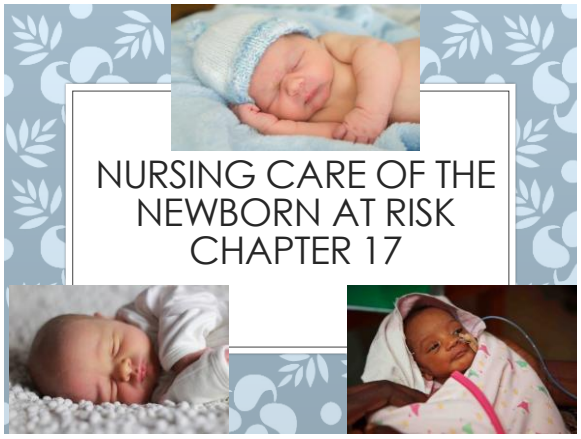

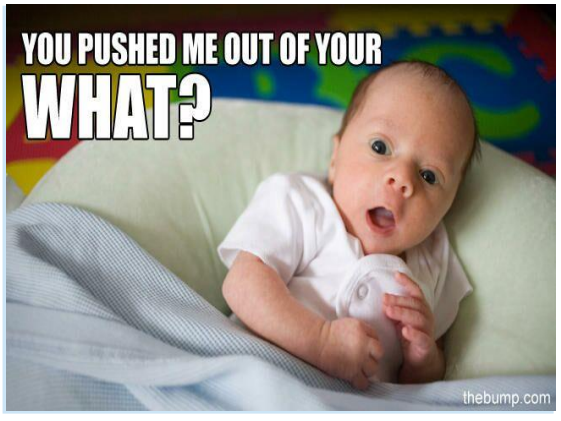

Identification of the At-Risk Newborn

- Risk factors that affect the newborn:
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Care of the Newborn at Risk Because of Birth Asphyxia

- Birth asphyxia
  - An acute brain injury caused by asphyxia when the baby did not get enough oxygen during the birth process
- Possible causes
- Signs and symptoms
  - Cyanosis
  - Difficulty breathing
  - Gasping respirations
  - Umbilical cord pH < 7
  - Apgar score < 3 for more than 5 minutes

Care of the Newborn at Risk Because of Birth Asphyxia

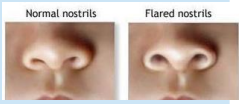
- Immediate CPR is provided upon birth if needed
- Newborn transferred to NICU if symptoms severe or persist
- Receive additional medical and nursing care
- Prognosis depends upon the severity of the asphyxia
- Long-term complications:
  - Cerebral palsy
  - Epilepsy
  - Blindness
  - Delayed motor development
  - Intellectual disability
  - Learning disability

NCLEX Question

A newborn is suffering from birth asphyxia. Which manifestations will you expect to see? **(Select all that apply.)**

A. Cyanosis.
B. Apgar score of 7 or more.
C. Difficulty breathing.
D. Gasping respirations.
E. Cephalohematoma.

Respiratory Distress Syndrome of the Newborn



- Caused by a lack of surfactant and immaturity of the fetal lungs
- Alveoli cannot open leading to hypoxemia, hypercapnia, and respiratory acidosis
- A membrane forms inside the alveoli impairing oxygen exchange

- Signs and symptoms:
  -
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Respiratory Distress Syndrome of the Newborn

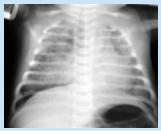
- Medical management:
  - Antenatal Corticosteroids
  - Transfer to NICU
  - Surfactant therapy
  - Oxygen therapy
  - Continuous positive airway pressure (CPAP)
  - Mechanical ventilation if needed
  - Vapotherm
- Nursing interventions:
  - CPR if indicated
  - Administer medications and fluids
  - Monitor respiratory and oxygenation status
  - Provide emotional support to the family

Transient tachypnea

- Common self-limiting condition
- Tachypnea, increased oxygen needs, and mild respiratory distress
- Caused by incomplete reabsorption of fluid in the lungs and usually resolves within 3-5 days
- Treatment and nursing interventions:
  - IV fluids
  - Gavage Feedings
  - Oxygen
  - Minimize stimulation
  - Prevent hypothermia or hyperthermia
  - Supportive care

Meconium aspiration syndrome

- Fetal distress can cause the fetus to pass meconium into the amniotic fluid
- Suction infant before first breath
  - Meconium can block the infant's bronchioles, causing poor oxygenation, pneumonia, and pneumothorax



