

## Neonatal Intensive Care Goals and Objectives

### Goal 1: Understand the pediatrician's role in reducing morbidity in high risk pregnancies and complications of childbirth.

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<p>A. Describe general principles about:</p> <ol style="list-style-type: none"> <li>1. Basic vital statistics that apply to newborns (neonatal, perinatal mortality, etc.) <i>PL 1,2,3</i></li> <li>2. Tests commonly used by obstetricians to measure fetal well-being. <i>PL 1,2,3</i></li> <li>3. Prenatal services available in one's region. <i>PL 2,3</i></li> <li>4. Prenatal visit in the pediatrician's office <i>PL 2,3</i></li> <li>5. Neonatal transport systems <i>PL 2,3</i></li> <li>6. Effective intervention programs for teens and other high risk mothers <i>PL 3</i></li> </ol> <p>B. For each of the following prenatal and perinatal complications</p> <ol style="list-style-type: none"> <li>1. Describe the pediatrician's role in assessment and management.</li> <li>2. Recognize potential adverse outcomes for the fetus/neonate</li> </ol> <p>List of complications:</p> <ol style="list-style-type: none"> <li>a. Maternal infections/exposure to infections during pregnancy <i>PL 1,2,3</i></li> <li>b. Fetal exposure to harmful substances (ETOH, TOB, street drugs, medications, environmental toxins) <i>PL 1,2,3</i></li> <li>c. Maternal insulin-dependent diabetes and pregnancy-induced glucose intolerance <i>PL 1,2,3</i></li> <li>d. Premature labor, premature ruptured membranes <i>PL 1,2,3</i></li> </ol>	<p>PC, MK, PBL, ICS, SBP</p>	<p>Clinical Encounters</p> <p>Readings</p> <p>Lectures</p> <p>NRP</p> <p>Attending led chart review (mother's history)</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p> <p>360 evaluations</p> <p>Transport evaluations</p> <p>Transport committee review process</p>

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<ul style="list-style-type: none"> <li>e. Complications of anesthesia and common delivery practices (C-section, vacuum, forceps, epidural, induction of labor) <i>PL 1,2,3</i></li> <li>f. Fetal distress during delivery <i>PL 1,2,3</i></li> <li>g. Postpartum maternal fever/infection <i>PL 1,2,3</i></li> <li>h. History of maternal GBS colonization/treatment <i>PL 1,2,3</i></li> <li>i. Multiple gestation <i>PL 2,3</i></li> <li>j. Placental abnormalities <i>PL 2,3</i></li> <li>k. Pre-eclampsia, eclampsia <i>PL 2,3</i></li> <li>l. Chorioamnionitis <i>PL 2,3</i></li> <li>m. Polyhydramnios <i>PL 2,3</i></li> <li>n. Oligohydramnios <i>PL 2,3</i></li> </ul> <p>C. Discuss the pediatrician's role in reducing fetal and neonatal morbidity/mortality in his/her own community. <i>PL 3</i></p>			
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**Goal 2: Understand how to resuscitate and stabilize a critically ill neonate.**

<b>Objective</b>	<b>Primary Competency Domain</b>	<b>Teaching Method</b>	<b>Evaluation Method</b>
<ul style="list-style-type: none"> <li>A. Describe the steps in resuscitation and stabilization, including equipment needed. <i>PL 1,2,3</i></li> <li>B. Demonstrate efficient and effective resuscitation in mock codes and under stress of actual codes. <i>PL 2,3</i></li> <li>C. Formulate a differential diagnosis for serious symptoms presenting during transfer to the NICU or in the NICU immediately after resuscitation. <i>PL 2,3</i></li> </ul>	PC, MK, PBL, PL, ICS, SBP	<ul style="list-style-type: none"> <li>Clinical Encounters</li> <li>Readings</li> <li>Lectures</li> <li>NRP</li> <li>Mock Codes</li> <li>Transport Team</li> </ul>	<ul style="list-style-type: none"> <li>Electronic Evaluation</li> <li>Direct Observation and feedback during Mock Codes</li> <li>360 evaluations</li> <li>Transport evaluations</li> <li>Transport review process</li> </ul>

