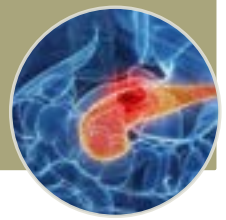
COMMON COMPLICATIONS OF THE NEONATE

Newborn Fellowship 2025

COMMON COMPLICATIONS

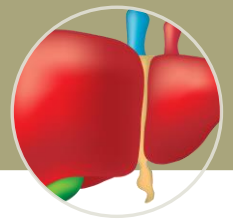
- Prevention
- Risk factors
- Signs & symptoms
- Treatment

Hypoglycemia



- Types of jaundice
- Treatment

Hyperbilirubinemia



- Risk factors
- Special considerations
- Care management

Late Preterm Infants

HYPOGLYCEMIA

- AAP definition: <40 mg/dL
- Transient asymptomatic neonatal hypoglycemia can occur up to 48 hours of life
- Higher incidence in at risk infants: premature, infants of diabetic mothers, small or large for gestational age.
- 15% all newborns require specialized tx for hypoglycemia which includes: IV glucose and NICU admission

THE BRAIN & GLUCOSE

Image from: https://www.sciencephoto.com/media/901830/view/baby-s-brain-at-full-term-illustration

To function normally, the brain requires a steady supply of glucose.

The brain stores minimal amounts of glucose

Most of the glucose that is circulating is used by the brain

When glucose concentrations are low, permanent brain damage can occur.

Sick infants need their energy needs met with IV fluids containing glucose.

(STABLE, 2024)

PREPARING FOR EXTRAUTERINE LIFE & GLUCOSE STABILITY

In Utero:

Fetus relies entirely on placental transfer of glucose, amino acids & lipids to develop

Fetus stores glucose as glycogen in the liver and other organs but minimally in the brain

Majority of glycogen stored from 36 weeks to term gestation

Liver releases glycogen for use by other organs

Steady supply of glucose needed for brain function

NORMAL POSTNATAL DECLINE IN PLASMA GLUCOSE

Once the cord is clamped plasma glucose declines.

By 1-2 hours after birth, nadir is reached.

The more preterm the earlier the nadir.

Liver glycogen is broken down into glucose and released into the bloodstream while waiting for milk from a feeding or dextrose containing IV fluid

Liver glycogen stores depleted within 10-12 hours after birth

Gluconeogenesis then occurs to ramp up glucose production

GLUCOSE HOMEOSTASIS

Factors that affect glucose homeostasis:

- Inadequate glycogen stores &
- Decreased glucose production
- Hyperinsulinemia
- Increased glucose utilization

(S.T.A.B.L.E., 2024)

HYPOGLYCEMIA

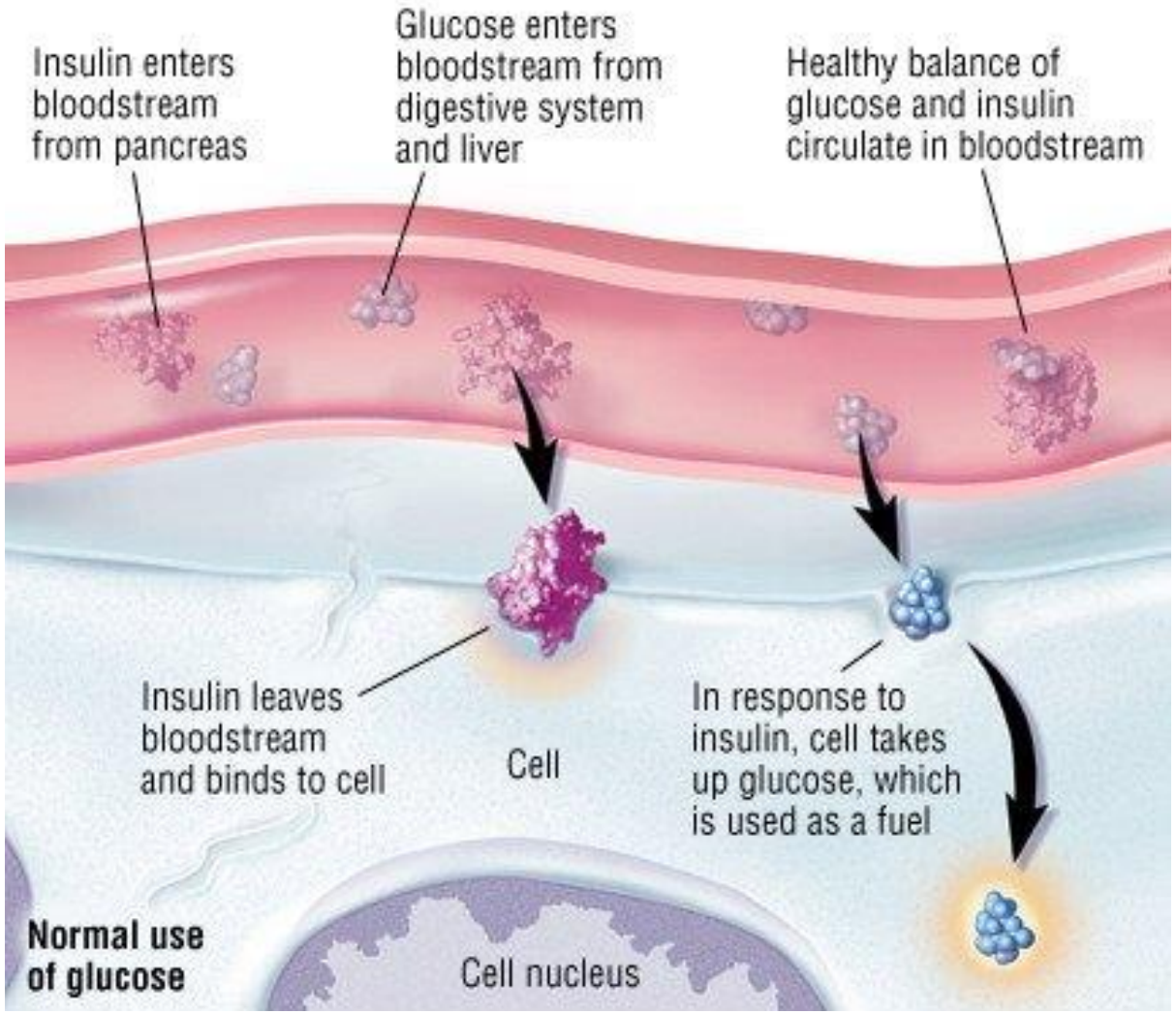
Hypoglycemia is defined as a blood glucose:

- <40mg/dL in the first 24 hours of life
- <50mg/dL from 24-48 hours of life
- Normal: 50-110 mg/dL
- Persistent hypoglycemia past 72 hours of age typically indicate pathologic causes

Can be symptomatic or asymptomatic

No specific threshold at which symptoms occur

NORMAL USE OF GLUCOSE



GLUCOSE REGULATION FOR INFANTS OF DIABETIC MOTHERS

Maternal glucose crosses the placenta

- Fetal levels are approximately 70% of maternal levels

Maternal insulin **does NOT** cross the placenta

- Fetal secretion of insulin begins around 10 weeks gestation
- Fetal insulin production and secretion are directly proportional to maternal glucose levels
- Fetal hyperinsulinemia

When cord is clamped, maternal glucose supply is abruptly removed

Infant's insulin secretion can be elevated for 2-4 days as the pancreas adjusts to the infant's own glucose levels

INFANTS AT INCREASED RISK FOR HYPOGLYCEMIA

Maternal conditions:

- ❖Diabetes
- ❖Preeclampsia and hypertension
- ❖Previous macrosomic infants
- ❖Substance abuse
- ❖Maternal medications

Neonatal conditions:

- ❖Preterm infants (<37 weeks)
- ❖Intrauterine growth restriction (IUGR)
- ❖Small for gestational age (SGA) infants
- ❖Large for gestational age (LGA) infants
- ❖Infants of diabetic mothers (IDM)
- ❖Stressed or sick infants
- ❖Endocrine disorders
- ❖Inborn errors of metabolism

