



Pediatric Learning Solutions

A clinical education program exclusively for pediatric professionals

The following Pediatric Learning Solutions courses align to focus areas of the Neonatal CCRN® Exam Content Outline. These courses equip candidates with the foundational knowledge necessary to approach the Neonatal CCRN® exam with confidence. Go to the [Association of Critical-Care Nurses](#) site for more information on the CCRN Exam.

Pediatric Learning Solutions' course alignment with Neonatal CCRN® Exam Content Outline. (Note: PLS Courses are in *italics* under topic area)

I. Clinical Judgment

A. Cardiovascular

1. Cardiac Surgery

Congenital Heart Disease: Overview
Congenital Heart Disease: Acyanotic Defects
Congenital Heart Disease: Cyanotic Defects
Introduction to Hemodynamic Monitoring
Vasoactive Medications
Introduction to ECMO
Nursing Management of Chest Tubes
Cardiovascular Laboratory Procedures: Diagnostic & Interventional
Preventing Surgical Site Infections

2. Dysrhythmias

Structure and Function of the Heart
Electrophysiology
The Cardiac Monitor
Lines, Waves and Segments
Analyzing the ECG Rhythm Strip
Sinus Rhythms
Atrial Arrhythmias
Junctional Arrhythmias
Ventricular Arrhythmias
Atrioventricular Arrhythmias
Channelopathies
Temporary Pacemakers
Permanent Pacemakers and ICDs

3. Structural Heart Defects

Congenital Heart Disease: Overview
Congenital Heart Disease: Acyanotic Defects
Congenital Heart Disease: Cyanotic Defects
Extrauterine Life: Assessment of the Neonate's Transition
Extrauterine Life: Fetal to Neonatal Circulation
Maternal Factors Affecting the Newborn
Congestive Heart Failure
Introduction to Hemodynamic Monitoring
Vasoactive Medications
Introduction to ECMO
Cardiovascular Laboratory Procedures: Diagnostic & Interventional
Persistent Pulmonary Hypertension of the Newborn (PPHN)

B. Pulmonary

1. Acute Respiratory Distress Syndrome
 - Introduction to Arterial Blood Gas Interpretation*
 - Understanding Abnormal Blood Gases*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Management of the Difficult Airway*
 - Advanced Concepts in Respiratory Physiology*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Preventing Ventilator-Associated Pneumonia*
 - Caring for a Child with a Tracheostomy*
 - Neonatal Respiratory Distress Syndrome*

2. Acute Respiratory Failure
 - Introduction to Arterial Blood Gas Interpretation*
 - Understanding Abnormal Blood Gases*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Management of the Difficult Airway*
 - Advanced Concepts in Respiratory Physiology*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Neonatal Respiratory Distress Syndrome*
 - Introduction to ECMO*
 - Caring for a Child with a Tracheostomy*

3. Acute Respiratory Infection (e.g., pneumonia)
 - Neonatal Sepsis*
 - Meconium Aspiration Syndrome*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Preventing Ventilator-Associated Pneumonia*

4. Air-leak Syndromes
 - Neonatal Respiratory Distress Syndrome*
 - Pneumothorax in the Neonate*
 - Meconium Aspiration Syndrome*
 - Nursing Management of Chest Tubes*

5. Apnea of Prematurity
 - Apnea of Prematurity*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*

6. Aspiration
 - Meconium Aspiration Syndrome*
 - Neonatal Sepsis*

7. Bronchopulmonary Dysplasia
 - Bronchopulmonary Dysplasia*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Neonatal Nutrition*

8. Congenital Anomalies
 - Comprehensive Assessment of the Neonate*
 - Congenital Diaphragmatic Hernia*
 - Esophageal Atresia and TE Fistula*
 - Gastroschisis and Omphalocele*
 - Management of the Difficult Airway*
 - Maternal Factors Affecting the Newborn*
 - Esophageal Atresia and TE Fistula*

9. Failure to Wean from Mechanical Ventilation
 - Advanced Concepts in Respiratory Physiology*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Preventing Ventilator-Associated Pneumonia*
 - Caring for a Child with a Tracheostomy*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*