Meconium aspiration syndrome

- Signs and symptoms of meconium aspiration syndrome
  -
  -
  -
  - Decreased oxygen saturation levels
  - Decreased breath sounds
- Thorough suctioning should occur with the first breath
- Endotracheal intubation and mechanical ventilation
- Admit to the NICU

Persistent pulmonary hypertension

- Fetal circulation remains as it was in the uterus causing blood to be shunted away from the lungs
- Causes
- Signs and symptoms:
  - Similar to respiratory distress syndrome
  - Cyanosis that does not improve with administration of oxygen
  - Shock
  - Heart murmur

Persistent pulmonary hypertension

- Medical and nursing care:
  - Echocardiography
  - Chest x-ray
  - ABGs
  - Oxygen therapy
  - Dopamine
  - Surfactant if cause by lung disease
  - Vasodilators after infant stable
  - Mechanical Ventilation
  - Nutritional support
  - Teaching and emotional support of the family

NCLEX Question

Which of the following is common in both RDS and PPHN?

A. Shock
B. Heart murmur
C. Tachypnea
D. Cyanosis despite oxygen supplementation

Care of the Newborn with Cold Stress

- Highest risk during the immediate transitional period after birth
- Likely if born outside of the hospital
- Risk factors:
  - Premature
  - Small for gestational age infants
  - Requires CPR
  - Infection or a congenital anomaly
- Prevention of cold stress:
  - Dry the infant thoroughly
  - Use prewarmed blankets
  - Place a cap on the head
  - Provide skin-to-skin contact
  - Place under radiant warmer

Care of the Newborn with Cold Stress

- Signs and symptoms:
  -
  -
  -
  -
  -
  - Jitters from low blood sugar
  - Refusal to eat
- Interventions:
  - Temperature monitoring every 15 minutes
  - Skin-to-skin contact
  - Radiant warmer
  - Double-wrapping
  - Incubator
  - Warming blankets
  - Warmed intravenous fluids and bottle formula
  - Treat hypoglycemia

Neonatal Hypoglycemia

- Definition: plasma glucose level of less than 30 mg/dL in the first 24 hours of life and less than 45 mg/dL thereafter
- Risk factors
- Long-term complications
- Signs and symptoms:
  -
  -
  -
  - Weak or high-pitched cry
  - Apnea
  - Hypothermia
  - Poor feeding

Neonatal Hypoglycemia

- Nursing intervention:
  - Heel stick blood samples
    - Always check immediately after birth for any large or small birth weight newborn.
  - Treat hypoglycemia per hospital protocol
  - If glucose is between 30 mg/dL and 40 mg/dL
    - Feed newborn then recheck blood sugar 20 minutes after feeding
  - If glucose is below 30 mg/dL
    - Administer glucose gel or D10W IV
  - Continue to monitor blood glucose levels and treat as prescribed

NCLEX Question

A small-for-gestational age newborn who was just born is demonstrating signs of cold stress. What action should the nurse take **first**?

a. Wrap in heated blankets.

b. Place in a heated incubator.

c. Dry the newborn thoroughly.

d. Cleanse the skin with warm water.

Care of the Newborn with Birth Injuries

- Caused by traction and compression during the birthing process and called **birth traumas**
- Types of injuries:
  - Soft tissue
  - Brachial plexus
- Risk factors
  - Macrosomia
  - CPD
  - Prolonged or precipitous delivery
  - Forceps or vacuum
  - Abnormal presentation
  - Large head

Brachial plexus injury

- Increase in the infant's neck-shoulder angle resulting in a traction force to the brachial plexus
- Associated with:
  - Large birth weight
  - Long labors
  - Vaginal breech delivery
  - Shoulder dystocia
- Symptoms:
  - Limited movement, abnormal muscle contractions, and absent Moro reflex on one side of the body
  - Affected hand claw-like appearance

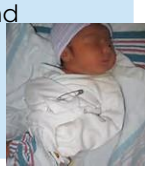
Figure 2. Classic phenotype associated with an upper brachial

Brachial plexus injury

- Treatment and Nursing Care:
  - Depends on the severity of the injury
  - Physical therapy
    - ROM, massage, stretching
  - Surgical treatment
    - nerve graft
  - Report symptoms
  - Protect the arm from dangling
  - Avoid lifting under the axillae
  - Positioning
  - Report signs of pain
  - Emotional support