HYPOGLYCEMIA PREVENTION

- Identify at-risk infants
  - Maternal risk factors
  - Infant risk factors
- Promote thermoregulation
  - Skin to skin
  - Delayed bath
  - Dress appropriately
- Feed within 1 hour of birth
  - POC glucose 30-60 minutes after initial feeding, if risk factors present
- Feed at least Q3H
  - AC POC Glucose for up to 24 hours
- Observe for S/S of hypoglycemia

HYPOGLYCEMIA

Cold stress can worsen hypoglycemia

- Delay bath
- Dress/swaddle
- Increase room temp
- EDUCATE family

Ensure effective/ sufficient feeding

- Latch/Milk transfer
- Adequate supplementation
- Hypoglycemic infants should NOT be syringe fed due to risk of aspiration
- Mothers may need to pump in addition to breast feeding

Methodist Health System (2020)

Newborn Glucose Management Protocol

1. **All infants**
   - Feed infant within 1 hour of age.
   - Identify infant's risk factors to determine if infant is High Risk, LGA/Postdates, or an Infant of a Diabetic Mother:
     i. <37 weeks (premature) or >42 weeks (post-dates)
     ii. SGA or LGA
     iii. 5 minute APGAR score of ≤ 7
     iv. IUGR
     v. No Prenatal Care (Late/No Prenatal Care = care started in the 3rd trimester (7-9 months) or no care received)
     vi. Infant of a Diabetic Mother (includes Gestational Diabetes, Type 1 and Type 2 Diabetes)
     vii. Mom received antenatal steroids at 34-37 weeks gestation
   - Obtain Glu POC 40 C 30 minutes after feeding has ended for those infants with risk factor(s) present.

#1	#2	#3	#4
Infant is NOT high risk (No Risk Factors Present)	**Infant IS High Risk** (< 37 weeks, SGA, 5 minute APGAR score of ≤ 7, IUGR, Mom received antenatal steroids at 34-37 weeks gestation)	**LGA** **Postdates (> 42 weeks)** **No Prenatal Care**	**Infant of Diabetic Mother** (Gestational Diabetes, Type 1 and 2 Diabetes)
No Screening	*Follow High Risk Infant Protocol **High Risk Infant Protocol** • **Feed every 2-3 hours with a.c. bedside glucose x 24 hours** • If any glucose is < 40, follow Hypoglycemia Algorithm **(separate sheet of paper)**	*Follow LGA/Postdates Protocol **LGA/Postdates Infant Protocol** • **Feed every 2-3 hours and check a.c. bedside glucose with next 2 feedings** • If any glucose is < 40, follow Hypoglycemia Algorithm **(separate sheet of paper)**	*Follow Infant of Diabetic Mother Protocol **Infant of a Diabetic Mother Protocol** • **Feed every 2-3 hours and check a.c. bedside glucose x 12 hours** • If any glucose is < 40, follow Hypoglycemia Algorithm **(separate sheet of paper)**
• If glucose is > 120, draw serum glucose. If serum glucose is > 120, notify M.D. • Check prn bedside glucose for symptoms of hypoglycemia– irritability, tremors, jitteriness, exaggerated moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, twitching, hypothermia, or hypotonia. • Notify physician for symptomatic hypoglycemia	• If glucose is > 120, draw serum glucose. If serum glucose is > 120, notify M.D. • Check prn bedside glucose for symptoms of hypoglycemia– irritability, tremors, jitteriness, exaggerated moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, twitching, hypothermia, or hypotonia. • Notifyphysicianfor symptomatic hypogycemia	• If glucose is > 120, draw serum glucose. If serum glucose is > 120, notify M.D. • Check prn bedside glucose for symptoms of hypoglycemia– irritability, tremors, jitteriness, exaggerated moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, twitching, hypothermia, or hypotonia. • Notify physician for symptomatic hypoglycemia	• If glucose is > 120, draw serum glucose. If serum glucose is > 120, notify M.D. • Check prn bedside glucose for symptoms of hypoglycemia– irritability, tremors, jitteriness, exaggerated moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, twitching, hypothermia, or hypotonia. • Notify physician for symptomatic hypoglycemia

- Abnormal cry (weak, high-pitched)
- Poor feeding (poor suck, uncoordinated)
- Apnea or tachypnea
- Hypothermia
- Diaphoresis
- Jitteriness/irritability
- Cyanosis
- Lethargy
- Hypotonia
- Tremors/seizures

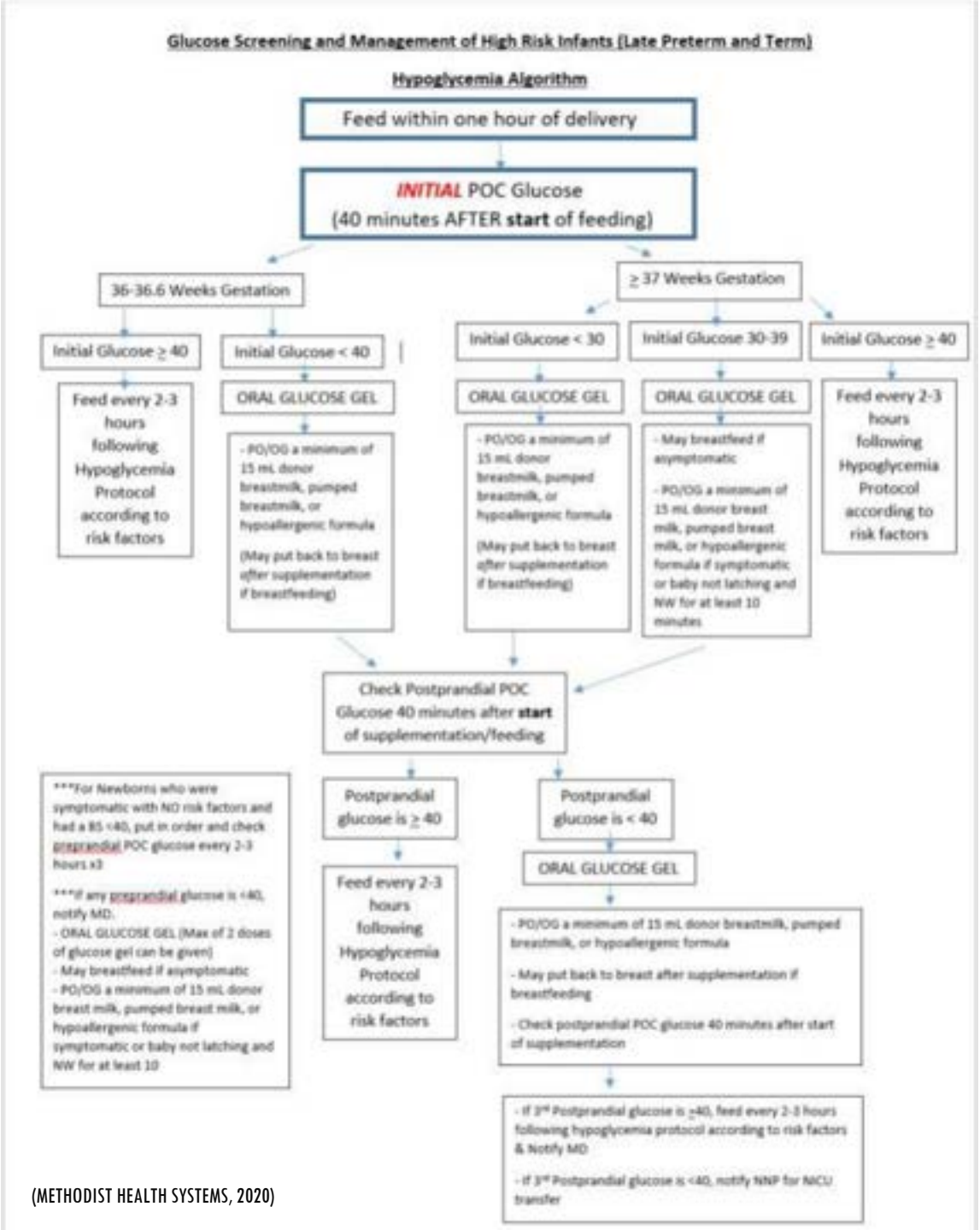
((S.T.A.B.L.E., 2024)

HYPOGLYCEMIA MANAGEMENT

Glucose <40: TREAT!

