# Pediatric HESI Review

## Topics

### Pediatric Health Assessment
- General considerations for the child:
  - Introduce self & allow child some warm-up time
  - Maintain eye contact, bend to child's level
  - Child is perceptive of caregiver's nonverbal communication
  - Respect child's responses
  - Respect need for privacy as appropriate for age
  - Incorporate play into assessment as appropriate
  - Use language appropriate to cognitive level

### Growth & Development
- Infant
- Toddler
- Preschool
- School Age
- Adolescent

### Disorders of Children
- Respiratory Disorders
- Gastrointestinal Disorders
- Genitourinary Tract Disorders
- Neurologic Disorders
- Neuromuscular, Muscular and Articular Disorders
- Hematologic Disorders
- Cardiovascular Disorders
- Cancer

## Pediatric Health Assessment

### General considerations for the family:
- Choose quiet setting for assessment
- Ask open-ended question to elicit responses
- Listen attentively & provide appropriate feedback
- Encourage parents to express concerns & ask questions
- Communicate importance of parent's role in conjunction with health team
DEVELOPMENTAL AGE PERIODS

• Prenatal: Conception to birth
  – Neonatal - Birth to 28 days
• Infancy: Birth to 12 or 18 months
  – Neonatal - Birth to 28 days
• Early Childhood: 1 - 6 years
  – Toddler: 1 - 3 years
  – Preschool: 3 - 6 years
• Middle Childhood: 6 - 11 years
  – School age
• Later Childhood: 11 - 19 years
  – Prepubertal: 10 - 13 years
  – Adolescence: 13 - 18 years

DEVELOPMENTAL AGE PERIODS

• Infant
• Toddler
• Preschool
• School-age
• Adolescent

INFANT GROWTH & DEVELOPMENT

• General characteristics:
  – Best health indicator is steady & increasing ht., wt., & head & chest circumference
  – Ht. increases 50% over birth length by 12 mo.
  – Wt. tripled by 12 mo.
  – Head & chest circumference equalize during 1st. yr.
  – Posterior fontanel closes by 2mo.
  – Anterior fontanel closes by 18 mo.

PHYSICAL GROWTH & DEVELOPMENT

• Gr. & Dev. Milestones:
  – 1-2 mo. smiles
  – 2 mo. lifts head from prone position & briefly holds it erect
  – 3 mo. vocalizes in response to voices
  – 4 mo. head control
  – 4 mo. purposefully grasps objects
  – 4-5 mo. rolls from abdomen to back
  – 6-7 mo. sits
  – 6-7 mo. anything grasped goes into mouth
  – 6-7 mo. rolls from back to abdomen

PHYSICAL GROWTH & DEVELOPMENT
PHYSICAL GROWTH & DEVELOPMENT
- 9 mo. crawls rapidly, keeping belly off floor
- 9 mo. moves from crawling to sitting position
- 9 mo. pulls up
- 9 mo. pincer grasp rather than palmar grasp
- 10 mo. walks with support
- 11 mo. stands alone
- 12 mo. walks alone

DEVELOPMENTAL THEORIES
• Psychosocial development: Erikson
  - Psychosocial crisis is TRUST vs MISTRUST
  - Significant other is “maternal” person
  - Quality of caregiver-child relationship is crucial factor
  - Attentive care shows that needs will be met promptly & that life is predictable.
  - Consistent delayed needs gratification fosters uncertainty
  - Comfort commonly obtained from a security object

DEVELOPMENTAL THEORIES
• Psychosexual development: Freud
  - Oral stage of dev.
    • Erogenous zone is mouth, lips, tongue, & teeth
  - Sexual activity takes form of:
    • Sucking, swallowing, chewing, & biting
  - Infant meets world by:
    • Crying, tasting, sucking, eating, & early vocalization
    • Grasping & touching to explore tactile variations in the environment

DEVELOPMENTAL THEORIES
• Cognitive development: Piaget
  - Sensorimotor stage from birth to 18 mo.
  - Dev. progresses from reflexive activity to purposeful acts
  - Dev. of intellect & knowledge of environment gained through the senses
  - At completion of stage, infant achieves a sense of object permanence
    • Retains a mental image of the absent object
    • Sees self as separate from others

DEVELOPMENTAL THEORIES
• Social development
  - Language:
    • Crying 1st means of verbal communication
    • Throaty vocalizations by 5 wks.
    • By 8 mo. combined syllables (mama, dada)
    • by 1 yr. several short words with meaning
    • Soothing tone can be comforting
  - Play:
    • Facilitates learning
    • Learns about environment through senses of touch, taste, hearing, smell, & sight

SOCIAL DEVELOPMENT
- Dev. motor skills through manipulating toys
- Play is basically solitary

SOCIAL DEVELOPMENT
• Socialization:
  - Attachment to significant other begins @ birth & becomes increasingly evident after 6 mo
  - Stranger anxiety begins around 6 mo.
  - Caregiver’s cuddling & warmth can help ease fears
  - Discipline & setting limits begins with negative voice, stern eye contact, or timeout
NUTRITION & FEEDING

- Breast milk has following advantages over cow's milk:
  - Immunologic & antibacterial components not in cow's milk
  - Less risk of allergies
  - More easily digested, convenient, & economical
- Ideally, weaning from breast or bottle begins @ age 6 mo
- Adequate fluid intake reflected by:
  - At least 6 wet diapers in 24 hr.
- Never microwave breast milk

NUTRITION & FEEDING

- Ready to use formula should be refrigerated once open & discarded after 24 hr.
- Whole milk should not be given before 12 mo.
- By 6 mo, infant ready to have solid foods introduced
  - Introduced progressively and one at a time
  - Start with cereal with iron (wheat & mixed last)
  - Next fruits, then veggies, and last meats
  - Juices after 6 mo.

NUTRITION & FEEDING

- Finger foods between 8-10 mo.
  - Avoid hot dogs, nuts, grapes, carrots, popcorn, peanuts, & hard round candies for fear of choking
- Common food allergies:
  - Cow's milk, egg, soy products, peanut, chocolate, corn & wheat
- Common clinical manifestations of food allergies:
  - Abd. pain, diarrhea, nasal congestion, cough, wheezing, vomiting & rashes

IMMUNIZATIONS

- Generally follow an age-based schedule
- Contraindications include:
  - Severe febrile illness
  - Immunodeficiency
  - Known allergy to the vaccine
- See Nursing Pediatric Seminar

INJURY PREVENTION

- See Nursing 2504 Pediatric Seminar PowerPoint Notes

HOSPITALIZATION

- Major stressor is Separation Anxiety
  - Seen between 6 mo & 30 mo
  - Traumatic for both infant and parent
- Major issue is that of stimulation & regular routine
  - Without appropriate stimulation, infant exhibits failure to thrive
  - Experiences mainly painful stimuli and interruption of sleeping & eating routine
**HOSPITALIZATION**

- **Guidelines for intervention:**
  - Human contact when parent not available
  - Stimulation through soothing voices, music, being rocked, etc.
  - Reduce environmental stimulation
    - Turn off TV
    - Dim lights
    - One toy or activity @ time
  - Ensure toys safe, clean & large enough so not to be ingested
  - Assure parents of their importance & abilities as caregivers
  - Encourage favorite comfort items from home

**SELECTED HEALTH PROBLEMS**

- Fever
- Iron Deficiency Anemia

**FEVER**

- Defined as a body temp > than 38.0 C (100.4 F) rectally or 37.8 C (100. F) orally
- Common causes in infancy:
  - UTI
  - Respiratory tract infections
  - Otitis media
  - Viral infections
- Associated clinical findings provide important indications of seriousness
  - Active with fever of 104.F generally of less concern than lethargic with fever of 102 F

**FEVER**

- Comfort measures:
  - External cooling
    - Remove blankets & clothing
    - Reduction of room temperature
    - Cooling blankets
    - Tepid baths with lukewarm water
      - Avoid rubbing alcohol as can result in too rapid cooling & chilling
  - Antipyretics
    - Acetaminophen & NSAIDS
    - Never ASA R/T Reye’s syndrome
  - Maintain adequate fluid intake

**FEBRILE SEIZURES**

- Defined as **transient** disorders of children that occur in association with fever
- Fever defined as a body temp. > 38 C (100.4 F) rectally or > 37.8 C (100 F) orally
  - Commonly do not recur after initial occurrence (60%)
  - Others have 2-3 over the years stopping by age 5 or 6
  - Average body temp at which sz occurs is 40C (104F)
  - Boys more than girls
  - ↑ susceptibility in families

**CARE DURING SEIZURE**

- Turn child onto side
- Do not try to restrain
- Do not put anything into the mouth
- Allow child to drool
  - May use a suction bulb to remove saliva or fluids
- Call Dr if any of following occurs:
  - Sz lasts > 3 min
  - Another sz occurs
  - Child’s neck is stiff
  - Child delirious or difficult to awaken after sz
IRON DEFICIENCY ANEMIA

• Results from inadequate supplies of iron to synthesize hemoglobin adequately
• Etiology:
  – Inadequate dietary intake of iron
  – Insufficient iron stores
• Pathology:
  – Full-term’s iron stores adequate for 1st 5-6 mo.
  – Premie or infant from multiple birth, iron stores adequate for only 2-3 mo.
  – Occurs around 9-24 mo.