10. Meconium Aspiration Syndrome (MAS)
 - Meconium Aspiration Syndrome*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Introduction to ECMO*
 - Vasoactive Medications*

11. Persistent Pulmonary Hypertension of the Newborn (PPHN)
 - Persistent Pulmonary Hypertension of the Newborn (PPHN)*
 - Extrauterine Life: Assessment of the Neonate's Transition*
 - Extrauterine Life: Fetal to Neonatal Circulation*
 - High-Frequency Ventilation*
 - Advanced Concepts in Respiratory Physiology*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Introduction to ECMO*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Vasoactive Medications*

12. Pulmonary Hypertension
 - Persistent Pulmonary Hypertension of the Newborn (PPHN)*
 - Extrauterine Life: Assessment of the Neonate's Transition*
 - Extrauterine Life: Fetal to Neonatal Circulation*
 - Maternal Factors Affecting the Newborn*
 - Advanced Concepts in Respiratory Physiology*
 - Mechanical Ventilation: Introduction to Pediatric Practices*
 - High-Frequency Ventilation*
 - Introduction to ECMO*
 - Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation*
 - Vasoactive Medications*

13. Thoracic Surgery
 - Congenital Heart Disease: Acyanotic Defects*
 - Congenital Heart Disease: Cyanotic Defects*

*Congenital Diaphragmatic Hernia
Esophageal Atresia and TE Fistula
Nursing Management of Chest Tubes
Preventing Surgical Site Infections*

14. Transient Tachypnea of the Newborn (TTN)
*Transient Tachypnea of the Newborn
Basic Principles of Oxygen Therapy, Specialty Gases and Noninvasive Ventilation
Comprehensive Assessment of the Neonate
Extrauterine Life: Assessment of the Neonate's Transition
Extrauterine Life: Fetal to Neonatal Circulation
Maternal Factors Affecting the Newborn*

C. Endocrine/Hematology/Gastrointestinal/Renal/Integumentary

1. Endocrine

- a. Hyperglycemia
*Glucose Homeostasis in the Neonate
Diabetes Insipidus and SIADH
Maternal Factors Affecting the Newborn*
- b. Inborn Errors of Metabolism
*Metabolic Disorders of the Newborn
Comprehensive Assessment of the Neonate*
- c. Neonatal Hypoglycemia
*Metabolic Disorders of the Newborn
Glucose Homeostasis in the Neonate
Maternal Factors Affecting the Newborn*

2. Hematology/Immunology

- a. Anemia/Anemia of Prematurity
*Anemia and Polycythemia in the Neonate (Coming 2017)
Disseminated Intravascular Coagulation*
- b. Coagulopathies (e.g., ITP, DIC, HIT)
*Disseminated Intravascular Coagulation
Thrombocytopenia: ITP and HIT/T (Coming 2017)*
- c. Immune Deficiencies
Neonatal Sepsis
- d. Hyperbilirubinemia
*Hyperbilirubinemia
Anemia and Polycythemia in the Neonate (Coming 2017)
Blood Administration: Exchange Transfusion*
- e. Leukopenia
Neonatal Sepsis
- f. Rh/ABO incompatibilities, hydrops fetalis
*Anemia and Polycythemia in the Neonate (Coming 2017)
Maternal Factors Affecting the Neonate*

- Hyperbilirubinemia*
- Blood Administration: Exchange Transfusion*
- Congestive Heart Failure*

- g. Thrombocytopenia
 - Disseminated Intravascular Coagulation*
 - Neonatal Sepsis*
 - Blood Administration: Exchange Transfusion*
 - Thrombocytopenia: ITP and HIT/T (Coming 2017)*

- 3. Gastrointestinal
 - a. Bowel Infarction/Obstruction/Perforation
 - Necrotizing Enterocolitis*
 - Gastroschisis and Omphalocele*
 - Neonatal Sepsis*

 - b. Gastroesophageal reflux
 - Neonatal Nutrition*
 - Nutrition in the Critically Ill Child*
 - Esophageal Atresia and TE Fistula*

 - c. GI Abnormalities (e.g., omphalocele; gastroschisis, volvulus, imperforate anus, Hirschsprung disease, malrotation, intusseption)
 - Comprehensive Assessment of the Neonate*
 - Gastroschisis and Omphalocele*
 - Congenital Diaphragmatic Hernia*
 - Necrotizing Enterocolitis*

