2021 CANDIDATE GUIDE
NEONATAL INTENSIVE CARE NURSING
RNC-NIC®

Congratulations on taking the next step in your career – earning your RNC-NIC certification

INFORMATION INCLUDED:

Fees & General Policies  2-5
About the Exam  6
Exam Content  7-9
Study Guides  10-17
Study Resources  18
Sample Questions  19
Scoring & Test Report  20-21
Terms of Certification and Certification Maintenance  22-23

ABOUT THIS GUIDE

This guide lists fees and provides information that will help you prepare for the examination. It includes the exam content in outline form, competency statements and study guide. It also provides sample exam questions to familiarize you with question format, study resources and lists some of NCC administrative policies & procedures. It is recommended that you familiarize yourself with the information in this guide.

NCC examinations are offered in several different test administrations options. The NCC publication Guide to Testing Methods will explain the different rules and policies based on how you are taking the examination. Please download this publication from the NCC website and review the exam administration options. It should answer your questions about the NCC examination process.

If you have other questions, please feel free to contact NCC through the NCC website at NCCwebsite.org.

NCC’S PHILOSOPHY OF TESTING

Certification is an evaluative process that provides the opportunity for nurses in the obstetric, gynecologic and/or neonatal specialty to demonstrate publicly what they know and to be recognized for the special knowledge they possess. The NCC certification carries no licensing authority. The ability to practice as a nurse is regulated by the state boards of nursing, and while certification may be required in some states for advanced practice roles, NCC has no regulatory power to require states to recognize NCC certification for this purpose. Practice and educational standards are reflected in the certification process, but the responsibility for development of such standards rests with the professional nursing specialty organizations and the nursing educational community. NCC encourages individual nurses to seek out information about how certification relates to state licensure requirements, program accreditation of the educational institutions attended, the educational and practice standards of national nursing specialty organizations, and employment expectations.

IT IS IMPORTANT TO READ THE INFORMATION IN THIS GUIDE. IT WILL ANSWER YOUR QUESTIONS AND WILL EXPLAIN ALL POLICIES TO WHICH YOU WILL BE SUBJECT.

NCC core and subspecialty programs are accredited by the National Commission for Certifying Agencies
EXAMINATION AND RELATED FEES

EXAMINATION FEES*
Computer Exam Fees are $325 which includes the non-refundable $50 application fee.

Professional Education Center (PEC) Exam Fees are $275 which includes the non-refundable $50 application fee.

*Examination fees are subject to change.

CHANGE REQUEST
Candidates who cannot take their currently scheduled examination, have missed their testing date or need to take a different exam - can request a change for a fee of $125. Details are on the NCC website.

WITHDRAWAL FEE
A computer testing candidate who withdraws from testing is subject to a $165 withdrawal fee. The candidate will receive $160 of their $325 payment, minus any outstanding charges. PEC candidates cannot withdraw.

RETEST FEE
Retest candidates must pay full application and examination fees. There are no discounts and they must complete a 90-day wait period* before resubmitting an application for testing. (*see Retest Policy page 4). Certifications exams of the same specialty can only be taken TWICE in a calendar year for the same candidate.

SUBSTITUTION FEE
Candidate substitutions are not allowed for any reason.

THIRD PARTY PAYMENTS
Applicant fees paid by third parties will be refunded to the third party in accordance with stated refund policies, in the event the applicant is determined ineligible or withdraws within the specified time.

NO REFUNDS WILL BE CONSIDERED FOR ANY CANDIDATE
- who has taken an examination
- who is not successful in achieving certification
- who failed to take the exam via computer within the 90-day testing window and did not submit a change request within stated time frames
- who is beyond the first 30 days of their eligibility window and is unable to schedule their exam within their eligibility window.
**PAYMENT INFORMATION**

- All applications are subject to a nonrefundable application fee.
- All fees are nonrefundable except where otherwise noted.
- Payments can be made by credit card (Visa, American Express and MasterCard only).
- Payments can be made by check: bank routing number and account number required.
- For payments made by third parties, any refund will be issued to the third party and not to the applicant.
- All payments must be in US funds.
- NCC does not accept debit cards or split payments (part check and part credit card).
- Exam fees can only be submitted online at the NCC website. Applications will not be accepted by mail, phone or fax.
- NCC will accept group payments for certification exams from institutions. Details are on the NCC website.

