Overall Competencies for the Pediatric Residency Training Program

NEONATAL INTENSIVE CARE

Goals and Competencies

PC: Patient Care; MK: Medical Knowledge; PBLI: Practice-Based Learning & Improvement;
IC: Interpersonal & Communication Skills; P: Professionalism; SBP: Systems-Based Practice

GOAL 1: Resuscitation and Stabilization: Understand how to resuscitate and stabilize a critically ill neonate.

COMPETENCIES: (PC, MK)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Formulate a differential diagnosis for life-threatening symptoms presenting in the NICU.		1	2	3
2. Describe steps in resuscitation and stabilization.			1	2,3
3. Demonstrate efficient and effective resuscitation in mock codes.			1	2,3
4. Demonstrate appropriate critical thinking in actual code situations.	1		2	3
5. Demonstrate the ability to draw arterial and venous blood from newborn infants of different weights		1	2	3
6. Demonstrate the ability to intubate newborn infants of different weights, including those at risk for meconium aspiration		1	2	3
7. Demonstrate the ability to place umbilical arterial and venous catheters		1	3	3

GOAL 2: Common Signs and Symptoms: Understand how to manage common signs and symptoms of high risk preterm and term neonates.

COMPETENCIES: (PC, MK)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. **General** – Small-for-gestational age, large-for-gestational age, history of maternal infection, history of maternal drug usage, lethargy, irritability, feeding difficulties.				
a. Perform an appropriate assessment.			1	2,3
b. Formulate a differential diagnosis.			1	2,3
c. Formulate plan for continuing assessment & management.		1	2	3
2. **Cardiorespiratory** – Respiratory distress, cyanosis, apnea, bradycardia, hypotension, shock.				
a. Perform an appropriate assessment.		1	2	3
b. Formulate a differential diagnosis.		1	2	3
c. Formulate plan for continuing assessment & management		1	2	3
3. **GI/surgical** – Distended abdomen, abdominal mass, emesis, bloody stools, hepatospenomegaly, meconium plug.				
a. Perform an appropriate assessment.	1		2	3
b. Formulate a differential diagnosis.	1		2	3
c. Formulate plan for continuing assessment & management.	1		2	3
4. **Metabolic** – Metabolic acidosis, elevated serum ammonia, hypocalcemia.				
a. Perform an appropriate assessment.		1	2	3
b. Formulate a differential diagnosis.		1	2	3
c. Formulate plan for continuing assessment & management.		1	2	3
5. **Hematologic** – Thrombocytopenia, neutropenia, jaundice in non-ill term infant, jaundice in ill infant, petechiae, polycythemia.				
a. Perform an appropriate assessment.			1	2,3
b. Formulate a differential diagnosis.			1	2,3
c. Formulate plan for continuing assessment & management.			1	2,3
6. **Neurologic** – Hypotonia, seizures, microcephaly, macrocephaly, neural tube defect.				
a. Perform an appropriate assessment.			1	2,3
b. Formulate a differential diagnosis.			1	2,3
c. Formulate plan for continuing assessment & management.			1	2,3
7. **Renal** – Hematuria, urinary retention, renal mass, edema.				
a. Perform an appropriate assessment.		1	2	3
b. Formulate a differential diagnosis.		1	2	3
c. Formulate plan for continuing assessment & management		1	2	3
8. **Dermatologic** – Common skin rashes, skin care of preterm infants, birthmarks.				

a. Perform an appropriate assessment.			1	2,3
b. Formulate a differential diagnosis.			1	2,3
c. Formulate plan for continuing assessment & management		1	2	3

GOAL 3: Common Conditions: Understand how to manage, under the supervision of a neonatologist, common neonatal diagnoses in tertiary NICU.

