**Pediatric Rehabilitation**

General concepts

- Children are not small adults- difference related to developmental and physiological immaturity
  - Family- centered care
  - Play is important
  - Cannot separate the child from the family in terms of treatment plans
  - Children are children first, "disabled" second
  - Need to have a developmental focus when caring for them
- Growth and Development ( critical factor on outcomes)
  - Physical
    - Develop in an orderly fashion
    - Sequentially and predictably
  - Cognitive
    - Progressive
    - Family → peers → community
  - Social
    - Stabilizes relationships with family first, then strangers
  - Psychological
    - Sense of awareness → self-image → confidence

Developmental Theories

- Erikson-8 stages
  - Characterized by different conflicts which must be resolved new demands…new conflicts- when the conflict is resolved, will move to the next stage
  - 2 ways to manage: adaptive/maladaptive

Erickson's Stages of Development

| STAGE/AGE | CONFLICT | BEHAVIORS |
|---|---|---|
| Stage One: birth to one year; Oral-Sensory | Trust vs Mistrust | Feeding |
| Stage Two: 1-3 years; Muscular-Anal | Autonomy vs Doubt | Toileting |
| Stage Three: 3-6 years; Locomotor | Initiative vs Inadequacy | Independence |
| Stage Four: 6-12 years; Latency | Industry vs Inferiority | School |
| Stage Five: 12-18 years; Adolescence | Identity vs Confusion | Peer Relationships |
| Stage Six: 18-40 year; Young Adulthood | Intimacy vs Isolation | Love Relationships |
| Stage Seven: 40-65 years; Middle Adulthood | Generativity vs Stagnation | Parenting |
| Stage Eight: 65 years to death; Maturity | Integrity vs Despair | Acceptance of one's life |

- Piaget
  - Cognitive Theory -- 4 stages
    - Born with reflexes that accommodate and assimilate throughout life
    - Accommodate is the process of "change"

| Stage | Age | Summary |
|---|---|---|
| Sensorimotor | Birth to 2 years | Sensory perceptions and motor activities; learning about environment; develop the concept of a separate self from the environment |
| Pre-operational | 2-7 years | Self-centered and egocentric; use of language and symbols; beginning to understand the difference between reality and fantasy |
| Concrete | 7-11 years | Reason logically and organize Operations thoughts; unable to handle abstract reasoning at this point |
| Formal operations | 11 years continues through adulthood and older | The ability to formulate hypotheses and systematically test to arrive at an answer (although Piaget believes some people never reach this stage) |

Pediatric Disabilities

- Trauma/Acquired Related
  - Brain Injury - children more likely to survive
  - More diffuse cerebral edema
  - Maintenance of cerebral perfusion
  - Delay in treatment can lead to increased injury

  - Causes
    - Young children- falls and child abuse
    - Older children- motor vehicle accidents
    - Adolescents – sports related
  - Children continue to grow and develop after TBI
  - Life- long care giving creates strain on family
  - School requires special education
    - Use WeeFIM
  - Rehabilitation needs
    - Same issues and concerns as with adults need to be addressed
    - Family needs to be important part of treatment plan
    - Pre-morbid status from school is critical
    - School involvement, part of the team
    - Developmental issues are critical to the success
    - The setting and milieu in which these patients are admitted are there any other children?
    - Is the treatment team skilled at treating pediatrics?
    - Is the setting conducive to pediatrics?
- Spinal cord injury (SCI)
  - Developmental issues

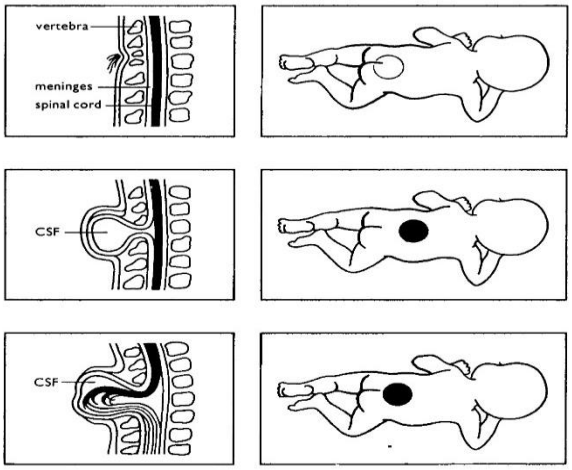
    - The ability to learn and live with SCI
    - B and B
    - Sexuality
    - Skin care
    - Complications from SCI
    - Life- long issues and concerns
- Burns
    - 1st degree -- superficial, 2nd degree -- partial thickness, 3rd degree – full thickness
    - Loss of skin due to: Fire, Scalds (immersion or splashes), Contact, Chemical
    - Electrical and radiation – sun
    - Classification
        - Mild/Minor: 10% of body surface, 2% full thick or unless eyes, ears, face, or perineum is involved.
        - Moderate: 10%-20% body surface, 2%-10% full thick or unless eyes, ears, face, or perineum is involved.
        - Major: more than 20% body surface > 10% full thickness, all eyes, ears, face, or perineum is involved. All that involve electrical, inhalation, all burns that involve ancillary injury – fracture and tissue trauma.
            - Rehabilitation issues: pain, nutrition, infection, functional ability, self –image,
            - Contractures and elimination (difficulty with pressure garments, school
            - Scholl re-integration.
- Limb Deficiency
    - Congenital, trauma, accidents, tumors and diseases
    - Leading cause of trauma – lawn mowers, followed by MVA's and GSW
    - Rehabilitation issues -- functionality, mobility prosthetics, pain,
- Cancer- 4th leading cause of death-brain, leukemia, lymphomas, liver, and bones