Fractures

- Clavicle: most frequently fractured bone
- Associated with:
  - Macrosomic infants
  - Infants with large shoulders
- Signs and symptoms:
  - Affected arm does not move
  - Palpable bone irregularity
- Diagnosis: x-ray of the clavicle and affected arm
- Healing occurs in 7-10 days
- Arm immobilized
- Observe for brachial plexus injury



Hyperbilirubinemia

- Jaundice: most common condition requiring medical attention in newborns
- Types:
  - Physiologic: normal occurrence
  - Pathologic/nonphysiologic: serum bilirubin level rises excessively
    - Can cause neurotoxicity; kernicterus
- Risk factors:
  -
  -
  -
  -

Hyperbilirubinemia

- Jaundice:
  - Level reaches 5-6 mg/dL
  - First appears on the face
  - Sclera tinted yellow
  - Diagnosis made through laboratory testing
- Medical management:
  - Breastfeeding
  - Phototherapy
  - Exchange transfusions

Hyperbilirubinemia

- When to start phototherapy
  - Total serum bilirubin level
    - = or > 15 mg/dL in infants 25-48 hours old
    - = or > 18 mg/dL in infants 49-72 hours old
    - = or > 20 mg/dL in infants older than 72 hours

Hyperbilirubinemia

- Nursing interventions:
  - Frequent breastfeeding
  - Monitor stools
  - Weigh diapers
  - Place patches on eye
  - Expose all skin except genital area to light
  - Monitor behavior and body temperature

NCLEX Question

A mother of an infant with hyperbilirubinemia is asking about the care of the infant during phototherapy. Which of the following should the nurse teach? **(Select all that apply.)**

A. Expose as much skin as possible, except for the genital area.
B. Keep the infant in a prolonged skin-to-skin contact.
C. Breastfeed 8 to 12 times a day or bottle-feed 8 to 10 times a day.
D. Keep the infant's eye patch in place while under the phototherapy light.

Neonatal sepsis

- Blood infection; Chemicals released into the blood to help fight the infection cause inflammation over the entire body
- Signs and symptoms:
  - Poor temperature control, respiratory distress, abnormal heartbeat, lethargy, diarrhea, abdominal distention, bulging fontanel
- Treatment and Nursing Care:
  - Cardiopulmonary support
  - IV fluids, antibiotics, and TPN
  - Monitor vital signs and lab results
  - Promote thermoregulation
  - Monitor fluid balance
  - Family emotional support

Herpes

- Become infected during pregnancy, labor, or delivery
- Type 2 (genital herpes) most common cause
- Can cause skin infection (blisters, crusts, then heals)
- Can become systemic and be life-threatening
- Symptoms identical to those of neonatal sepsis
- Medical management and nursing interventions:
  - Same as sepsis except Antiviral medications versus antibiotics
- Preventative
  - Scheduled cesarean for known/suspected herpes positive mothers

Care of Newborns with Problems Related to Gestational Age and Development

- Terminology:
  - **Preterm birth:** less than 37 weeks, 6 days
  - **Early term birth:** from 37 weeks, 6 days through 38 weeks, 6 days
  - **Full term birth:** from 39 weeks through 40 weeks, 6 days
  - **Late term birth:** from 41 weeks through 41 weeks, 6 days
  - **Postterm birth:** 42 weeks and beyond

Small-for-gestational-age (SGA)/intrauterine growth restriction newborn

- Weight less than 10th percentile for gestational age
- Possibly affected by intrauterine growth restriction (IGR)
- Causes of SGA:
  - Abnormalities of the placenta
  - Maternal hypertension
  - Uncontrolled, severe diabetes
  - Poor maternal nutrition
  - Drug use
  - Heavy smoking
  - Exposure to teratogenic substance
  - Alcohol consumption
  - Twins, triplets, or other multiples
  - Small stature parents

Small-for-gestational-age (SGA)/intrauterine growth restriction newborn

- Diagnosed during pregnancy
- Assessment findings:
  - Weight, length, and head circumference below 10th percentile for gestational age
  - Large head in relation to the rest of the body
  - Thin extremities and trunk
  - Loose skin
  - Thin umbilical cord

Small-for-gestational-age (SGA)/intrauterine growth restriction newborn

- SGA infant at risk for:
  -
  -
  -
  -
- Nursing interventions:
  - Perform gestational age assessment
  - Assess for respiratory distress
  - Assess for signs of hypoglycemia
  - Institute early feeding
  - Monitor for hypothermia
  - Monitor vital signs and daily weight
  - Patient teaching

