

The University of Arizona Pediatric Residency Program

Primary Goals for Rotation

Newborn Nursery

1. **GOAL:** Assess and manage a newborn in the delivery room, including resuscitation and stabilization of a critically ill neonate.
2. **GOAL:** Provide comprehensive care in a level I nursery.
3. **GOAL:** Assess newborns, using history, physical exam and routine screening procedures, and provide preventive counseling and intervention as indicated.
4. **GOAL:** Evaluate and appropriately treat or refer newborns with these commonly presenting signs and symptoms.
5. **GOAL:** Evaluate and appropriately treat or refer newborns with these commonly presenting conditions.
6. **GOAL:** Manage breast- and bottle-feeding in the newborn period.
7. **GOAL:** Assess and manage common infections in the normal newborn nursery.
8. **GOAL:** Recognize and manage jaundice in the newborn period.
9. **GOAL:** Provide anticipatory counseling at nursery discharge that relates to newborn behavior, family adjustment, injury prevention, and access to medical services.
10. **GOAL:** Demonstrate high standards of professional competence while working with patients in the normal newborn nursery.

1. GOAL: Assess and manage a newborn in the delivery room, including resuscitation and stabilization of a critically ill neonate.

- A. Explain risk factors at delivery that warrant having a pediatrician in attendance.
- B. Describe the necessary medical equipment for neonatal resuscitation, and demonstrate its proper use.
- C. Accurately assess and manage normal and high-risk newborns immediately following delivery, including:
 - 1. Assess the need for immediate resuscitation.
 - 2. Assign the 1-minute, 5-minute and subsequent Apgar scores.
 - 3. Use appropriate technique for suctioning the nose and mouth.
 - 4. Demonstrate at least two steps to reduce radiant heat loss.
 - 5. Demonstrate bag and mask ventilation.
 - 6. Demonstrate intubation and ventilation.
 - 7. Perform cardiac compression.
 - 8. Place an umbilical venous catheter.
 - 9. Demonstrate appropriate use of medications during neonatal resuscitation.
 - 10. Interpret scalp and cord blood gases.
 - 11. Rapidly inspect for signs of major malformations.
- D. Pass a course in neonatal life support (e.g., AAP/AHA Neonatal Resuscitation Program).
- E. Demonstrate the immediate management of infants born to mothers with abnormal prenatal screening tests (antibody screening; rubella screening; HIV, HSV, syphilis, gonorrhea, hepatitis B, Group B Strep, tuberculosis and chlamydia testing).
- F. Describe the rationale and use of eye prophylaxis, vitamin K1 administration, and hepatitis B vaccine and HBIG.
- G. Discuss immediate breastfeeding and early bonding between baby and family and describe how hospital routines can facilitate or impede these natural processes.
- H. Describe how obstetricians and pediatricians can communicate and work together as a team to improve outcome at high-risk deliveries.
- I. Discuss prevalence and infant health issues of home deliveries by nurse midwives in one's own community.
- J. Recognize the risks and liabilities of home birth, as well as ways the nurse midwife and pediatrician can work together to benefit the infant born at home.
- A. For these common conditions, demonstrate delivery room assessment and management; and manage newborns independently; and list criteria for consultation or transfer to level II or III nursery:
 - 1. Meconium stained fluid
 - 2. Respiratory depression and other common effects of maternal anesthesia, medications, or substance use/abuse
 - 3. Complicated labor (e.g., decelerations, maternal hypertension)
 - 4. Complicated delivery (e.g., problems with Cesarean Section, instrument-assisted deliveries, breech presentation, cord prolapse, placenta abruption, oligo- or polyhydramnios, precipitous deliveries)
 - 5. Cyanosis, respiratory distress or heart murmur
 - 6. Cardiorespiratory depression or abnormal blood gases

B. Describe the care and treatment of an infant following delivery that occurred unexpectedly at home or in transit to hospital.

2. GOAL: Provide comprehensive care in a level I nursery.

A. Explain the role of the primary care pediatrician in the level I nursery and how it relates to the continuum of office health supervision care.

