PEDIATRIC NURSING

DEFINITION OF TERMS

1. **Growth:** physical change and quantitative increase in size of the whole body or any of its parts. The best index of growth is weight.
   - Growth takes place in the first 20 years of life
   - Most rapid in infancy
   - Growth spurt during adolescent
2. **Development:** changes that mark an increase in function, complexity and progression of skill.
   - Development is qualitative
   - Continues after 20 years, even after growth stops
   - Growth and development are independent and interrelated processes
3. **Maturation** involves intrinsic processes of development that are genetically and organically programmed.

CONCEPTS:

ASYNCHRONOUS GROWTH

- ❖ Whole body does not grow at once
- ❖ Different regions and systems develop at different rates and times

THE PACE OF GROWTH & DEVELOPMENT IS UNEVEN

- ❖ Growth is greater/very rapid in two periods: infancy period and adolescence

ALL BODY SYSTEMS DO NOT DEVELOP AT THE SAME RATE

- ❖ Neurologic tissues grow during the first year of life while genital tissue grows until puberty

DEVELOPMENT PROCEEDS FROM GROSS TO REFINED SKILLS

- ❖ This principle parallels the preceding one. Once children are able to control distal body parts such as fingers, they are able to perform fine motor skills.
  (A 3-yr old colors best with a large crayon; a 12-yr old can write with a fine pen).

PRINCIPLES OF GROWTH AND DEVELOPMENT

1. Growth and development are continuous processes from conception until death
   - At all times a child is growing new cells and learning new skills
2. Growth and development proceed in an orderly sequence
   - Growth in height occurs in only one sequence from smaller to larger
   - Development proceeds from gross to refined skills
3. There is an optimum time for initiation of experiences or learning
   - Children cannot learn tasks until their nervous system is mature enough to allow that particular learning
4. All body systems do not develop at the same rate
   - Certain body tissues mature more rapidly than others. For example, neurologic tissue experiences its peak growth during the first year of life, whereas genital tissue grows little until puberty
5. Development is cephalocaudal
   - Development proceeds from their head to tail
   - Newborns can lift only their head off the bed when they lie in a prone position. By age 2 mo, infants can lift both the head and chest off the bed
6. Development proceeds from proximal to distal body parts
   - Development starts from the midline of the body and progresses towards the extremities

Basic Division of Childhood	
Stage	**Age period**
Neonate	First 28 days of life
Infant	1 month – 1 year
Toddler	1-3 years
Preschooler	4-6 years
School-age-child	7-12 years
Adolescent	13-18 years

FREUD'S STAGES OF CHILDHOOD

Psychosexual Stage

Infants	Oral stage	Explores the world using mouth
Toddler	Anal stage	Control of urination and defecation
Preschool	Phallic Stage	Sexual Identity through awareness of genital area
School-age	Latent Stage	Personality development appears to be non-active or dormant
Adolescent	Genital stage	Sexual maturity and relationships with the opposite sex

ERIKSON'S STAGES OF CHILDHOOD

Developmental Task

Infant	Sense of trust versus mistrust	To love and be loved
Toddler	Sense of autonomy versus shame	To be independent and make decisions for self
Preschool	Initiative versus guilt	To start doing things (basic problem solving) and that doing things is desirable
School-age	Sense of industry versus inferiority	To do things well
Adolescent	Sense of identity versus role confusion	Learn who they are, what kind of person they will be by adjusting to a body image

Maternal Bonding

- A special mutual relationship between mother and infant
- Best initiated immediately after birth
- Can be achieved within the first 30 mins

Language Development

Age	Vocabulary
3 yrs	900 words
4 yrs	1500 words
5 yrs	2100 words

STAGES OF GROWTH AND DEVELOPMENT

INFANT

FEAR: Stranger and Anxiety
Play: Solitary
Toys: Mobile, rattle, musical toys, crib (Sensory toys)

- ❖ Rapid growth and development
- ❖ Birth until 1 year

Freud's Psychoanalytic Theory

Freud termed the infant period the "oral phase" because infants are so interested in oral stimulation or pleasure during this time

Psychosexual: Oral

- Meet the oral needs of the infant: Provide safe and washable toys such as a pacifier
- Feed on demand: Feed according to the child's biologic need for food
- When oral feeding is contraindicated but sucking is not, give a pacifier to suck

PIAGET'S: COGNITIVE DEVELOPMENT

1-4 months	Primary circular reaction (body is center of attention)
4-8 months	Secondary circular reaction (from body to environment)
8-12 months	Coordination of secondary reaction
12-18 months	Tertiary circular reaction (trial and error)

Kohlberg's Theory of Moral Development

The infancy period is a pre-religious stage. Infants learn that when they do certain actions, parents give affection and approval; for other actions, parents scold and label the behavior "bad."

TODDLER

FEAR: Separation Anxiety
PLAY: Parallel
TOYS: Push and Pull toys

- ❖ Age 1 to 3 yrs
- ❖ Characterized by alternating rapid and slow rate of growth & development
- ❖ Pot-belly
- ❖ Bow-legged
- ❖ Ask questions constantly, up to 400 a day
- ❖ A consistent bedtime ritual helps prepare the toddler for sleep
- ❖ Security objects at bedtime may assist in sleep
- ❖ Children generally have all 20 of their deciduous teeth by 3 years of age

Signs of Readiness For Toilet Training

- Child is able to stay dry for 2 hours
- Child is waking up dry from a nap
- Child is able to sit, squat, and walk
- Child is able to remove clothing
- Child recognizes urge to defecate or urinate
- Child expresses willingness to please parent
- Child is able to sit on toilet for 5 to 10 minutes without fussing or getting off

Negativism – Toddlers often say "no" when asked to do something or may not obey requests from people other than their parents because they do not view their authority as being at the same level as their parents' authority

Nursing intervention:

- Offer choices to them
- Avoid using close-ended questions, use open-ended questions instead

Freud's Psychoanalytic Theory

Freud described the toddler period as an "anal phase" because during this time, children's interests focus on the anal region as they begin toilet training

Piaget Cognitive Development

Preoperational thought 2-7 yrs
Thought becomes more symbolic; can arrive at answers mentally instead of through physical attempt. Comprehends simple abstractions but thinking is basically concrete and literal. Child is egocentric (unable to see the viewpoint of another)

Kohlberg: Moral Development

Pre-conventional (2-3 yrs old) Stage 1
Morals are thought to be motivated by punishment and rewards

PRESCHOOL PERIOD

FEAR: Mutilation and Castration
PLAY: Associative & imitation/make-believe
TOYS: A simple puzzle, dolls, coloring book

- ❖ Age 3-5 yrs
- ❖ The preschooler grows 2 ½ to 3 inches per year
- ❖ By 5 years old, the child tends to focus on social aspects of eating, table conversations, manners, and willingness to try new foods
- ❖ Oedipus and Electra complex
  - An Oedipus complex refers to the strong emotional attachment a preschool boy demonstrates toward his mother
  - Electra complex is the attachment of a preschool girl to her father
- ❖ Centering
  - Children tend to look at an object and see only one of its characteristics
  - They see that a banana is yellow but do not notice it is also long
- ❖ Magical Thinking
  - They perceive animals and even inanimate objects as being capable of thought and feeling
- ❖ Egocentrism
  - Perceiving that one's thoughts and needs are better or more important than those of others