IRON DEFICIENCY ANEMIA

– Usually related to lg. intake of milk & foods that do not contain supplemental iron
• Assessment findings:
  – Pallor
  – Tachycardia
  – Lethargy
  – Irritability
  – Hb. < 9 g/dL
  – ↑ susceptibility to infection
  – Impaired cognitive ability (a long-term consequence)

IRON DEFICIENCY ANEMIA

• Long-term therapy:
  – ↑ intake of iron & ↓ consumption of cow’s milk
• Teaching Guidelines:
  – Provide iron-fortified formula if < 12 mo.
  – Limit cow’s milk to < 24 oz/d if > 12 mo.
  – ↑ intake of iron-rich foods
  – Administer iron in 3 divided doses between meals
    • Give with vitamin C-rich fluids
    • administer with dropper placed @ back of mouth, away from teeth
    • Expect black, tarry stools

OTHER SELECTED HEALTH PROBLEMS

• Sids
• Shaken Baby Syndrome
• Meningitis
• Atopic Dermatitis (Eczema)
• Seizures

• Refer to RNSG 2504 Pediatric PowerPoint Notes

PHYSICAL GROWTH & DEVELOPMENT

• General characteristics:
  – Physical growth & weight slower
  – Characteristic protruding abdomen results from underdeveloped abdominal muscles
  – Bow-legged since legs bear the wt. of the relatively lg. trunk
  – Anterior fontanel closes between 12-18 mo.
  – Fine motor skills include:
    • Undressing
    • Drawing simple lines
    • Building simple things
PHYSICAL GROWTH & DEVELOPMENT

• Gr. & Dev. Milestones:
  – 12-15 mo. walks
  – 15 mo. climbs stairs
  – 18 mo. climbs
  – 2 yrs. runs
  – 3 yrs. walks backward & hops on 1 foot
  – 3 yrs. throws a large ball
  – 3 yrs. puts on simple clothes
  – 3 yrs. walks on tiptoe
  – 3 yrs. achieves fairly good bowel & bladder control

DEVELOPMENTAL THEORIES

• Psychosocial development: Erikson
  – Psychosocial crisis is Autonomy vs Doubt & Shame
  – Significant other is the “paternal” person
  – Psychosocial theme is “To hold on; to let go”
  – Ready to give up dependence to assert his budding sense of control, independence & autonomy
  – Often continues to seek a familiar security object during times of stress

DEVELOPMENTAL THEORIES

• Erikson, cont:
  – Begins to master:
    • Differentiation of self from others
    • Separation from parents
    • Control of bodily functions
    • Communication with words
    • Acquisition of socially acceptable behavior
    • Egocentric interactions with others
  – Negativism - often says “no”, even when means “yes” to assert independence
  – Ritualism helps child venture out & away from safety of parents
  – Has temper tantrums

DEVELOPMENTAL THEORIES

• Psychosexual development: Freud
  – Anal stage of dev.
    • Erogenous zone is anus & buttocks
    • Sexual activity centers on expulsion & retention of body waste
  – Conflict between “holding on” & “letting go” gradually resolves as bowel training progresses

DEVELOPMENTAL THEORIES

• Cognitive development: Piaget
  – Sensorimotor phase between 12 & 24 mo.
  – Preoperational phase from about 2 yrs - 4 yrs.
  – Egocentric thinking
    – Focuses on the here & now
    – Absolute thinking - perceives things as good or bad, right or wrong
    – Increased use of language & dramatic play

DEVELOPMENTAL THEORIES

• Moral development: Kohlberg
  – Makes judgments on basis of avoiding punishment or obtaining a reward
  – Discipline patterns affect moral development
    • Physical punishment & withholding privileges tends to give toddler a negative view of morals
    • Withdrawing love & affections as punishment leads to feeling of guilt
    • Appropriate disciplinary actions include providing simple explanations, praising appropriate behavior, & using distraction when the toddler is heading for danger
### SOCIAL DEVELOPMENT

**Language:**
- Begins to use short sentences
- Has a vocabulary of about 300 words by 2 yrs
- Tends to ask many “what” questions

**Play:**
- Is the major socializing medium
- Typically **parallel**
- Short attention span causes him to change toys often
- Continues to separating from parents

### SOCIAL DEVELOPMENT

**Samples of safe toys to provide opportunities for exploring the environment:**
- Play dough
- Blocks
- Housekeeping toys
- Containers
- Toy telephone
- Wooden puzzles
- Cloth books
- Simple musical instruments

### SOCIAL DEVELOPMENT

**Common Fears:**
- Loss of parents - Separation Anxiety
- Stranger anxiety
- Large animals
- Loud noises
- Going to sleep

**Effects of Hospitalization**
- Primary issue = Separation
- May interpret being in hospital or painful procedures a punishment for something he did “bad”
- Regressive behaviors

### SOCIAL DEVELOPMENT

**Guidelines for intervention:**
- Encourage caregivers to assure child of their return when need to leave & to follow through
  - Leave a familiar object belonging to them to assure a return
- Medical play kits helpful
- Provide for activity in a safe & supportive environment
- Use simple explanations to allay fears

### NUTRITION & FEEDING

**Most toddlers prefer to feed themselves**

- At risk for aspiration of small foods not easily chewed
- Most experience “food jags”
- Most experience episodes of physiologic anorexia R/T alternating periods of fast & slow growth

**Feeding suggestions:**
- Provide basic 4 food groups in small portions
- Offer limited number of foods at time

### NUTRITION & FEEDING

- Prepare foods attractively
- Limit concentrated sweets & empty calories
- Set child @ high chair @ family table
- Allow sufficient time to eat, but remove food when toddler begins playing with it
- Avoid using food as a reward or punishment
SELECTED HEALTH PROBLEMS

• Lead Poisoning
• Refer to RNSG 2504 Pediatric PowerPoint Notes

PRESCHOOL GROWTH & DEVELOPMENT

PHYSICAL GROWTH & DEVELOPMENT

• General characteristics:
  – Coordination & muscle strength ↑ rapidly
  – Handedness clearly established by 4 yrs.
  – Appears taller & thinner
  – Grows 2.5 - 3 inches /yr.
  – Gains 5 lb/yr
  – Can use scissors successfully & tie shoelaces
  – 20 teeth present
    • By 5 yrs may begin to lose deciduous teeth
    • By 5 yrs may have first permanent teeth (molars)

DEVELOPMENTAL THEORIES

• Psychosocial development: Erikson
  – Psychosocial crisis of Initiative vs Guilt
  – Significant other is the family
  – Psychosocial theme is “To make, to make like, to play”
  – Dev. a conscience & guilty feelings
  – Is energetic, enthusiastic, & has an active imagination
  – Uses simple reasoning & can tolerate longer periods of delayed gratification

• Psychosexual development: Freud
  • Phallic stage of development
  • Sexual pleasure centers on the genitalia & masturbation
  • Oedipal stage occurs, marked by jealousy & rivalry toward same-sex parent & love of the opposite-sex parent
    – By late preschool period, this typically resolves & a strong identification with the same-sex parent

