

**COMPETENCY BASED CURRICULUM FOR PEDIATRIC RESIDENCY EDUCATION
TERM NEWBORN NURSERY AT KCHC, UHB OR SIUH – JUNIOR RESIDENT**

Standard Rotation: Term Newborn Nursery at KCHC, UHB or SIUH

Residents: Pediatric residents at the PL1 level, Family Medicine residents at the PGY 1 or 2 level.

Prerequisites: none

Patient Care: Residents must provide family-centered culturally-sensitive patient care that promotes health and well-being of newborns and effectively treats problems in the nursery.

Goal I: Assessment, Screening and Prevention for Normal Newborns. Assess newborns, using history, physical exam and routine screening procedures, and provide preventive counseling and intervention as indicated.

A. Obtain and interpret information relevant to newborn health including:

1. Maternal medical, prenatal and obstetric history
2. Results of maternal screening tests - HIV, rubella, hepatitis B and C, syphilis, tuberculosis, blood type, Rh, group B streptococcus, herpes simplex virus, illicit drugs, gonorrhea, and chlamydia
3. Maternal medication use or substance use/abuse
4. Results of prenatal ultrasound testing
5. Family history

B. Understand and demonstrate appropriate timing for newborn exams and define the key reasons for doing the exams (e.g., determine state of transition, assess risks, identify abnormalities, and demonstrate normal findings and behaviors to parents).

C. Perform a neonatal physical examination and identify normal and abnormal findings related to:

1. Gestational age assessment and growth category (AGA, SGA, LGA)
2. Vital signs (Temperature, HR, BP, RR, O2 sat), and measurements (Wt, Ht, HC)
3. General appearance and identification of anomalies
4. HEENT (head size/shape, caput, cephalohematoma, red reflex, palate, short frenulum)
5. Neck and clavicles
6. Chest and breasts
7. Heart
8. Lungs, Respiratory effort
9. Abdomen (including umbilical cord)
10. Femoral pulses
11. Genitalia
12. Hips (Ortolani and Barlow maneuvers)
13. Extremities
14. Skin
15. Neurologic system (symmetry, tone, reflexes, suck, behavioral state, spine, sacrum)

D. Use and/or interpret clinical tests commonly used in Newborn Nursery setting, such as:

1. Dubowitz exam for gestational age assessment, premature and term infant growth curves
2. CBC, ABO typing and Coombs testing, blood glucose/glucometer, bilirubin (serum and/or

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transcutaneous), maternal cord blood antibodies, syphilis serology.

Goal II: Common Signs and Symptoms of Normal Newborns. Evaluate and appropriately treat or refer newborns with these common signs and symptoms.

Recognize, describe clinical significance of, and develop a strategy to evaluate, manage and/or refer newborns with these common newborn signs and symptoms:

1. High or low temperature
2. Tachypnea
3. Bradycardia/tachycardia
4. Respiratory distress
5. Peripheral and central cyanosis
6. Cephalohematoma or caput
7. Microcephaly/Macrocephaly
8. Facial palsy
9. Corneal opacities or absent red reflex
10. Anomalies of the ear, including tags, pits
11. Palate abnormalities (cleft, submucous cleft)
12. Fractured clavicle
13. Brachial plexus injury
14. Swollen breasts
15. Heart murmurs
16. Two vessel umbilical cords
17. Abdominal distension and masses, umbilical hernia
18. Genitourinary abnormalities (ambiguous genitalia, hypospadias, undescended testicle)
19. Vaginal bleeding, discharge
20. Absent femoral pulses
21. Abnormal findings on the Barlow or Ortolani
22. Polydactyly/Syndactyly
23. Plethora
24. Pallor
25. Sacral dimple, pit, hair tuft
26. Birth marks (mongolian spots, hemangiomas, port wine stains)
27. Rashes and markings secondary to birth trauma (petechiae, subconjunctival hemorrhage)
28. Papular and pustular rashes (erythema toxicum, pustular melanosis, staph. Pustulosis, milia)

Goal III: Common Conditions of Normal Newborns. Evaluate and appropriately treat or refer newborns with these commonly presenting conditions.

