NICU RN Exam Content Outline

Exam Objective
To measure the overall clinical knowledge of the Registered Nurse in the NICU setting.

Knowledge Domains

<table>
<thead>
<tr>
<th>Knowledge Domains: NICU RN</th>
<th>%</th>
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</table>
| Cardiovascular             | 9%
| General Knowledge          | 9%
| GI/GU/Endocrine            | 9%
| Infection Control          | 9%
| Multisystem                | 9%
| Neurological               | 9%
| NICU Pharmacology          | 9%
| Nutrition and Feeding      | 9%
| Professional/Ethical Issues| 9%
| Respiratory                | 9%

Each question in this assessment is categorized by a cognitive level that the test taker would use to respond. These categories are:

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Recall: The ability to recall or recognize specific information.

Application: The ability to comprehend, relate, or apply knowledge to new or changing situations.

Analysis: The ability to analyze and synthesize information, determine solutions, and/or evaluate the usefulness of a solution.

Content Outline

I. Cardiovascular
   A. Knowledge of anatomy and physiology of the cardiovascular system.
   B. Knowledge of different cardiovascular disease signs and symptoms commonly seen in the NICU setting such as:
      1. Pulmonary hypertension of the newborn (PPHN)
      2. Coarctation of the aorta
      3. Ventricular septal defect
      4. Cyanotic heart defect
      5. Patent ductus arteriosus
      6. Single ventricle physiology
   C. Knowledge of Umbilical Arterial Line (UAC) complications such as:
      1. Cardiac tamponade
      2. Ischemia of lower extremities
      3. Blood stream infection
   D. Knowledge of common cardiac emergency protocols and when to initiate treatment for emergency situations.
   E. Knowledge of drugs that are used for treatments of cardiac disease and defects (ex: Prostaglandin E1, dobutamine, lanoxin, etc.).
II. General Knowledge

A. Knowledge of normal and abnormal laboratory values such as: potassium, blood glucose, metabolic acidosis, etc.
B. Knowledge of assessment findings, and treatment protocols for common disease processes in the NICU setting including but not limited to:
   1. Autosomal chromosomal abnormality
   2. Retinopathy of prematurity
   3. Meconium aspiration syndrome
   4. Congenital webbing of the limbs
C. Knowledge of Apgar scoring components (i.e. effects of magnesium sulfate administration).
D. Knowledge of car seat use teaching (i.e. identifying infants risk for airway obstruction).
E. Knowledge Allen test prior to peripheral radial artery catheterization.
F. Knowledge of morbidities related to large gestational age infants.
G. Knowledge of infant safe sleep guidelines.
H. Knowledge of peripheral IV site placement on the newborn.

III. GI/GU/Endocrine

A. Knowledge of pathophysiology, normal and abnormal assessment findings, and treatment protocols for common GI disease processes in the NICU setting including but not limited to:
   1. Omphalocele
   2. Gastrochisis
   3. Necrotizing enterocolitis
   4. Meconium plug
   5. Diaphragmatic hernia
6. Infant with ileostomy
7. Short bowel syndrome

B. Knowledge of pathophysiology, normal and abnormal assessment findings, for common GU disease processes in the NICU setting including but not limited to:
   1. Genital exam of the extremely low birth weight male infant
   2. Unilateral swollen scrotum

C. Knowledge of dextrose infusion rates appropriate in the NICU setting.

D. Knowledge of urine output calculation used in the NICU setting.

E. Knowledge of normal and abnormal lab values related to genitourinary disease processes.

IV. Infection Control
A. Knowledge of pathophysiology, normal and abnormal assessment findings, for common infectious disease processes in the NICU setting such as:
   1. TORCH syndrome
   2. Respiratory Syncytial Virus (RSV)
   3. Sepsis
   4. Septic shock
   5. Herpes simplex virus
   6. Group B Streptococcus
   7. Chlamydia

B. Knowledge of vertical transmission of infection in an infant.

C. Knowledge of non-ambulatory patient transfer from bed to chair or vice versa.

D. Knowledge of antibiotics commonly used in infant infections (penicillin g, gentamicin, ampicillin, etc.)

E. Knowledge of different types of isolation precautions in the NICU setting such as: standard, droplet, contact, etc.
F. Knowledge of preventing ventilator acquired pneumonia in the NICU.

V. Multisystem
   A. Knowledge of bedside interventions and medical procedures, including but not limited to:
      1. Paracentesis
      2. Thoracentesis
      3. Infant swaddling
      4. Lumbar puncture
   B. Knowledge of infant assessments consistent with each specific gestational age.
   C. Knowledge of different lesions and rash commonly seen on infants including but not limited to: erythema toxicum, port wine stain, brown fat, etc.
   D. Knowledge of infant evaporative loss and hypothermia.
   E. Knowledge of fetal growth restrictions and its relation to the growth curve.
   F. Knowledge of infant breech delivery and the risk it brings to the delivery of the infant.