• Cognitive development: Piaget
  – Still in Preoperational thought
    • Forms concepts not as complete or logical as adult’s
    • Makes simple classifications
    • Reasons from specific to specific
  – Thinking remains egocentric, becomes magical
  – Judgements dominated by perception & are illogical
  – Magical thinking
  – Animism
    • Perception that all objects have life & feeling
DEVELOPMENTAL THEORIES
• Moral development: Kohlberg
  – Conscience emerges
  – Obey rules out of self-interest
  – An “eye for an eye” guides their behavior
  – Begins to use self-control & tries to be “good” to avoid feelings of guilt
  – Little understandings of reasons for rules
    • Decides whether to break rule depending on punishment
  – Family’s religious beliefs & customs are important & can be deeply meaningful & comforting

SOCIAL DEVELOPMENT
• Language:
  – Talks incessantly
  – Engages in long monologues, even if no one is listening
  – Asks many “why” questions
  – Tend to boast & exaggerate
  – Enjoy rhymes
  – By 5 yrs. speak in sentences of adult length & use all parts of speech
  – May stutter as ideas come faster than speech
    • Usually disappears spontaneously if child not pressured

SOCIAL DEVELOPMENT
• Play:
  – Big task is learning to relate with age-mates
  – Play mainly associative
  – Understands concept of sharing
  – Needs regular socialization with age-mates
  – May have an imaginary friend
  – Play & activity suggestions:
    • Dress-up clothes
    • Housekeeping toys
    • Dolls & other toys that encourage pretending
    • Bikes & climbing toys for big muscles
    • Paper & crayons for creativity

SOCIAL DEVELOPMENT
• Common Fears:
  – Has more fears than at any other time
  – The dark
  – Being left alone, especially at bedtime
  – Animals, especially big dogs
  – Ghosts
  – Body mutilation
  – Pain

SOCIAL DEVELOPMENT
• Effects of hospitalization:
  – Primary issue is body mutilation
    • May think he caused illness or injury because he was “bad”
    • Feels loss of control over usual routines
    • May exhibit regressive behaviors
  – Fears injury & pain
  – Afraid of intrusive procedures & have a literal interpretation of words
    • Often imagine things are worse than they are

SOCIAL DEVELOPMENT
• Guidelines for intervention:
  – Reassure not to blame for hospitalization
  – Preparation for any medical procedure
    • Do not overload with too much info
  – Medical play
    • Provide for playroom & toys in room
  – Be consistent
  – Involve parents in care
  – Allow for regressive behavior
  – Encourage independence in ADL
  – Watch medical vocabulary
    • “Fix” instead of “take out”
SELECTED HEALTH PROBLEMS

- Head Lice
- Pin worms
- ADHD (Attention-Deficit Hyperactivity Disorder)
- Communicable Diseases
- Impetigo

- Refer to RNSG 2504 Pediatric PowerPoint Notes

SCHOOL-AGE GROWTH & DEVELOPMENT

- General characteristics:
  - Girls often grow faster than boys
  - Appears thinner & more graceful than preschoolers
  - Musculoskeletal growth leads to greater coordination & strength
    - Muscles still immature & can be injured from overuse
  - Lungs & alveoli fully mature, so ↓ resp. infections
  - Eustachian tube more downward so ↓ otitis media
  - All 20 deciduous teeth lost & replaced by 28 of 32 permanent teeth

DEVELOPMENTAL THEORIES

- Psychosocial development: 
  - Erikson
    - Psychosocial crisis of industry vs inferiority
    - Significant others expand to include school & instructive adults
    - Sense of industry grows out of a desire for real achievement
    - Engages in tasks & activities he can carry out
    - Learns rules & how to compete with others
    - Play is cooperative
    - School activities important

- Psychosexual development: 
  - Freud
    - Latency period, extending from about age 5 through 12, represents a stage of relative sexual indifference before puberty & adolescence
    - Dev. of self-esteem closely linked with a dev. sense of industry in gaining a concept of one’s value & worth

PHYSICAL GROWTH & DEVELOPMENT

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### DEVELOPMENTAL THEORIES

**Cognitive development:**
- **Piaget**
  - Stage of concrete operations
  - Marked by inductive reasoning, logical operations
  - Can distinguish fact from fantasy
  - Concept of time becomes clear
  - Does not deal with abstractions or socialized thinking
  - Asks questions
  - Collecting & sorting objects (eg., baseball cards, Beanie Babies)

**Moral development:**
- **Kohlberg**
  - Increased desire to please others
  - Observes & to some extent, internalizes standards of others
  - Wants to be considered “good” by those whose opinions matter to him

### SOCIAL DEVELOPMENT

**Play:**
- Becomes more competitive & complex
- Team sports
- Secret clubs, gangs
- Rules & rituals important
- Coordination & motor skills improve as child given opportunity to practice
- Enjoy active sports & games as well as crafts & fine motor activities
- Enjoy activities requiring balance & strength

**Common Fears:**
- Failure @ school
- Bullies
- Intimidating teachers

**Effects of Hospitalization:**
- Common fears include:
  - Disability & possibly death
  - Unknown events & procedures
  - Loss of control & independence
  - Interruption of daily routine
- Primary issue is control
- Loss of contact with peers big issue
- School routines interrupted

**Guidelines for intervention:**
- Encourage to talk about interests
- Allow to help with self care & treatments
- Give opportunities to make choices whenever possible
- Still a need for comfort from caregivers & parents
- Reassure that crying is OK
- Peer interaction important
  - Cards, visits, etc
SELECTED HEALTH PROBLEMS

• Appendicitis
• Rheumatic fever

• Refer to RNSG 2504 Pediatric PowerPoint Notes

ADOLESCENT GROWTH & DEVELOPMENT

PHYSICAL GROWTH & DEVELOPMENT

• General characteristics:
  – Rapid rate of physical
  – Encompasses puberty
    • Girls begin between ages 8-14 yrs
      – Complete within 3 yrs
    • Boys begin between ages 9-16 yrs
      – Complete by age 18 - 20
  – Hormonal changes
  – Sexual maturity reached
  – Most girls reach “reproductive maturity 2-5 yrs after onset of menstruation
  – Ultimately ht., wt., & body build influenced by diet, exercise, & heredity

DEVELOPMENTAL THEORIES

• Psychosocial development: Erikson
  – Psychosocial crisis is identity vs role confusion
  – Significant others are the peers
  – Energy focused within the self, & the adol. is described as egocentric or self-absorbed
  – Try on new roles in transition & experiment with the environment until finding a role that fits
  – Lack of commitment R/T changing interests
    • Illustrated by parents buying expensive equipment & having it given up next yr

• Psychosexual development: Freud
  – In the genital stage
    – Focus in on genitals as erogenous zone
    – A time of heightened sexual drive
      • Experiences conflict between own need for sexual satisfaction & society’s expectations
    – Core concerns include body image dev. & acceptance by the opposite sex

DEVELOPMENTAL THEORIES

• Cognitive development: Piaget
  – In developmental stage of formal operations
  – Moves from deductive to abstract reasoning
  – Thinks beyond the present & forms theories about everything
  – Develops a systematic approach to problems
DEVELOPMENTAL THEORIES

- **Moral development: Kohlberg**
  - Marked by the development of an individual conscience & a defined set of moral values
  - Control of conduct is now internal
  - Dev. a respect for law & order

SOCIAL DEVELOPMENT

- A period of rebellion & uncertainty as the adol. defines an identity separate from parental authority
- Peer relationships become all important for advice & support
- Being found attractive by members of the opposite sex is important
- Group parties & dates occupy much of the social time
- Automobile ownership important
- A job & earning money important

SOCIAL DEVELOPMENT

- Degree of sexual intimacy experienced depends, to a large part, on peer group codes & the adolescent's expectations & value system
  - Needs accurate, complete information on sexual matters
  - Must know how pregnancy occurs and how it is prevented
- Common fears:
  - Relationships with persons of opposite sex
  - Homosexual tendencies
  - Ability to assume adult roles

SOCIAL DEVELOPMENT

- Effects of Hospitalization:
  - Primary issue is body image
    - Self-esteem, independence & body image are negatively impacted when hospitalized
  - Fears loss of control through enforced dependency & loss of identity
  - Fears bodily injury & pain
  - Inability to gain independence from family
  - Adjustment required R/T separation from peers & lack of emotional support