Recognize, describe clinical significance of, and develop a strategy to evaluate, manage and/or refer newborns with the following common clinical situations:

1. Large and/or small for gestational age babies
2. Infant of a diabetic mother
3. Infant of substance abusing mother
4. Child with ABO/Rh incompatibility
5. Polycythemia
6. Premature/postmature infant
7. Jitteriness
8. Transient metabolic disturbances (hypoglycemia, etc.)
9. Delayed urination/Delayed stooling
10. Vomiting feeds/bilious emesis/hematemesis
11. Poor/delayed suck

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12.	Respiratory distress with feedings
13.	Jaundice
14.	Infant with abnormalities on prenatal ultrasound (hydronephrosis, etc.)
15.	Dysmorphic features
16.	Eye discharge
17.	Abnormal newborn hearing screen results
18.	Infant born to a mother with a significant medical condition (lupus, seizure disorder, etc)
Goal IV: Normal Newborn Nutrition. Manage breast- and bottle-feeding.	
A. Assess a newborn's nutritional status based on maternal and obstetrical history and infant's history (e.g., caloric requirement, feeding, stools, urination) and physical exam (e.g., weight expected for gestational age, hydration status) and implement appropriate feeding plans.	
B. Know the advantages and disadvantages of breast- and bottle-feeding.	
C. Recognize and manage:	
1.	Common problems for breastfeeding infants and mothers
2.	Maternal use of medications that are transmitted via breast milk
3.	Maternal infections and risk of transmission (Hepatitis B, Hepatitis C, HIV)
4.	Preserving breastfeeding while managing jaundice
5.	Feeding plans for the SGA or premature infant
6.	Feeding plans for the infant of a diabetic mother
7.	Feeding plans for the infant with a cleft palate
Goal V: Newborn Infections. Assess and manage common infections in the newborn nursery.	
A. Identify common and important perinatal infections.	
B. Discuss methods for screening and, where appropriate, preventive treatment of mother and infant (HIV, group B strep, chlamydia, gonorrhea, CMV, hepatitis B, hepatitis C, HSV, tuberculosis, HPV, parvovirus, rubella, syphilis, toxoplasmosis, and varicella).	
C. Identify newborns at risk for bacterial sepsis by history, physical exam, and laboratory studies.	
D. Describe why umbilical cord care is routinely performed and what methods are available.	
E. Recognize and manage:	
1.	Newborn with signs of sepsis (e.g., fever, poor feeding, tachypnea, low temperature)
2.	Infant born to mother with fever
3.	Infant born to mother with a history of a perinatal infectious disease (e.g., GBS, chlamydia, syphilis, HSV)
4.	Infant born to mother with prolonged rupture of membranes
5.	Infant born to mother who received antibiotic during delivery
Goal VI: Jaundice. Recognize and manage jaundice in the newborn period.	
A. Interpret maternal history for factors contributing to jaundice (Rh, blood type, gestational age, infection, family history of jaundice in infants, etc.).	
B. Interpret infant's history for possible etiologies of jaundice (e.g., infrequent or ineffective feeding, poor urine or stool output, acholic stool, blood type, risk factors for infection, metabolic disease).	
C. Perform a physical exam to assess for jaundice or other evidence of hepatic dysfunction (e.g., skin color, sclerae, bruising, cephalhematoma, organomegaly).	
D. Demonstrate use and interpretation of transcutaneous bilirubin monitoring.	
E. Interpret test results to evaluate jaundice in the clinical setting.	
GOAL VII: Assessment, resuscitation, care of newborn after high risk or complicated delivery	

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A. Assess prenatal, perinatal and familial risk factors which may affect the well-being of the newborn infant. Communicate with obstetrician and mother.
B. Perform APGAR scoring
C. Provide resuscitative or supportive care as necessary <ol style="list-style-type: none"> 1. suctioning 2. stimulation 3. oxygen 4. warmth 5. ventilatory support if needed 6. fluid and/or pharmacologic therapy if needed
D. Perform targeted physical examination
E. Determine patient disposition (Newborn Nursery, Step Down, NICU). Contact neonatologist if needed.
F. Communicate with mother and encourage mother-child bonding whenever possible.
GOAL VIII: Technical and therapeutic procedures. Perform and describe the following procedures, including how they work and when they should be used.
Breast pump use
Capillary blood collection (PKU, hct)
Conjunctival swab
Gastric tube placement (OG/NG)
Pulse oximeter placement
Suctioning nares
Suctioning oral pharynx
Accurate measurements of head circumference and length
Neonatal resuscitation as per NRP guidelines

Medical Knowledge: Residents must learn established clinical, epidemiological and social-behavioral knowledge relevant to newborns, and demonstrate the ability to acquire, critically interpret and apply this knowledge in the care of newborns. This includes knowledge of normal and abnormal conditions, and when and why to consult specialists (including neonatal intensivists).

Goal I: Basics of Delivery

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| A. Describe normal physiologic changes in neonatal transition, signs of abnormal responses and strategies for their management. |
| B. Describe the components of the APGAR score and understand how it is used. |
| C. Describe the rationale and use of eye prophylaxis, vitamin K, Hep B vaccine and HBIG. |
| D. Describe the immediate management of infants born to mothers with abnormal prenatal screening tests (antibody screening; rubella, HIV, HSV, syphilis, Hep B, GBS, TB, gonorrhea, and chlamydia). |
| E. Discuss immediate breastfeeding and early bonding between baby and family and describe how hospital routines can facilitate or impede these natural processes. |

Goal II: Routine screening procedures

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| A. Describe current standards for newborn screening, including: <ol style="list-style-type: none"> 1. National (AAP) recommendations for universal newborn hearing screening 2. State neonatal blood-screening program, including diseases screened for, timing, and process for notification of abnormal results 3. Current recommendations for maternal Group B Streptococcus screening and the evaluation of exposed neonates 4. Appropriate use of other screening tests or protocols and their indications (e.g., blood type and Coombs, glucose, hematocrit) |
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5. Appropriate use of testing to identify prenatal exposure to substances of abuse

Goal III: Common Conditions of Normal Newborns.