- Follow hypoglycemia algorithm
- Glucose gel
- Supplement immediately with minimum 15 ml via bottle/gavage
  - If bottling, remaining volume not taken by infant should be gavaged
- AC glucose levels per protocol and until stable
- May need IV glucose bolus/infusion
- NICU individualized

1. Screen for the presence of hypoglycemia risk factors
2. Determine gestational age (exam/dates)
3. Assess for S/S of hypoglycemia
4. Infant will be in one of 4 sub-sections
5. Orders are received based on risk factors and protocol sub-section
6. Initiate skin-to-skin time (as able)
7. Feed infant by 1 hour of age
8. Obtain glucose POC 40 minutes after the <u>start</u> of feeding for infants with risk factors or S/S of hypoglycemia
   - For glucose POC 40-120: routine orders
   - For glucose POC < 40 or >120, follow orders per glucose management protocol



(METHODIST HEALTH SYSTEMS, 2020)

GLUCOSE GEL

- Weight-based dose of 40% dextrose gel rubbed into the buccal mucosa of a hypoglycemic newborn
- Studies show effectiveness in elevating blood glucose levels and decreased NICU admissions for hypoglycemia
- Order reads as follows: Glucose (glucose oral gel) 0.5mL/kg, Buccal, Q15min, PRN blood sugar < 40
- Can be given right before or with the feeding
- To be used in the first 48 hours after birth
- Used for late preterm infants (35+ weeks)
- May give up to 2 doses before calling the provider for further interventions

(METHODIST HEALTH SYSTEMS, 2020)

HYPOGLYCEMIA PREVENTION

Prevention is key!

- Identify at risk infants immediately after birth
- Initiate hypoglycemia protocol as soon as identified
- ALL at risk infants should be closely monitored throughout hospitalization (even after the first 24 hours)
- Educate families

HYPERBILIRUBINEMIA

Hyper- (too much)

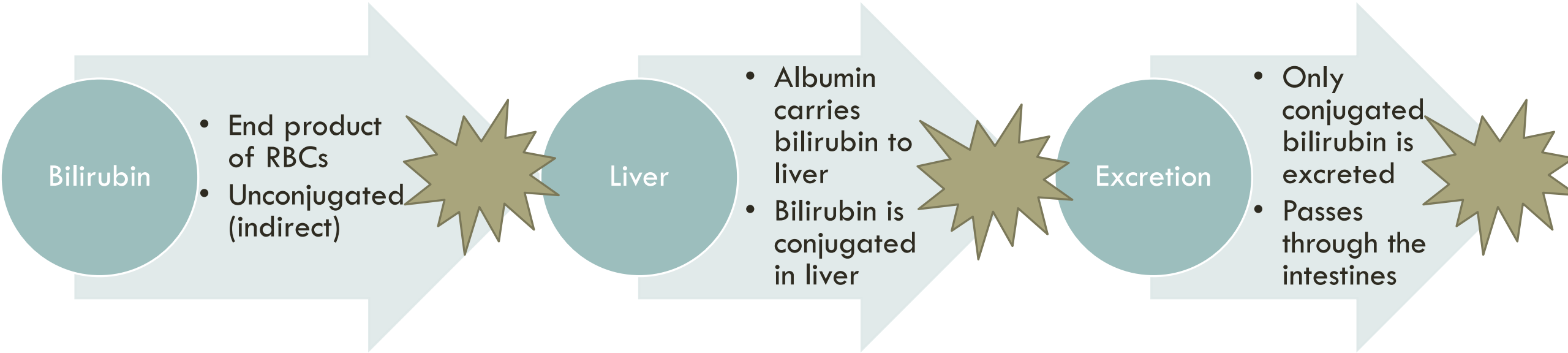
-bilirubin- (byproduct of RBC breakdown)

-emia (present in the blood)

→too much bilirubin in the blood

*not the same as jaundice

BILIRUBIN 'LIFE CYCLE'



	Characteristics	Found	Phototherapy	Effects
Indirect (unconjugated bilirubin)	Lipid soluble, unbound or bound to albumin	• Free bilirubin (unbound) circulating in blood stream • Needs to be bound to albumin to get to liver (where the enzymes are)	Yes	• Free bilirubin can cause kernicterus or brain staining • Deposits in fatty tissues (sclera & skin) • **JAUNDICE**
Direct (conjugated bilirubin)	Water soluble	• Found in the liver • If not water soluble, cannot be excreted without enzyme help	No	Build up in the liver and can cause gallbladder sludge

NEONATAL HYPERBILIRUBINEMIA

Types:

- Physiological jaundice
- Breast milk jaundice
- Breastfeeding jaundice
- Pathologic jaundice
- Hemolytic jaundice

Causes:

- Increased production
- Decreased hepatic uptake
- Decreased conjugation
- Impaired excretion
- Impaired bile flow (cholestasis)
- Increased enterohepatic circulation

SCREENING AND LABS

Lab testing may include one or more of the following:

- Transcutaneous bilirubin level
- Serum bilirubin levels (direct and total)
- Coombs test
- Hemoglobin (Hgb or Hb)
- Reticulocyte percentage

JAUNDICE SCREENING

Coombs test: Detection of antibodies on RBC surface

Direct Antiglobulin Test (DAT)

Direct: measurement of presence of antibody on the baby's RBC surface

Indirect: measurement of presence of antibodies against baby in maternal blood

JAUNDICE – SIGNS AND SYMPTOMS

Assess every 8-12 hours or more frequently PRN

General:

- Yellow/orange discoloration to skin and sclera
- Lethargy
- Poor tone
- Poor feeding/sucking

Hemolytic Disease:

- Enlarged liver and spleen
- Pallor or jaundice first 24-26 hours of life
- Edematous, with pleural and pericardial effusion plus ascites
- Hemolytic anemia

JAUNDICE - MANAGEMENT

General:

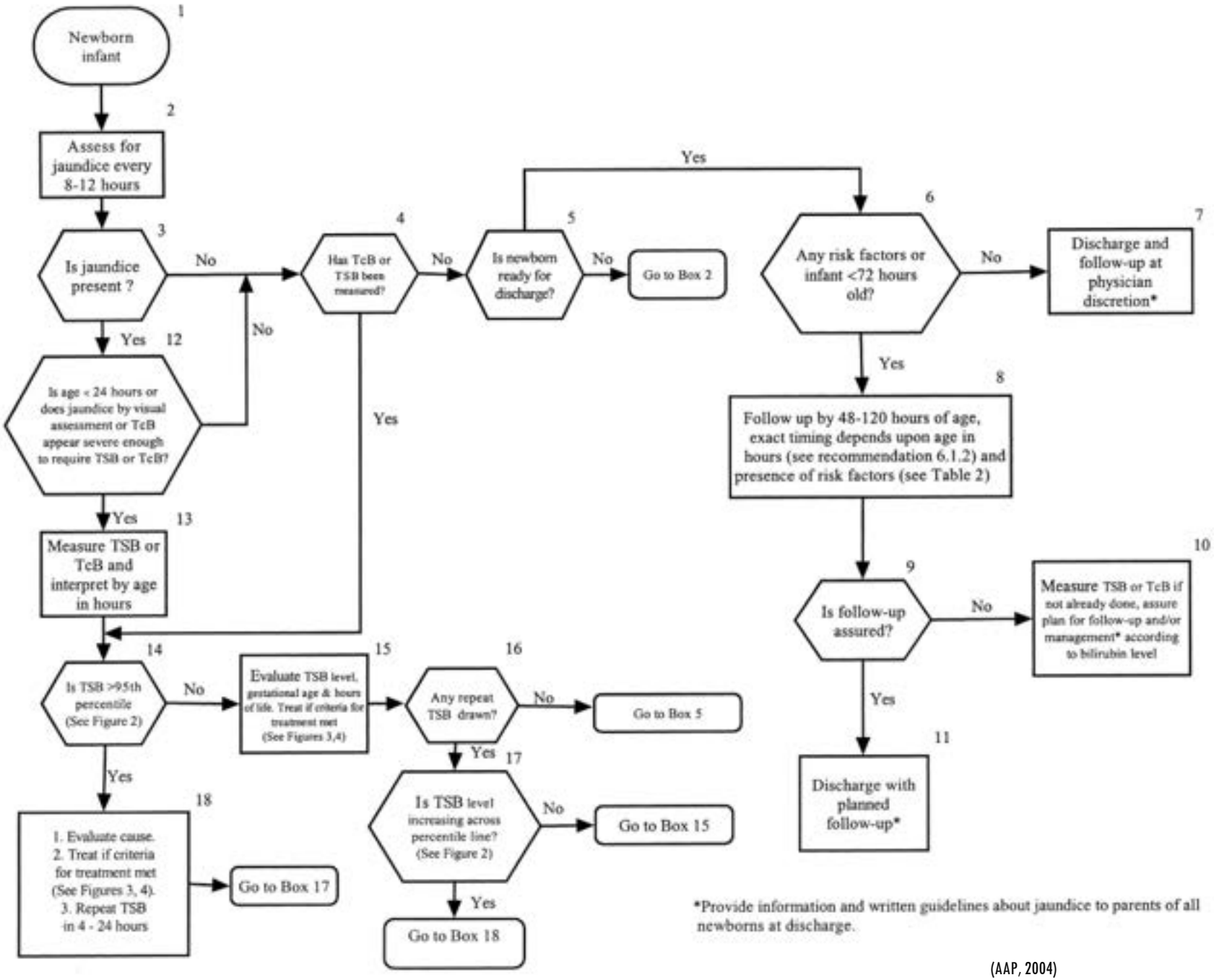
- Prevention
  - Early feeding initiation within 1-2 hours of life
  - Frequent feedings minimum of 8-12 times in 24 hours
- Increase hydration
- Increase stooling
- Treat underlying cause

Appropriate management depends on 3 variables:

- Serum bilirubin levels
- Birth weight
- Age in hours

TREATMENT ALGORITHM

For management of jaundice in the well baby nursery:



(AAP, 2004)

TREATMENTS

- Phototherapy
  - Facilitates biliary excretion of unconjugated bilirubin
- Intravenous Immunoglobulin (IVIG)
  - Used with newborns diagnosed hemolytic disease
- Exchange Transfusion
  - Withdrawal and replacement of newborn's blood with donor
  - Used to treat infants
    - Whose serum bilirubin continues to rise despite phototherapy
    - With severe hyperbilirubinemia (i.e. hemolytic disease)
    - Diagnosed with acute bilirubin encephalopathy

PHOTOTHERAPY

- Single, double or triple banks
  - Lamp, blanket, pad, and/or cover-body device
- Changes the shape of bilirubin to water soluble form and excretes by kidneys and intestines

Risks:

- Retinal damage
- Diarrhea
- Dehydration
- Bronzing
- Interrupted bonding

Therapy is effective if bilirubin levels:

- Begin to decrease within 4-6 hours
- Decrease by 30-40% within 24 hours

PHOTOTHERAPY MANAGEMENT

Monitor

- Monitor irradiance throughout treatment to ensure efficacy

Protect

- Protect eyes and genitals—remove eye mask during feedings for assessment and bonding

Reposition

- Reposition infant every 2-3 hours to maximize skin exposure

Monitor

- Monitor closely for hypo/hyperthermia

Avoid

- Avoid use of ointments, creams, lotions as they can absorb heat and cause burns

