

NEONATAL-PERINATAL MEDICINE ROTATION

Competency Based Goals and Objectives

Competency 1. Patient Care: Provide family centered patient care that is developmentally and age appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

1. Explain and perform steps in resuscitation and stabilization, particularly airway management, vascular access, volume resuscitation, indications for and techniques of chest compressions, resuscitative pharmacology, and management of meconium deliveries.
2. Function appropriately in codes and neonatal resuscitations as part of the NICU team by:
 - ◆ Participating in resuscitations.
 - ◆ Completing Neonatal Resuscitation Program (NRP) or comparable training.
 - ◆ Using neonatal resuscitation drugs appropriately.
3. Obtain an appropriate patient history from mother, physical examination of infant, and complete Admission Summary.
4. Evaluate and manage patients, with supervision, with the *signs and symptoms* that present commonly in the NICU:
 - ◆ **General:** Feeding problems, history of maternal infection or exposure, hyperthermia, hypothermia, intrauterine growth failure, irritability, jitteriness, large for gestational age, lethargy, poor post-natal weight gain, prematurity (various gestational ages).
 - ◆ **Cardiorespiratory:** Apnea, bradycardia, cyanosis, dehydration, heart murmur, hypertension, hypotension, hypovolemia, poor pulses, respiratory distress (flaring, grunting, tachypnea), shock.
 - ◆ **GI/surgical:** abdominal mass, bloody stools, diarrhea, distended abdomen, failure to pass stool, gastric retention or reflux, hepatosplenomegaly, vomiting.
 - ◆ **Genetic/metabolic:** Apparent congenital defect or dysmorphic syndrome, metabolic derangements (glucose, calcium, acid-base, urea, amino acids, etc.).
 - ◆ **Hematologic:** Abnormal bleeding, anemia, jaundice in a premature or seriously ill neonate, neutropenia, petechiae, polycythemia, thrombocytopenia.
 - ◆ **Neurologic:** Birth trauma related nerve damage, early signs of neurologic impairment, hypotonia, macrocephaly, microcephaly, seizures, spina bifida.
 - ◆ **Renal/urologic:** Abnormal genitalia, edema, hematuria, oliguria, proteinuria, renal mass, urinary retention.
5. Evaluate and manage patients, with supervision, with conditions that present commonly in the NICU:
 - ◆ **General:** Congenital malformations.
 - ◆ **Cardiovascular:** Cardiomyopathy, congenital heart disease (cyanotic and acyanotic-including common disorders: patent ductus arteriosus, ventricular septal defect, tetralogy of Fallot, transposition of the great arteries, etc.), congestive heart failure, dysrhythmias (e.g. supraventricular tachyarrhythmia, complete heart block), pericarditis.
 - ◆ **Genetic, endocrine disorders:** Abnormalities discovered from neonatal screening programs as they affect the premature infant, common chromosomal anomalies (Trisomy 13, 18, 21, Turner's), inborn errors of metabolism, infant of a diabetic mother, infant of a mother with thyroid disease (e.g. maternal Graves Disease), uncommon conditions such as congenital adrenal hyperplasia, hypothyroidism, hyperthyroidism.
 - ◆ **GI/nutrition:** Biliary atresia, breast feeding support for mothers and infants with special needs (high risk premature, maternal illness, multiple birth, etc.), complications of umbilical catheterization, gastroesophageal reflux, growth retardation, hepatitis, hyperbilirubinemia, meconium plug, necrotizing enterocolitis, nutritional management of

high risk neonates or those with special needs (cleft lip/palate, other facial anomalies, etc.).