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**Goal 3: Understand how to evaluate and manage common signs and symptoms of disease in high risk newborns.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<p>A. For each of the signs and symptoms below:</p> <ol style="list-style-type: none"> <li>1. Perform an appropriate assessment (H&amp;P, Initial diagnostic studies). <i>PL 1</i></li> <li>2. Formulate a differential diagnosis <i>PL 2,3</i> with appropriate prioritization <i>PL 3</i></li> <li>3. Describe indications for admission or referral to Levels I, II, and III nurseries. <i>PL 2, 3</i></li> <li>4. Describe stabilization procedures to prepare for transfer <i>PL 1,2,3</i></li> <li>5. Formulate and carry out a plan for continuing assessment and management <i>PL1,2,3</i></li> </ol> <p>List of Signs and Symptoms (NICU)</p> <ul style="list-style-type: none"> <li>• General: Intrauterine growth failure, large for gestational age, hypothermia, hyperthermia, prematurity, feeding problems, poor postnatal weight gain, lethargy/<del>irritability</del>/jitteriness, history of maternal infection or exposure, dehydration.</li> <li>• Cardiorespiratory: Respiratory distress, cyanosis, apnea, bradycardia, heart murmur, hypotension, hypotension, hypovolemia, poor pulses, shock.</li> <li>• Dermatologic: Common skin rashes/conditions, birthmarks, hyper and hypopigmented lesions, discharge and/or inflammation of the umbilicus, proper skin care for premature infants, vesicles.</li> <li>• GI/Surgical: Feeding intolerance, vomiting, bloody stools, distended abdomen, hepatosplenomegaly, abdominal mass, failure to pass stool, diarrhea.</li> <li>• Genetic/Metabolic: Metabolic derangements, hypoglycemia, hypercalcemia, hypocalcemia, hypokalemia, hyperkalemia, apparent congenital defect or dysmorphic syndrome.</li> </ul>	<p>PC, MK, PBL, SBP, PL, ICS</p>	<p>Clinical Encounters</p> <p>Readings</p> <p>Lectures</p> <p>Transport Team</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p> <p>Transport Evaluation</p> <p>Transport Review Process</p>

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<ul style="list-style-type: none"> <li>• Hematologic: Jaundice in a premature, term or seriously ill neonate, petechiae, anemia, polycythemia, abnormal bleeding, thrombocytopenia, neutropenia.</li> <li>• Musculoskeletal: Birth trauma related fractures and soft tissue injuries, dislocations, birth defects and deformities.</li> <li>• Neurologic: Hypotonia, hypertonia, seizures, lethargy, early signs of neurologic impairment, microcephaly, macrocephaly, spina bifida, birth trauma related nerve damage.</li> <li>• Parental Stress/Dysfunction: Poor attachment, postpartum depression, anxiety disorders, teen parent, substance abuse, child abuse and neglect.</li> <li>• Renal/Urologic: Edema, decreased urine output, abnormal genitalia, renal mass, hematuria, urinary retention, inguinal hernia.</li> <li>• Ophthalmologic: abnormal red reflex, eye anomaly</li> </ul>			
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**Goal 4: Understand how to manage, under the supervision of a neonatologist, common diagnoses in infants in a Level II or III nursery.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<p>For each of the following common diagnoses in the list below; be able to</p> <ol style="list-style-type: none"> <li>1. Describe the pathophysiologic basis of the disease. <i>PL 1,2,3</i></li> <li>2. Describe the initial assessment plans. <i>PL 1,2,3</i></li> <li>3. Discuss key principles of the NICU management plan. <i>PL 2,3</i></li> <li>4. Explain when to use consultants. <i>PL 2,3</i></li> <li>5. Explain the role of the primary care provider. <i>PL3</i></li> </ol> <p>List of Common Diagnoses in this Setting (NICU)</p> <ul style="list-style-type: none"> <li>• Pulmonary disorders: Hyaline membrane disease, transient tachypnea of the newborn, meconium aspiration, amniotic fluid or blood aspiration, persistent pulmonary hypertension,</li> </ul>	<p>PC, MK, PBL, SBP, ICS</p>	<p>Clinical Encounters</p> <p>Readings</p> <p>Lectures</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p>