ESCALATION OF CARE FOR THE INFANT WITH HYPERBILIRUBINEMIA

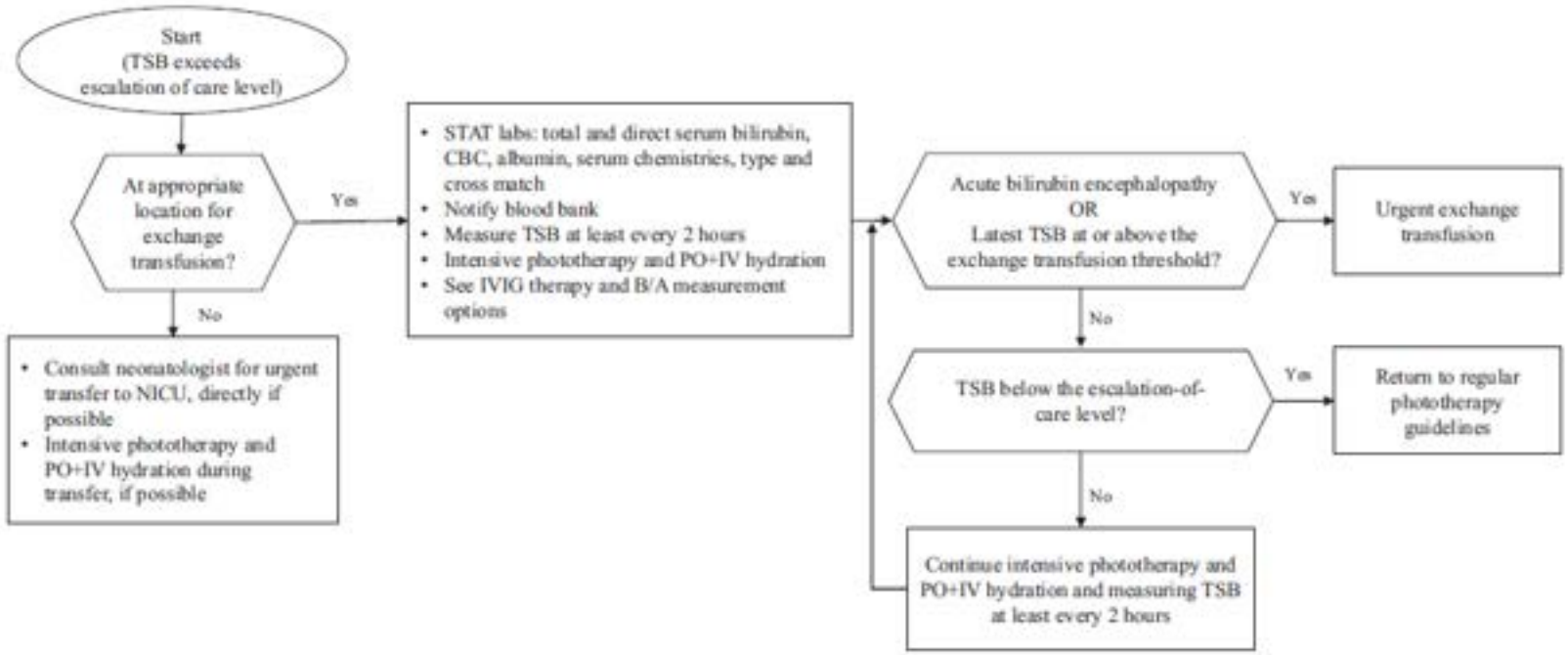


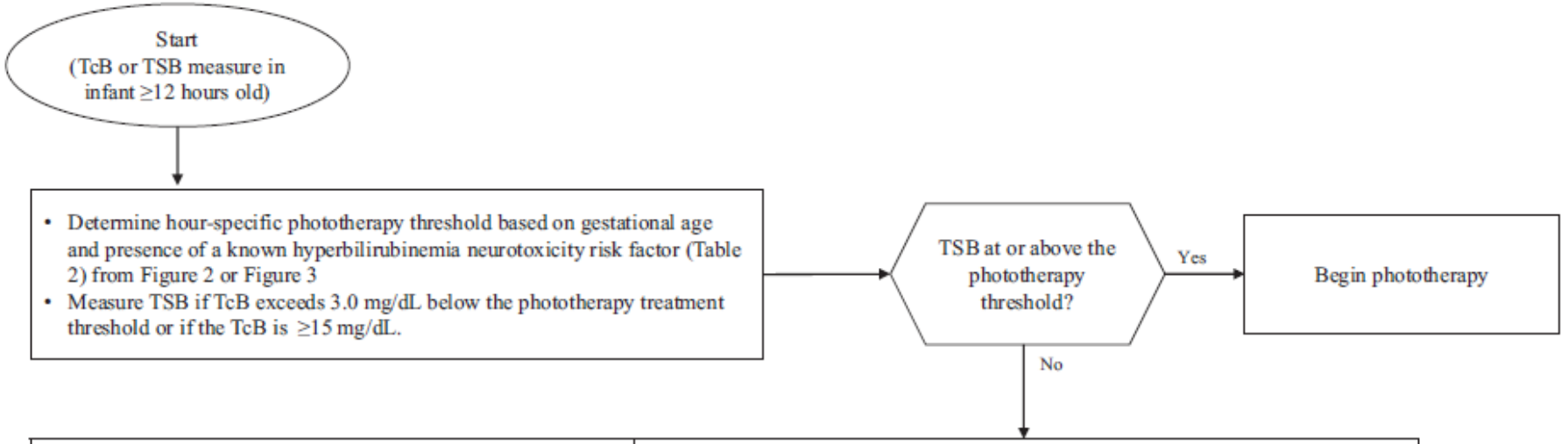
FIGURE 4
Approach to escalation of care. The escalation-of-care threshold is 2 mg/dL below the exchange transfusion threshold. IVIG, intravenous immune globulin; B/A, bilirubin to albumin ratio.

(AAP, 2022)

DISCHARGE SCREENING

- Assess all newborns for risk of developing jaundice prior to discharge
- Bilirubin measurement by TCB or TSB
- Assessment of risk factors
- Other considerations influencing timing of discharge: gestational age, postnatal age, assessment of breastfeeding, weigh loss from birth weight, and assessment of well-being of the infant and parents

DISCHARGE RECOMMENDATIONS



Phototherapy threshold minus TcB or TSB		Discharge Recommendations
0.1-1.9 mg/dL	Age <24 hours	Delay discharge, consider phototherapy, measure TSB in 4 to 8 hours
	Age≥24 hours	Measure TSB in 4 to 24 hours[a] Options: • Delay discharge and consider phototherapy • Discharge with home phototherapy if all considerations in the guideline are met • Discharge without phototherapy but with close follow-up
2.0-3.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 4 to 24 hours[a]
3.5-5.4 mg/dL	Regardless of age or discharge time	TSB or TcB in 1-2 days
5.5-6.9 mg/dL	Discharging <72 hours	Follow-up within 2 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥72 hours	Clinical judgment[b]
≥7.0 mg/dL	Discharging <72 hours	Follow-up within 3 days; TcB or TSB according to clinical judgment[b]
	Discharging ≥72 hours	Clinical judgment[b]

FIGURE 7
Flow diagram for infants during the birth hospitalization to determine postdischarge follow-up for infants who have not received phototherapy.
[a]Use clinical judgment and shared decision making to determine when to repeat the bilirubin measure within this 4 to 24 hour time window.
[b]Clinical judgment decisions should include physical examination, the presence of risk factors for the development of hyperbilirubinemia (Table 1) or hyperbilirubinemia neurotoxicity risk factors (Table 2), feeding adequacy, weight trajectory, and family support. (AAP, 2022)

CASE STUDY

SITUATION:

After 14 hours of labor and 2 hours of pushing, Emily (A Rh + blood type) gave birth to a 6-pound 2-ounce baby. She delivered 48 hours ago via vaginal delivery. The baby was approximately 37 4/7 weeks gestation. The physician used forceps to assist with the birth of the infant. As a result, the baby suffered bruising to the sides of his head where the forceps were applied.

The first 24 hours, the baby was very sleepy and difficult to arouse for feedings. The parents believed he was just tired from the long labor and difficult delivery.

When the RN enters the room for beginning of shift assessment, she notes the parents gazing at their infant and complimenting how beautiful his “tan” skin color is, how he looks just like his daddy, and how happy they are that he had slept through the night. Over the next 12 hours, the infant breastfeeds every 3 hours for 15 minutes each feeding. At the end of the shift the RN reviews total intake and output since birth and notices that the infant has voided twice and passed one small meconium stool.

LATE PRETERM STATISTICS

- Defined as infants born 34.0 – 36.6 weeks gestation
- Size can be deceiving
- Constitute 70% of all preterm births
- Account for 20% of admissions to the NICU
- Associated with adverse short-term and long-term outcomes

LATE PRETERM STATISTICS

↑ risk of neonatal mortality vs. term infants

- 6x risk of early mortality (0-6 days of life)
- 3x risk of late mortality (7-27 days of life)

2-3x risk of death due to preventable causes

2x risk of SIDS

LATE PRETERM CONSIDERATIONS

- Developmental
- Respiratory complications
- Temperature instability
- Feeding challenges
- Hypoglycemia
- Hyperbilirubinemia
- Sepsis

35 0/7 TO 35 6/7 WEEK INFANT PRACTICE CHANGE AT MWH

Sacred Hour for Asymptomatic 35 0/6 to 35 6/7 week Infants

PURPOSE: To establish guidelines to accommodate skin-to-skin time with the mother and infant before the admission process to the NICU.

Started Sept. 3, 2024

The why: Skin to skin to promote temperature regulation, bonding/attachment, initiate feeding, and ensure stable blood glucose levels.

Policy: The NICU admit team (Neonatal Nurse Practitioner (NNP), Respiratory Therapist (RT), and NICU Registered Nurse (RN)) will attend the delivery and routine resuscitation efforts will take place on the warmer

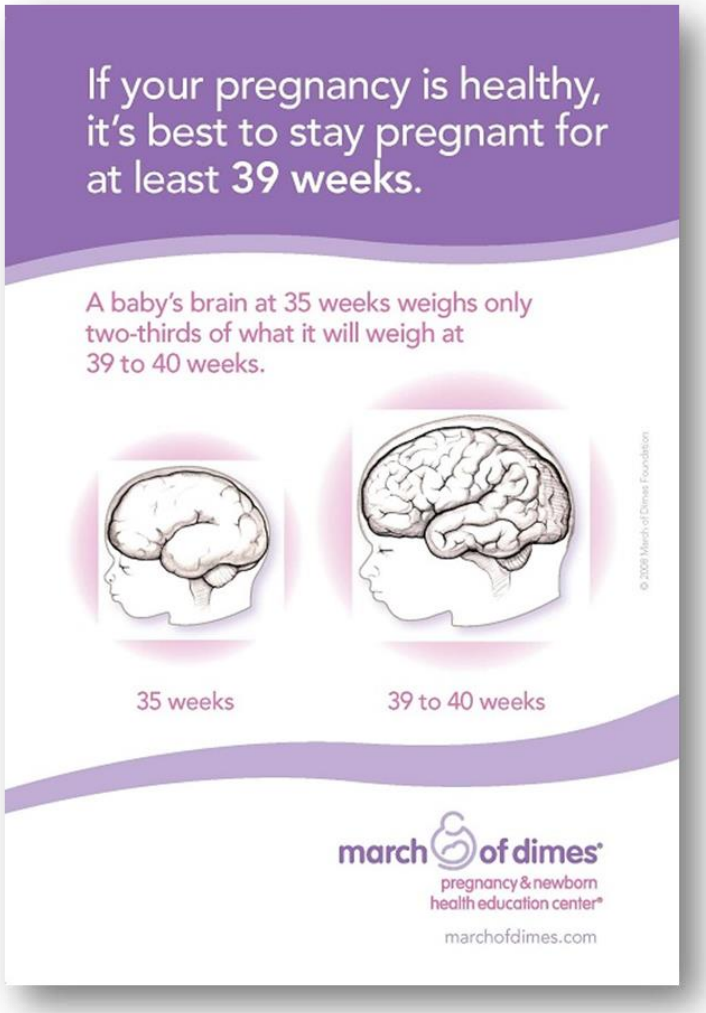
Based on clinical appearance/stability, the NNP will determine if the infant is able to participate in the Sacred Hour

The Labor and Delivery (L&D) RN will function as the baby nurse and remain with the infant during the skin-to-skin with his/her mother.