- ♦ **Hematologic conditions:** Coagulopathy of the newborn, erythroblastosis fetalis, hemophilia, hydrops fetalis, hyperbilirubinemia, splenomegaly.
 - ♦ **Infectious disease:** Central line infections, Group B Streptococcal infections, hepatitis, herpes simplex, immunization of the premature neonate, infant of mother with HIV, intrauterine viral infections, neonatal sepsis and meningitis, nosocomial infections in the NICU, syphilis, ureaplasma, varicella exposure.
 - ♦ **Neurologic disorders:** Central apnea, CNS malformations (e.g. encephalocele, porencephaly, holoprosencephaly), drug withdrawal, hearing loss in high risk newborns (prevention and screening), hydrocephalus, hypoxic-ischemic encephalopathy, intraventricular hemorrhage, retinopathy of prematurity, seizures, spina bifida.
 - ♦ **Pulmonary disorders:** Atelectasis, bronchopulmonary dysplasia, meconium aspiration, persistent pulmonary hypertension of the newborn, pneumonia, pneumothorax, respiratory distress syndrome, transient tachypnea of the newborn.
 - ♦ **Renal:** Acute and chronic renal failure, hematuria, hydronephrosis, oliguria, proteinuria.
 - ♦ **Surgery** [assess and participate in management under supervision of a pediatric surgeon or cardiac surgeon]: Congenital heart disease, (cyanotic, patent ductus arteriosus, obstructive left-sided cardiac lesions, pre- and post-operative care), diaphragmatic hernia, esophageal or gut atresia, gastroschisis, omphalocele, intestinal obstruction, necrotizing enterocolitis, perforated viscus, Pierre Robin syndrome, volvulus.
6. Use the following evaluations that have specific application to neonatal care:
- ♦ Direct and indirect Coomb's tests.
 - ♦ Cranial ultrasound for intraventricular hemorrhage.
 - ♦ Abdominal x-rays for placement of umbilical catheter.
 - ♦ Chest x-rays for endotracheal tube placement, air leak, heart size, and vascularity.
7. Order and use appropriately the following evaluations that may have specific application to neonatal care:
- ♦ CBC with differential, platelet count, RBC indices.
 - ♦ Blood chemistries: electrolytes, glucose, calcium, magnesium, phosphate.
 - ♦ Renal function tests.
 - ♦ Coagulation studies: platelets, PT/PTT, fibrinogen, fibrin split products, D-dimers, DIC screen
 - ♦ Arterial, capillary, and venous blood gases.
 - ♦ Detection of bacterial, viral, and fungal pathogens.
 - ♦ Urinalysis.
 - ♦ CSF analysis.
 - ♦ Gram stain
 - ♦ Toxicologic screens/drug levels
 - ♦ Newborn screening tests
8. Order and use appropriately imaging, radiographic, or other studies for patients in the NICU:
- ♦ Chest x-ray
 - ♦ CT scans
 - ♦ MRI
 - ♦ Electrocardiogram and echocardiogram
 - ♦ Cranial ultrasonography
9. Use appropriately common monitoring and therapeutic techniques in the NICU
- ♦ Physiologic monitoring of temperature, pulse, respiration, blood pressure.
 - ♦ Pulse oximetry.
 - ♦ Neonatal pain and drug withdrawal scales.

10. Use appropriately the following treatments and techniques in the neonatal intensive care unit under supervision by the attending neonatologist:
 - ◆ Oxygen administration by hood, CPAP or assisted ventilation.
 - ◆ Endotracheal intubation.
 - ◆ Administration of surfactant therapy.
 - ◆ Positive pressure ventilation and basic ventilator management.
 - ◆ Nitric oxide therapy.
 - ◆ Phototherapy.
 - ◆ Umbilical arterial and venous catheterization.
 - ◆ Central hyperalimentation and parenteral nutrition.
 - ◆ Enteral nutrition.
 - ◆ Analgesic, sedatives and paralytics.
 - ◆ Blood and blood product transfusions, including exchange transfusion.
 - ◆ Vasoactive drugs (pressors and inotropes).
 - ◆ Judicious use of antibiotics.
 - ◆ Administration of medications specific to the needs of the newborn (e.g., Vitamin K).
 - ◆ Arterial puncture.
 - ◆ Venous access by peripheral vein.
 - ◆ Umbilical artery and vein catheterization.
 - ◆ Chest tube placement.
11. Use appropriate resources to facilitate the transition to home of the technology dependent neonate.
12. Properly assess patient and develop plan of care. Properly organize and prioritize patient's problems.

Competency 2. Medical Knowledge. Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by neonatologists; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.