B. Effectively communicate with the mother's obstetrician during the hospital stay and her primary care provider prior to the infant's discharge.

C. Describe normal physiologic changes in neonatal transition, signs of abnormal responses and strategies for their management.

D. Describe the rationale behind various nursery and delivery routines and how these affect the health and well-being of families and newborns (e.g., rooming in, on-demand feeding, 24 hour discharge of the newborn, glucose water feeds).

E. Function as a pediatric consultant to health professionals in the newborn nursery, obstetrical ward, and delivery room for routine, normal pregnancies, deliveries and newborn care.

F. Identify the role and scope of practice of general pediatricians, neonatologists, perinatologists, obstetricians, family physicians, nurse midwives, lactation consultants, primary care nurses for OB/Newborn, and social workers in relation to the normal nursery; and work collaboratively with these professionals in the care of newborns.

3. GOAL: 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. Family history
3. Results of maternal screening tests (e.g, Rh), rubella, hepatitis B and C, serology for syphilis, HIV, tuberculosis, illicit drugs, blood type, group B streptococcus, herpes simplex virus, gonorrhea, and chlamydia
4. Maternal medication use or substance use/abuse
5. Results of prenatal ultrasound testing

B. Obtain and interpret a social history to assess the physical and psychosocial environment in the infant's home.

C. 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).

D. 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 and measurements
3. General appearance and identification of anomalies
4. HEENT (red reflex, intact palate, short frenulum, caput, cephalohematoma)
5. Neck and clavicles
6. Neurologic system (symmetry, tone, reflexes, suck, behavioral state, head size and shape, spine)
7. Respiratory effort

8. Skin
9. Chest and breasts
10. Heart
11. Lungs
12. Abdomen (including umbilical cord)
13. Genitalia
14. Femoral and brachial pulses
15. Hips (Ortolani and Barlow maneuvers)
16. Extremities

E. Describe current standards for newborn screening, including:

1. National (AAP) recommendations for universal newborn hearing screening
2. State neonatal blood-screening program, including diseases screened for, timing, testing procedures 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)
5. Appropriate use of testing to identify prenatal exposure to substances of abuse

F. Communicate effectively with parents and family in a professional and caring manner that honors family values and enhances their parenting skills and confidence.

G. Provide anticipatory guidance and prevention counseling throughout hospital stay and at time of discharge, according to recommended guidelines (e.g., AAP, Bright Futures).

4. GOAL: Evaluate and appropriately treat or refer newborns with these commonly presenting signs and symptoms.

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

1. Large birth marks (mongolian spots, hemangiomas, port wine spots)
2. Rashes and markings secondary to birth trauma
3. Papular and pustular rashes (erythema toxicum, pustular melanosis, staph. Pustulosis, milia)
4. Peripheral and central cyanosis
5. High or low temperature
6. Tachypnea
7. Heart murmur-asymptomatic and symptomatic
8. Abdominal distension and masses
9. Two vessel umbilical cords
10. Abnormal findings on the Barlow or Ortolani
11. Swollen breasts
12. Vaginal bleeding
13. Subconjunctival hemorrhages
14. Corneal opacities or absent red reflex
15. Facial palsy
16. Fractured clavicle
17. Brachial plexus injury
18. Cephalohematoma or caput

19. Ear tags, pits
20. Palate abnormalities (cleft, submucous cleft)
21. Polydactyly
22. Syndactyly
23. Plethora
24. Pallor
25. Respiratory distress
26. Abnominal mass
27. Genitourinary abnormalities (ambiguous genitalia, hypospadias, undescended testicle)
28. Microcephaly
29. Macrocephaly
30. Sacral dimple, pit, hair tuft