The mother's ability to participate in the Sacred Hour will be determined by the L&D nurse caring for her.

BRAIN DEVELOPMENT

- In a full term pregnancy, the brain doubles in size in the last month
- Late preterm infants are born with only 65% of term infant brain development
- MRI has demonstrated impairment of cerebellar growth vs. term infants
- Myelination is markedly underdeveloped



PROTECTING SKIN

- Premature infants have underdeveloped skin
- Increased risk for:
  - Water loss
  - Electrolyte imbalances
  - Thermal instability
  - Skin damage
  - Infection

HYPOTHERMIA

Risk Factors:

- Less brown fat to generate heat
- Less adipose tissue for insulation
- Large surface area to weight ratio
- Increased need for resuscitation and delivery room interventions

FEEDING CHALLENGES OF LATE PRETERM

Related to:

- Uncoordinated suck-swallow-breathe pattern
- Weak suction pressures with breastfeeding prevents breast emptying
- Easily fatigued
- Poor/inconsistent hunger cues
- May appear deceptively vigorous and/or satisfied

FEEDING CHALLENGES

Breastfeeding Challenges:

- ↑ breastfeeding non-initiation rates
- ↓ breastfeeding initiation within first hour after birth
- ↓ exclusive breastfeeding rates at discharge
- ↓ continued breastfeeding rates >10 weeks

Poor Feedings Result In:

- Poor weight gain
- Dehydration
- Inadequate breast stimulation and maternal milk supply
- Hyperbilirubinemia
- Hypoglycemia
- Hospital readmission

BREASTFEEDING SUPPORT

Immediate and uninterrupted skin to skin until after 1st breastfeeding

Milk expression shortly after birth

Monitor and document feeding frequency

May need to limit attempts or time spent at breast

Support from lactation consultant

Nipple shield if ineffective latch or milk transfer

INTERVENTIONS FOR IMMATURE FEEDERS

- Observe every feeding Q3H
- Observe and document feeding cues Q3H
- Supplement PRN (if medically indicated) by breast or bottle
- Paced feedings
- Ongoing monitoring and documentation of voids and stools
- Daily weights
- Avoid excessive weight loss

HYPERBILIRUBINEMIA

- LPIs are 2X more likely to develop hyperbilirubinemia than term infants
- Approximately 1 in 4 LPIs will require phototherapy
- Peak may occur after hospital discharge (day 5-7 of life)
- Most common cause for readmission

RESPIRATORY COMPLICATIONS

Infants born at 35 weeks are 9x more likely to have respiratory distress than term infants

Immature lung structure results in:

Delayed intrapulmonary fluid absorption	Surfactant insufficiency	Inefficient gas exchange

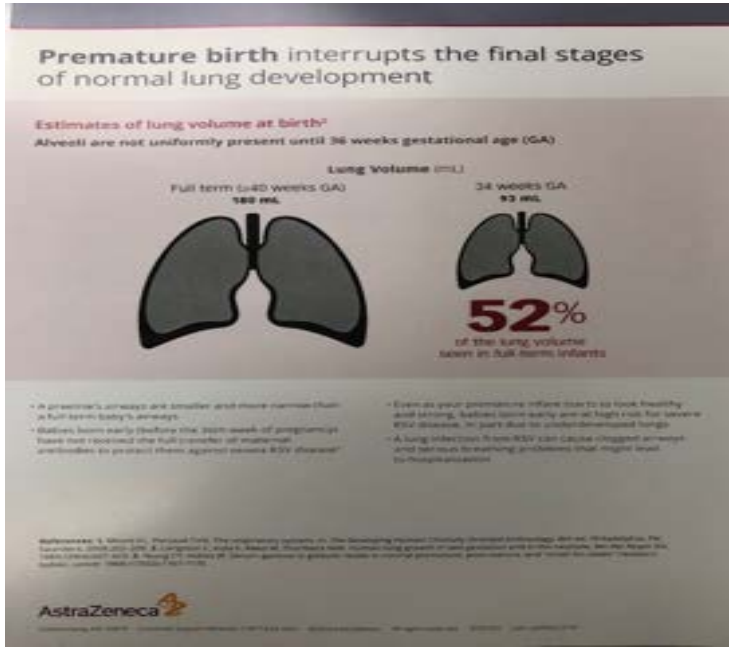
RESPIRATORY DISTRESS SYNDROME (RDS)

Causes:

- Surfactant deficiency leading to decreased lung compliance, also call HMD
  - Lung maturation occurs thru 36 weeks gestation
  - Increased risk with decreasing gestation

Signs & Symptoms:

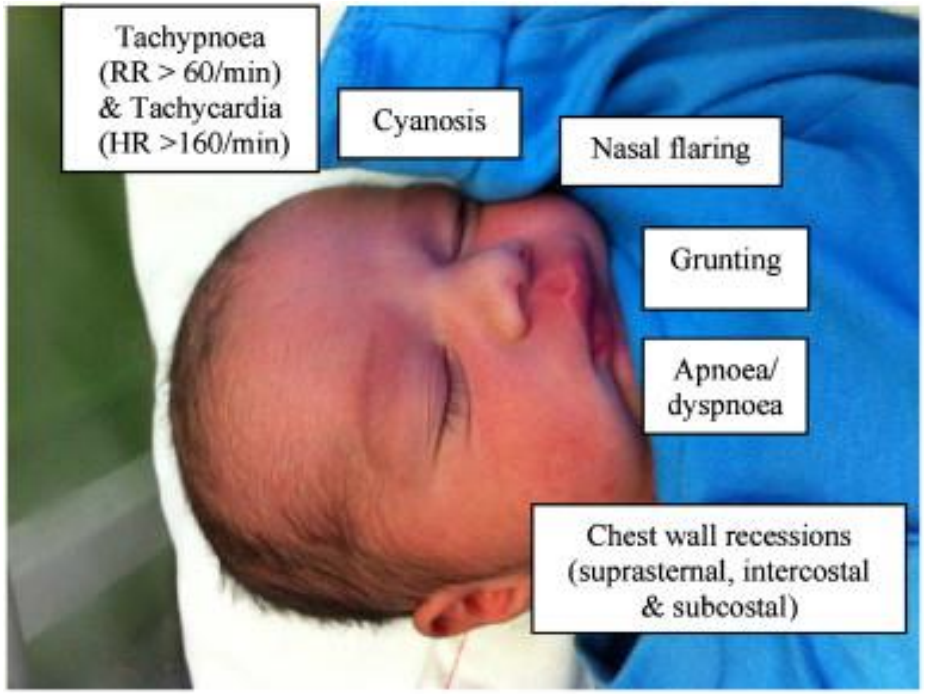
- Increased work of breathing (grunting, retracting), tachypnea, cyanosis, lethargy



RESPIRATORY INTERVENTIONS

Interventions for respiratory distress:

- Evaluation by neonatal provider
- Administer supplemental O2
- Pulse oximeter (target range 85-95%)
- Supplemental heat source
- Assess blood glucose level



RESPIRATORY DISTRESS SYNDROME (RDS)

Medical Management

- Antenatal steroids (24 – 34 wks EGA)
- Surfactant
- Positive distending pressure to maintain FRC (nasal CPAP / intubation)
- Supplemental oxygen
- Watch for diuresis as a sign of recovery

RESPIRATORY PREVENTION

- Body temperature, metabolism, and oxygen consumption are closely related
  - Maintain neutral thermal environment
  - Skin to skin
- Hypoglycemia and respiratory distress go hand in hand
  - If in distress, check blood glucose level

