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

Physical Characteristics

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

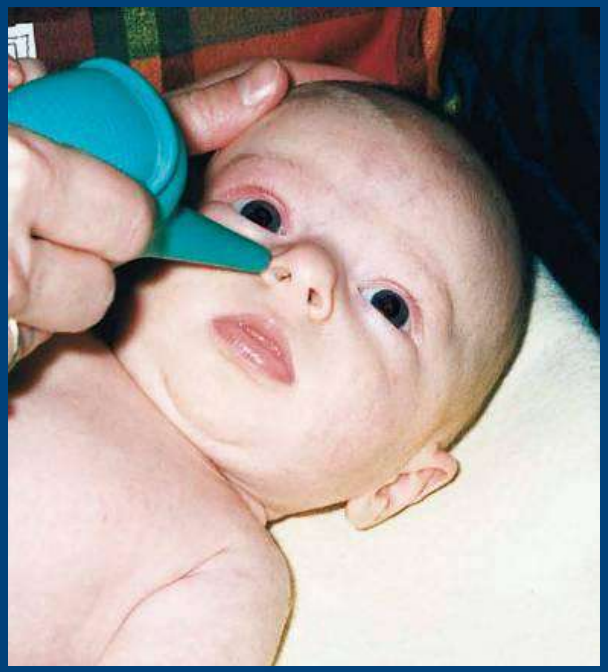
- Measures inherent neurological capacities and response to selected stimuli
- Areas tested include
  - Alertness
  - Response to visual and auditory stimuli
  - Motor coordination
  - Level of excitement
  - Organizational process in response to stress

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

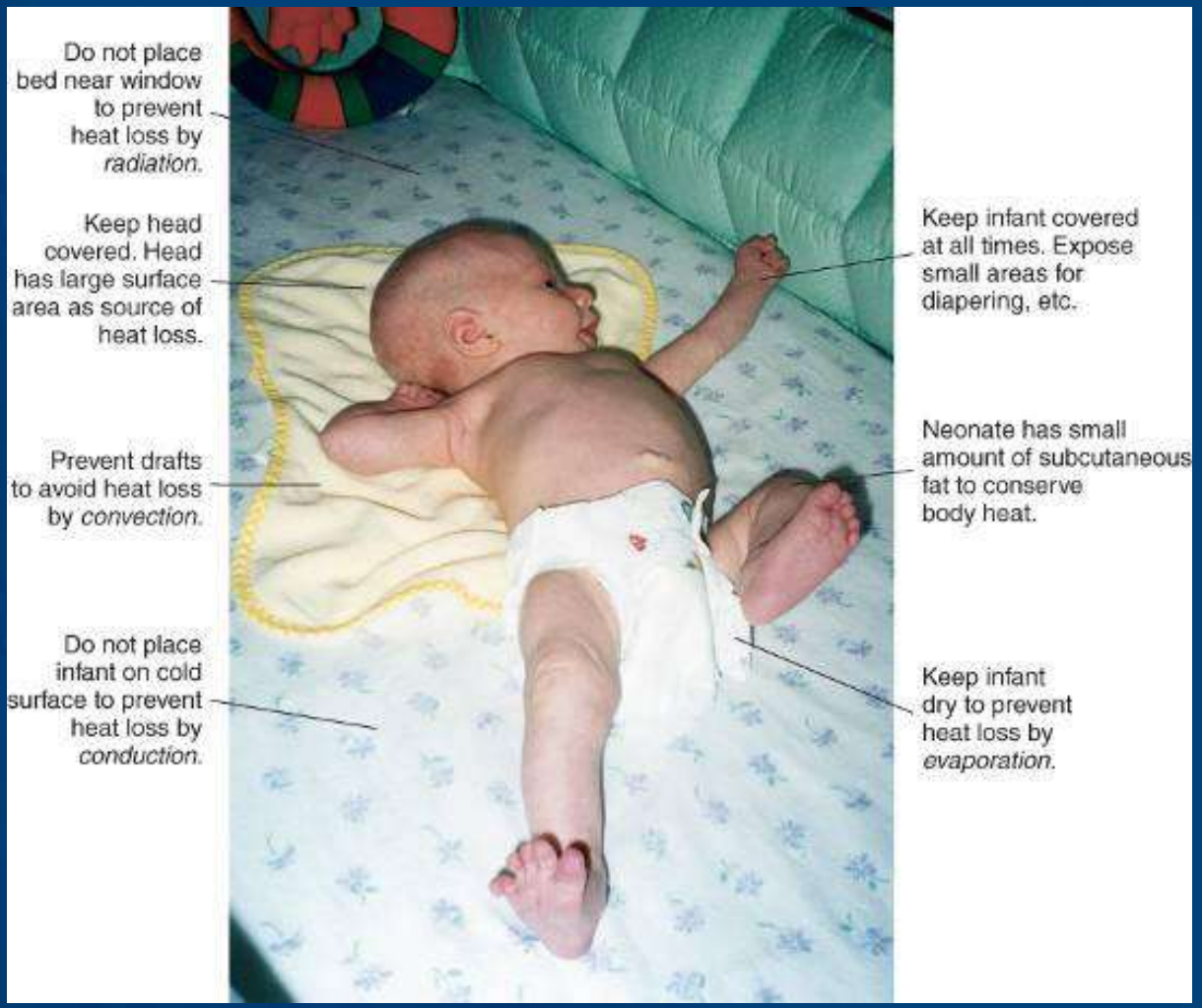
Providing Warmth

- 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



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

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