The large-for-gestational-age (LGA) newborn

- Weight greater than 90% for gestational age
- Primary cause: maternal diabetes
- Can cause delivery complications
- Should be delivered cesarean section
- Most common newborn complications:
  - Shoulder dystocia
  - Fracture of the clavicle or limbs
  - Perinatal asphyxia
  - Meconium aspiration
  - Respiratory distress
  - Hypoglycemia

The large-for-gestational-age (LGA) newborn

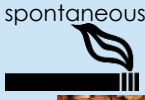
- Assessment findings:
  - Large, obese baby
  - Listless, apathetic baby
- Nursing interventions:
  - Perform gestational age assessment
  - Assess respiratory status
  - Assess for signs of birth injuries
  - Monitor for tremors
  - Provide frequent feedings

The preterm newborn

- Born before 37 weeks gestation

The preterm newborn

- Known risk factors:
  - Low socioeconomic status
  - Cigarette smoking
  - Prior premature births
  - Multiple prior therapeutic or spontaneous abortions
  - Little or no prenatal care
  - Poor nutrition
  - Untreated infections
  - Pre-eclampsia
  - Multiple gestation



The preterm newborn

- Assessment:
  - Based on gestational age assessment
- Additional findings:
  - Skin thin with visible arteries and veins
  - Skin fragile, smooth, and shiny
  - Abundant lanugo
  - Partially formed finger and toenails
  - Ears may fold over
  - Less muscle tone
  - Does not lie in a fetal position until 35 weeks

The preterm newborn

- Complications:
  - Respiratory distress
  - Hypothermia
  - Heart problems (PDA and hypotension)
  - Intraventricular hemorrhage
  - Immature gastrointestinal system (potential for necrotizing enterocolitis)
  - Anemia
  - Infection
  - Fluid and electrolyte imbalances
  - Apnea of prematurity

Necrotizing Entercolitis (NEC)

- Gastrointestinal disease that results in inflammation and necrosis of the bowel.
- Onset usually between 2-3 weeks of life.
- Signs of NEC: vomiting, diarrhea, delayed gastric emptying, decreased bowel sounds, lethargy, increased abd birth, palpable abdominal mass, hematochezia
- Treatment is supportive:
  - Stop formula feedings
  - Insert NG tube
  - Feed with breastmilk
  - Administer antibiotics
- Surgical intervention
  - Remove perforated or necrotic intestinal tissue

Post-term Newborn

-
- cause is unknown
- Fetus receives inadequate nutrition and oxygenation from the placenta
  - Causes a small-for-gestational age infant
- Assessment:
  - More alert after birth
  - Decreased subcutaneous fat
  - Loose skin
  - Dry and peeling skin
  - Lack of vernix and lanugo
  - Long fingernails and toenails
  - Meconium staining on the umbilical cord

Post-term Newborn

- Potential complications:
  -
  -
  -
  -

NCLEX Question

A newborn has abundant lanugo. Which term best describes this infant?

a. Preterm.

b. Post-term.

c. Small-for-gestational age.

d. Large-for-gestational age.

Care of the Infant of a Diabetic Mother

- Neonatal complications directly related to inadequate glucose control in pregnancy
- **Congenital malformations:** high blood sugar concentration toxic to cell growth in 1st trimester
  - Cardiomegaly
  - Spina bifida
- Nursing interventions:
  - Prompt identification of congenital abnormality
  - Notifying the healthcare provider of abnormalities

Care of the Infant of a Diabetic Mother

- **Fetal macrosomia**: large-for-gestational-age (larger than 4000 g at birth)
  - Occurs in 15-45% of diabetic pregnancies
  - Risk for birth injuries due to shoulder dystocia
  - Frequently delivered via cesarean birth
  - Infant appears ruddy, fat, puffy, and decreased muscle tone
- Nursing interventions:
  - Notify healthcare provider of birth weight and signs of macrosomia
  - Perform gestational age assessment
  - Observe for birth injuries
  - Observe for hypoglycemia

Care of the Infant of a Diabetic Mother

- **Hypoglycemia:**
  - Rapid fall in glucose
  - Linked to fetal hyperinsulinism
  - Goal: prevent hypoglycemia