SEPSIS

- Occurs 3x more frequently in the late preterm infant
  - Maternal antibody transfer is not complete until term gestation is reached
- Impaired cellular response
  - Decreased or inefficient WBCs
  - Decreased antibody production
  - Decreased killing power in stressed infants
- Any type of infection can → sepsis
  - Infection = pathogen in or on the body
  - Sepsis = pathogen and/or their toxins in the bloodstream

SEPSIS
LPI ANTEPARTUM/INTRAPARTUM RISK FACTORS

Maternal:

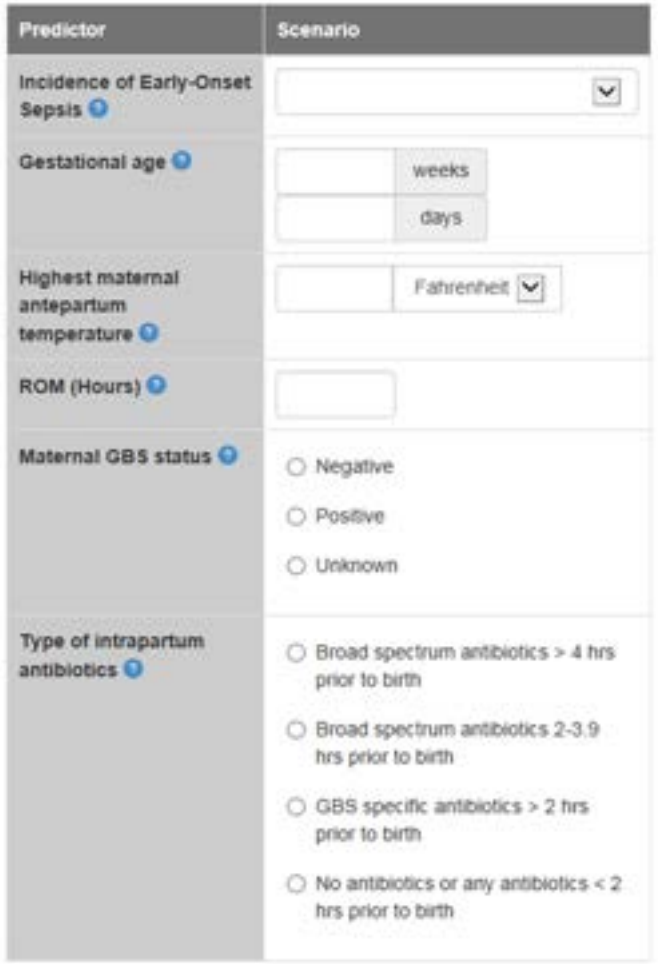
- Prolonged ROM (>18 hrs)
- Intraamniotic infection
- Intrapartum fever
- Young maternal age
- Black race
- Hispanic ethnicity
- Previous delivery of an infant with invasive GBS disease

Neonatal:

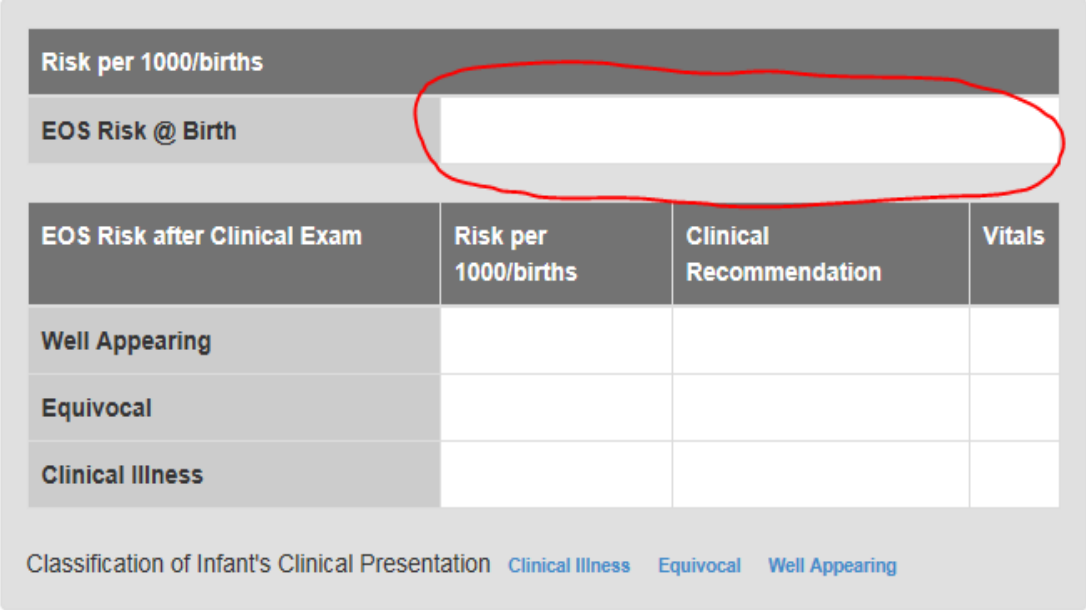
- Male sex
- Multiple births
- Low birthweight (<2500g)
- Congenital anomalies
- Difficulties during delivery (mec, resuscitation, asphyxia)
- Black race

EARLY ONSET SEPSIS CALCULATOR

- Tool to help determine risk of sepsis in infant born ≥ 34 0/7 weeks gestation
- Helps decrease unnecessary use of antibiotics
- https://neonatalsepsiscalculator.kaiserpermanente.org



EOS RISK AT BIRTH



Risk per 1000/births	
EOS Risk @ Birth	

EOS Risk after Clinical Exam	Risk per 1000/births	Clinical Recommendation	Vitals
Well Appearing			
Equivocal			
Clinical Illness			

Classification of Infant's Clinical Presentation Clinical Illness Equivocal Well Appearing

Low risk: <0.65

Medium risk: 0.65-1.54

High risk: >1.54

If an infant has an EOS risk of <0.65, the infant may be admitted to NBN (normal protocol).

If an infant has a score of 0.65 or greater, the infant will require an NNP consult. This INITIAL consult does not require pediatrician request.

SIGNS & SYMPTOMS OF SEPSIS

- ALL or Nothing – may be nonspecific
- Temperature instability
- Lethargy
- Jitteriness
- Irritability
- Hypotonia
- Respiratory distress
- Hypotension
- Poor perfusion
- Poor feeding
- Gastric distention
- Vomiting or diarrhea
- Glucose instability
- Rashes, Pustules, Petechiae
- Jaundice

SEPSIS MANAGEMENT

- Assessment by neonatal provider
- Sepsis workup
  - CBC, blood culture, chest x-ray, lumbar puncture
- Antibiotic therapy
- Infants born to GBS status unknown mother
  - Anticipate diagnostic evaluation

PARENT EDUCATION

- Infection prevention
  - Good hand hygiene
  - Limit visitors
  - Avoid crowds
- Safe sleep practices
- Developmental care
  - Overstimulation
  - Stress/overstimulation cues
  - Sleep requirements
  - Sleep/wake cycles
- Respiratory distress
  - Identification
  - Response
- Thermoregulation
  - Environment, dress
  - Bathing
  - Thermometer use
  - Skin to skin
- Feeding guidelines
- Jaundice
- When to call the provider

LATE PRETERM PARENT EDUCATION

METHODIST
The meaning of care.

36 Week Infant

Late Preterm Infant Care Plan

Help me grow:

- Please let me sleep as much as possible. My brain is still growing and sleep will help it develop.
- **Please make sure everyone washes their hands before touching me.**

  My immune system is not fully developed so I am at increased risk of getting an infection.

Help me stay warm:

- I am more relaxed and sleep better when you hold me skin to skin. It also helps increase my mom's milk supply.
- If I am not being held skin to skin; dress me in an outfit and swaddle me tightly in 1 blanket.