 - d. GI Surgeries
 - Gastroschisis and Omphalocele*
 - Congenital Diaphragmatic Hernia*
 - Esophageal Atresia and TE Fistula*
 - General Post-Op Care of the Transplant Patient*
 - Preventing Surgical Site Infections*

 - e. Malnutrition and Malabsorption
 - Neonatal Nutrition*
 - Nutrition in the Critically Ill Child*
 - Necrotizing Enterocolitis*

 - f. Necrotizing Enterocolitis
 - Necrotizing Enterocolitis*
 - Neonatal Nutrition*
 - Disseminated Intravascular Coagulation*
 - Neonatal Sepsis*

- 4. Renal/Genitourinary
 - a. Acute Kidney Injury, Failure, Acute Tubular Necrosis
 - Renal Failure in the Pediatric Patient*
 - Hemodialysis*
 - Continuous Renal Replacement Therapy*
 - Neonatal Pharmacokinetics*

- b. Renal/GI Infections
 - Neonatal Sepsis*
 - Comprehensive Assessment of the Neonate*
 - c. Life-threatening Electrolyte Imbalances
 - Neonatal Nutrition*
 - Fluids and Electrolytes: Laboratory Assessment*
 - Fluids and Electrolytes: Physical Assessment*
 - Fluids and Electrolytes: Physiological Differences*
 - Fluids and Electrolytes: Replacement Therapy*
 - Fluids and Electrolytes: Water Intoxication and Fluid Shift*
 - d. Polycystic Kidney Disease
 - Renal Failure in the Pediatric Patient*
5. Integumentary
- a. IV Infiltration
 - Neonatal Skin Care*
 - Pediatric Peripheral IV Care & Management*
 - Management of PIV Complications in the Pediatric Patient*
 - b. Wounds (surgical)
 - Neonatal Skin Care*
 - Preventing Surgical Site Infections*
 - Introduction to Pediatric Pressure Injuries*
 - Pressure Injuries in the Pediatric Population: Staging and Care*
 - Pressure Injuries Staging Assessment*

D. Musculoskeletal/Neurology/Psychosocial

- 1. Musculoskeletal
 - a. Infections
 - Comprehensive Assessment of the Neonate*
 - Neonatal Sepsis*
 - b. Osteopenia
 - Neonatal Nutrition*
- 2. Neurology
 - a. Birth Injuries
 - Maternal Factors Affecting the Neonate*
 - Intracranial Pressure Monitoring*
 - Hypoxic Ischemic Encephalopathy*
 - b. Brain Death
 - Hypoxic Ischemic Encephalopathy*
 - Organ and Tissue Donation: The Gift of Life*
 - Intracranial Pressure Monitoring*
 - c. Congenital Neurologic Abnormalities (e.g., AV malformation, myelomeningocele, encephalocele)
 - Neonatal Cranial Hemorrhage*

- Hydrocephalus*
 - Maternal Factors Affecting the Neonate*
 - Craniotomy*
 - d. Encephalopathy
 - Neonatal Sepsis*
 - Meningitis and Encephalitis*
 - Intracranial Pressure Monitoring*
 - e. Hemorrhage (ICH, IVH, subarachnoid)
 - Neonatal Cranial Hemorrhage*
 - Intracranial Pressure Monitoring*
 - Craniotomy*
 - f. Hydrocephalus
 - Hydrocephalus*
 - Intracranial Pressure Monitoring*
 - Craniotomy*
 - g. Neurologic Infectious Disease (e.g., viral, bacterial, fungal)
 - Neonatal Sepsis*
 - Meningitis and Encephalitis*
 - h. Neurosurgery
 - Hydrocephalus*
 - Intracranial Pressure Monitoring*
 - Craniotomy*
 - i. Seizure Disorders
 - Status Epilepticus*
 - Neonatal Seizures*
- 3. Behavioral/Psychosocial
 - a. Agitation
 - Maternal Factors Affecting the Neonate*
 - Pediatric Restraint and Seclusion*
 - Neonatal Pain Assessment and Management*
 - b. Developmental Delays
 - Developmental Care of the Newborn*
 - c. Failure to Thrive
 - Nutrition in the Critically Ill Child*
 - Neonatal Nutrition*
 - Pediatric Nutritional Overview*
 - Congestive Heart Failure*
 - e. Stress in Extremely Low Birth Weight Infants
 - Developmental Care of the Newborn*
 - Neonatal Pain Assessment and Management*