VI. Neurological
   A. Knowledge of pathophysiology, normal and abnormal assessment findings, and treatment protocols for common neurological disease processes in the NICU setting including but not limited to:
      1. Phenylketonuria (PKU)
      2. Hypoxic-ischemic encephalopathy
      3. Caput succedaneum
      4. Myelomeningocele
      5. Subgaleal hemorrhage
      6. Anencephaly
7. Periventricular leukomalacia (PVL)

B. Knowledge of common clinical presentation of a neonatal seizure.

C. Knowledge of risk factors is associated with the development of intraventricular hemorrhage in the preterm infant.

D. Knowledge of commonly used seizure medications used in the NICU setting such as: phenobarbital, lorazepam, etc.

VII. NICU Pharmacology

A. Knowledge of the “Six Rights” of medication administration.

B. Knowledge of medication administration principles such as:
   1. Drug classifications and indications
   2. Use of at least two appropriate resident identifiers
   3. Baseline vital signs

C. Knowledge of JCAHO’s national patient safety goals to reduce medication errors.

D. Knowledge of how to monitor for adverse side effects.

E. Knowledge of commonly used medications used in the NICU setting such as:
   1. palivizumab (Synagis)
   2. fluconazole (Diflucan)

   3. acyclovir (Zovirax)
   4. epoetin alfa (Epogen)
   5. furosemide (Lasix)
   6. calfactant (Infasurf)

F. Knowledge of immunization dose for preterm infants.

G. Knowledge of antibiotic therapy and treatment initiation.
H. Knowledge of how to perform parenteral dosage calculations and metric conversions.

**Conversion references:**

<table>
<thead>
<tr>
<th>Conversion</th>
<th>Value</th>
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<tbody>
<tr>
<td>1 Kilogram = 1000 Grams</td>
<td>1 Gram = 1000 Milligrams</td>
</tr>
<tr>
<td>1 Milligrams – 1000 Micrograms</td>
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**Dosage calculation based on body weight:**

\[
\text{Weight (kg) \times Dosage ordered (per kg) = Y (Required dosage)}
\]

\[
\text{IV Infusion Rate (cc/hr) = dose (mcg/kg/min) \times weight (kg) \times 60 min/hr}
\]

\[
\text{concentration (mg/cc) \times 1000 mcg/mg}
\]

VIII. Nutrition and Feeding

A. Knowledge of transepidermal water loss (TEWL) including but not limited to: infant susceptibility to TEWL, factors that may decrease TEWL, electrolyte imbalances, etc.

B. Knowledge of feeding methods, enteral feedings, and trophic feedings appropriate for an infant.
C. Knowledge of required infant calorie intake for adequate growth and development.

D. Knowledge of normal infant weight loss during the first week of life.
E. Knowledge of when to hold infant feeding and notify provider when abnormal symptoms are noted such as: apnea, bradycardia, emesis, increased abdominal girth, etc.

F. Knowledge of when to call for lactation consultant services for issues regarding breastfeeding including but not limited to:
   1. Breast engorgement
   2. Breast feeding with inverted nipples
   3. Foremilk versus hindmilk education
   4. Infant suck, swallow, and breathe coordination
   5. Human milk fortifiers for premature infants

IX. Professional Issues/Ethical Issues
A. Knowledge of principles of cultural diversity and protocols for communicating with non-English speaking patients.

B. Knowledge of principles of delegation to non-licensed personnel using the “5 rights” of delegation.

C. Knowledge of principles of patient safety and HIPAA guidelines.

D. Knowledge of principles for obtaining informed consent.

E. Knowledge of essential elements in resolving conflict in the NICU setting.

F. Knowledge of ethical principles in the NICU setting such as: autonomy, beneficence, etc.

G. Knowledge of appropriate interventions in assisting parents with a NICU crisis such as:
   1. Admission of an ill newborn in the NICU
   2. Sudden loss of an infant
   3. Ethical concerns regarding an infant on life support

H. Knowledge of how to encourage family-infant bonding.

I. Knowledge of appropriate patient documentation in the medical record.

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X. Respiratory

A. Knowledge of pathophysiology, treatments, and disease signs and symptoms of pulmonary conditions commonly seen in the NICU setting such as:

1. Choanal Atresia
2. Pneumomedistinum
3. Maternal chorioamnionitis
4. Pneumopericardium
5. Transient tachypnea of the newborn
6. Meconium aspiration
7. Bilateral pneumothoraces
8. Infant apnea
9. Cystic Fibrosis (CF)
10. Bronchopulmonary dysplasia

B. Knowledge of oxygen therapy and delivery systems, including but not limited to positive pressure ventilation bag and mask, positive end-expiratory pressure (PEEP), continuous positive airway pressure (CPAP), mechanical ventilation, etc.

C. Knowledge of infant endotracheal tube size, intubation attempts, and signs and symptoms of accidental extubation in the NICU setting.

D. Knowledge of non-pharmacological techniques and infant positioning such as: maintaining infant head in neutral position, prone positioning, etc.