Kohlberg: Moral Development

Pre-conventional (4-7 years old) Stage 2
Individualism Carries out actions to Satisfy own needs rather than society's

SCHOOL-AGE PERIOD

FEAR: Displacement from school
PLAY: Indoor competitive
TOYS: Computer games and table games

- Age 6-12 yrs
- Characterized by having a slow period of growth and development patterns

Freud's Psychosexual Stage

Freud saw the school-age period as a "latent phase," a time in which children's libido appears to be diverted into concrete thinking

Piaget's: Cognitive Development

Concrete operational 7-12 yr
Concrete operations include systematic reasoning. Classifications involve sorting objects according to attributes such as color. Child is aware of reversibility, an opposite operation or continuation of reasoning back to a Starting point (follows a route through a maze and then reverses steps)

Kohlberg: Moral Development

Level II: conventional (7-10 yrs old)
Orientation to interpersonal relations of mutuality. Child follows rules because of a need to be a "good" person in own eyes and eyes of others

Reasoning during school age tends to be inductive, proceeding from specific to general: school-age children tend to reason that a toy they are holding is broken, the toy is made of plastic, so all plastic toys break easily

ADOLESCENCE

FEAR: Displacement from peers
PLAY: Outdoor competitive (Athletic & sports)
TOYS: Basketball etc.

- Age 13-18 yrs
- Accelerated growth and maturation
- Influenced by hormonal changes characterized by growth spurt which begins early in girls, about 1-2 years ahead than boys
- Sebaceous and sweat glands become active and fully functional

Freud's Psychosexual Stage

Freud termed the adolescent period the "genital phase." Freudian theory considers the main events of this period to be the establishment of new sexual aims and the finding of new love objects

Piaget's: Cognitive Development

Formal operational 12 yr
Can solve hypothetical problems with scientific reasoning; understands Thought causality and can deal with the past, present and future. Adult or mature Thought. Good activity for this period: "talk time" to sort through attitudes

Kohlberg: Moral Development

Post-conventional (Older than 12 yrs. old)
Social contract. Utilitarian law-making perspectives. Follows standards of society for the good of all people
Universal ethical principle orientations. Follows internalized standards of conduct
Adolescents can be responsible for self-care because they view this as a standard of adult behavior Many adults do not reach this level of moral development

ASSESSMENT APGAR SCREENING TEST

- Done twice at 1 and 5 minutes

CRITERIA	0	1	2
Appearance	Blue	Acrocyanosis	Pink
Pulse	Absent	<100	>100
Grimace	No response	Grimace	Vigorous cry
Activity	Limp/flaccid	minimal	Full flexion
Respiration	Absent	Weak cry	Vigorous cry

Interpretation

1-3	Poor-needs immediate resuscitation (CPR)
4-7	Fair-needs further observation & stimulation, needs suctioning (rubber)
8-10	Good-Healthy

ESTIMATION OF AGE OF GESTATION CRITERIA

PHYSICAL CHARACTERISTICS

	PRE-MATURE	TERM	FULL-TERM
Skin	Very thin, gelatinous, visible blood vessels	Smooth, thick, less visible blood vessels	Leathery, cracked, wrinkled
Lanugo	Abundant	Thinning	Bald
Plantar Creases	Anterior transverse	2/3 with creases	Entire sole w/ creases
Breast	Stripped areola	Raised areola	Full areola
Ear	Flat and folded	Thin and soft	Thick and firm
Genital (m)	Undescended Testis	Intermediate	Fully descended
Genital (f)	Prominent labia and clitoris	Labia minora & clitoris partially covered by labia majora	Completely covered minora & clitoris

PROFILE OF A NEWBORN

NORMAL BIRTHWEIGHT: 2.5-4.0 kg

- Doubles at 6 mos
- Triples at 12 mos
- Quadruplets at 2 ½ yrs

*Second-born children
Usually weigh more than first-born. Birth weight continues to increase with each succeeding child in a family
*During the first few days after birth, a newborn loses 5% to 10% of birth weight (6 to 10 oz). This weight loss occurs because a newborn is no longer under the influence of salt and Fluid-retaining maternal hormones
Low birth Weight (LBW): <2,500 grams
Large for gestational age (LGA): >4,000

BIRTH LENGTH:
46-54 cm
HEAD CIRCUMFERENCE:
33-35 cm
(Largest circumference in an infant)
CHEST CIRCUMFERENCE:
31-33 cm

NEUROLOGIC ASSESSMENT

Reflexes:
Extrusion

- Food placed on infant's tongue is thrust forward and out of mouth

Tonic Neck

- As head is turned to one side, arm & leg on that side extends and opposite extremities in flexion
- Response usually disappears within 3 to 4 months

Palmar Grasp

- Elicited by placing finger in NB's palm
- Palmar response lessens within 3 to 4 months

Moro

- Place the newborn on a flat surface and strike the surface or make a loud abrupt noise to startle the newborn
- The newborn symmetrically abducts and extends the arms
- A persistent response lasting more than 6 months may indicate the occurrence of brain damage during pregnancy

Sucking and Rooting

- Touch the **newborn's** lip, cheek, or corner of the mouth with a nipple
- Newborn turns head toward the nipple, opens the mouth, takes hold of the nipple, and sucks
- Rooting reflex usually disappears after 3 to 4 months but may persist for up to 1 year

Stepping or Walking

- Hold the **newborn** in a vertical position, allowing one foot to touch a table surface
- The **newborn** simulates walking, alternately flexing and extending the feet
- The reflex is usually present for 3 to 4 months

Babinski Sign: Plantar Reflex

- Beginning at the heel of the foot, gently stroke upward along the lateral aspect of the sole, and then move the finger along the ball of the foot
- The newborn's toes hyperextend while the big toe dorsiflexes
- The reflex disappears after the newborn is 1 years old
- Absence of this reflex indicates the need for a neurological examination

VITAL SIGNS

- **Temperature:** Axillary, 97.9° to 98°F
- **Apical rate:** 120 to 160 beats/min
- **Respirations:** 30 to 60 (average 40) breaths/min
- **Blood pressure:** 73/55 mm Hg

*Newborns can conserve heat by constricting blood vessels and moving blood away from the skin. Brown fat, a special tissue found in mature newborns, apparently helps to conserve or produce body heat by increasing metabolism

PHYSICAL ASSESMENT

HEAD

Anterior fontanel	-Soft, flat, diamond shaped,3-4cm wide by 2-3 long -Closes between 12-18mos
Posterior fontanel	-Triangular shaped, 05-1cm wide -Closes 2-3mos
Caput succedaneum	-Swelling of scalp caused by prolonged labor crosses over suture line -Gradually disappears at about third day of life
Cephalhematoma	-Collection of blood caused by increase pressure of birth -Caused by rupture of Periosteal capillary -Absorbed within 3-6 weeks
Craniotabes	-Localized swelling of the cranial bones caused by pressure of the fetal skull against the mother's pelvic bone in uterus -Condition corrects itself without treatment