Help me with feeding:

- I need to eat every 3 hours and I can take as much as I want.
- Please let my nurse know when I am acting hungry. I may need to have my blood sugar checked before I eat.
- If I had a low blood sugar at any time during my hospital stay, I should only breastfeed for 10 minutes and then I can drink from a bottle so my volume of milk can be monitored.
- Mom should pump her breasts after she breastfeeds me. I am not strong enough yet to empty my mom's breasts. This will help increase her milk supply.

My feeding schedule is every 3hours at-
_____ around the clock.

Methodist Health System

Babies Born 36 Weeks and Older

Sleeping

- It is important for your baby to have long periods of sleep for his/her brain to develop. If possible your baby should not be woken up when asleep.
- Allow your baby 30 minutes before and after a care time to wake up on his/her own.
- Your baby will be placed to sleep on his/her back when medically stable.

Positioning

- Your baby will be swaddled in a snuggled position with his/her arms rounded and legs flexed.
- Your baby's hands will be positioned close to his/her face.
- Your baby's head position will be changed with each care time. He/she should spend the same amount of time with his/her head positioned to the right, left and straight forward.

Touching and holding

- Talk to your baby in a soft voice prior to touching him/her.
- Use gentle pressure when touching your baby. He/she is sensitive to touch and cannot handle being rubbed or stroked.
- Use containment (cradle your baby by placing your hands around his/her head and bottom/feet) for 5 seconds before care times.
- Daily skin to skin holding is very important for your baby. This is when you hold your undressed baby next to your bare chest. Talk to your nurse about when this may be done.
- Hold your baby with his/her arms forward with hands near the face and legs tucked in near his/her body.
- When holding your baby talk or sing to him/her in a soft voice.
- Your baby may be placed in a crib.

Feeding

- When your baby is medically stable he/she may be ready to begin oral (breast or bottle) feedings. Once stable, your baby's nurse will get an order to do a feeding safety assessment. If it is safe, your baby will then be assessed to see if he/she can try to orally feed.
- Until your baby is able to eat he/she will be given nutrition through an IV line or feeding tube (tube that goes in his/her mouth or nose to the stomach that breast milk or formula is given through).
- Your baby may be able to suck on a pacifier. Only offer a pacifier when your baby is showing that he/she wants to suck (this is called cueing). This is important during tube/gavage feedings.

Looking, Listening and Smelling

- Your baby's room will be kept lighter during the day and dimmer at night; this is called cycled lighting. His/her eyes will be protected from direct light.
- When your baby is trying to open his/her eyes, shield the light and position yourself so your baby can see your face.
- Avoid loud noises in your baby's room. Turn your ringer off on your cell phone and close the doors to the incubator quietly. Talk, sing and read to your baby in a soft voice when he/she is awake; he/she will recognize your voice.
- Protect your baby from strong odors by not wearing perfume, aftershave or scented lotions.

Diapering

- Use containment during diaper changes to decrease stress.
- Move your baby slowly and do not raise his/her bottom above his/her head when changing the diaper.

Bathing

- Your baby may be stable enough for a swaddled tub bath.
- Hospital approved soap will be used to bathe your baby.
- You can support your baby during this time by providing containment.

Stress Signs

The following may be signs that your baby is showing stress; when you see these signs, give your baby a rest:

- Changes in color (becoming pale, mottled or bluish in color)
- Changes in heart rate, blood pressure, and oxygen saturations
- Changes in breathing (faster, harder, or apnea or holding their breath)
- Hand splaying
- Coughing, hiccupping, yawning or gagging
- Looking away

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HOSPITAL READMISSION

Higher rates of re-hospitalization

- 1.5 to 3x more often than term infants

Higher rates of ED visits

Readmission commonly occurs from:

- Jaundice
- Proven/suspected infection
- Feeding difficulties
- Failure to thrive
- Hypothermia

DISCHARGE CRITERIA

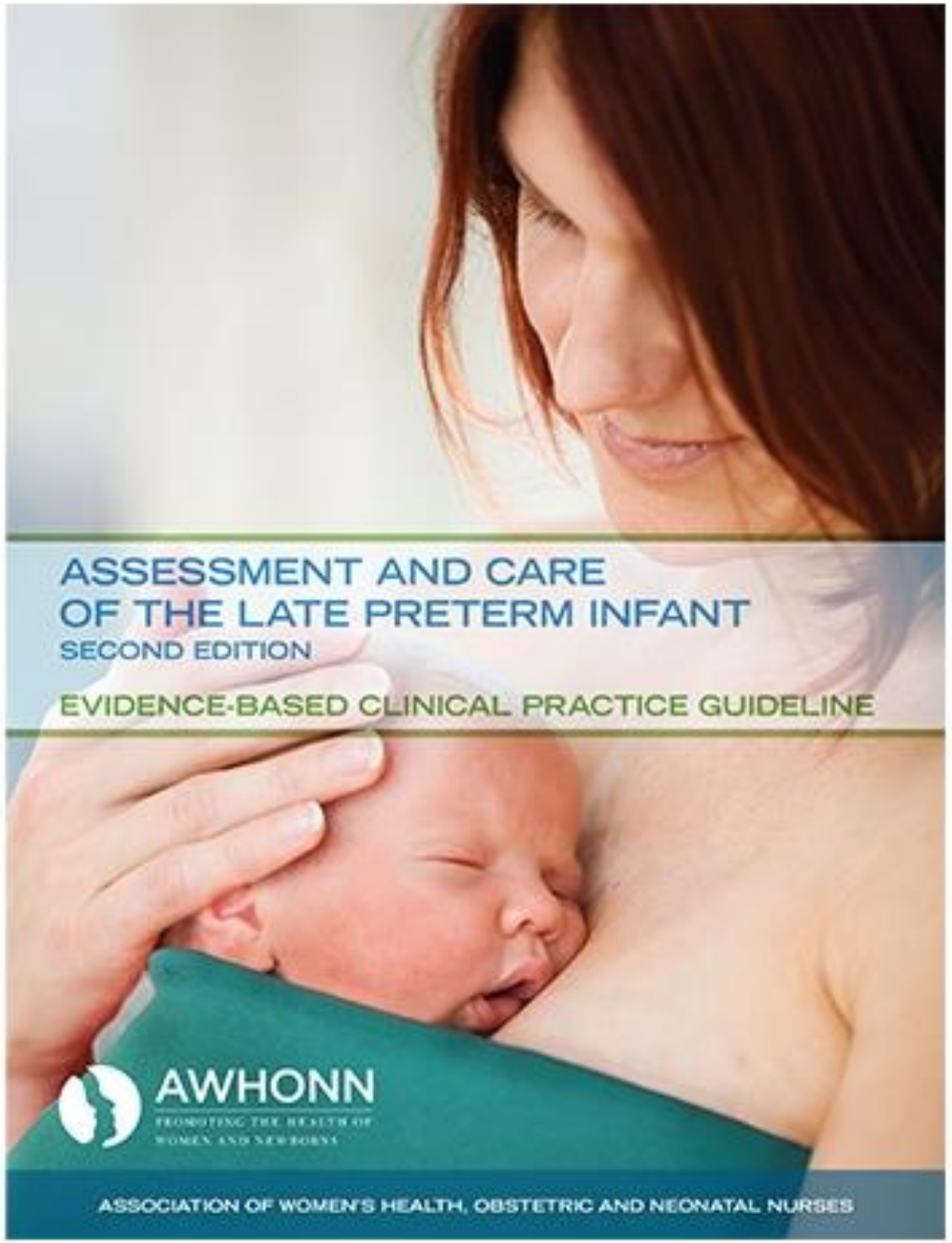
- Absence of medical illness and social risk factors
- Demonstrate cardiorespiratory stability
- Ability to maintain thermoregulation
- 24 hours of successful feedings demonstrated
- Feeding plan understood by family

DISCHARGE CRITERIA

- Hyperbilirubinemia has been assessed and plan developed for follow-up if needed
- Car seat study completed
- Discharge before 48 hours after birth is discouraged
- PCP identified and follow-up visit arranged for 24-48 hours after discharge

RESOURCES

AWHONN



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