Chapter 12

The Term Newborn
Objectives

• Briefly describe three normal reflexes of the neonate, including the approximate age of their disappearance.
• Demonstrate the steps in the physical assessment of the newborn.
• State four methods of maintaining the body temperature of a newborn.
• State the cause and appearance of physiological jaundice in the newborn.
Objectives (cont.)

- Define the following skin manifestations in the newborn: lanugo, vernix caseosa, Mongolian spots, milia, acrocyanosis, desquamation.
- State the methods of preventing infection in newborns.
- Interpret discharge teaching for the mother and her newborn.
Adjustment to Life Outside the Uterus

• Adjustment is dependent upon
  – Genetic background
  – Health of the recent uterine environment
  – A safe delivery
  – Care during the first month of life
Adjustment to Life Outside the Uterus (cont.)

- Respirations stimulated due to chilling and chemical changes in the blood
  - Sensory and physical stimuli
  - First breath opens alveoli
  - Independent air exchange begins
- Initiates cardiopulmonary interdependence
Adjustment to Life Outside the Uterus (cont.)

- Ability to metabolize food hampered by immaturity of digestive system (deficient in enzymes from pancreas and liver)
- Kidney’s ability to concentrate urine and maintain fluid balance is limited due to decreased rate of glomerular flow and limited renal tubular reabsorption
- Neurological functions are primitive
Nervous System: Reflexes

- Moves arms and legs vigorously but cannot control them
- Full-term infants are born with the following reflexes (which help keep them alive)
  - Blinking
  - Sneezing
  - Gagging
  - Sucking
  - Grasping
- They can also cry, swallow, and lift their head (slightly) when lying on their abdomen
Reflexes

- Moro
- Rooting
- Tonic neck
- Dancing
Head

- Molding from delivery process
  - May have swelling of the soft tissues of the scalp, called *caput succedaneum*
  - May see a cephalhematoma—a collection of blood beneath the periosteum of the cranial bone
    - Does not cross the suture line
- Fontanels (soft spots) protect the head during delivery and allow further brain growth
Visual Stimuli and Sensory Overload

- Can see and fixate on points of contrast
  - Toys with contrasting colors or those that make noise attract the newborn’s attention
- Tears are absent until 1 to 3 months of age
- Sensory overload can occur if there is too much detrimental stimulation
- Important for the nurse to keep surrounding environment as calm and quiet as possible, no bright lighting or loud alarms
Hearing

- Ears well-developed, but small
- Hearing ability present at birth (sick or premature newborn may not respond to sounds)
- Normal drainage and sneezing occurs after birth to rid ear canals of amniotic fluid
- May react to sudden sounds by increased pulse or respiratory rate or startle reflex
- Responds to voices by decreasing motor activity, sucking activity, and turning head toward the sound
- Hearing screening performed before discharge
Sleep

- 15 to 20 hours per day
- Phases of sleep-wake cycle
  - First reactive
  - Sleep
  - Second reactive
  - Stability

- Specific pattern of reactivity that can influence the response to stimuli and bonding
  - Quiet sleep
  - Rapid eye movement (REM) sleep
  - Active alert
  - Quiet alert
  - Crying
  - Transitional

Pain

- Produces catecholamines and cortisol
  - Heart and respiratory rates change
  - Blood pressure increases as does blood glucose levels
- Untreated pain can have long-term effects
  - Pain pathways and structures required for long-term memory are well developed by 24 weeks gestation
- Unrelieved pain can cause exhaustion, irritability, and delay the healing process
Pain Assessment Tools

- COMFORT
- CRIES
- FLACC
- PIPP
- NIPS
- NPASS
Conditioned Responses

- A response of reflex that is learned over time
- Example is a hungry infant stops crying when it hears its mother’s voice, even though food is not available
- Emotions particularly subject to this type of conditioning
Neonatal Behavioral Assessment Scale

- Measures inherent neurological capacities and response to selected stimuli
- Areas tested include
  - Alertness
  - Response to visual and auditory stimuli
  - Motor coordination
  - Level of excitement
  - Organizational process in response to stress
Respiratory System

- Once umbilical cord is clamped and cut, the lungs take on the function of breathing oxygen and removing carbon dioxide
  - First breath helps to expand the collapsed lungs
  - Full expansion does not occur for several days
- Most critical period is the first hour of life
- Newborn should be position on the back or side to help maintain a patent airway
Bulb Suctioning

- Nurse ensures patent airway is maintained through correct positioning of neonate (on its back or side) and removing any mucus from the mouth and nose with a bulb syringe.
Apgar Score

- Standardized method of evaluating newborn’s condition immediately after delivery
- Five objective signs measured
  - Heart rate
  - Respiration
  - Muscle tone
  - Reflexes
  - Color
- Score is obtained at 1 and 5 minutes after birth
- Nurse monitors for respiratory distress as evidenced by
  - Rate and character of respirations
  - Color (cyanosis)
  - General behavior
- Sternal retractions must be reported immediately to the health care provider
Circulatory System

- Has approximately 300 mL of circulating blood volume
- Neonatal circulation differs from fetal circulation
- Dependent upon ducts within the heart to close at certain points in time, such as
  - Foramen ovale
  - Ductus arteriosus
- If the ducts fail to close when they are supposed to, the neonate may become cyanotic because the blood bypasses the lungs and does not pick up any oxygen
Providing Warmth