EYES

- Infant eyes assume their permanent color between 3 and 12 months of age
- Lacrimal ducts do not fully mature until about 3 months of age
- Strabismus is normal until 6 mos
- Subconjunctival hemorrhage – a red spot on sclera on inner aspect of eye due to pressure at birth (absorbed in 2-3 wks)

EARS

- The pinna normally align from inner to outer canthus of the eye
- The low set ears indicate Chromosomal disease such as
  - Trisomy 21(Down Syndrome)
  - Kidney anomaly
- Test newborn hearing by ringing a bell held 6 inches from each ear

NOSE

- Nasal Flaring is the enlargement of the opening of the nostrils during breathing
- NASAL FLARING indicates respiratory distress
- Test for CHOANAL ATRESIA (blockage at the rear of the nose) by closing the newborn's mouth and compressing one nares at a time with your fingers. Note any discomfort or distress while breathing this way

NECK

- Short chubby with creases skin folds Rigidity of neck may indicate: CONGENITAL TORTICOLLIS/MANINGITIS
- The trachea may be prominent on the front of the neck, and the thymus gland may be enlarged because of the rapid growth of glandular tissue
- The thymus gland will triple in size by 3 years of age; it remains at the size until the child is about 10 years old, and then shrinks

CHEST

- It is approximately 2 inches smaller than head circumference
- Retractions or drawing in of the chest during inspiration should not be observed. It could indicate respiratory distress

ABDOMEN

- The abdomen of the child should look slightly protuberant, a scaphoid or sunken appearance could indicate missing abdominal contents
- Bowel sounds should be present 1 hour after birth
- Umbilical cord
  - Stump should appear as a white, gelatinous structure with blue and red streaks of the umbilical vein and arteries
  - (2 arteries and 1 vein)
  - Single artery could signify congenital heart or kidney anomaly
  - Umbilical cord should break free by day 6 to 10
  - If umbilical hernia is present, taping or putting buttons or coins on the cord do not help defects to close

ANOGENITAL AREA

- Inspect the anus of a newborn to be certain it is present, patent, and not covered by a membrane (imperforate anus)
- If a newborn does not do so in the first 24 hours, suspect imperforate anus or meconium ileus

MALE GENITALIA

- Both testes should be present in the scrotum
- If one or both testicles are not present (cryptorchidism) caused by agenesis (absence of an organ)
- Ectopic testes (the testes cannot enter the scrotum because the opening to the scrotal sac is closed), or undescended testes
- Newborns with agenesis of the testes are usually referred for investigation of kidney anomalies, because the testes arise from the same germ tissue as the kidneys
- Elicit a cremasteric reflex. This is a test for the integrity of spinal nerves T8-T10. The response may be absent in newborns who are younger than 10 days
- Urethral opening should be on the tip of the glans, not on the dorsal surface (epispadias) or on the ventral surface (hypospadias)

FEMALE GENITALIA

- The vulva in female newborns may be swollen because of the effect of maternal hormones
- Pseudomenstruation: Female newborns have a mucus vaginal secretion, which is sometimes blood-tinged, which is normal

BACK

- Inspect the base of a newborn's spine carefully to be sure there is no pinpoint opening, dimpling, or sinus tract in the skin which would suggest a dermal sinus or spinal bifida occulta

EXTREMITY

- Unusually short arms may signify achondroplastic dwarfism- Achondroplasia is a form of short-limbed dwarfism
- Inspect the palm for a simian crease which could signify down syndrome
- Assess for webbing (syndactyly),
- Extra toes or fingers (polydactyly)
- Both hips can be flexed and abducted to such an extent (180 degrees) that the knees touch or nearly touch the surface of the bed if the hip joint seems to lock short of this distance (160 to 170 degrees), hip subluxation (a shallow and poorly formed acetabulum) is suggested

Congenital Anomaly Appraisal

PROCEDURE	ABNORMALITIES CONSIDERED
Inquire for Hydramnios or Oligohydramnios	Presence of hydramnios suggests congenital gastrointestinal obstruction. Oligohydramnios suggests genitourinary obstruction or extreme prematurity
Appearance of abdomen	Distended abdomen suggests ascites, possible bowel obstruction, or tumor Empty abdomen suggests diaphragmatic hernia
Passage of nasogastric tube (no. 8 feeding catheter) through, nares into stomach	Failure to pass nasogastric tube through nares on either side establishes choanal atresia. Failure to pass it into the stomach confirms presence of esophageal atresia
Counting of umbilical arteries	The presence of one artery suggests possible congenital urinary or cardiac anomalies chromosomal trisomy (if other portions of examination are consistent)

Breast Feeding Facts

- Almost all drugs pass into breastmilk. A breastfeeding mother must be certain not to take any medication without contacting her primary care provider to be certain it is compatible with breastfeeding
- If a baby will be formula fed, be certain the parents understand the potential danger of warming bottles in a microwave oven (the inner core of milk may grow very hot)
- Caution parents not to prop bottles, because it increases the risk for aspiration and otitis media. It also deprives infants of the pleasure of being held for feedings
- To avoid baby bottle syndrome (cavities of the lower teeth), infants should not be put to bed with a bottle

PEDIATRIC DISORDERS

SPINA BIFIDA

- Congenital defect of the spinal/neutral tube in which there is an incomplete closure of the spinal column due to one or two missing vertebral arches
- Usually occurs during 4th week of embryonic life, but the exact cause is unknown

Classifications

1. **Spina Bifida Occulta –** seen as a small dimple at the lower back; usually asymptomatic and creates health problems; often, no treatment is needed
2. **Meningocele** – sac like cyst that contains meninges and spinal fluid that protrudes through the defect
3. **Myelomeningocele** – with herniated sac of meninges, spinal fluid and a portion of the spinal cord and its nerves, which protrude through the defect in the spine
   - It is the most severe form

Etiology

- Deficiency in folic acid of the mother during pregnancy
- Hereditary and environmental factors

Assessment

- Visible sac-like structure or dimpling of the skin at any point on the spinal column
- Associated defects/problems found in myelomeningocele
  - ✓ Hydrocephalus
  - ✓ Bowel/bladder dysfunction
  - ✓ Paralysis of lower extremities
  - ✓ Associated meningitis

Management: Surgery

- Currently, it is done as soon after birth as possible (usually within 24 to 48 hours) so infection through the exposed meninges does not occur

NURSING INTERVENTION

Women are advised to undergo amniocentesis.