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<p>pneumonia, pneumothorax, bronchopulmonary dysplasia, atelectasis.</p> <ul style="list-style-type: none"> <li>• Cardiac conditions: Congenital heart disease (cyanotic and acyanotic, obstructive lesions, single ventricle), patent ductus arteriosus, congestive heart failure, SVT, complete heart block.</li> <li>• Genetic, endocrine disorders: Infant of diabetic mother, common chromosomal anomalies, congenital adrenal hyperplasia, hypo and hyperthyroidism.</li> <li>• GI/nutrition: Feeding plans and nutritional management of high risk neonates or those with special needs, breast feeding support for mothers and infants with special needs, hepatitis, gastrointestinal reflux, meconium plug, malrotation, Hirschsprungs, necrotizing enterocolitis, short gut syndrome, gastroesophageal reflux.</li> <li>• Hematologic conditions: Indications for phototherapy, anemia, polycythemia, transfusion of blood products, exchange transfusions in the premature/term or ill neonate, erythroblastosis fetalis/hydrops fetalis, coagulopathy, hemophilia, Vitamin K prophylaxis/deficiency.</li> <li>• Infectious disease: Intrauterine viral infections, Group B Streptococcal infections, neonatal sepsis and meningitis, herpes simplex; infant of HIV infected mothers, neonatal hepatitis, syphilis; nosocomial infections in the NICU, central line infections, immunization of the premature neonate, isolation procedures for contagious diseases in mother/infant, indications for RSV prophylaxis.</li> <li>• Neurologic disorders: Hypoxic-ischemic encephalopathy, intraventricular hemorrhage, hearing loss in high risk newborns, drug withdrawal, seizures, hydrocephalus, spina bifida, CNS anomalies.</li> <li>• Surgery: (assess and participate in management under supervision of or collaboration with pediatric surgeon) Necrotizing enterocolitis, short gut syndrome, intestinal perforation,</li> </ul>			
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intestinal obstruction, diaphragmatic hernia, malrotation, esophageal atresia and tracheo-esophageal fistula, intestinal atresia, meconium ileus, meconium plug syndrome, gastroschisis, omphalocele, imperforate anus, pre-op and post-op care. <ul style="list-style-type: none"> <li>• Eye disorders: retinopathy of prematurity, cataracts and eye anomalies</li> <li>• Miscellaneous: complications of umbilical catheterization</li> </ul>			
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**Goal 5: Understand how to use and interpret laboratory and imaging studies unique to the NICU setting.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
1. Order and interpret laboratory and imaging studies appropriate for NICU patients. <i>PL 1,2,3</i> 2. Explain indications, limitations, and gestational-age norms for the following which may have specific application to neonatal care: <i>PL 2,3</i> <ul style="list-style-type: none"> <li>• Serologic and other studies for transplacental infections</li> <li>• Direct and indirect Coomb’s test</li> <li>• Neonatal drug screening</li> <li>• Neuro ultrasound</li> <li>• Abdominal x-rays for placement of umbilical catheter, bowel gas pattern, evidence of NEC</li> <li>• Chest x-rays for endotracheal tube placement, heart size and vascularity, deep line placement</li> </ul>	PC, MK, PBL	Clinical Encounters  Readings  Lectures	Electronic Evaluation  Direct Observation  Procedure Competency

**Goal 6: Understand the application of the physiologic monitoring and special technology applied to the care of the fetus and newborn**

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Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<p>1. For each of the following, which are commonly used by pediatricians, discuss indications and limitations and demonstrate proper use/instruction in how to use: <i>PL 1,2,3</i></p> <ul style="list-style-type: none"> <li>• Physiologic monitoring of temperature, pulse, respiration, blood pressure</li> <li>• Phototherapy</li> <li>• Pulse oximetry</li> <li>• Umbilical arterial and venous catheterization</li> <li>• Endotracheal intubation</li> <li>• Thoracentesis</li> <li>• Chest tube placement</li> <li>• Electric and manual breast pumps</li> </ul> <p>2. From each of the following techniques and procedures used by obstetricians, perinatalologists, and neonatologists, describe key indications, limitations, normal and frequently encountered abnormal findings, and common complications for the fetus/infant: <i>PL 2,3</i></p> <ul style="list-style-type: none"> <li>• Fetal ultrasound for size and anatomy</li> <li>• Fetal heart rate monitors</li> <li>• Scalp and cord blood sampling</li> <li>• Surfactant therapy</li> <li>• ECMO/Nitric oxide therapy</li> <li>• Amniocentesis</li> <li>• Biophysical profile/stress testing</li> <li>• Intrauterine transfusions/PUBS</li> <li>• Chorionic villus sampling</li> <li>• Exchange transfusion</li> <li>• Central hyperalimentation</li> </ul> <p>3. Discuss in general terms, home medical equipment and services needed for oxygen dependent and technology dependent graduates of the NICU. <i>PL 3</i></p>	<p>PC, MK, PBL, SBP</p>	<p>Clinical Encounters</p> <p>Readings</p> <p>Lectures</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p>

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**Goal 7: Develop 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 decision-making and problem solving skills.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<ol style="list-style-type: none"> <li>1. Apply principles of decision-making and problem solving to care in the NICU. <i>PL 1,2,3</i></li> <li>2. Seek information as needed and apply this knowledge appropriately using evidence based problem solving. <i>PL 1,2,3</i></li> <li>3. Recognize the limits of one’s own knowledge, skill, and tolerance of stress; know when to ask for help, how to contact consultants and where to find basic information. <i>PL 1,2,3</i></li> <li>4. Develop a comprehensive problem list with appropriate and accurate prioritization for action. <i>PL 2,3</i></li> </ol>	PC, PBL, ICS, PL	Role Modeling  Clinical Encounters  Lectures	Electronic Evaluation  Direct Observation  360 degree evaluations