**OTHER NON-REFUNDABLE PAYMENT RELATED FEES**

**INCOMPLETE APPLICATION FEE**

All incomplete applications are subject to a non-refundable $30 reprocessing fee upon the submission of proper documentation.

Incomplete applications are those submitted with missing information, (e.g. required licensure information and corroborating uploaded documentation; containing incomplete or incorrect information; or do not include full fee payment).

**RETURNED CHECKS AND CREDIT CARD CHARGEBACK FEE**

A $30 fee will be assessed for any check or e-check returned or a credit card payment disputed for any reason. Remittance thereafter of all fees and applications must be in the form requested by NCC.

**LICENSE VERIFICATION**

If licensure information is requested requiring an additional submission, the candidate will have two weeks to provide the license with all the correct information and pay the non-refundable $30 reprocessing fee. If this is not provided within the two weeks, the application will be marked ineligible. Ineligible applicants will receive a refund minus the $50.00 non-refundable application fee. There are no refunds or withdrawals for applications using a bulk code.

**VERIFICATION OF CERTIFICATION**

Third party notification of status will not be released without authorization from the RNC. A $30 fee is required for any third party notification or issuance of duplicates of test results reports. Verification requests can only be submitted after official written results have been received in the mail.

Verification requests can only be made via the online verification system on the NCC website. NCC does not issue verifications via the mail or fax.

Certification will be revoked or withheld if a returned check or a chargeback request on a credit card payment results in loss of income to NCC and the monies are not recovered in an alternate payment. Fees received at any time will first be applied to any unpaid prior certification/special fees.
GENERAL POLICIES

UNSUCCESSFUL CANDIDATES
A candidate who sits for the examination and does not receive a passing score is not eligible for any refund nor for any credit on any later NCC exam.

NONDISCRIMINATION
It is the policy of NCC that no individual will be excluded from the examinations as a result of age, sex, race, religion, national origin, ethnicity, disability, marital status, sexual orientation, military status or gender identity.

AMERICANS WITH DISABILITIES ACT
Special testing accommodations will be provided pursuant to the Americans with Disabilities Act. Any requests for special testing accommodations must be made in writing and submitted with the application. The accommodation request form can be downloaded from the NCC website. Upon receipt of a request for special accommodations, NCC will contact the applicant. Such requests must be signed by a clinician, physician, or other qualified specialist with training and experience appropriate to diagnose and treat the specified disability.

EXAM CATEGORY CHANGES
You can only request an exam category change by completing a Change Request Form on the NCC website and submitting with non-refundable payment of $125. Candidates are only allowed one change option (e.g. if you reschedule your exam date, you will not be able to change your exam category). All change requests must be approved by NCC. There will be no refund of original or Change Request fees. Eligibility must be re-established for the new exam category, and additional documentation and fees may be required. The time to consider eligibility for the new category will count toward the original assigned 90-day computer testing window. Examination category cannot be changed from a subspecialty or RN Core application to a NNP or WHNP certification. Examinees must take the exam for which they have been determined eligible. No changes will be permitted on examination day. If a candidate knowingly or unknowingly takes an examination other than the one they were found eligible to take, the examination will not be scored. No refunds will be allowed, and all fee policies will apply if the candidate reapplyes for an examination. See website for complete details.

RETEST POLICY
You may retake the examination if you do not pass. You must reapply, submit all applicable fees and documentation, and re-establish eligibility according to the appropriate deadlines. There is no limit to the number of times you may retake the examination. However, the maximum number of times a candidate can take the same NCC test in a calendar year is two.

All retest candidates must wait 90 days from the date their exam was scored before they can submit a new application to retest.
• this date is provided in the candidate’s results notification
• this 90-day wait period affects all modes of testing

Any loss of power or internet during an exam in which there was more than 15 minutes of testing with exposure to more than 10% of the exam requires a retest after 90-days. There is no need to complete a new application but you will need to notify NCC to move your eligibility window so it begins 90-days after the exam attempt. Please notify NCC immediately if this occurs so that a new window can be set.