COMPETENCIES: (PC, MK, IC, SBP)	**<25%**	**25-50%**	**50-75%**	**75-100%**
Fluid/Nutrition				
1. Outline the appropriate fluid management for preterm/term infants over the first week of life.		1	2	3
2. Understand the role of enteral vs. parenteral nutrition in neonates.				1,2,3
3. Discuss the benefits and shortcomings of breastmilk, breastmilk fortification, and commercial formulas.			1	2,3
4. Describe the use of trophic feedings.			1	2,3
5. Describe the advantages and disadvantages of continuous vs. bolus feedings in neonates.			1	2,3
6. Discuss the use of enteral and parenteral calcium supplements in neonates.			1	2,3
7. Discuss the use of supplemental vitamin administration in neonates.			1	2,3
Newborn Screening				
1. List the neonatal diseases screened for in the State of Illinois.			1	2,3
2. Describe unique neonatal screening for procedures for infant born to an HIV+ or Hepatitis B+ mother.			1	2,3
3. Identify factors in the neonatal period which contribute to the risk of cerebral palsy, SIDS, hearing loss, child abuse, asthma, failure to thrive, developmental delay and learning disabilities.			1	2,3
Respiratory System				
1. Discuss the evaluation and management of respiratory distress in full-term and preterm infants.			1	2,3
2. Discuss the etiology, pathophysiology, natural history, complications, and treatment of:			1	2,3
a. Respiratory distress syndrome.			1	2,3
b. Pneumonia.		1	2	3
c. Meconium aspiration syndrome.		1	2	3
d. Persistent pulmonary hypertension on the newborn.		1	2	3
e. Air leak syndrome.		1	2	3
f. Congenital diaphragmatic hernia.	1	2		3
3. Interpret blood gas data appropriately and discuss indications for ventilator assistance.			1	2,3
4. Discuss the indications for potential benefits, risks, and complications of the following therapies				
a. CPAP			1	2,3
b. Endotracheal intubation.			1	2,3
c. Conventional ventilation.			1	2,3
d. High frequency ventilation.		1	2	3
e. Exogenous surfactant.			1	2,3
f. Corticosteroids.		1	2	3
g. ECMO	1		2	3
5. Discuss the definition, pathophysiology, and management of chronic lung disease.				
Cardiovascular System				
1. Discuss the evaluation of a cyanotic newborn.		1	2	3
2. Discuss the work-up and management of a heart murmur.			1	2,3
3. Discuss the management of neonatal congestive heart failure.			1	2,3
4. Discuss the evaluation and management of neonatal shock.		1	2	3
5. Discuss the indications for and possible complications of PGE therapy.		1	2	3
Infectious Diseases				
1. Discuss the immunologic handicaps of full-term and preterm infants in relation to susceptibility to infections.		1	2	3
2. Discuss “universal precautions” in the NICU.			1	2,3
3. Define indications for sepsis w/u for infants.			1	2,3
4. Discuss the management of viral infections, Group B Streptococcal infections.			1	2,3
Hematology				
1. Describe the evaluation and treatment of DIC.				

		1	2	3
2, Review indications for the transfusion of blood products.			1	2,3
3, Interpret neonatal CBC with an understanding of the definition of anemia, L shift, thrombocytopenia, and neutropenia.			1	2,3
4. Discuss the initiation of iron therapy in neonates.			1	2,3
5. Indications for phototherapy, exchange transfusion.			1	2,3
Bilirubin				
1. Discuss the physiological jaundice in the full-term and preterm infants.			1	2,3
2. Discuss the common causes of hemolysis and pathological jaundice in the newborn.			1	2,3
3. Discuss the mechanisms of action of phototherapy.			1	2,3
4. Discuss the Coombs test, reticulocyte count, red blood cell indices, and blood smear in the evaluation of hemolytic disease in the newborn.			1	2,3
Neurology				
1. Discuss the neurological development of the preterm infant.		1	2	3
2. Understand the etiology, presentation, management and long term outcome of the following:				
a. IVH			1	2,3
b. HIE		1	2	3
c. Post-hemorrhagic hydrocephalus		1	2	3
d. Periventricular leukomalacia		1	2	3
Renal				
1. Describe the normal physiology of glomerular and tubular function in the term/preterm neonate.		1	2	3
2. Discuss the etiology, presentation, and management of acute renal failure in the newborn.		1	2	3
Surgical				
1. Describe the risk factors for, clinical features, and medical management of NEC.		1		2,3
2. Discuss the indications for surgical interventions for NEC.			1	2,3
3. Describe the clinical features of: DH, TEF, gastroschisis, omphalocele, myelomeningocele.		1	2	3
4. List causes of respiratory distress in the newborn which are amenable to surgical intervention.		1	2	3
5. Describe the management of bilious emesis in the newborn.		1	2	3
6. Outline the management of delay in passage of stool/meconium.			1	2,3
7. Outline the management of abdominal distention and poor urine output.			1	2,3
Apnea and Bradycardia				
1. List types of apnea which occur in infants.			1	2,3
2. Discuss the treatment of apnea of prematurity.			1	2,3
3. Discuss the indications and limitations of home monitoring.			1	2,3
Genetics				
1. Discuss the etiology and presentation of common trisomies at birth.		1	2	3
2. Define autosomal dominant/recessive and sex-linked patterns of inheritance.				1,2,3

GOAL 4: Diagnostic Testing: Understand how to use and interpret common laboratory and imaging studies in the NICU setting.