- Women who have had one child with a spinal cord disorder are advised to have a maternal serum assay or amniocentesis for AFP levels to determine if such a disorder is present in a second pregnancy (levels will be abnormally increased if there is an open spinal lesion)
- Evaluate sac and lesions
- Perform neurological assessment
- Monitor ICP
- Measure head circumference, assess anterior fontanels for fullness protect the sac, cover with a sterile, moist non-adherent dressing
- Place in a prone position to minimize tension on the sac and the risk of trauma
- Use aseptic technique to prevent infection
- Assess the sac for redness, clear or purulent drainage, abrasion, irritation and signs of infection
- Administer antibiotics as prescribed
- Administer anti-cholinergics to improve urinary continence and laxatives to achieve bowel continence

PREVENTION

- Pregnant women are advised to ingest 600 micrograms of folic acid daily to help prevent these disorders during the first trimester

HYDROCEPHALUS

- Excess of CSF in the ventricles of the subarachnoid space

TYPES OF HYDROCEPHALUS

1. **COMMUNICATING**
   - Occurs as a result of impaired absorption within the sub-arachnoid space
2. **NON-COMMUNICATING/OBSTRUCTIVE**
   - Obstruction of cerebrospinal flow within the ventricular system occurs

RISK FACTORS

- Infant **meningitis / encephalitis** – leave adhesion behind
- Hemorrhage of Tumor – blocks passage of fluid
- **Arnold-Chiari disorder** – elongation of the lower brainstem & displacement of the 4th ventricle into upper cervical canal
- **Surgery for meningocele** – portion of subarachnoid space is removed causing less surface area for absorption of CSF

CAUSES OF EXCESS CSF

- Overproduction of fluid by choroids plexus in 1st or 2nd ventricle
- Obstruction of the of fluid in narrow aqueduct of sylvius (most common)
- Interference with the absorption of CSF from subarachnoid space

SIGNS AND SYMPTOMS

- Anterior fontanel bulging
- (Macewen's sign) Bones of the head are widely separated that produces a cracked pot sound upon percussion
- (Bossing sign) Brow bulges

TREATMENT: SURGICAL SHUNTING

Ventriculoperitoneal (V-P) shunt

- Connects the lateral ventricle of the brain to the peritoneal cavity
- Most commonly used shunt in children

Atrioventricular (A-V) shunt

- Connects the lateral ventricle to the right atrium of the heart

Ventriculoureteral (V-U) shunt

- Connects the lateral ventricle of the brain to the ureter; requires unilateral nephrectomy which, may cause recurrent fluid and electrolyte imbalance

Nursing Care

1. Assess daily head circumference
2. Protect the child's head
3. Maintain nutrition and hydration

PREOPERATIVE INTERVENTIONS

1. Monitor intake and output; give small frequent feedings as tolerated until a preoperative NPO status is prescribed
2. Reposition head frequently and use an egg crate mattress under the head to prevent pressure sores
3. Prepare the child and family for diagnostic procedures and surgery

POSTOPERATIVE INTERVENTIONS

1. Monitor vital signs and neurological signs
2. Position the child on the unoperated side to prevent pressure on the shunt valve
3. Keep the child flat as prescribed to avoid rapid reduction of intracranial fluid
4. Observe for increased ICP; if increased ICP occurs, elevate the head of the bed to 15 to 30 degrees to enhance gravity flow through the shunt
5. Monitor for signs of infection and assess dressings for drainage
6. Measure head circumference
7. Monitor intake and output
8. Provide comfort measures; administer medications as prescribed, which may include diuretics, antibiotics, or anticonvulsants

BACTERIAL MENINGITIS AND ENCEPHALITIS

- An acute bacterial infection of the central nervous system that may be acquired as the primary disease or as a result of a local infection (e.g., otitis media, sinusitis), systematic infections, trauma and neurosurgery

CAUSES

- Bacterial meningitis (Haemophilus influenza type B, Streptococcus pneumonia, or Neisseria meningitidis) occurs in epidemic form and can be transmitted by droplets from nasopharyngeal secretions
- Viral meningitis is associated with viruses such as mumps, paramyxovirus, herpesvirus, and enterovirus

Meningitis: inflammation of membranes surrounding the brain and spinal cord
Encephalitis: Inflammation of the brain itself

SIGNS AND SYMPTOMS

- Opisthotonus position
- Stiff neck and nuchal rigidity
- (+) Kernig's sign
  - ✓ Inability to extend the leg when the thigh is flexed anteriority at the hip
- (+) Brudzinski sign
  - ✓ Neck flexion causes adduction and flexion movements of the lower extremities

DIAGNOSTIC TEST

- Lumbar Puncture:
  - ✓ Clouding of CSF, Increased Protein and Decreased Glucose
- Smear and culture of CSF and blood demonstrate the presence organism

TREATMENT

- Antibiotic Therapy/ I.V: **Penicillin G** (Drug of Choice)

NURSING CARE

1. **Isolate infant**: first nursing implementation on admission
2. Ensure patent airway and promote safety during seizures
3. Monitor and control temperature
4. Perform neurological assessment and monitor for seizures; assess for the complication of inappropriate antidiuretic hormone (ADH) secretion, causing fluid retention (cerebral edema) and dilutional hyponatremia

5. Assess for changes in level of consciousness and irritability
6. Monitor intake and output
7. Assess nutritional status
8. Determine close contacts of the child with meningitis because the contacts will need prophylactic treatment

CEREBRAL PALSY

- ❖ A neuromuscular disorder characterized by lack of control of the voluntary muscles, abnormal muscle tone and incoordination

ETIOLOGY

- Anoxia to the brain: the most significant factor to causation
- Infection

THREE TYPES OF CEREBRAL PALSY

- **Spastic** (most common): The cortex is affected resulting in the child having a scissor-like gait where one foot crosses in front of the other foot
- **Athetoid**: The basal ganglia are affected resulting in uncoordinated involuntary motion
- **Ataxic**: The cerebellum is affected resulting in poor balance and difficulty with muscle coordination

SIGNS AND SYMPTOMS

- Infant may manifest early signs of cerebral palsy
  - ✓ Abnormal posturing
  - ✓ Difficulty feeding
  - ✓ Tremors/Seizures
  - ✓ Persistence of primitive reflexes
- Signs of delayed motor development

TREATMENT

- Exercises: passive and active
- Medications: muscle relaxants, anti-convulsants and tranquilizers
- Braces, ambulation devices: Crutches, walkers

NURSING CARE

- Promote adequate nutritional intake
- Promote maximum mobility and development of self-help skills
- Ensure safety when ambulating

DOWN SYNDROME (TRISOMY 21)

- ❖ A chromosomal aberration characterized by Trisomy 21 or the tripling of chromosome number 21
- ❖ Presence of an extra copy of chromosome 21 resulting in a total number of 47 rather than 46

ETIOLOGY

- It is found to be more common among children of mothers with increased or advanced age

ASSESSMENT

- Facial characteristics: wide gap between the eyes, flat nose, large tongue
- Head characteristic flattened posterior and anterior surfaces of the skull, obviously flat occiput
- Extremities: simian crease: abnormal single horizontal line on the palm of the hands; plantar furrow: vertical line on the sole; first and second toes widely spaced
- Brushfield's spots – white specks in the iris of the eye
- Low-set ears
- Potbelly – High waist circumference

ASSOCIATED PROBLEMS AND FINDINGS

- Intelligence varies from severely retarded to below normal (IQ less than 20 to IQ between 50-70)
- Congenital anomalies, VSD, Hirschsprung's disease and leukemia
- Growth is reduced, with rapid weight gain
- Sexual development maybe delayed, incomplete or both

NURSING INTERVENTIONS

- Goal for the child is to reach his optimum development potential and be able to cope as effectively as possible to this mental handicap
- Treatment is based on the child's developmental age rather than chronological age
- Emphasize the importance of providing the child consistent care to favor the development of trust (foundation of personality) and feeling of security