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3. Infant of substance abusing mother
4. Child with ABO/Rh incompatibility
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9. Delayed urination/Delayed stooling
10. Vomiting feeds/bilious emesis/hematemesis
11. Poor/delayed suck
12. Respiratory distress with feedings
13. Jaundice
14. Infant with abnormalities on prenatal ultrasound (hydronephrosis, etc.)
15. Dysmorphic infant
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17. Abnormal newborn hearing screen results
18. Infant born to a mother with a significant medical condition (lupus, seizure disorder, obstetrical condition such as HELLP syndrome)

Goal IV: Jaundice

- A. Discuss the current AAP practice parameters regarding diagnosis and management of jaundice.
- B. Interpret the significance of a total serum bilirubin level in the context of early discharge of newborns, with reference to normative data based on age in hours.
- C. Describe indications for phototherapy and exchange transfusions.
- D. Describe the use of phototherapy and explain risks (e.g., dehydration, eye injury, and disruption of breastfeeding routines).

Interpersonal and Communication Skills: Residents must demonstrate interpersonal and communication skills that result in effective information exchange and cooperation with families and professional contacts.

- A. Provide anticipatory guidance and prevention counseling to parents throughout the hospital stay and at time of discharge, according to recommended guidelines (e.g., AAP, Bright Futures).
- B. Provide routine counseling on topics such as:
 1. Routine follow-up appointment time (e.g., 3-5 days of age for early discharge and breastfeeding infants)
 2. How and when to contact the office for advice or earlier appointment
 3. For infants discharged early: warning signs of jaundice, infection, dehydration, and feeding problems
 4. Needed medical, social, and WIC services
 5. Normal infant behaviors related to crying, sleep, and wakefulness and how to deal with common problems (hiccups, sneezes, vaginal bleeding, breast masses/discharge, care of umbilical cord, care of penis)
 6. Postpartum adjustment including the need for rest and support, and the potential for postpartum "blues" (e.g., depression, anxiety, feelings of inadequacy, fear, resentment)

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7. Injury prevention (e.g., car seat for discharge, crib safety, water temperature settings, smoke alarm, constant supervision of newborn with siblings or pets, sleep position, environmental exposures like cigarette smoke)
8. Significance of increasing jaundice, feeding problems or fever in this age group and the rapidity with which medical care should be sought

C. Encourage and support mothers who are breastfeeding.

D. Counsel parents about types of jaundice (physiologic, insufficient breastfeeding, breast milk, hemolytic, etc.) and their natural history.

E. Counsel parents about when to be concerned about jaundice (poor feeding, fever, irritability).

F. Counsel parents about ways to improve jaundice at home (e.g. frequent feedings, exposure to sunlight)

G. List resources that can be used to supplement counseling by the physician.

H. Communicate and work effectively with staff and other health care professionals.

Practice-Based Learning and Improvement: Residents must demonstrate knowledge, skills and attitudes needed for self-assessment, using scientific methods to evaluate and improve patient care.

A. Use scientific methods and evidence to investigate, evaluate, and improve patient care in the nursery.

B. Develop strategies for effectively teaching students and colleagues.

Professionalism: Residents must demonstrate a commitment to professional responsibilities, adherence to ethical principles and sensitivity to diversity.

A. Demonstrate personal accountability (e.g., follow-up lab results, write legible notes, seek answers to patient care questions).

B. Adhere to ethical principles and be sensitive to diversity

C. Demonstrate professional behavior in interactions with staff and professional colleagues.

System-Based Practice: Residents must learn to practice high-quality health care and advocate for patients within the health care system.

A. Demonstrate sensitivity to costs of clinical care in the nursery and take steps to minimize costs without compromising quality.

B. Recognize and advocate for families who need assistance during and after hospitalization.

C. Provide written discharge instructions for the parents, discharge summary for the pediatrician, documentation of immunization (HBV) given, and results of hearing screen.

D. Recognize one's limits and those of the system, take steps to avoid medical errors.

Modified from:

Kittredge, D., Baldwin, C. D., Bar-on, M. E., Beach, P. S., Trimm, R. F. (Eds.). (2004). APA Educational Guidelines for Pediatric Residency. Ambulatory Pediatric Association Website.