If a retest application is submitted prior to the 90-day wait period, the application will be returned as ineligible. The applicant will be subject to the $50 non-refundable application fee.
FEES & GENERAL POLICIES

REVIEW COURSES AND MATERIALS
NCC does not offer or sponsor review courses or review materials for its certification examinations. Examination candidates should view any course of study as being independent of NCC. You should carefully examine the merits of any individual exam preparation offering before you participate.

TEST DISCLOSURE
NCC does not make test questions available for review. Because test questions may be used for more than one examination administration, distributing this information would compromise the security of the test questions and would increase the cost of certification if the questions had to be replaced each year.

REVOCATION
Your certification may be revoked for falsifying any information submitted to determine eligibility to take the certification examination or for maintaining certification, for losing your license to practice nursing, or for failing to pay designated certification or maintenance fees.

GENERAL POLICIES (CONTINUED)

INTERNET DISCONNECTIONS
If you start the exam and are disconnected please use the PSI tech lines if you are testing with LRP or if at a test center please discuss with the proctor to attempt to get reconnected and continue testing.

If you are unable to get reconnected after starting the exam, the timing for a second attempt to take the exam will be based on how much time and how many questions you were exposed to. If you are disconnected and cannot be reconnected and have tested for under 15 minutes and were exposed to less than 10% of the exam you will be rescheduled within your current eligibility window. You must work directly with PSI that day to reschedule and if you run into any issues you must notify NCC within 3 days of testing. If you tested for longer than 15 minutes and/or saw more than 10% of the questions on the exam you will have to wait 90 days and will be rescheduled. A decision on the timing of your second attempt will be made after reviewing the test exposure. Please note, you will need to retest at a computer center. Please notify NCC of the internet disconnection issue as soon as you have convenient computer access.

APPEALS PROCEDURE
Any request to waive any policy of the NCC Board of Directors relative to eligibility, administration, examination content issues, or certification maintenance must be received in writing within 60 days of the dispute. All requests should be sent to the attention of the NCC President at nccpresident@nccnet.org. The correspondence should contain a detailed account as to why the NCC policy should be waived or the candidate’s status should be changed. Such requests are referred to the NCC Policy Review Committee of the Board of Directors. All decisions will be provided in writing. Cases not resolved by the Policy Review Committee will be referred to the full Board of Directors.

DESIGNATION AUTHORIZATION
Certification is a non-transferable, revocable, limited, non-exclusive license to use the certification designation “RNC-NIC®”, subject to compliance with the policies and procedures, as may be revised from time to time.

Any use or display of NCC certification marks and/or logos without the prior written permission of the NCC is prohibited. Any candidate or certificant who manufacturers, modifies, reproduces, distributes or uses a fraudulent or otherwise unauthorized NCC certificate, NCC designation or other credential may be subject to disciplinary action, including denial or revocation of eligibility or certification. Any individual who engages in such behavior also may be subject to legal action.

POLICIES ARE SUBJECT TO CHANGE WITHOUT NOTICE.
ABOUT THE EXAM

TIMED EXAMINATION
Three (3) hours are allotted to complete the examination.

EXAM FORMAT
The Neonatal Intensive Care Nursing examination consists of up to 175 test questions. 150 are scored and the remainder are embedded in the exam as pretest items. The pretest items do not count toward the examinee’s final results.

- There is one question format used for all NCC examinations.
- Each question has a premise (stem) and three alternative answers.
- The answer options are alphabetized by the first word in each answer option to randomize the answers.
- Computer tests are delivered in a different random order for each candidate.
- Questions will test both basic knowledge and application of knowledge.
- Questions that contain laboratory data will show results in conventional units of measure with international units in parentheses.
- Drugs are listed in both generic and trade names where appropriate.

EXAMINATION CONTENT DEVELOPMENT
The development of NCC certification involves many individuals and involves a meticulous process of review. There are three major groups that contribute to the test development process:

ITEM WRITERS:
RNCs and others identified with special expertise have the responsibility of drafting test items per designated assignment for review by the content team and expert reviewers. Item writers are solicited from the NCC certified population, by recommendations or through the volunteer portal.