- f. Substance Dependence or Abuse
Maternal Factors Affecting the Neonate

E. Multisystem

1. Asphyxia
 - Acute Respiratory Distress Syndrome*
 - Hypoxic Ischemic Encephalopathy*
 - Maternal Factors Affecting the Newborn*
2. End of Life
 - Care of the Dying Child: Care Issues*
 - Care of the Dying Child: Grief*
 - Care of the Dying Child: The Dying Process*
 - Health Care Advance Directives: Communicating Wishes*
 - Organ and Tissue Donation: The Gift of Life*
3. Healthcare-associated Infections (CLABSI, CAUTI, VAP)
 - Preventing Catheter-Associated Urinary Tract Infection (CAUTI)*
 - Preventing Central Line-Associated Bloodstream Infections (CLABSI)*
 - Preventing Surgical Site Infections*
 - Preventing Ventilator-Associated Infections*
 - Central Lines in the Neonate*
4. Hypotension
 - Vasoactive Medications*
5. Infectious Diseases (MDROs; influenza)
 - Management of MDROs in the Health Care Setting (Clinical)*
 - Tuberculosis*
6. Life-threatening Maternal-Fetal Complications
 - Maternal Factors Affecting the Newborn*
 - Anemia and Polycythemia in the Neonate (Coming 2017)*
7. Low Birth Weight/Prematurity
 - Comprehensive Assessment of the Neonate*
 - Retinopathy of Prematurity*
 - Neonatal Nutrition*
8. Multi-organ Dysfunction Syndrome (MODS)
 - Neonatal Sepsis*
9. Pain
 - Neonatal Pain Assessment and Management*
 - Pain Management: Assessment of Pain*
 - Pain Management: Non-Pharmacological Therapies in the Management of Pediatric Pain*
 - Pain Management: Pain Pathophysiology*
 - Pain Management: Pharmacological Management of Pediatric Pain*

Procedural Sedation in the Pediatric Patient

10. Palliative Care

Care of the Dying Child: Care Issues

Care of the Dying Child: Grief

Care of the Dying Child: The Dying Process

Family-Centered Care in the NICU

11. Sepsis Continuum (SIRS, sepsis, severe sepsis, septic shock)

Neonatal Sepsis

Pediatric Sepsis

Care of the Pediatric Patient in Shock

Blood Administration: Exchange Transfusion

12. Shock States (distributive, hypovolemic)

Care of the Pediatric Patient in Shock

Introduction to ECMO

13. Sleep Disruption

Developmental Care of the Newborn

14. Thermoregulation

Thermoregulation of the Newborn Infant

Neonatal Skin Care

15. Toxin/Drug Exposure

Pediatric Toxicology Exposure

Neonatal Pharmacokinetics

II. Professional Caring and Ethical Practice

1. Advocacy/Moral Agency

Introduction to Ethics

Family-Centered Care in the NICU

Therapeutic Relationships and Professional Behaviors (Coming 2017)

2. Caring Practices

Introduction to Ethics

Family-Centered Care in the NICU

3. Response to Diversity

Introduction to Workplace Diversity

Family-Centered Care in the NICU

4. Facilitation of Learning

Precepting: Adult Learners

Precepting: Preceptor Roles and Responsibilities

5. Collaboration

Building Effective Teams

Clinical Delegation

Coaching

Empowering Teams

Giving and Receiving Feedback

Therapeutic Relationships and Professional Behaviors (Coming 2017)

6. Systems Thinking

Building Effective Teams

Empowering Teams

7. Clinical Inquiry

Introduction to Research Ethics

Other related and supporting PLS content:

Patient Care

Assessment of the Critically Ill Child

Blood Administration: Administration of Blood and Blood Components

Blood Administration: Blood Components

Blood Administration: Transfusion Reaction

Caring for the Complex Patient (Coming 2018)