**Occupational Therapy**
- Upper body functions
- Fine motor skills
- Devices such as handles for pens, eating utensils

**Speech Therapy**
- Swallow evaluations
- Diet quality recommendations (liquid? Solid?)
- Communication – including devices

**Management in a stroke rehabilitation unit confers survival benefit 10 years after stroke.**

**Before Starting Rehab**
- Assess problem
- Set goals
- Define strategies to achieve goals
- Re-assess
  - What is working
  - What is not

**Goals**
- Re-gain independence
- Mobility
- Communication
- Cognitive skills
- Social skills and interaction
**ADLs**
- Personal self-care
  - Feeding oneself
  - Bathing
  - Toileting
- Mobility
  - Transfers
  - Walking short distances (with/without assistance)
- Continence
  - Urine
  - Feces

**IADL**
- Within the home
  - Cooking
  - Housecleaning
  - Laundry
  - Management of medications
  - Management of telephone
  - Management of personal accounts
- Outside the home
  - Shopping for food, clothing, drugs
  - Use of transportation to travel to necessary and desired activities

- Patients w/o recovery in arm function by 2 weeks of stroke rarely recover
- Walking with some degree of assistance will occur in ~85%
- Urinary incontinence will be present in 10-20% by 6 months
- Motor recovery is fastest and most complete in the proximal antigravity muscles

**During Rehab Address...**
- Dysphagia
- DVT
- Bladder function and UTI
- Pain (ie shoulder)
- Depression (>40%)
- Falls
- Osteoporosis (vit D supplementation?)
- Secondary prevention

**Trach/PEG**
- PEG feeding was associated with an absolute increase in risk of death of 1.0% (-10.0 to 11.9, p=0.9) and an increased risk of death or poor outcome of 7.8% (0.0 to 15.5, p=0.05)
- A portion of the trial involved early tube feeding, and found that: it might reduce case fatality, but at the expense of increasing the proportion surviving with poor outcome. Our data (FOOD trial) do not support a policy of early initiation of PEG feeding in dysphagic stroke patients.
  - FOOD trial
  - FOOD was a RCT, prospective, with 859 participants from 83 hospitals in 15 countries, enrolled within 7 days of stroke.
Aphasia Rehab

- Present in 35-45% of stroke patients
- Develop compensatory mechanisms
- Improve communication (low- or high-tech options)

- [http://www.aphasia.org/](http://www.aphasia.org/)

Dysphagia

- Can lead to cough, drooling, weight loss, change in dietary habits, nasal regurgitation, dehydration, pneumonia, death
- Assessment by MD and by ST
- Maintain quality of life and nutrition
- Rx: dietary modifications, compensatory maneuvers
- Sip test (how to... in your booklet)

Dysphagia after Stroke. Stroke 36(12):2756-63 2005

Hemispatial Neglect

- Due to non-dominant hemisphere lesions
- Force attention training
  - Sensory awareness
  - Visual scanning
  - Spatial organization
  - Prism adaptation

Sexual Dysfunction

- Education
- Sildenafil

Cognition

- Altered memory, attention, insight, problem solving
- Family education is important
- Collaborative approach between health care workers, patient and caregivers is very important
  - JAMA 295(18):2148-57 May 2006 (RCT)

Treatments

- Psychostimulants
- Body-weight supported treadmill training
- Constraint-induced movement
- Spasticity
  - Baclofen, tizanidine, dantrolene benzodiazepines, Botox
- Decreased tone – prosthesis
- Electrical stimulation
- Virtual-reality
**Exercise Programming**

- **Aerobic**
  - Increase independence in ADLs
  - Increase walking speed and efficiency
  - Improve tolerance for prolonged physical activity
  - Reduce risk of cerebrovascular disease
- **Strength**
  - Increase independence in ADLs
- **Flexibility**
  - Increase ROM of involved extremities
  - Prevent contractures
- **Neuromuscular**
  - Improve level of safety during ADLs
- **Constrain Therapy**

**Devices**

- Canes and crutches
- Wheel chairs, motorized chairs
- Prosthesis, splints, braces
- Artificial muscles
- Bionics

**Support Groups**

- For patients
- For family

- **Stallworth-Vanderbilt**

**Back to Community**

- Approximately 90% of recovery occurs in first 90 days, but it never ceases as long as the effort continues

**Guidelines and Reviews**

- Brain Recovery and Rehabilitation. *Stroke* 37(2), 2006
- Post-Stroke Rehabilitation (Series). *Arch Phys Med Rehab* 86: 51–2005
Questions?
Comments?