Congenital/Birth Defects

- Spina Bifida Myelodysplasia
    - Definition -- Latin for 'split spine'
        - 1 in 500 births
        - Fault in spinal column
        - Vertebra fail to close or form properly, leaves a gap or split
        - Abnormal development of neural tube which houses the spinal cord and vertebra
        - Pre-natal (begins about 3rd week)
    - Types
        - Occulta
            - Mild and common
            - Often results in no disability
            - May just be a tuft of hair over the defect

        - Meningocele
            - Sac contains tissue which covers the meninges and CSF
        - Myelomeningocele
            - *More common, more serious*
            - *Sac contains also nerves, spinal cord*
            - *The cord is damaged and does not properly develop*
            - *Disability will be dependent on where it is*

# Types of Spina Bifida




- Deficits and Characteristics
  - Sensory
    - Visual problems
    - Usually high verbal IQ
    - Difficulty with problem-solving
  - Motor
    - Orthopedic problems
    - Scoliosis, lordosis, kyphosis
    - Hip dysplasia, fractures from osteo
  - Hydrocephalus
  - Nutritional
    - Must be careful of obesity
  - Mobility
    - Depending on where the damage has occurred will determine mobility ability
    - If able to ambulate may need splints, braces, etc. and will have trouble with endurance for long distances
    - Many will be wheelchair bound
  - B and B
    - Usually areflexic bowels; no sphincter control
    - Neurogenic bladder (spastic or flaccid)
    - ICP (intermittent cath. program)
    - Timed toileting
    - Artificial sphincters
  - Skin considerations
  - Safety and Play
  - Sexuality and body image

Orthopedic and Joint Diseases

- Legg-Calve-Perthes disease
  - More males than females
  - Age 4-8 years

    - Femoral cap develops avascular necrosis
    - Goal is to prevent degenerative arthritis
    - Symptoms are:
    - Hip/groin pain
    - Painful gait
    - Treatment
        - NSAIDS
        - Relieve weight bearing
        - Maintain ROM
        - Traction
- Osteogenesis Imperfecta
    - Brittle bones
    - Fractures from normal movement
    - Believed to be genetic
    - 20,000-50,000 in US have disease
    - No cure but goal of treatment is to prevent fractures
    - May do rodding
- Blount's Disease (Tibia Vara)
    - Abnormal proximal tibia epiphysis and metaphysis
    - Abnormal growth of the medial aspect of the tibial growth plate at the knee
    - Causes the tibia to have an angular deformity
    - Bowing of one or both legs
    - Treatment is corrective osteotomy
- Juvenile RA
    - Chronic inflammation
    - Involves the connective tissue, joints and viscera
    - Usually begins before age 16
- Cerebral Palsy
    - Non-progressive disorder created by damage to voluntary motor centers in the brain. Occurs about 1.5 - 2.5% live births
    - Plegia may be:
        - Hemi
        - Di (affecting both UE or both LE)
        - Quad
- 4 Types
    - Spastic
        - Most common form (50%)
        - Hypertonic
    - Athetoid
        - Second most common (30%)
        - Dystonia
        - Dyskinetic
        - Hypotonic
        - Uncontrolled movements
    - Ataxic
        - Cerebellum damage
        - Jerky movements
        - Uncoordinated
        - Balance problems
    - Mixed
        - Athetoid and Ataxic most common mix
        - About 10% of all CP cases
- Causes
    - Prenatal
        - Anoxia
        - Maternal infection

        - Metabolic disorders i.e. diabetes
        - Absence/lack of prenatal care
    - Perinatal
        - Anoxia
        - Asphyxia
        - Trauma
        - Pressure changes
        - Prematurity
        - Analgesics
    - Postnatal
        - Trauma
        - Infection
        - Neoplasms
        - Anoxia
        - Vascular problems
    - Developmental
        - Macrocephaly
        - Microcephaly
- Treatment
    - Hyperbaric oxygen
    - Conductive therapy
        - Done for 5 hours/day
        - Exercises to improve motor skills
            - Hippotherapy (equestrian)
- Treatment issues:
    - Positioning and ROM are very important
    - ROM with relaxation
    - AFO's, braces, wheelchairs must all be fitted properly
    - Surgical interventions
        - To ↓ tone in spinal nerves
        - Rhizotomies
        - Heel cord lengthening
- Other problems associated with CP (CP or medication related?)
    - Strabismus
    - Crossed eyes
    - Vision field cut
    - Hearing loss
    - Seizures
    - Communication problems (dysarthria)
    - Developmental delay but usually not retarded)
    - Swallowing problems
    - Nutritional problems
    - B and B concerns
    - Respiratory
    - Skin
    - Safety
    - Play considerations
- Important rehabilitation concerns
    - Home management of a chronic disease
    - Spasticity management
    - Family teaching
    - Family support
    - Community resources
- Community Services – Long term planning

    - Children with disabilities are integral part of community thus should participate in school (regular classroom), recreation, playgroups, social activities and work and school programs.
- **IDEA (Individuals with Disabilities Education Act) 2006 --** all children 3-21 years old receive free public schools to include PT, OT Speech and nutrition.
- **No Child Left Behind 2002 --** requires testing on reading and math. Children with disabilities that hinder their learning may be excludes or have alternative testing
- **Home Health –** Medicaid is primary provider but does not cover all needed services
- **Health Promotion and Prevention --** Developmental screening, immunizations, and nutrition to ensure all medical and nonmedical needs are met.
- **Transition to Adulthood Program** -- moving to adult medical care and housing/living arrangements. These are provided by the school systems.
- **Vocational Rehabilitation** – provide assistive technology and progression to higher education

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