5. GOAL: Evaluate and appropriately treat or refer newborns with these commonly presenting conditions.

A. Recognize, describe clinical significance of, and develop a strategy to evaluate, manage and/or refer newborns with the following common newborn 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
10. Delayed stooling
11. Vomiting feeds/bilious emesis
12. Poor/delayed suck
13. Respiratory distress with feedings
14. Jaundice
15. Infant with risk factor for DDH (girl breech, +family hx)
16. Infant with abnormalities on prenatal ultrasound (pyelectasia, hydronephrosis, choroids plexus cyst)
17. Dysmorphic infant or infant with known chromosomal abnormality (e.g., Trisomy 21)
18. Multiple births (near and at term)
19. Eye discharge
20. Abnormal newborn hearing screen results
21. Infant born to a mother with a significant medical condition (lupus, seizure disorder, obstetrical condition such as HELLP syndrome)

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

1. Physiologic monitoring (HR, RR, pulse oximetry, blood gas, doppler BP measurement)

2. Dubowitz exam for gestational age assessment, premature and term infant growth curves
3. CBC, ABO typing and Coombs testing, blood glucose/glucometer, bilirubin (serum and transcutaneous), maternal cord blood antibodies
4. Xray of chest, abdomen
5. Ultra sound of kidneys/bladder, head, hips, lower spine

C. Be familiar with common assessment tools and studies used by obstetricians to assess normal pregnancies and infant well-being close to term and during the labor and delivery process.

D. Discuss common post-delivery obstetrical issues that mothers face, and how these affect their recovery and ability to care for their newborn:

1. C-section delivery
2. Tubal ligation
3. Retention of placenta
4. Post-partum hemorrhage
5. Post-partum depression
6. Post-partum infections
7. Hypertension

E. Discuss care and communication issues for an infant being placed for adoption (including both birth and adoptive parents).

6. GOAL: Manage breast- and bottle-feeding in the newborn period.

A. Assess a newborn's nutritional status based on maternal medical and obstetrical history and infant's history (e.g., illness, feeding, stools, urination) and physical exam (e.g., weight expected for gestational age, subcutaneous fat, hydration, neurologic or oral/facial anomalies) and implement appropriate feeding plans.

B. Counsel parents about feeding choices and assess for potential risks/difficulties.

C. Encourage and support mothers who are breastfeeding.

D. Counsel and support mothers who are formula feeding.

E. Refer mothers to WIC and other resources for assistance with food purchase, nutrition education, and breastfeeding support equipment.

F. Recognize and manage these conditions:

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. Newborn who is a poor feeder
6. Feeding plans for the SGA or premature infant
7. Feeding plans for the infant of a diabetic mother
8. Feeding plans for the infant with a cleft palate
9. Feeding plans for neurologically depressed/abnormal newborn

7. GOAL: Assess and manage common infections in the normal newborn nursery.

A. Identify common and important perinatal infections.

B. Discuss methods for screening and, where appropriate, preventive treatment of mother and infant (chlamydia, CMV, gonorrhea, group B strep, hepatitis B, hepatitis C, HSV, HIV, tuberculosis, HPV, parvovirus, rubella, syphilis, toxoplasmosis, and varicella).

C. Identify newborns at risk for bacterial sepsis by history, physical exam, and laboratory studies.

D. Practice the AAP/ACOG accepted policies for infection reduction in the newborn nursery.

E. Describe why umbilical cord care is routinely performed and what methods are available.

F. Counsel parents about recommendations on routine Hepatitis B vaccination, including risks, benefits, alternatives, and common side effects.

G. 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., group B strep, chlamydia, syphilis, HSV)
4. Infant born to mother with prolonged rupture of membranes
5. Infant born to mother who received antibiotic during delivery

8. GOAL: 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. Obtain laboratory tests judiciously for management of the jaundiced infant (blood type/Coombs, total, fractionated bili, Hct, peripheral blood smear).

F. Correctly interpret test results to evaluate jaundice in the clinical setting.

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

H. Counsel parents about when to be concerned about jaundice (e.g., icterus beyond the face and chest, poor feeding, fever, irritability).

I. Discuss the current AAP practice parameters regarding diagnosis and management of the jaundiced infant.

J. 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.

K. Describe indications for phototherapy and exchange transfusions.

L. Describe the use of phototherapy in both the hospital and the home and explain risks (e.g., dehydration, eye injury, and disruption of breastfeeding routines).