SIGNS AND SYMPTOMS

- Tachycardia; tachypnea
- Profuse scalp sweating
- Fatigue; irritability
- Respiratory distress
- Feeding problem
- Poor weight gain/failure to thrive
- Frequent respiratory injections; cough

ACYANOTIC HEART DEFECTS

- **Acyanotic heart disorders**: heart or circulatory anomalies that involve either a stricture to the flow of blood or a shunt that moves blood from the arterial to the venous system (oxygenated to unoxygenated blood, or **left-to-right shunts**)
  - VSD: ventricular septal defect
  - ASD: atrial septal defect
  - PDA: patent ductus arteriosus
  - PS: Pulmonary stenosis
  - COA: coarctation of aorta

SIGNS AND SYMPTOMS

- Audible murmurs-most common sign
  - ✓ Loud systolic murmur – VSD
  - ✓ Machinery like murmur – PDA
- Easy fatigability shown as brow sweating (during feeding or crying episodes)
- Hepatomegaly – due to backup of blood

COMPLICATIONS

- Congestive Heart Failure most common complication
- Respiratory distress manifested by: moist cough, diaphoresis, severe dyspnea

VENTRICULAR SEPTAL DEFECT

- Almost always **left to right shunt**
- Abnormal opening between the left and right ventricles
- **Most common CHD**: 30%
- Overloading of RV and pulmonary circulation
- Pulmonary hypertension and respiratory failure may occur
- Reverse shunt (right to left) may develop: Eisenmenger syndrome (pulmonary hypertension)

ATRIAL SEPTAL DEFECT

- Abnormal opening between the atria that causes an increased flow of oxygenated blood into the right side of the heart
- Failure of the atrial septum to close

THREE MAJOR TYPES

- ASD 1 – **Ostium primum** (opening at the lower end of the septum)
- ASD 2 – **Ostium Secundum** (opening near the center of the septum)
- ASD 3 – **Sinus Venosus Defects** (opening near the junction of the SVC and the right atrium)

MANIFESTATIONS

- Asymptomatic if small defect
- Systolic ejection murmurs
- Growth retardation (slow weight gain)
- Heart failure symptoms usually occur in ostium primum defects
- Right ventricular hypertrophy
- Frequent respiratory infections; dyspnea
- Easy fatigability

NURSING INTERVENTIONS

- Provide family teaching about treatment options
- Small defect spontaneously close
- Non-surgical treatment: the defect may be closed by using devices during a cardiac catheterization
- Defects are usually repaired in girls due to possibility of pulmonary hypertension during pregnancy
- Surgical treatment: open repair with cardiopulmonary bypass before school age

PATENT DUCTUS ARTERIOSUS

❖ Results when the fetal ductus arteriosus fails to close completely after birth

Blood from the Aorta
↓
Patent Ductus Arteriosus
↓
Back to the Pulmonary Artery and Lungs
↓
Increased Left Ventricular workload
↓
Increased Pulmonary Vascular congestion

ASSESSMENT

- Asymptomatic – if defect is small
- **Loud machine like murmur**
- Frequent respiratory infection
- CHF with poor feeding, fatigue, Splenomegaly, poor weight gain, Tachypnea and irritability
- Widening pulse pressure

TREATMENT

- **Ibuprofen** or **Indomethacin**, prostaglandin inhibitors, may be administered to close a patent ductus in premature infants and some newborns

NURSING INTERVENTIONS

- Some PDA's close spontaneously
- Premature infants-prostaglandin Synthetase inhibitors (stimulates closure of ductus)
- Management: the defect may be closed during cardiac catheterization or the defect may require surgical management

COARCTATION OF AORTA

❖ Restricted lumen of the aorta proximal to, at, or distal to the ductus arteriosus
❖ Localized narrowing of the aorta

ASSESSMENT

- Elevated upper-body blood pressure produces headache and vertigo
- Bounding radial pulse and absent femoral pulse (pathognomonic sign)
- Epistaxis, headache, fainting, lower leg cramps

- Systolic murmur

TREATMENT

- Children with this disorder require therapy with digoxin and diuretics it aims to reduce the severity of the congestive heart failure from hypertension
- Interventional angiography (a balloon catheter) or surgery
- With surgery, the narrowed portion of the aorta is removed and the new ends of the aorta are anastomosed

PULMONARY STENOSIS

- ❖ Pulmonary **stenosis** is narrowing at the entrance to the pulmonary artery
- ❖ Resistance to blood flow causes right ventricular hypertrophy and decreased pulmonary blood flow; the right ventricle may be hypoplastic
- ❖ Pulmonary **atresia** is the extreme form of pulmonary **stenosis** in that there is total fusion of the commissures and no blood flows to the lungs

ASSESSMENT

- A characteristic murmur is present
- The infant or child may be asymptomatic
- Newborns with severe narrowing will be cyanotic
- If pulmonary **stenosis** is severe, CHF occurs
- Signs and symptoms of decreased cardiac output may occur

TREATMENT

- Nonsurgical treatment is done during cardiac catheterization to dilate the narrowed valve

SURGICAL TREATMENT

- In infants, transventricular (closed) valvotomy procedure
- In children, pulmonary valvotomy with cardiopulmonary bypass

TWO BROAD CLASSIFICATIONS

1. CYANOTIC HEART DEFECTS

- **T**etralogy of Fallot
- **T**runcus Arteriosus
- **T**ricuspid Atresia
- **T**ransposition of Great vessel

SIGN AND SYMPTOMS

- Central cyanosis
- Recurrent respiratory infection
- Easy fatigability
- Retarded physical growth
- Clubbing of fingers
- Squatting in older children
- Increase hematocrit

COMPLICATIONS

- Brain infarctions and blood clots
- Left sided heart failure

TETRALOGY OF FALLOT

A combination of 4 defining features:

- ❖ **P**ulmonary stenosis
- ❖ **R**V hypertrophy
- ❖ **O**verriding aorta
- ❖ **V**SD

ASSESSMENT

Infant – cyanotic at birth or may have mild cyanosis over the first year of life

- **TET SPELLS** – irritability, pallor, blackouts or convulsions
- Cyanosis at rest
- Squatting
- Slow weight gain
- Exertional dyspnea, fatigue, slowness due to hypoxia

NURSING INTERVENTION

- Maintain respiration/Oxygenation
- Proper positioning
  - ✓ Cyanotic child, lateral position, knee-chest, squatting for preschool or older children
- Promote Rest
- Keep warm
- Prevent infection
- Administer drugs, as ordered: digitalis and diuretics

TRICUSPID ATRESIA

- ❖ Tricuspid atresia is an extremely serious disorder because the tricuspid valve is completely closed, allowing no blood to flow from the right atrium to the right ventricle
- ❖ As long as the foramen ovale and ductus arteriosus remain open, the child can obtain adequate oxygenation

ASSESSMENT

- Cyanosis, tachycardia and dyspnea
- Older children – chronic hypoxemia and clubbing