COMPETENCIES: (PC, MK)	**<25%**	**25-50%**	**50-75%**	**75-100%**
Order and interpret the following common laboratory studies and explain the indications and limitations of each.				
1. Coombs test.			1	2,3
2. CBC/diff/plt count, lytes, BUN, creatinine, calcium.				1,2,3
3. Neonatal drug screening.				1,2,3
4. CXR.		1	2	3
5. Cranial U/S.	1	2	3	
6. Babygram for umbilical line placement.			1	2,3

GOAL 5: Monitoring and Therapeutic Modalities: Understand the application of physiologic monitoring and special technology applied to the care of the neonate.

COMPETENCIES: (PC, MK)	**<25%**	**25-50%**	**50-75%**	**75-100%**

For each of the following, discuss indications and demonstrate proper use.				
1. Cardiac monitor.				1,2,3
2. Pulse oximetry.				1,2,3
3. Umbilical arterial and venous catheterization.			1	2,3
4. Phototherapy.				1,2,3
5. Continuous monitoring of temperature, respiration, blood pressure.				1,2,3
For each of the following, discuss indications and demonstrate proper use.				
1. VP shunt.			1	2,3
2. Ileostomy.		1	2	3
3. Gastrostomy.		1	2	3
4. Continuous feedings.			1	2,3
5. Home monitoring.			1	2,3
6. Central line.			1	2,3
7. Physical therapy.			1	2,3
8. Home oxygen therapy.			1	2,3

GOAL 6: Management and Decision-Making: (Under the guidance of a neonatologist) Develop a logical plan and effective approach to the assessment and daily management of critically ill neonates and their families.

COMPETENCIES: (PC, MK, PBLI, IC)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Apply principles of evidence medicine.		1	2	3
2. Develop a problem list.		1		2,3
3. Recognize when to contact consultants.			1	2,3

GOAL 7: Teamwork and Professional Development: Understand how to function effectively as part of an interdisciplinary team.

COMPETENCIES: (IC, P, SBP)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Communication effectively with the neonatal team: residents, fellows, attendings, consultants, nurse practitioners, nutritionists, pharmacists. respiratory therapists, social workers, discharge coordinators, and nurses.				1,2,3
2. List the key members of a multi-disciplinary NICU discharge planning team.				1,2,3

GOAL 8: Patient Support and Advocacy: Understand how to provide comprehensive and supportive care to the NICU infant and their families.

COMPETENCIES: (PC, MK, PBLI, IC, P, SBP)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Recognize role as a child advocate.				1,2,3
2. Be familiar with the grieving process, delivery of bad news, and uncertainty to parents.		1	2	3
3. Interact with patients and families with honesty and integrity.				1,2,3
4. Understand the importance of communication with primary care physician.			1	2,3

GOAL 9: Medical Ethics and Legal Issues: Become familiar with ethical and medical-legal considerations in the care of critically ill neonates.

COMPETENCIES: (PC, MK, IC, P, SBP)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Discuss the concepts of futility, withdrawal, and withholding of care.		1		2,3
2. Identify appropriate hospital ethics committee consultation.		1		2,3
3. Demonstrate sensitivity to the financial burdens of families.	1	2	3	

GOAL 10: Perinatal Prevention: Understand the pediatrician's role in reducing neonatal mortality and morbidity.

COMPETENCIES: (PC, MK, IC, SBP)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Discuss how neonatal mortality rates relate to maternal race, ethnicity, place of residence, and country of birth.		1		2,3
2. Discuss how low birth weight rates relate to maternal race, ethnicity, place of residence, and country of birth.		1		2,3
3. Understand the general principals about neonatal transport systems.			1	2,3
4. Describe tests generally used to assess fetal well-being.			1	2,3
5. Describe the pediatrician's role in assessment and management of common conditions during pregnancy; including, maternal insulin-dependent diabetes, multiple gestation, pregnancy-associated hypertension, placental abnormalities, illicit drug/tobacco/alcohol usage, and chorioamnionitis.			1	2,3

GOAL 11: Medical Records: Understand how to maintain medically accurate and legally appropriate medical records.

COMPETENCIES: (PC, PBLI, IC, P)	**<25%**	**25-50%**	**50-75%**	**75-100%**
1. Ensure that the initial history and physical exam are complete.				1,2,3
2. Maintain daily timed notes.				1,2,3
3. Ensure that the discharge summary is complete.				1,2,3