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

9. GOAL: Provide anticipatory counseling at nursery discharge that relates to newborn behavior, family adjustment, injury prevention, and access to medical services.

- A. Discuss priorities for anticipatory counseling, especially in face of time constraints due to "early discharge."
- B. List resources that can be used to supplement counseling by the physician.
- C. 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; interaction with visiting nurse, need to do repeat newborn screening blood tests
 - 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)
 - 7. Uniqueness of each infant's temperament and how to identify and respond to this
 - 8. Potential for sibling rivalry and ways to handle this
 - 9. 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)
 - 10. Significance of increasing jaundice, feeding problems or fever in this age group and the rapidity with which medical care should be sought
- D. Provide written discharge instructions, documentation of immunization (HBV) given, and results of hearing screen.

10. GOAL: Demonstrate high standards of professional competence while working with patients in the normal newborn nursery.

- A. **Competency 1: Patient Care.** Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.
 - 1. Use a logical and appropriate clinical approach to the care of newborns, applying principles of evidence-based decision-making and problem-solving.
 - 2. Provide sensitive support to patients and their families in the delivery room and level 1 and 2 newborn nursery.
- B. **Competency 2: Medical Knowledge.** Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.
 - 1. Demonstrate a commitment to acquiring the knowledge needed for the care of newborns in the delivery room and level 1 and 2 nursery.

2. Know and/or access medical information efficiently, evaluate it critically, and apply it to newborn care appropriately.
C. Competency 3: Interpersonal Skills and Communication. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.
1. Provide effective patient education, including reassurance, for condition(s) common to the newborn nursery.
2. Communicate and work effectively with staff, health professionals, specialists, referring and primary care providers to create and sustain information exchange and teamwork for patient care.
3. Develop effective strategies for teaching students, colleagues and other professionals.
4. Maintain accurate, legible, timely, and legally appropriate medical records for newborns (summary of maternal record, labor and delivery note, admission note, daily progress notes, consultant notes and discharge summaries).
D. Competency 4: Practice-based Learning and Improvement. Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.
1. Use scientific methods and evidence to investigate, evaluate, and improve patient care practice in the nursery setting.
2. Identify standardized guidelines for diagnosis and treatment of conditions common to the newborn nursery, and adapt them to the individual needs of specific patients.
3. Identify personal learning needs, systematically organize relevant information resources for future reference, and address plans for lifelong learning about newborn care.
E. Competency 5: Professionalism. Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.
1. Demonstrate personal accountability to the well-being of patients (e.g., following-up on lab results, writing comprehensive notes, and seeking answers to patient care questions).
2. Demonstrate a commitment to professional behavior in interactions with staff and professional colleagues.
3. Adhere to ethical and legal principles, and be sensitive to diversity.
F. Competency 6: Systems-Based Practice. Understand how to practice high-quality health care and advocate for patients within the context of the health care system.
1. Demonstrate sensitivity to the costs of clinical care in the nursery, and take steps to minimize costs without compromising quality.
2. Recognize and advocate for families who need assistance during the hospital stay and after discharge.
3. Recognize one's limits and those of the system; take steps to avoid medical errors.

Procedures

A. GOAL: Technical and therapeutic procedures. Describe the following procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. Bladder: catheterization
2. Breast pump use
3. Capillary blood collection (PKU, hct)
4. Circumcision
5. Conjunctival swab
6. Gastric tube placement (OG/NG)
7. Lumbar puncture
8. Medication delivery: IM/SC/ID
9. Medication delivery: IV
10. Pulse oximeter: placement
11. Suctioning: nares
12. Suctioning: oral pharynx
13. Suctioning: trachea (newborn)

B. GOAL: Diagnostic and screening procedures. Describe the following tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. Hearing screening
2. Monitoring interpretation: pulse oximetry
3. Radiologic interpretation: chest X-ray

Adapted 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. Available online: www.ambpeds.org/egweb.