- Unstable heat-regulating system
- Acrocyanosis is evident because of sluggish peripheral circulation
- Cannot adapt to change in temperatures easily
- Sweat glands do not function during neonatal period, so infant is at risk for developing elevated temperature if overdressed or placed in overheated environment
Obtaining Temperature, Pulse Rate, and Respirations

- **Temperature:** can be taken rectally or in the axilla
- **Pulse and respiratory rates:** count before taking temperature as infant may cry when disturbed
- **The nurse should report**
  - Temperature elevations >99.8°F or <97.1°F
  - Pulse rates >160 or <110 beats/min
  - Respirations >60 or <30 breaths/min
  - Noisy respirations
  - Nasal flaring or chest retraction
Maintaining Body Temperature of the Newborn

- Do not place bed near window to prevent heat loss by radiation.
- Keep head covered. Head has large surface area as source of heat loss.
- Prevent drafts to avoid heat loss by convection.
- Do not place infant on cold surface to prevent heat loss by conduction.

- Keep infant covered at all times. Expose small areas for diapering, etc.
- Neonate has small amount of subcutaneous fat to conserve body heat.
- Keep infant dry to prevent heat loss by evaporation.
Musculoskeletal System

- Skeleton is flexible
- Movements are random and uncoordinated
- Development of muscle control proceeds from head to foot and from the center of the body to the periphery
- Head and neck muscles are the first ones under control
Length and Weight

- **Average length**
  - 19 to 21.5 inches (46-56 cm)

- **Average weight**
  - 6 to 9 pounds (2722 to 4082 g)

- In the first 3 to 4 days after birth, the infant loses about 5% to 10% of its birth weight
  - May be a result of withdrawal from maternal hormones, fluid shifts, and the loss of feces and urine
Genitourinary System

- Kidneys not fully developed at birth
  - Glomeruli are small
  - Renal blood flow is about a third of an adult
  - Ability to handle a water load is reduced
  - Renal tubules are short and have limited capacity for reabsorbing important substances
  - Decreased ability to concentrate urine and cope with fluid imbalances
- Important for nurse to note first void
- Newborn has about 6 wet diapers per day
Male Genitalia

- Testes descend into scrotum before birth
- Location of the urethral opening should be on the tip of the penis
- A white cheesy substance (smegma) is found under the foreskin
- Some parents may choose to have their child circumcised while others may not
  - Whatever their decision, proper care of the male genitalia must be taught to the parents
Female Genitalia

• May be slightly swollen
• Thin white or blood-tinged mucus may be discharged from the vagina (pseudomenstruation) caused by hormonal withdrawal from the mother
• Cleanse the vulva from the urethra to the anus to prevent fecal matter from entering the urinary meatus, leading to UTI
Integumentary System

- Assess turgor and overall skin condition
  - Usually covered with fine hair called lanugo (disappears within a week of birth)
  - Covered in vernix caseosa—made of cells and glandular secretions; thought to protect skin from irritation and effects of a watery environment
  - Physiological jaundice (icterus neonatorum) seen as a yellow tinge to the skin; caused by the rapid destruction of excess red blood cells
Safety Alert

- Jaundice that appears in the first day of life is not normal and should be recorded and reported
Gastrointestinal System

- Normal functions begin shortly after birth
- Meconium, the first stool, is a mixture of amniotic fluid and intestinal gland secretions
- Sticky, greenish black, thick, and passed 8 to 24 hours after birth
- Stool color and consistency change over time
- Color, amount, and consistency are somewhat dependent upon what the infant is fed (breast milk versus formula)
Normal Infant Stool Cycle

1. First meconium stool
2. Meconium after breastfeeding
3. First transitional breastfed stool
4. Second transitional breastfed stool
5. Normal breastfed stool
6. Cow's milk stool
7. Osmotic stool
8. Diarrhea stool
Gastrointestinal System Upsets

- Constipation
- Hiccoughs
- Digestion
Preventing Infections

- Newborn’s response to inflammation and infection is slow because of the immaturity of the immune system.
- Umbilical cord stump primary site of infection if not kept clean.
- Hand hygiene is the primary means of preventing infection and/or its spread.
Immunoglobulin G (IgG)

- Crosses the placenta and provides newborn with *passive* immunity
- Rarely lasts longer than 3 months
Immunoglobulin M (IgM)

- Produced by the newborn
- Elevated level suggests serious infection
Immunoglobulin A (IgA)

- Produced after neonatal period (about 1 month) ends
- Contained in breast milk
- Provides some resistance to respiratory and gastrointestinal infection
  - Before age 1 month, infants are at risk for such infections
Discharge Planning

- Begins upon admission of the laboring mother
- Areas may include
  - Basic infant care
  - Safety measures
  - Immunizations
  - Return appointments
  - Proper use of a car seat
  - Signs and symptoms of problems and who to contact
Home Care

- Feeding
- Furnishings
- Clothing
- Skin care
Question for Review

• When is the Apgar score assessed and what does it mean?
Review

- Objectives
- Key Terms
- Key Points
- Online Resources
- Critical Thinking Question
- Review Question