SOCIAL DEVELOPMENT

- Guidelines for intervention:
  - Allow to participate in treatment decisions & have as much control as possible
  - Respect privacy & confidentiality
  - Provide opportunities for expression of feelings
  - arrange for age-compatible roommate, if possible
  - Have phone @ bedside
  - Encourage to wear own clothing
  - Use scientific & medical terminology to prepare for procedures

SOCIAL DEVELOPMENT

- When possible, provide for special activity area limited to adolescent use
- Allow favorite foods to be brought in
- Approach with caring, understanding, & acceptance
INJURY PREVENTION

• Are risk-takers & often do not consider safety before acting
• Contribute substantially to the number of motor vehicle accidents through:
  – Inexperience & poor judgment
  – Reckless driving or speeding
  – Driving under the influence of alcohol or other drugs
  – Failure to use safety belts
  – Peer pressure for unsafe driving practices

INJURY PREVENTION

• Particularly prone to swimming & diving accidents, and safety of these areas must be taught
• Needs instruction as to how to avoid sports injuries
• Smoking & use of alcohol & other drugs should be discouraged
• Other issues:
  – Body piercing
  – Tattoos
  – Suntanning

SELECTED HEALTH PROBLEMS

• Acne
• Mono

• Refer to RNSG 2504 Pediatric PowerPoint Notes

DISORDERS OF CHILDREN

DISORDERS

• RESPIRATORY DISORDERS
• GASTROINTESTINAL DISORDERS
• GENITOURINARY TRACT DISORDERS
• NEUROLOGIC DISORDERS
• NEUROMUSCULAR, MUSCULAR & ARTICULAR DISORDERS
• HEMATOLOGIC DISORDERS
• CARDIOVASCULAR DISORDERS
• CANCER

RESPIRATORY DISORDERS OF CHILDREN
RESPIRATORY SYSTEM OVERVIEW

OVERVIEW
- Resp. infections easily spread from one structure to another within the resp. tract
  - R/T the contiguous nature of the mucous membrane lining the entire tract
- Resp infections account for the majority of acute illness in children
  - Etiology influenced by age, season, living conditions, & preexisting medical problems
- Most infections caused by viruses

OVERVIEW
- Infants ↓ 3 mo have lower infection rate R/T protective function of maternal antibodies
  - Rate ↑ between 3-6 mo, & continues to remain high during toddler & preschool yrs.
    - Amount of lymphoid tissue ↑ throughout middle childhood & repeated exposure to organisms gives increasing immunity as children grow older
- Children exhibit a response to resp. infection with systemic symptoms (diarrhea, fever, etc)

OVERVIEW
- Poor tolerance of nasal congestion - esp. in infants who are obligatory nose breathers until 2-4 mo.
- Increased susceptibility to ear infection R/T shorter, broader, & more horizontally positioned eustachian tubes
- Increased severity of resp. symptoms R/T smaller airway diameters
- Resp. rate higher

OVERVIEW
- Fever:
  - May be absent in the NB
  - Greatest @ 6 mo to 3 yrs.
  - May be high, even with mild infections
  - May dev. febrile sz.
    - Uncommon after 3 - 4 yr.
- Anorexia:
  - Common
  - Freq. initial evidence of illness
  - Often extends into convalescence

ASSSESSMENT:
ASSOCIATED SIGNS & SYMPTOMS

ASSESSMENT
- Fever:
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ASSESSMENT

• Vomiting:
  – Sm. Children vomit readily with illness
  – May be a clue to onset of infection
    • May precede other signs by several hr.
• Diarrhea:
  – Usually mild, but may become severe
  – Often accompanies viral resp. infections
  – Is a frequent cause of dehydration

ASSESSMENT

• Abdominal Pain:
  – Common complaint
• Nasal Blockage
  – Sm. passages of infants easily blocked by mucosal swelling & exudation
  – Can interfere with respiration & feeding in infants
  – May irritate upper lip & skin surrounding nose
• Cough:
  – Common feature
  – May persist several months after disease

ASSESSMENT

• Respiratory Sounds:
  – Sounds associated with respiratory disease:
    • Cough
    • Hoarseness
    • Grunting
    • Stridor
    • Wheezing
  – Auscultation:
    • Wheezing
    • Crackles
    • Absence of sound

ASSESSMENT

• Sore Throat:
  – Frequent complaint of older children
  – Young children (unable to describe sym.) may not complain even when highly inflamed
  – Often leads to refusal to take oral fluids or solids

ASSESSMENT

• Overall physical should focus on following:
  – Alertness, changes in mental status
  – Activity level & complaints of fatigue
  – Skin color changes, particularly cyanosis
  – Respiratory rate & pattern & apnea
  – Retractions: presence, location, & severity
  – Adventitious lung sounds
  – Cough, productive or nonproductive

ASSESSMENT

– Dyspnea, stridor, grunting, nasal flaring, head bobbing (infant)
– Sputum
– Bad breath
ASSESSMENT

• NURSING ALERTS
  - Advise family to seek medical evaluation is:
    – Breathing becomes difficult
    – Abdominal pain develops
    – Sore throat pain is so severe that child is unable to eat or drink
  - Prolonged fever or appearance of fever during early convalescence is a sign of secondary bacterial infection & should be reported ASAP

RESPIRATORY SYSTEM
NURSING IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

IMPLEMENTATION

• Ease respiratory efforts
  – Moisture to soothe inflamed membranes
  – Humidification / nebulilization / p
  – Use of O2
  – Parent at bedside

• Promote rest

• Promote comfort
  – Nose drops & throat irrigations
  – Decongestants
  – Use of either hot or cold compresses
  – Antipyretics
  – Cough suppressants

ASSESSMENT

• NURSING ALERTS
  - Children with severe respiratory distress should not be given anything by mouth to prevent aspiration & to ↓ the work of breathing
  - Early signs of impending airway obstruction include:
    – ↑ P&R
    – Retractions
    – Flaring of nares in infants
    – ↑ restlessness

IMPLEMENTATION

• Prevent spread of infection
  – Careful handwashing!
  – Remove affected children from contact with other children
  – Isolation procedures
  – Antibiotic therapy if indicated
  – Encourage good chest physiotherapy

• Reduce temperature
  – Antipyretics, (ibuprofen or acetaminophen)
  – Cool environment
  – Remove clothing & blankets

IMPLEMENTATION

• Promote hydration
  – IV fluids if not able to maintain adequate po fluids
  – Encourage adequate fluid intake
    • Sm. amts. of favorite fluids @ freq. intervals
    • Use of high-calorie liquids
      – Juices
      – Water flavored with Jello, etc
      – (Do not use if diarrhea present)
    • Oral rehydration solutions
      – Infalyte or Pedialyte for infants
      – Sports drinks such as Gatorade for older
  – Do not awaken to give fluids
  – Observe freq. of voiding
  – Strict I&O
IMPLEMENTATION

• Provide nutrition
  – IV fluids while loss of appetite
  – Do not urge food on anorexic children as may precipitate N&V or an aversion to feeding
  – Offer small feedings of foods such as gelatin, soup, & puddings

• Family support & home care
  – Recognize parental concern & need for info. & support
  – Explain therapy & child’s behavior
  – Encourage family-centered care
  – Ensure family knows S&S of Resp. complications

RESPIRATORY DISORDERS

• Asthma
• Cystic fibrosis
• Croup
• Otitis media
• Pneumonia
• Respiratory Syncytial Virus
• Tonsillitis

• Refer to RNSG 2504 Pediatric PowerPoint Notes

GASTROINTESTINAL DISORDERS OF CHILDREN

GASTROINTESTINAL SYSTEM OVERVIEW

OVERVIEW

• Dysfunction of the GI tract can cause significant problems with the exchange of fluids, electrolytes & nutrients
• Problems can affect overall health, growth & development
• Children easily become dehydrated if vomiting &/or diarrhea a symptom
• Meeting nutritional needs a major goal
  – Use ht & wt to determine
  – Many conditions chronic & extend over lifetime
OVERVIEW

• Diarrhea & vomiting occur more frequently in children
  – More prone to fluid & electrolyte imbalances
• Dehydration most commonly results from abnormal fluid losses such as from excessive vomiting or diarrhea