TREATMENT

- Surgery consists of the construction of a vena cava-to-pulmonary artery shunt, which deflects more blood to the lungs, or a **Fontan procedure** (sometimes termed a **Glenn Shunt Baffle**), which restructure the right side of the heart

NURSING INTERVENTIONS

- An **IV infusion of PGE1** is begun to ensure that the ductus remains open

RESPIRATORY DISORDERS

CHOANAL ATRESIA

- ❖ A congenital disorder in which the back of the nasal passage (choana) is blocked; may be unilateral or bilateral

ASSESSMENT

Danger sign:

- Cyanosis during feeding (because of the obstruction of the nasal passages by the tongue, which may further restrict the airway), which may improve when the baby cries (as the mouth is open in cry and is used for breathing

TREATMENT

- Temporary alleviation of dyspnea: **insertion of an oral airway** into the mouth
- Surgical correction of the defect by **perforating the atresia** followed by insertion of a stent or repetition of dilation to keep the newly formed airway patent

NURSING CARE

- Early screening
- Maintain patency of oral airway
- Monitor respiration
- Provide pre- and post-op care as indicated

TONSILLITIS/ADENOIDITIS

- Inflammation of lymphoid tissue which circles the pharynx and form part of the waldeyer's ring

ETIOLOGY

- Common cause: streptococci (beta-hemolytic streptococcus A)
- Environmental pollutants and immunizations decrease the protective role of the waldeyer's ring
- The child's increasing age results in increased socialization (church, school, community) and leads to recurrent upper respiratory infection

SIGNS AND SYMPTOMS

- Inflammation and hypertrophy of the tonsils and adenoids leads to obstruction of breathing and swallowing
- Soreness of throat
- Altered sense of smell, taste and hearing

DIAGNOSTIC TESTS/PROCEDURE

- Physical examination

- CBC: leukocytosis
- Elevated ESR

RISK FOR:

- **Acute glomerulonephritis** occurs 5 to 21 days after a streptococcal infection
- **Rheumatic fever** presents 2 to 6 weeks following an untreated or partially treated group. A beta-hemolytic streptococcal infection of the upper respiratory tract
- The most serious complication is **rheumatic heart disease**, which affects the cardiac valves, particularly the mitral valve

TREATMENT

- Antibiotic treatment to control acute infection Surgical removal/excision two to three weeks after acute infection to prevent bacterial spread to other body parts
  Criteria:
  - ✓ Recurrent tonsillitis with documented streptococcal infection (4 times/year) and marked swallowing difficulties and speech distortion
- Contraindication to tonsillectomy and adenoidectomy
  - ✓ Age: under 5 to 6 years unless condition is life threatening
  - ✓ Bleeding disorders
  - ✓ Acute respiratory infection in the child or immediate family

INTERVENTIONS POST-OPERATIVELY

- Position the child prone or side-lying to facilitate drainage
- Have suction equipment available, but do not suction unless there is an airway obstruction
- Monitor for signs of hemorrhage (frequent swallowing may indicate hemorrhage); if hemorrhage occurs, turn the child to the side and notify the physician
- Discourage coughing or clearing the throat
- Provide clear, cool, non-citrus and noncarbonated fluids
- Avoid milk products initially because they will coat the throat
- Avoid red liquids, which simulate the appearance of blood if the child vomits
- Do not give the child any straws, forks, or sharp objects that can be put into the mouth
- Administer acetaminophen (Tylenol) for sore throat as prescribed
- Instruct the parents to notify the physician if bleeding, persistent earache, or fever occurs
- Instruct the parents to keep the child away from crowds until healing has occurred

EPIGLOTTITIS (BACTERIAL CROUP)

- ❖ Epiglottitis is inflammation of the epiglottis (the flap of tissue that covers the opening to the larynx to keep out food and fluid during swallowing)
- ❖ Life threatening inflammation of the epiglottis by H. influenza
- ❖ **Considered an emergency situation**

ASSESSMENT

- Child suddenly develops severe inspiratory stridor and hoarseness
- Difficulty swallowing that they drool saliva
- Fever and leukocytosis (20,000 to 30,000 mm3)
- **Tripod positioning**: while supporting the body with the hands, the child thrusts the chin forward and opens the mouth in an attempt to widen the airway

INTERVENTIONS

- Children need moist air to reduce the epiglottal inflammation
- An antibiotic, such as a third-generation cephalosporin such as cefotaxime
- ET intubation or tracheostomy is performed to maintain a patent airway. Swelling decreases after 24 hours-extubated the third day
- Do not leave the child unattended
- Gagging procedure causes complete obstruction of the glottis and shuts off the ability of the child to inhale. **Never attempt to visualize the epiglottis directly with a tongue blade or obtain a throat culture**

BRONCHIAL ASTHMA

- ❖ A chronic pulmonary disorder characterized by reversible obstructive condition of bronchi/bronchioles in response to certain biochemical, immunological and psychological factors

ETIOLOGY

- Intrinsic or extrinsic triggering factors (allergen) that cause bronchospasm

SIGNS AND SYMPTOMS

- Audible wheezy breathing more common during expiration
- Rapid labored respiration
- Respiratory symptoms include a hacking, irritable, nonproductive cough caused by bronchial edema
- Accumulated secretions stimulate the cough; the cough becomes rattling and there is production of frothy, clear, gelatinous sputum

STATUS ASTHMATICUS

- ❖ Child displays respiratory distress despite vigorous treatment measures
- ❖ Status asthmaticus is a medical emergency that can result in respiratory failure and death if left untreated

TREATMENT

- **Mild attack**: albuterol p.o. or per inhalation (nebulizer) every four to six hours
- **Moderate attack**: albuterol PRN p.o. or per inhalation (nebulizer), plus Cromolyn sodium by inhaler or nebulizer for prevention
- **Severe attack**: inhaled corticosteroid and inhaled albuterol PRN

NURSING CARE

- Position the child upright, assist with mechanical ventilation as indicated
- Monitor VS, breath sounds and chest retractions
- Monitor ABG's and oxygen saturation as ordered
- Administered IV fluids, oxygen, emergency drugs as ordered
- Nebulizer, metered-dose inhaler (MDI) or peak expiratory flow meters may be used to administer medications; if the child has difficulty using the MDI, medication can be administered by nebulization
- Chest physiotherapy includes clapping, vibration, postural drainage, suctioning, and breathing exercises
  - ✓ Chest physiotherapy is not recommended during an acute exacerbation

GASTROINTESTINAL DISORDER
CLEFT LIP/CLEFT PALATE

- ❖ A congenital anomaly that occurs as a result of failure of soft tissue or bony structure to fuse during embryonic development

CAUSES

- Genetic; hereditary
- Environment – exposure to radiation
- Rubella virus, chromosome abnormalities, teratogenic factors

ASSESSMENT

- **Cleft lip** – can range from a slight notch on to a complete separation from the floor of the nose
- **Cleft Palate** – nasal distortion, midline or bilateral cleft, variable extension from the uvula and soft and hard palate