1. Know the tests commonly used by obstetricians to measure fetal well being.
2. Recognize potential adverse outcomes for the fetus and neonate in common prenatal and perinatal conditions:
 - ◆ Fetal exposure to harmful substances (alcohol, tobacco, environmental toxins, medications, street drugs).
 - ◆ Maternal insulin-dependent diabetes and pregnancy-induced glucose intolerance
 - ◆ Pre-eclampsia, eclampsia.
 - ◆ Chorioamnionitis.
 - ◆ Polyhydramnios.
 - ◆ Oligohydramnios.
 - ◆ Premature labor, premature ruptured membranes.
 - ◆ Fetal distress during delivery.
 - ◆ Postpartum maternal fever or infection.
 - ◆ Maternal blood group incompatibilities.
 - ◆ Maternal thrombocytopenia.
3. Demonstrate knowledge and appropriate application of knowledge to the following:
 - ◆ Prematurity,
 - ◆ HMD, PTN,
 - ◆ Sepsis,
 - ◆ Apnea,
 - ◆ Hyperbilirubinemia,

- ◆ Hypoglycemia,
 - ◆ BPD,
 - ◆ Anemia,
 - ◆ Nutrition/Growth,
 - ◆ PPHN,
 - ◆ Meconium Aspiration Syndrome,
 - ◆ Seizures,
 - ◆ Inborn Errors of Metabolism,
 - ◆ ROP,
 - ◆ Electrolyte Disorders,
 - ◆ PDA,
 - ◆ IVH,
 - ◆ Drug Withdrawal,
 - ◆ NAS,
 - ◆ Congenital Anomalies,
 - ◆ NEC,
 - ◆ Perinatal Asphyxia
4. Demonstrate understanding of common diagnostic tests and imaging studies used in the NICU by being able to:
 - ◆ Explain the indications for and limitations of each study.
 - ◆ Interpret the results in the context of the specific patient.
 - ◆ Discuss therapeutic options for correction of abnormalities.
 5. Develop an efficient approach to finding information resources related to a specialty or organ system (e.g., information on the web, in the literature, text books, or PDAs) to obtain rapid information that is relevant to a presenting patient problem.
 6. In dealing with the patients with a new or unfamiliar disorder, recognize the limitations of one's knowledge and commit to expanding your knowledge base in a systematic fashion.

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. Communicate appropriately to patient's family about patient's condition and plan of care.
2. Communicate plan of care to other members of the health care team.
3. Maintain accurate, timely, and legally appropriate medical records in the critical care setting of the NICU including clear and appropriate medical orders and daily progress notes.
4. Communicate effectively with unit staff.
5. Communicate effectively with medical and surgical consultants
6. Provide emotional, social, and culturally sensitive support to the NICU infant and family, including those at home.

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. Identify personal learning needs. (PL-2, M/PL-3 will list objectives and complete)
2. Prepare 20 minute research presentation.
3. Use neonatal manual appropriately
4. Use a logical and effective approach to the assessment and daily management of seriously ill neonates and their families, under the guidance of a neonatologist, using evidence-based decision-making and problem solving skills.

Competency 5. Professionalism: Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

1. Demonstrate accountability for patient care (orders, progress notes, etc.)
2. Work in collaborative fashion with healthcare team and staff.
3. Collaborate with Neonatal Nurse Practitioners.
4. Show honesty and integrity in professional duties
5. Demonstrate sensitivity to patients and colleagues in areas such as culture, religion and other personal traits.
6. Maintain patient's confidentiality.
7. Show awareness and sensitivity to ethical issues in the Neonatal Intensive Care Unit.
8. Demonstrate compassion and empathy in dealing with patients and their families.
9. Use consults appropriately.

Competency 6. Systems-Based Practice. Understand how to practice quality health care and advocate for patients within the context of the health care system.

1. Practice cost effective health care that does not negatively affect health care.
2. Work effectively with health care team to provide proper discharge planning (may include Home Care)
3. Understand key aspects of health care systems, cost control and mechanisms for payment in the NICU setting
4. Clarify how documentation and billing/charges differ for consultations vs. referrals vs. on-going management of children treated by neonatologists.