ASSESSMENT

• Most important basic nursing assessments:
  – Measurements of intake & output
  – Measurements of height & weight
  – Abdominal examination
  – Stool & urine tests
  – Abdominal pain
  – Bowel sounds
  – Urinary output
  – Stool output
  – Fever
  – Dietary history

ASSESSMENT

• NURSING ALERT
  • In any instance in which severe abd. pain is observed, the nurse must be aware of the danger of administering laxatives or enemas as such measures stimulate bowel motility & ↑ the risk of perforation

G I SYSTEM ASSESSMENT: ASSOCIATED SIGNS & SYMPTOMS

G I SYSTEM NURSING IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

IMPLEMENTATION

• Obtain accurate weights
• IV fluids / TPN if unable to ingest sufficient fluid/foods orally
• Monitor IV replacement therapy, checking IV site frequently
• Monitor hydration status with strict I&O
• Maintain skin integrity
  – Provide good hygiene
  – Skin care
  – Carefully washing & drying diaper area with every change
• Promote comfort
IMPLEMENTATION

• If postoperative, monitor for wound infection
• Note & record frequency & characteristics of stools
• Monitor abdominal girth to assess for increasing distention
  – Distended abd. ↓ resp. efforts
• Prepare child & parents for procedures & treatments
  – Surgery
  – Ostomies
  – Enemas
  – Bowel preps
  – TPN, etc.

SELECTED GI DISORDERS OF CHILDREN

GASTROINTESTINAL DISORDERS

• Megacolon
• Biliary atresia
• Gastroesophageal reflux
• Celiac disease
• Lactose intolerance
• Failure to thrive
• Intussusception
• Necrotizing enterocolitis
• Intussusception
• Cleft lip & palate
• Crohn’s disease
• Ulcerative colitis

GASTROINTESTINAL DISORDERS

• Pyloric stenosis
• Rotavirus
• Esophageal atresia
• Anorectal malformations

GENITOURINARY TRACT DISORDERS OF CHILDREN

• Refer to RNSG 2504 Newborn Congenital Conditions and Pediatric PowerPoint Notes

IMPLEMENTATION

• Support parents by encouraging them to express feelings & concerns
• Promote a positive self-concept in older child by allowing to express feelings about the disorder &/or dietary restrictions
• Offer pacifier while infant is NPO
• Prevent infection by good handwashing & appropriate isolation
• Refer parents & child to nutritional counseling & various appropriate community agencies
GENITOURINARY SYSTEM OVERVIEW

OVERVIEW

- Kidney development not complete until end of 1st. year
  - Can’t concentrate or dilute urine well
  - Newborn more prone to developing severe acidosis
  - Sodium excretion ↓ in infancy
- In the newborn, urinary tract disorders generally associated with malformations of other body systems

GENITOURINARY TRACT ASSESSMENT: ASSOCIATED SIGNS & SYMPTOMS

ASSESSMENT

- Health history findings possibly pointing to renal dysfunction in the neonate:
  - Poor feeding
  - Failure to thrive
  - Frequent urination
  - Crying on urination
  - Poor urinary stream
  - Dehydration
  - Convulsions
  - Rapid respirations (acidosis)
  - Enlarged kidneys or bladder
  - Other anomalies

ASSESSMENT

- Health history findings possibly pointing to renal dysfunction in the infant:
  - Same findings as neonate PLUS:
    - Persistent diaper rash
    - Foul-smelling urine
    - Straining on urination
    - Pallor
    - Fever

ASSESSMENT

- Health history findings possibly pointing to renal dysfunction in the older child:
  - Poor appetite
  - Vomiting
  - Excessive thirst
  - Incontinence
  - Frequent urination
  - Painful urination
  - Bloody urine
  - Fatigue
  - Abd., flank, or back pain
  - Swelling of the face
ASSESSMENT

• Older child (cont.)
  – Edema
  – Hypertension
  – Growth failure
  – Seizures

ASSESSMENT

• Physical assessment might reveal signs & symptoms suggestive of renal dysfunction such as:
  – Abnormal rate & depth of respirations
  – Hypertension
  – Fever
  – Growth retardation
  – Abdominal distention
  – Signs of circulatory congestion
  • Peripheral cyanosis
  • Slow cap refill time
  • Pallor
  • Peripheral edema

ASSESSMENT

• Physical assessment cont.
  – Early signs of uremic encephalopathy
    • Lethargy
    • Poor concentration
    • Confusion
  – Signs of congenital anomalies
    • Hypospadias or Epispadias
    • Ear anomalies (low-set, floppy, malformed)
    • Prominent epicanthal folds
    • Beak-like nose
    • Small chin

ASSESSMENT

• NURSING ALERTS

  • A child who exhibits the following should be evaluated for UTI:
    – Incontinence in a toilet-trained child
    – Strong-smelling urine
    – Frequency &/or urgency
  • Use of Fleet enemas in children with acute or chronic renal failure is potentially lethal R/T hyperphosphatemia

GU SYSTEM

IMPLEMENTATIONS

NURSING IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

• Accurate measurement of weights
• Accurate measurement of blood pressure
• Accurate measurement of intake & output
• Prepare children & parents for tests, collection of urine samples, & other procedures
• Observe characteristics of urine collected & perform tests on urine collected
• Administer meds as ordered
IMPLEMENTATION

– Assess for fluid volume deficit by monitoring:
  • ↑ edema
  • Daily abdominal girth
  • Daily weight
  • Daily I&O
  • Blood pressure

– Prevent skin breakdown
  • Frequent position changes
  • Providing good skin care
  • Scrotal supports in boys

– Maintain or improve nutritional status

– Monitor for signs of infection

IMPLEMENTATION

– Assess urinary status by observing appearance & color of urine, & noting S&S such as:
  – Frequency
  – Burning
  – Enuresis
  – Urinary retention
  – Flank pain

– If post-op, monitor for wound infection

– Provide support to family by answering question & providing information about diagnosis, tests, & treatments

IMPLEMENTATION

– Help improve child’s self-concept by providing positive feedback, emphasizing strengths, & encouraging social interaction & pursuit of interests

– Refer child & family to community health resources

SELECTED GU DISORDERS OF CHILDREN

• Exstrophy of bladder
• Vesicoureteral reflux (VUR)
• Undescended testicle
• Hypospadias
• Epispadias
• Nephrotic syndrome
• Acute glomerulonephritis

• Refer to RNSG 2504 Pediatric PowerPoint Notes

GENITOURINARY TRACT DISORDERS

NEUROLOGIC DISORDERS OF CHILDREN
CENTRAL NERVOUS SYSTEM OVERVIEW

OVERVIEW

• In 1st year of extrauterine life, the number of brain neurons ↑ rapidly
• Brain weight doubles by end of first year & triples by age 6 yrs.
• CNS myelinization, which enables progressive neuromuscular function, follows the cephalocaudal & proximodistal sequence

NERVOUS SYSTEM ASSESSMENT: ASSOCIATED SIGNS & SYMPTOMS

ASSESSMENT

• Components of pedi. neuro. exam:
  – General
    • Affect
    • Social interaction
    • Denver Developmental Screening Test
    • Emotional state
  – Head circumference
  – Fontanel assessment in infants
  – Mental status
    • LOC
    • Orientation
    • Reasoning ability
    • Memory

ASSESSMENT

• Periodic neurologic checks should include:
  – Vital signs
  – LOC
  – Eyes:
    • Pupil size
    • Equality
    • Reaction to light
    • Extraocular movements
    • Corneal reflex
    • Visual disturbances
  – Motor & sensory function
  – Head circumference & fontanel inspection in infants
  – Reflexes
**ASSESSMENT**

- Clinical manifestations of ↑ ICP in an infant & young child commonly include:
  - Irritability & restlessness
  - Tense, bulging anterior fontanel in child < 18 mo.
  - High-pitched cry
  - Change in feeding habits
  - ↑ Occipital frontal circumference
  - Crying with cuddling & rocking
  - “Setting sun” sign
  - Macewen’s (“cracked pot”) sign in an infant with unfused cranial sutures

- Clinical manifestation of ↑ ICP in an older child commonly include:
  - Headache
  - Anorexia
  - Vomiting, often projectile without nausea
  - Cognitive, personality, & behavioral changes
  - Diplopia, blurred vision
  - Seizures