- **Fetal hypoxia:**
  - Poorly controlled maternal diabetes
    - Decreased supply of oxygen to the fetal tissues
    - Decreased blood flow to the placenta
  - Chronic fetal hypoxia
    - Can lead to intrauterine death or respiratory depression at birth
  - The fetus attempts to compensate by producing extra red blood cells ***(polycythemia)***

Care of the Infant of a Diabetic Mother

Polycythemia

- Hematocrit > 65%
- Increases the risk of strokes, seizures, and hyperbilirubinemia
- Characteristics:
  - Ruddy skin, sluggish capillary refill time, respiratory distress, apnea, cyanosis, poor feeding, lethargy, seizures, hematuria
- Treatment and Nursing Care:
  - Monitor VS, hematocrit, and blood glucose
  - May perform arterial blood exchange transfusion with saline in symptomatic infants
  - In asymptomatic infants, observe for symptoms
    - May hydrate the newborn with IV fluids
  - Notify provider immediately of any signs and symptoms

Care of the Infant of a Diabetic Mother

- **Mineral/electrolyte metabolism:**
  - Hypocalcemia and hypomagnesemia can occur
- Signs and symptoms of mineral/electrolyte imbalances in the newborn:
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- Nursing interventions:
  - Recognize abnormal signs and symptoms and report them
  - Maintain close observation to detect deterioration
  - Administer calcium and/or magnesium
  - Provide family education and emotional support

NCLEX Question

The nurse suspects that a newborn has been exposed to large amounts of glucose in utero. Which assessment finding did the nurse use to make this clinical determination?

A. Loose skin.
B. Poor muscle tone.
C. Thin umbilical cord.
D. Partially formed fingernails and toenails.

Care of Chemically Exposed Infants

- **Neonatal abstinence syndrome (NAS):** group of behavioral and physiological signs and symptoms in the neonate caused by withdrawal from pharmacologic agents
- Withdrawal symptoms depend on:
  - Age of the neonate
  - Drug
  - Drug's half-life
  - Mother's last use
  - Table 17-7 Drug Withdrawal for the Neonate, pg. 298

Care of Chemically Exposed Infants

- Medical interventions:
  - Transfer to neonatal intensive care unit
  - Intravenous fluids
  - Provide medications to reduce symptoms and gradually wean from the substance (Morphine most frequently used medication for opioid addicted newborns)
  - Administer phenobarbital as order
  - Avoid administering naloxone at the time of delivery
  - https://www.youtube.com/watch?v=yr-kLIwNexs

Care of Chemically Exposed Infants

- Nursing interventions:
  -
  -
  - Protect skin
  - Ensure adequate nutrition
  - Patient education
  - Referrals
- Long-term effects:
  - Poor growth
  - Hyperactivity and attention-deficit disorder
  - Impaired cognition
  - Poor language development
  - Higher rates of criminal behavior and substance abuse
- Safe and Effective Nursing Care: Care for the Chemically Exposed Newborn pg. 297

Care of the Newborn Exposed to HIV/AIDS

- Perinatal transmission: HIV transmitted during pregnancy, labor and delivery, or breastfeeding
- The risk of perinatal acquisition is 25% to 40% without interventions such as antiviral therapy
- CDC recommends that infants born to mothers with unknown HIV status should receive rapid HIV testing

Care of the Newborn Exposed to HIV/AIDS

- Medical management:
  - If mother received antiretroviral medications during pregnancy:
    - Zidovudine (ADV) 4mg/kg twice a day through 6 weeks of age
  - If mother did not receive prenatal antiretroviral medications:
    - Zidovudine (ADV) 4mg/kg twice a day through 6 weeks of age
    - Nevirapine (NVP) – 3 doses in the first week of life, 12 mg PO per dose if birth weight is greater than 2 kg and 8 mg per dose if birther weight is 1.5-2 kg
  - Pediatric infectious disease specialist
  - Obtain a complete blood count

Care of the Newborn Exposed to HIV/AIDS

- Nursing interventions:
  - Strict standard precautions
  - Gloves worn until the first bath
  - Assess and notify healthcare provider of abnormalities
  - Administer medications
  - Patient teaching
  - Advise not to breastfeed

NCLEX Question

Nursing care for a newborn exposed to HIV includes which interventions? (Select all that apply)