**Goal 8: Understand how to function effectively as part of an interdisciplinary team member in the NICU.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<ol style="list-style-type: none"> <li>1. Communicate and work effectively with all members of the healthcare team (residents, attending, consultants, nurses, nurse specialists, lactation consultants, nutritionist, pharmacists, respiratory therapist, social workers, discharge coordinators, referring physicians and ancillary staff. <i>PL 1,2,3</i></li> <li>2. Communicate effectively with parents of critically ill patients and highly stressed families. <i>PL 1,2,3</i></li> <li>3. Discuss role of primary care physician in the long term management of infants admitted to the NICU. <i>PL 2,3</i></li> <li>4. Discuss the role of managed care case manager, work with these individuals to optimize healthcare outcomes. <i>PL3</i></li> </ol>	PC, PBL, ICS, PL, SBP	Role Modeling  Clinical Encounters  Lectures	Electronic Evaluation  Direct Observation  360 degree evaluations

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**Goal 9: Understand how to provide comprehensive and supportive care to the NICU infant and their family.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<ol style="list-style-type: none"> <li>1. Serve effectively as an advocate and case manager for patients with multiple problems or chronic illnesses. <i>PL 1,2,3</i></li> <li>2. Work with discharge coordinator to develop discharge plans which facilitate the family’s transition to home care, including adequate follow-up and appropriate use of community services. <i>PL1,2,3</i></li> <li>3. Demonstrate sensitivity and skills in dealing with death and dying in the NICU setting. <i>PL 1,2,3</i></li> <li>4. Consistently listen carefully to concerns of families and provide appropriate information and support. <i>PL 1,2,3</i></li> <li>5. Provide counseling and support for breast feeding of premature and critically ill infants, including maintenance of mother’s milk supply when the infant cannot suckle. <i>PL 2,3</i></li> <li>6. Provide responsible communication with the neonate’s primary care physician during the hospital stay and in discharge planning. <i>PL 2,3</i></li> <li>7. Identify problems and risk factors in the infant or family and make appropriate interventions and/or referrals. <i>PL 2,3</i></li> </ol>	<p>PC, PBL, ICS, PL</p>	<p>Role Modeling</p> <p>Clinical Encounters</p> <p>Lectures</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p> <p>360 degree evaluations</p>

**Goal 10: Become familiar with ethical and medical-legal consideration in the care of critically ill newborns.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
<ol style="list-style-type: none"> <li>1. Discuss concepts of futility, withdrawal and withholding care. <i>PL 1,2,3</i></li> <li>2. Describe hospital policy on “Allow Natural Death” orders. <i>PL1,2,3</i></li> <li>3. Identify situations warranting consultation with the hospital ethics committee. <i>PL 2,3</i></li> </ol>	<p>PC, PBL, ICS, PL</p>	<p>Role Modeling</p> <p>Clinical Encounters</p>	<p>Electronic Evaluation</p> <p>Direct Observation</p>

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4. Complete a death certificate appropriately. <i>PL 3</i>		Lectures Hospital Rules and Regulations	
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**Goal 11: Understand key aspects of cost control and mechanisms for payment in the NICU setting**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
1. Be sensitive to the burden of costs on families and refer for social services as indicated. <i>PL 1,2,3</i> 2. Use consultants and other resources appropriately during NICU stay and in discharge planning. <i>PL 1,2,3</i> 3. Demonstrate awareness of costs and cost control in NICU care. <i>PL 2,3</i> 4. Explain principles of typical coverage by local insurance plan, Medi-Cal, and other state and federal subsidies for the care of high risk neonates. <i>PL 3</i>	PC, PBL, ICS, PL, SBP	Role Modeling  Clinical Encounters  Lectures	Electronic Evaluation  Direct Observation

**Goal 12: Understand how to maintain accurate, timely and legally appropriate medical records in the critical care setting of the NICU.**

Objective	Primary Competency Domain	Teaching Method	Evaluation Method
1. Ensure that initial history and physical examination records include appropriate history, exam appropriate for the infant's condition, record of procedures in delivery room and since admission; problem list assessment and plan. <i>PL 1,2,3</i> 2. Maintain daily timed notes, with updates as necessary, clearly documenting the patient's progress and details of the on-going evaluation and plan. <i>PL 1,2,3</i> 3. Ensure discharge summary is timely and concise, with clear documentation of discharge plans and follow up appointments.	PC, PBL, ICS, PL	Role Modeling  Clinical Encounters  Lectures	Electronic Evaluation  Direct Observation  Daily note review by attending  Monitoring of

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