**NURSING ALERTS**

- Lack of response to painful stimuli is abnormal & must be reported immediately
- The sudden appearance of a fixed & dilated pupil is a neurosurgical emergency
- 3 key reflexes that demonstrate neurologic health in infants are:
  - Moro
  - Tonic-neck
  -Withdrawal reflexes

- When opioids are used, bowel elimination must be closely monitored because of their constipating effect

**IMPLEMENTATION**

- Monitor vital signs
- Measure occipital frontal circumference as ordered
- Assess neurologic status & assess all signs of ↑ ICP
- Encourage parents to express their feelings, fears, & anxieties
- Promote parent-infant relationship:
  - Encourage parent participation with ADLs
  - Encourage cuddling & tactile stimulation

**NEUROLOGIC SYSTEM NURSING IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT**

- Encourage parents to express their feelings, fears, & anxieties
- Promote parent-infant relationship:
  - Encourage parent participation with ADLs
  - Encourage cuddling & tactile stimulation
### IMPLEMENTATION
- Provide family teaching with special emphasis of:
  - Infection control
  - Recognizing early S&S of ↑ ICP
  - Bladder & bowel management
  - Shunt management
  - Developmental needs
  - Effects of immobilization & ways to minimize them
  - Need for lifelong care
- Assess family’s ability to care for infant, & refer for further assistance if necessary

### IMPLEMENTATION
- Help prevent skin / sac breakdown
- If post-op, monitor for wound infection
- Institute procedures for Latex allergy prevention

### SELECTED NEUROLOGIC DISORDERS OF CHILDREN
- Neural tube defects
  - Spina bifida occulta
  - Meningocele
  - Myelomeningocele
- Hydrocephalus
- Down syndrome

- Refer to RNSG 2504 Newborn Congenital Conditions & Pediatric PowerPoint Notes

### NEUROLOGIC DISORDERS
- Hydrocephalus
- Spina bifida occulta
- Meningocele
- Myelomeningocele

### NEUROMUSCULAR, MUSCULAR & ARTICULAR DISORDERS OF CHILDREN

### NEROMUSCULAR, MUSCULAR & ARTICULAR DISORDERS OF CHILDREN: OVERVIEW
OVERVIEW

• The most frequent reasons for immobility are congenital defects
• The major effects of immobilization are:
  – Loss of muscle strength, endurance, & muscle mass
  – Bone demineralization leading to osteoporosis
  – Loss of joint mobility & contractures
  – Decreased metabolism
• Muscle disuse, over time, affects all other systems of body

OVERVIEW

• Bone growth occurs at the epiphyseal plate, a very vascular area
  – These cells highly sensitive to the influence of growth hormone, estrogen, & testosterone
  – During adolescence, the epiphyseal plate converts to bone & growth stops
  – This is an area susceptible to injury through fracture, crushing or slippage
  – Damage to this area can disrupt bone growth

OVERVIEW

• Because a child’s bones are still growing:
  – Some bony deformities due to injury can be remodeled or straightened
  – Some deformities can progress with growth
• Because a child’s bones are more plastic:
  – More force required to fracture a bone
• A child’s bones heal much faster than adult’s

OVERVIEW

• Treatment for these disorders often involves immobility
  – Casts
  – Traction
  – Body frames
• Impact of immobility depends in large part on the child’s developmental level
• Play, social interaction, & self-care help the immobilized child gain self-esteem & independence & promote normal growth & development

OVERVIEW

• Psychological effects of immobilization commonly include:
  – Altered body image
  – Altered perception of external environment
  – Sensory deprivation
  – Impaired mastery of developmental psychosocial tasks

NEUROMUSCULAR, MUSCULAR & ARTICULAR SYSTEM ASSESSMENT

Pediatric HESI Review 28
ASSESSMENT

• Initial assessment should obtain a complete health history of problems pertaining to this system, focusing on:
  – Trauma
  – Delayed walking or other developmental abnormalities
  – Pain
  – Structural abnormalities
  – Any physical limitations or lifestyle alterations imposed by the problem
  – Mobility aids used

ASSESSMENT

• Clinical manifestations of prolonged immobilization may include:
  – Joint contractures & pain
  – Muscle atony & weakness
  – Fatigue
  – Diminished reflexes
  – Delayed healing
  – Orthostatic hypotension
  – S&S of thrombus formation
  – Anorexia
  – Constipation

ASSESSMENT

• NURSING ALERTS

  • Numbness, tingling, change in sensation & loss of motion are sym. of neurologic impairment & should be evaluated immediately
  • The 5 “Ps” of ischemia from vascular (circulatory) injury are:
    – Pain
    – Paralysis
    – Pallor
    – Paresthesia
    – Pulselessness

NEUROMUSCULAR, MUSCULAR, & ARTICULAR SYSTEMS IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

ASSESSMENT

• NURSING ALERTS

  • A fracture should be strongly suspected in a small child who refuses to walk
  • Skeletal traction is NEVER released by the nurse, nor are weights lifted that are applying traction
  • A plastic bag of frozen veg, such as peas, serves as a convenient ice pack for soft tissue injuries

ASSESSMENT

• The classic S&S of Pulmonary Emboli are:
  – Chest pain
  – Dyspnea
  – Petechial hemorrhages of the chest & shoulders
  • Treat the dyspnea by elevating the head & administering O2
IMPLEMENTATION

• Protect skin integrity by turning frequently & inspecting for early signs of breakdown
• Promote adequate hydration by offering favorite drinks
• Promote good nutrition by offering high-protein, high caloric foods in sm., freq., & attractively arranged servings
• Promote normal bowel elimination by keeping child well hydrated, including fiber in diet, & providing for privacy @ toilet

IMPLEMENTATION

• Promote normal urinary elimination by monitoring freq. & amt. of urination & assessing for bladder distention
• Promote normal activity as condition & restrictive devices allow
• Provide diversional activities spaced with adequate rest
• Help prevent respiratory complications through good hydration & changing position freq.

IMPLEMENTATION

• Help maintain adequate cardiac output by changing position freq., & providing active or passive range of motion exercises
• Help prevent urinary tract infections through good hydration, promotion of frequent voiding, provision of acid-ash foods (cereal, fish, poultry, cranberry or apple juice & meats)

IMPLEMENTATION

• Prevent contractures by maintaining proper body alignment, minimizing flexed positions, & providing active & passive ROM
• Promote self-care by allowing child to help plan daily routines, select foods, determine the time for bathing, select clothing, etc.
• Promote normal growth & dev. by providing regular social contact & diversional activities

IMPLEMENTATION

• Promote effective coping by providing play therapy, anticipatory teaching, & explanations of physical restrictions & restraining devices
• Provide patient & family teaching while in hospital & for home care
• Prepare child & family for each procedure & planned therapy
• Refer family to support organizations

SELECTED NEUROMUSCULAR, MUSCULAR & ARTICULAR DISORDERS OF CHILDREN
**DISORDERS**

- Developmental dysplasia of the hip (DDH)
- Clubfoot
- Cerebral palsy
- Muscular dystrophy
- Juvenile rheumatoid arthritis
- Scoliosis
- Legg-Calve' Perthes disease
- Osteomyelitis
- Fractures
- Traction

**HEMATOLOGICAL DISORDERS OF CHILDREN**

- Refer to RNSG 2504 Newborn Congenital Conditions and Pediatric PowerPoint Notes

**HEMATOLOGIC SYSTEM OVERVIEW**

- Blood consists of liquid plasma & formed elements:
  - Erythrocytes
  - Leukocytes
  - Thrombocytes
- RBCs primarily transport O2 to & CO2 away from body tissues
- Typical lifespan of RBC = 120 days
- WBCs protect the body against infection
- There are 5 types of WBCs

**OVERVIEW**

- Platelets contain coagulation factors & help regulate homeostasis through a sequence of events known as the coagulation process
- The major blood-forming organs are bone marrow, the lymphatic system & the reticuloendothelial system
- Children with hematological dysfunction commonly undergo a multitude of invasive diagnostic tests, procedures, & treatments
OVERVIEW