NURSING INTERVENTION

- ✓ Assess the ability to suck, swallow, handle normal secretions and breathe without distress
- ✓ Assess fluid and calorie intake daily
- ✓ And monitor weight
- ✓ Modify feeding techniques
- ✓ Enlarge nipple
- ✓ Stimulate the sucking reflex
- ✓ Rest to allow infant to finish swallowing what has been placed in the mouth
- ✓ Hold the child in **upright position** and
- ✓ Direct the formula to the side and back of the mouth
- ✓ Position on the side after the feeding
- ✓ Keep **suction equipment** and bulb syringe at bedside
- ✓ **Encourage breastfeeding** if appropriate

INTERVENTION POST OPERATIVELY CLEFT LIP REPAIR (CHEILOPLASTY)

- ➢ Closure of cleft lip defect precedes that of the cleft palate and is usually performed during the **first weeks of life**
  - ✓ A **lip protector** device may be taped securely to the cheeks to prevent trauma to the suture line

- ✓ Position the child on the side opposite to the repair or on the back, **avoid prone** position to prevent rubbing of the surgical site on the mattress
- ✓ After feeding, cleanse the suture line with plain normal saline solution
- ✓ Prevent the child from crying if possible
- ✓ Do not let the **Logan Bar** get wet

CLEFT PALATE (PALATOPLASTY)

- **Cleft palate repair** is performed sometime between **12 and 18 months** of age to allow for the palatal changes that take place with normal growth; a cleft palate is closed before the child develops faulty speech habits
  - ✓ Child is allowed to lie on the abdomen (prone)
  - ✓ Feeding are resumed by bottle, breast or cup
  - ✓ **Oral packing** maybe secured to the palate
  - ✓ Do not allow the child to brush teeth
  - ✓ Avoid hard foods
  - ✓ **Soft elbow or jacket restraints** maybe used to keep the child from touching the repair site
  - ✓ **Avoid contact with sharp objects** near the repair site
  - ✓ **Avoid oral suction** or placing objects in the mouth
  - ✓ Provide analgesics for pain

PYLORIC STENOSIS

- ❖ Hypertrophy of the circular muscles of the pylorus causes narrowing of the pyloric canal between the stomach and the duodenum
- ❖ Stenosis develops in the first few weeks of life

ASSESSMENTS

- With this condition, at 4 to 6 weeks of age, infants begin to vomit almost immediately after each feeding
- Peristaltic waves are visible from left to right across the epigastrium during or immediately following a feeding
- Vomiting grows increasingly forceful until it is projectile
- Pyloric stenosis. Fluid is unable to pass easily through the stenosed and hypertrophied pyloric valve
- **Vomiting – projectile, non – bilious** Hunger and irritability
- **Olive shaped mass in the epigastrium** just right of the umbilicus
- **Dehydration and malnutrition**
- Electrolyte imbalance

TREATMENT

- Prepare the child for **pyloromyotomy**
  - ✓ An incision through the muscle fibers of the pylorus that may be performed by laparoscopy

NURSING INTERVENTIONS

- Monitor vital signs; intake and output and weight
- Monitor for signs of dehydration and electrolyte imbalance
- **Oral feedings are withheld** to prevent further Electrolyte depletion
- An infant who is receiving only IV fluid generally **needs a pacifier** to meet nonnutritive sucking needs

LACTOSE INTOLERANCE

- ❖ Inability to tolerate lactose as a result of an absence or deficiency of lactase, an enzyme found in the secretions of the small intestine that is required for the digestion of lactose

ASSESSMENT

- Symptoms occur after the ingestion of milk products
- Abdominal distention
- Crampy, abdominal pain; colic
- Diarrhea and excessive flatus

NURSING INTERVENTIONS

- Eliminate the offending dairy product
- Provide information to the parents about enzyme tablets that predigest the lactose in milk or supplement the body's own lactase
- Substitute soy-based formulas for cow's milk formula or human milk
- Provide calcium and vitamin D supplements to prevent deficiency
- Limit milk consumption to one glass at a time
- Instruct the child and family that the child should drink milk with other foods rather than by itself

- Encourage consumption of hard cheese, cottage cheese, or yogurt, which contains the inactive lactase enzyme
- Encourage consumption of small amounts of dairy foods daily to help colonic bacteria adapt to ingested lactose
- Instruct the parents about the foods that contain lactose, including hidden sources

CELIAC DISEASE

- Celiac disease also is known as gluten enteropathy or celiac sprue
- Intolerance to gluten, protein component of
  B-arley
  R-ye
  O-ats
  W-heat
- Celiac disease results in the accumulation of the amino acid glutamine, which is toxic to intestinal mucosal cells
- Intestinal villi atrophy occurs, which affects absorption of ingested nutrients
- There is usually an interval of 3 to 6 months between the introduction of gluten in the diet and the onset of symptoms

ASSESSMENT

- Acute or insidious diarrhea
- Steatorrhea
- Anorexia
- Abdominal pain and distention
- Muscle wasting, particularly in the buttocks and extremities
- Vomiting

CELIAC CRISIS

- Precipitated by infection, fasting, ingestion of gluten
- Can lead to electrolyte imbalance, rapid dehydration, severe acidosis
- Causes profuse watery diarrhea and vomiting

NURSING INTERVENTION

- Maintain a **gluten-free diet**, substituting **corn, rice**, and millet as grain sources
- Instruct parents and child about **lifelong elimination of gluten** sources such as wheat, rye, oats, and barley
- Administer mineral and vitamin supplements including iron, folic acid, and fat-soluble supplements A, D, E and K

FOODS ALLOWED

- Beef
- Pork
- Fish, eggs, milk, and dairy products
- Vegetables fruits, rice, corn, gluten-free wheat flour, puffed rice, cornflakes

FOOD PROHIBITED

- Commercially prepared ice cream
- Malted milk
- Prepared puddings
- Grains, wheat, rye, oats, or barley, such
  - ✓ Breads, rolls, cookies, cakes, crackers, cereal, spaghetti, macaroni noodles and beer

DUODENAL ATRESIA

- Congenital absence or complete closure of a portion of the lumen of the duodenum

ASSESSMENT

- **Early bilious vomiting**
- No abdominal distention
- Continued vomiting even when infant has not been fed for several hours
- **Absent bowel movements** after first few meconium stools usually confirmed by radiography
- An x-ray of the abdomen shows two large air filled spaces, the so-called "**double bubble**" **sign**

HIRSCHSPRUNG'S DISEASE

- The disease occurs as the result of an **absence of ganglion** cells in the rectum and other areas of the affected intestine
- Congenital anomaly also known as congenital aganglionosis or **aganglionic megacolon**
- Involves an enlargement of the colon caused by bowel obstruction

ASSESSMENT

- "**Ribbon like stools**"
- Shows symptoms in the first 6 weeks of life
- No bowel movement in the first 48 hours of life
- Gradual bloating of the abdomen
- Gradual onset of **bile stained vomitus**
- Fecal odor of breath
- Loss of appetite, delayed growth;
- Anemia
- Passing small, watery stool

DIAGNOSIS

- Abdominal x-ray
- Barium enema
- Biopsy of the rectum or large intestine

MEDICAL TREATMENT: SURGERY

- **Bowel resection**
- **Abdominoperineal pull through** by about one year
  - ✓ Maintain low-fiber, high-calorie, high-protein diet; parenteral nutrition may be necessary in extreme situations
  - ✓ Administer stool softeners as prescribed
  - ✓ Administer daily rectal irrigations with normal saline to promote adequate elimination and prevent obstruction as prescribed