A. Gloves must be worn by everyone, including family members, until the first bath.

B. Encourage breastfeeding.

C. Assess the infant for any abnormalities.

D. Teach the importance of following the drug prophylaxis plan after discharge.

Care of the Family of an At-Risk Newborn

- Parents experience a range of emotions:
  - Fear of the unknown
  - Anger
  - Guilt
  - Loss of bonding and attachment time
  - Loss of control
  - Frustration
  - Anxiety
  - Helplessness

Care of the Family of an At-Risk Newborn

- Family-centered nursing interventions:
  - Provide opportunity for parents to hold and bond with newborn
  - Develop a therapeutic relationship with the parents
  - Provide positive reinforcement for their concerns
  - Encourage parents to talk about their NICU experience
  - Never behave as if the parents are in the way or interrupting

Care of the Family of an At-Risk Newborn

- Family-centered nursing interventions:
  - Answer all questions honestly
  - Include the parents in an open dialogue with the entire NICU team
  - Demonstrate care for the parents and the baby
  - Refer to the baby by his or her first name
  - Allow parents to provide infant care
  - Teach home care before discharge

NCLEX Question

A newborn is diagnosed with a fractured clavicle. What care is indicated for this infant?

a. Provide antibiotics.

b. Immobilize the arm.

c. Avoid lifting under the axilla.

d. Encourage frequent breastfeeding.

NCLEX Question

A newborn's blood glucose level is recorded at 47 mg/dL. What is the next step the nurse should do?

a) Record the number in the chart.

b) Immediately ask the mother to feed the newborn.

c) Report the blood glucose level to the practitioner.

d) Observe for hypoglycemia in the newborn.

NCLEX Question

A newborn born 72 hours ago was diagnosed with jaundice, requiring phototherapy. Which is **most** important to educate the family on at this time?

a) Anticipatory guidance regarding immunization schedules.

b) Covering the newborn's eyes during phototherapy.

c) Proper clothing for the newborn during seasonal changes.

d) How to accurately measure the newborn's temperature.

NCLEX Question

The nurse is educating a birthing class on factors influencing bilirubin levels. The nurse would include information about which of the following? **(Select all that apply)**

a) Prematurity.
b) Birth trauma.
c) Maternal diabetes.
d) Exclusively breastfeeding.

NCLEX Question

Which clinical sign is **most** concerning immediately following the delivery of a high-risk neonate?

a) Oxygen saturation 90%.
b) Blood glucose of 29 g/dL.
c) Axillary temperature 97.9 F.
d) Blue-tinged hands and feet.

NCLEX Question

A new mother has been taking methadone 85 mg daily throughout the last trimester of pregnancy. At 3 days of life the infant is jittery, inconsolable with poor feeding, and recent diarrhea. What is the **most** appropriate response by the nurse?

a. "Infants are often fussy during the newborn period."
b. "Your infant is exhibiting signs of withdrawal from the methadone and may need pharmacological intervention."
c. "Your baby probably has hypoglycemia. I will get the doctor."
d. "Your baby is showing signs of colic and difficult temperament."

Math Practice

Infant weighs 10 lbs. 8 oz.

Order: amoxicillin 100mg PO twice a day for 6 days

Supply: amoxicillin 250mg/5mL

Recommended dosage from drug book: 25mg – 45mg/kg/day in divided doses every 12 hours

Safe calculated single dosage range for this child
(Round to a whole number and include the correct label)
_____ to _____

Would you administer the medication?
_____ (administer or not administer)

If you would administer, give _____
(Round to a whole number and include the correct label)

- Leopold Starwiti was born at 37-weeks weighing 9 pounds 2 ounces and 21 inches long born through vacuum-assisted delivery.
- He had a nuchal cord x 2. Mother received prenatal care and was diagnosed with gestational diabetes.
- Mother had a history of hypertension, occasional smoking, and occasional alcohol usage during pregnancy.
- Leopold's APGARs were 7 and 9. After completing the gestation age assessment Leopold was determined to be large-for-gestational-age.
- Leopold showed symptoms of jitteriness and tachycardia at 1 hour of age. The hypoglycemia protocol was initiated.

Case Study Questions

- What risk factors does Leopold have for hypoglycemia?
- What symptoms of hypoglycemia should Leopold's mother be educated on to monitor her infant for?
- Upon assess of Leopold's blood sugar the nurse notes the heal stick reads 34. What interventions should the nurse provide to the infant?


IF OLIVE OIL IS MADE OF
OLIVES...THEN....
...BABY OIL IS MADE OF...