• Children with hematological dysfunction commonly depend on others for care & support
• During the 1sr. 6 mo. of life, fetal hemoglobin is gradually replaced by adult hemoglobin, & it is only after this that hemoglobin disorders can be diagnosed

HEMATOLOGIC SYSTEM ASSESSMENT

ASSESSMENT

ASSESSMENT

HEMATOLOGIC SYSTEM ASSESSMENT

• Health history questions should focus on:
  – Bleeding or bruising tendencies
  – Medication use
  – Family history of bleeding problems
• Physical assessment findings of possible hematologic problems include:
  – Skin:
    • Pallor, flushing, jaundice, purpura, petechiae, ecchymoses, cyanosis, brownish discoloration

• NURSING ALERTS

• Never administer aspirin or any aspirin-containing compound to the child with hemophilia

ASSESSMENT

ASSESSMENT

ASSESSMENT

ASSESSMENT

ASSESSMENT

ASSESSMENT

ASSESSMENT

– Eyes:
  • Jaundiced sclera, conjunctival pallor, retinal hemorrhage, blurred vision
– Mouth:
  • Gingival & mucosal pallor
– Lymph nodes:
  • Lymphadenopathy, tenderness
– Cardiac:
  • Tachycardia, murmurs, signs & symptoms of congestive heart failure
– Pulmonary:
  • Tachypnea, orthopnea, dyspnea
– Neurologic:
  • Headache, vertigo, irritability, depression, impaired thought processes, lethargy

– Gastrointestinal:
  • Anorexia, hepatomegaly, splenomegaly
– Musculoskeletal:
  • Weight loss, decreased muscle mass, bone pain, joint swelling, pain
### Hematological System Nursing Implementations & Therapeutic Management

**Implementation**
- Relieve pain by assessing the child’s need for pain medication & provide prescribed medication
- Position the child for maximum comfort
- Implement therapeutic measures as appropriate which may include:
  - Oral & IV fluids
  - Electrolyte replacement to counter acidosis caused by hypoxia
  - O2 therapy to promote adequate oxygenation
  - Immobilization devices

**Implementation**
- Application of pressure &/or cold
- Administration of factor VIII or other substances
- Monitor for signs of infection
- Encourage optimal nutrition
- Support the child & family by allowing them to ventilate their fears, concerns & anger
- Provide patient & family teaching, covering:
  - Disease process, including genetic aspects & early recognition

### Selected Hematological Disorders of Children

**Select**
- Sickle cell anemia
- Hemophilia

**Refer to**
- RNSG 2504 Pediatric PowerPoint Notes
**CARDIAC DISORDERS IN CHILDREN**

**OVERVIEW**

- Congenital heart disease is the most common form of cardiac disease in children
- The cardiovascular system's basic function is to pump oxygenated blood to tissues & remove metabolic waste products from tissues
- Valves within the heart & pressure differences between the four heart chambers regulate blood flow through the heart & into systemic circulation

**CARDIAC SYSTEM OVERVIEW**

- Developmental delays often occur in children with cardiac disorders, particularly cyanotic heart defects
- Activity limitations may be essential, but may be difficult to impose
- With many defects, an older child may be allowed to self-limit activities according to how he feels
- Surgical procedures will be required to repair the defect

<table>
<thead>
<tr>
<th>OVERVIEW</th>
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</thead>
<tbody>
<tr>
<td>• Heart defects are described as either <strong>Acyanotic Heart Defects or Cyanotic Heart Defects</strong></td>
</tr>
<tr>
<td>• <strong>Acyanotic heart defects</strong> are congenital defects in which no deoxygenated (or poorly oxygenated) venous blood enters systemic arterial circulation</td>
</tr>
<tr>
<td>• Oxygenated blood is shunted from systemic to pulmonary circulation</td>
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</tbody>
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<table>
<thead>
<tr>
<th>OVERVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Any time there is a defect connecting systemic &amp; pulmonary circulation, blood will go from high to low pressure (path of least resistance)</td>
</tr>
<tr>
<td>• Normally pressure is higher in systemic circulation, so blood will be shunted from systemic to pulmonary circulation</td>
</tr>
<tr>
<td>• Blood leaving aorta is completely oxygenated</td>
</tr>
<tr>
<td>• Increased blood volume on right side of heart results in hypertrophy of right ventricle</td>
</tr>
<tr>
<td>• Most acyanotic heart defects will result in CHF</td>
</tr>
</tbody>
</table>
### OVERVIEW

**Types of acyanotic defects include:**
- Left to right shunting through an abnormal opening:
  - PDA, ASD, VSD
- Obstructive lesions that restrict ventricular outflow:
  - Aortic valvular stenosis, pulmonic stenosis, coarctation of aorta

**Types of cyanotic defects include:**
- Tetralogy of Fallot, Tricuspid atresia, transposition of the great vessels, truncus arteriosus,
- Total anomalous pulmonary venous communication, hypoplastic left heart syndrome

### OVERVIEW

**Cyanotic heart defects** are congenital heart defects in which deoxygenated blood enters systemic arterial circulation
- Blood entering peripheral tissues has much lower O2

**Types of cyanotic defects include:**
- Tetralogy of Fallot, Tricuspid atresia, transposition of the great vessels, truncus arteriosus,
- Total anomalous pulmonary venous communication, hypoplastic left heart syndrome

### OVERVIEW

In over 90% of congenital heart defects, the exact etiology is unknown
- The primary cause of congestive heart failure in the 1st 3 years of life is congenital heart disease

### OVERVIEW

**The reasons for CHF are basically:**
- 1. The heart is unable to meet the body’s oxygenation & nutritional needs due to:
  - Excessive volume
  - Excessive pressure load on the heart
- 2. Diminished myocardial functioning

**The major diagnostic test for cardiac disorders is cardiac Catheterization** which provides the following information:
- O2 saturation in heart chambers
- Pressures within chambers
- Changes in cardiac output
- Anatomic abnormalities

**Post-Catheterization care:**
- Check extremity distal to cath site for color, temp., pulse, & cap. refill
- Keep extremity distal to cath. site extended for 6-8 hr.

- Check pressure dressing over site for bleeding
- Monitor heart rate for signs of Bradycardia, tachycardia, & dysrhythmia
- Monitor intake & output
CARDIAC SYSTEM ASSESSMENT

ASSESSMENT

• Health history findings of significance include:
  – Family history of congenital heart disorders
  – Presence of murmurs & age at which first noted
  – Feeding problems, including fatigue or diaphoresis during feeding & poor weight gain
  – Respiratory difficulties, including tachypnea, dyspnea, SOB, cyanosis & freq. URI
  – Chronic fatigue or exercise intolerance

ASSESSMENT

• Significant physical assessment findings may include:
  – Failure to thrive
  – Frequent resp. infections
  – Cyanosis
  – Periorbital & peripheral edema
  – Respiratory difficulties
  – Color changes:
    • Pallor or cyanosis
    – Persistent or intermittent
    – Pulse alterations
    • Tachycardia or bradycardia
    • Dysrhythmias
    • Diminished peripheral pulses

ASSESSMENT

– Activity intolerance
– Hypotension or unequal blood pressure in arms & legs
– Abdominal distention, hepatomegaly, splenomegaly
– Clubbing of fingers & toes
– Murmurs, bruits, thrills
– Squatting
– Hypoxic spells ("tet" spells R/T transient cerebral ischemia)

ASSESSMENT

• NURSING ALERTS

• Electrodes for cardiac monitoring are often color coded: white for right, green (or red) for ground, & black for left
• O2 is a drug & is only administered with an appropriate order
• Therapeutic serum digoxin levels range from 0.8-2 ug/L. Signs of toxicity - bradycardia & vomiting

ASSESSMENT

• NURSING ALERTS

• Infants rarely receive > than 1 ml (50ug or 0.05 mg) of Digoxin. A higher dose is an immediate warning of a dosage error
• Chest tube drainage > than 3 ml/kg/hr for more than 3 consecutive hours is excessive & may indicate post-op hemorrhage
ASSESSMENT

• NURSING ALERTS

• The early signs of CHF are:
  – Tachycardia, especially during rest & slight exertion
  – Tachypnea
  – Profuse scalp sweating, especially in infants
  – Fatigue & irritability
  – Sudden weight gain
  – Respiratory distress