NURSING INTERVENTION (POST-OP)

- Measure abdominal girth daily and PRN
- Assess the surgical site for redness, swelling, and drainage
- Assess the stoma if present for bleeding or skin breakdown (stoma should be red and moist)
- Maintain NPO status until bowel sounds return or flatus is passed, usually within 48 to 72 hours
- Maintain the nasogastric tube to allow intermittent suction until peristalsis returns
- Maintain IV fluids until the child tolerates appropriate oral intake, advancing the diet from clear liquids to regular as tolerated and as prescribed
- Provide the parents with instructions regarding colostomy care and skin care

ABDOMINAL WALL DEFECTS OMPHALOCELE

- ❖ **Herniation of the abdominal contents** through the umbilical ring with intact peritoneal sac
- ❖ Protrusion is **covered by translucent sac** that contain bowel or other abdominal organs
- ❖ **Immediately after birth cover sac with sterile gauze** soaked in normal saline to prevent drying of abdominal contents

UMBILICAL HERNIAS

- ❖ Caused by a small defect in the Abdominal muscles which allows a **portion of the peritoneum to protrude, and push the umbilicus outward**
- ❖ More obvious when the infant cries
- ❖ Increased pressure results in more visible bulging
- ❖ In most cases, by age 3 the umbilical hernia shrinks and closes without treatment

INDICATIONS FOR UMBILICAL HERNIA REPAIR:

- Incarcerated (strangulated) umbilical hernia
- Defects not spontaneously closed by 4-5y/o
- Children under 2 with very large Defects
- Unacceptable to parents for Cosmetic reasons

GASTROSCHISIS

- ❖ Herniation is lateral to the umbilical ring
- ❖ No membranes cover the exposed bowel
- ❖ Exposed bowel is covered loosely in saline soaked pads and the abdomen is wrapped in a plastic drape

NURSING INTERVENTIONS

- Surgery is performed several hours after birth – no membrane is covering the sac
- Position the child supine
- Keep the sac from drying

IMPERFORATED ANUS

ASSESSMENT

- **Failure to pass meconium stool**
- Absence or stenosis of the anal rectal canal
- A "**wink**" **reflex** (touching the skin near the rectum should make it contract) **will not be present**
- Inability to insert a rubber catheter into the rectum
- No stool will be passed, and abdominal distention will become evident

THERAPEUTIC MANAGEMENT

- Degree of difficulty in repairing an imperforate anus depends on the extent of the problem
- Repair involves simple anastomosis of the separated bowel segments
- All repairs are complicated if a fistula to the bladder or vagina is present

TALIPES

- ❖ Popularly called **clubfoot**
- ❖ More often in boys than in girls
- ❖ It probably is inherited as a polygenic pattern. It usually occurs as a unilateral problem

A true talipes disorder can be one of four separate types:

1. **Plantarflexion**
   - ✓ (an equinus or "horsefoot" position, with the Forefoot lower than the heel)
2. **Dorsiflexion**
   - ✓ (the heel is held Lower than the forefoot or the anterior foot is flexed toward the anterior leg)
3. **Varus deviation** (the foot turns in)
4. **Valgus deviation** (the foot turns out)

THERAPEUTIC MANAGEMENT

- Use of **DENIS BROWNE-TYPE SPLINTS** to maintain the correction obtained by manipulation and stretching the most frequently used surgical approach is **posteromedial release**
- Correction is achieved best if it is begun in the newborn period. A cast is applied while the foot is placed in an overcorrected position
- Infants grow so rapidly in the neonatal period that casts for talipes deformities must be changed almost every 1 or 2 weeks
- After approximately 6 weeks (the time varies depending on the extent of the problem), the final cast is removed. After this, parents may need to perform passive foot exercises such as putting the infant's foot and ankle through a full range of motion several times a day for several months

DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH)/ CONGENITAL HIP DYSPLASIA

(A) A normal femur head and acetabulum
(B) A dislocated hip

With this disorder, the acetabulum of the pelvis is flattened or shallow. This **prevents the head of the femur from remaining in the acetabulum** and rotating adequately improper formation and function of the hip socket

CAUSES

- **Physiologic** (having to do with the child's basic make up as well as the child's response to the maternal hormones)
- **Mechanical** (positional influences in utero); breech presentation
- **Pelvic relaxation around the time of birth** Aggravate the instability of the newborn hip joint allow softening and stretching of the baby's hip ligaments

ASSESSMENT

- **Barlow test** is the most important maneuver in examining the newborn hip. The examiner attempt to push the ball of the hip rearward out of the socket. A **feeling of the femur head slipping out of the socket posterolaterally** is a positive Barlow's sign indicative of hip instability
- Associated with developmental hip dysplasia one knee will appear to be lower than the other (a **galeazzi sign**)

THERAPEUTIC MANAGEMENT

- Correction of subluxated and dislocated hips involves positioning the hip into a flexed, abducted (externally rotated) position to press the femur head against the acetabulum and cause it to **deepen its contour by the pressure or casts may be used**. The small number of children who do not achieve correction by these methods will have **surgery** and a pin inserted to stabilize the hip
- **Ortolani test** is a maneuver to reduce a recently dislocated hip

Positive = examiner feels a "clunk" as it pops back into place

- **Ortolani maneuver**
  An initial downward pressure further dislocates the hip, which then relocates as the thigh is adducted. A palpable "clunk" is noted
- **Multiple Diapers or Splints.** Often splint correction (to hold the legs in a frog-leg, or abducted, externally rotated position) is begun during the newborn's initial hospital stay by placing two or three diapers on the infant

GENITO-URINARY TRACT DISORDERS

EPISPADIAS/HYPOSPADIAS

- ❖ A congenital condition in which the urethral opening is located behind the glans penis or on the **dorsal segment (epispadias)** or on **ventral or undersurface of the penis (hypospadias)** a ventral curvature of the penis **(chordee)** is often associated, causing constriction

SIGN

- Observable malposition of the urethral orifice

TREATMENT

- For minor conditions in which the urethral opening is still on the glans, no treatment is needed
- Ureteroplasty for severe cases. Surgical repair is done when the child is about two to three years old (period of toilet training), or before the child enters kindergarten school

NURSING CARE

- Careful and thorough assessment of the genitourinary system of the newborn
- Identify signs: misplaced urinary meatus and inability to make straight stream of urine

INGUINAL HERNIA

- ❖ Result from incomplete closure of the tube (processus vaginalis) between the abdomen and the scrotum leading to the descent of intestinal portion

HYDROCELE

- Presence of abdominal fluid in the scrotal sac

NON-COMMUNICATING

- Seen at birth
- Residual peritoneal fluids is trapped within the lower segment of the processus vaginalis
- No treatment

COMMUNICATING

- Associated with hernia
- Processus vaginalis remains open from The scrotum to the abdominal cavity

Reference:
Hockenberry, M., Wilson, D (2015). Wong's nursing care of infants and children, 10th edition. Canada: Elsevier Inc.