CARDIAC SYSTEM

NURSING IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

IMPLEMENTATION

• Help ↓ cardiac workload
  – Organize nursing care to provide for periods of uninterrupted rest
  – Prevent excessive crying in infants
  – Provide diversional activities that involve limited energy expenditure for older children
  – Encourage parents to stay with infant to provide holding, rocking, & cuddling to help infant sleep more soundly
  – Minimize stressors
  – Keep warm

• Observe for & assist in managing CHF

IMPLEMENTATION

• Help maintain optimal nutritional status by:
  – Provide small, frequent meals if child tires easily
  – In infants use soft nipples to ↓ work during feeding; gavage feedings may be necessary
    • Limit feedings to 45 min or≤
    • Anticipate infant’s hunger to avoid crying
    • Feed in semi-erect position
    • Burp frequently
    • Observe for vomiting & diarrhea if high-caloric formula ordered
    • Daily weights

• Prepare child/family for diagnostic studies & surgery

• Help prevent infections
  – Careful handwashing
  – Avoid contact with sick persons
  – Ensure immunizations up to date

• Promote normal growth & development

• Administer meds & monitor for side effects

• Help ↓ child’s & family’s anxiety & ↑ understanding by providing information on medical & surgical treatments

IMPLEMENTATION

• Evaluate fluid status
  – Strict I&O
  – Daily weights
  – Assessing for edema & severe diaphoresis
  – Monitor electrolyte values

• Provide family members with appropriate discharge teaching
  – Medications
  – Activity restrictions
  – When to call doctor
  – Diet & nutrition
  – Wound care
  – Follow-up appointments

IMPLEMENTATION

• Daily weights

• Prepare child/family for diagnostic studies & surgery

• Help prevent infections
  – Careful handwashing
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  – Activity restrictions
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  – Diet & nutrition
  – Wound care
  – Follow-up appointments
IMPLEMENTATION

• Observe for & assist in managing resp. distress: cough, tachypnea, tachycardia, retractions, grunting, nasal flaring, cyanosis
  – Administer O2 as ordered
  – Positioning to ease breathing
  – Administer meds as ordered
• Administer meds as ordered
• Monitor fluid status
  – Strict I&O
  – Daily weights
• Prevent infections

CANCER IN CHILDREN

• Cancer is the leading cause of death from disease in children from 1-14 yrs
• Leukemia is the most frequent type of childhood cancer, followed by tumors of the CNS
• In recent years survival rates have ↑ so that > 70% of all children with malignant neoplasms treated @ major centers will survive > 5 years

OVERVIEW

• Classification is by tissue of origin:
  – Blood & related cells:
    • Leukemias
    • Lymphomas
  – Connective tissue:
    • Fibrosarcoma - originating in fibrous tissue
    • Osteosarcoma - originating in bone-producing cells
    • Ewing’s sarcoma, originating in midshaft of long bones & flat bones
  – Muscle tissue
    • Rhabdomyosarcoma

CANCER OVERVIEW

• Nerve tissue:
  • Neuroblastoma - originating from neural crest during embryonic dev.
  • Glioblastoma - originating from glial cells
  • Retinoblastoma - originating in the retinal tissue
• Renal tissue:
  • Wilm’s tumor (nephroblastoma) - originating in the kidneys
• The child & family adjust to the process of living with a life-threatening illness
• Child’s reaction depends on his age

OVERVIEW

• Cancer overview
  – Cancer is the leading cause of death from disease in children from 1-14 yrs
  – Leukemia is the most frequent type of childhood cancer, followed by tumors of the CNS
  – In recent years survival rates have ↑ so that > 70% of all children with malignant neoplasms treated @ major centers will survive > 5 years
OVERVIEW

• Interventions used:
  – Surgery:
    • Useful for diagnosis
    • Used for tumor removal
    • Often used in conjunction with radiation &/or chemotherapy
  – Chemotherapy:
    • Primary form of treatment
    • Protocols combine drugs to allow for optimum cell cycle destruction with minimum toxic effects & ↓ resistance by cells to the agent
  – Radiation:
    • May be curative or palliative

OVERVIEW

– Biologic Response Modifiers (BRMs):
  • Uses monoclonal antibodies and other agents
  • Changes host’s biologic response to tumor cells
– Bone marrow transplant:
  • Transfused marrow or stem cells produce functioning nonmalignant blood cells
  • Types:
    – Autologous - transplanted with own harvested marrow
    – Syngeneic - transplanted between identical twins
    – Allogeneic - transplanted from a nonidentical donor

OVERVIEW

• Stages of treatment consist of:
  – Induction
    • Goal to remove most of tumor
    • Often the most intensive phase
    • Side effects of treatment potentially life-threatening
  – Consolidation
    • Goal is to eliminate any remaining cells
  – Maintenance
    • Goal is to keep child cancer free
    • Uses chemo & may last for several yrs.

OVERVIEW

– Observation
  • Goal is to monitor @ intervals for evidence of recurrent disease & complications of treatment
  • Treatment is complete: may continue in this stage indefinitely

ASSESSMENT OF THE CHILD WITH CANCER

• Specific clinical findings vary depending on particular body system involvement
• Cardinal S&S of cancer in children include:
  – Unusual mass or swelling
  – Unexplained paleness & loss of energy
  – Sudden tendency to bruise
  – Persistent, localized pain or limping
  – Prolonged, unexplained fever or illness
ASSESSMENT

- Frequent headaches, often with vomiting
- Sudden eye or vision changes
- Excessive, rapid weight loss

IMPLEMENTATION

• Help child cope with intrusive procedures
  - Provide information geared to developmental level & emotional readiness
  - Use medical play
  - Allow child some control in situations where possible

• Provide patient & family teaching covering:
  - Diagnosis & nature of disorder
  - All treatments & procedures
  - Side effects of chemo & radiation

CANCER IMPLEMENTATIONS & THERAPEUTIC MANAGEMENT

• Help child cope with intrusive procedures
  - Provide information geared to developmental level & emotional readiness
  - Use medical play
  - Allow child some control in situations where possible

• Provide patient & family teaching covering:
  - Diagnosis & nature of disorder
  - All treatments & procedures
  - Side effects of chemo & radiation

IMPLEMENTATION

- Support child & parents
  - Acknowledge feelings & encourage communication
  - Provide contact with another parents or an organized support group
  - Try to keep life as normal as possible
  - Always tell the truth

- Minimize effects of treatment:
  - Skin breakdown
    • Keep clean & dry
    • Do opt wash off radiation markings
    • Avoid topical agents with alcohol
  - Bone marrow suppression:
    • Decreased RBCs
      - Provide frequent rest activities
    • Decreased WBCs
      - Monitor temperature elevations
      - Evaluate any potential site of infection
      - Good handwashing a MUST
      - Isolate from children with known communicable disease
    • Decreased platelets
      - Make environment safe
      - Avoid use of salicylates
      - Select activities that are physically safe
    - Interpret peripheral blood counts to guide specific interventions & precautions

- Nausea & vomiting
  • Administer antiemetics as ordered before chemo & repeat PRN
  • Ensure adequate oral intake or administer IV fluids as necessary

- Alopecia
  • Advise to buy wig before hair falls out
  • Help choose caps or hats to wear

- Stomatitis
  • Inspect mouth & rectum daily
  • Meticulous oral hygiene
  • Use soft-sponge toothbrush, cotton-tipped application “Toothettes” to avoid trauma
  • Apply lip balm
  • Local anesthetics to ulcerated areas

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  • Inspect mouth & rectum daily
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**IMPLEMENTATION**

- No juices containing ascorbic acid & hot or spicy foods
- Avoid lemon glycerin swab (irritate eroded tissue)
- Avoid hydrogen peroxide (delays healing by breaking down protein)
- Administer meds as ordered (antiinfectives & analgesics)
- Wash perineal area after each toileting
- Apply protective skin barriers to perineal area
- No rectal or oral temps

**IMPLEMENTATION**

- **Nutritional deficits**
  - Measure height & weight frequently
  - Provide small, frequent meals
  - Provide high-calorie, high-protein supplements
- Assist child in interacting with peers
- Assist family discuss fears & anxiety about procedures & prognosis

**BIBLIOGRAPHY**