REVIEWERS:
Reviewers are RNCs or other designated experts who assist the content teams in review of test items developed by the item writers. Reviewers are responsible for reviewing items for content relevance and confirming that references cited for the questions support the items as written.

CONTENT TEAMS:
Content team members are experienced practitioners and are appointed on an annual basis by the NCC President. Content teams are solicited from the NCC certified population, by recommendations or through the volunteer portal. To see the current membership composition of the Content Team responsible for the Neonatal Intensive Care Nursing examination, please visit the NCC website under the section on NCC Leadership.

Content team members are RNCs or other identified experts who:
- develop and update the test outline and competency statements
- review test items developed by item writers
- review item statistics from exam administrations and pretest examinations
- approve the exam forms to be administered
- review item banks

In addition, NCC uses volunteers for standard setting and content validation studies.
The above chart shows the percentage distribution of questions on the Neonatal Intensive Care Nursing exam across the major content categories covered on the examination. The major focus of the examination is on General Management and Assess & Manage Pathophysiologic States. Lesser emphasis is on General Assessment and Psychosocial Support with Professional Issues having the least number of questions assigned to this content category.
**EXAM OUTLINE**

This is an outline of topics and areas which may be included in the Neonatal Intensive Care Nursing examination.

<table>
<thead>
<tr>
<th>Section</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00</td>
<td>General Assessment (9%)</td>
</tr>
<tr>
<td></td>
<td>Maternal Risk Factors and Birth History</td>
</tr>
<tr>
<td></td>
<td>Physical and Gestational Age Assessment</td>
</tr>
<tr>
<td>11.00</td>
<td>General Management (44%)</td>
</tr>
<tr>
<td></td>
<td>Resuscitation and Stabilization</td>
</tr>
<tr>
<td></td>
<td>Fluids and Electrolytes and Glucose Homeostasis</td>
</tr>
<tr>
<td></td>
<td>Nutrition and Feeding</td>
</tr>
<tr>
<td></td>
<td>Oxygenation, Ventilation and Acid Base Homeostasis</td>
</tr>
<tr>
<td></td>
<td>Thermoregulation and Integumentary</td>
</tr>
<tr>
<td></td>
<td>Pharmacology, Pharmacokinetics and Pharmacodynamics</td>
</tr>
<tr>
<td></td>
<td>Neuroprotective and Neurodevelopmental Care</td>
</tr>
<tr>
<td></td>
<td>Infection and Immunology</td>
</tr>
<tr>
<td>12.00</td>
<td>Assess &amp; Manage Pathophysiologic States (39%)</td>
</tr>
<tr>
<td></td>
<td>Cardiovascular</td>
</tr>
<tr>
<td></td>
<td>Respiratory</td>
</tr>
<tr>
<td></td>
<td>Gastrointestinal and Gastrourinate</td>
</tr>
<tr>
<td></td>
<td>Hematopoietic</td>
</tr>
<tr>
<td></td>
<td>Neurological/Neuromuscular</td>
</tr>
<tr>
<td></td>
<td>Genetic, Metabolic and Endocrine</td>
</tr>
<tr>
<td></td>
<td>Head, Eye, Ear, Nose Throat</td>
</tr>
<tr>
<td>13.00</td>
<td>Psychosocial Support (5%)</td>
</tr>
<tr>
<td></td>
<td>Discharge Management, Family Centered Care, Grieving, Palliative Care, Mental Health</td>
</tr>
<tr>
<td>14.00</td>
<td>Professional Issues (3%)</td>
</tr>
<tr>
<td></td>
<td>including: Evidence Based Practice, Legal/Ethical, Patient Safety, Quality Improvement</td>
</tr>
</tbody>
</table>
EXAMINATION CONTENT

ASSOCIATED COMPETENCIES

- Identify antepartal and intrapartal indicators of neonatal risk and their potential significance
- Systematically assess all body systems utilizing physical examination, gestational age assessment and neurobehavioral assessment
- Apply knowledge of anatomy and physiology (maternal, fetal, transitional, newborn), pathophysiology, pharmacology, nutrition, and behavioral psychology to assess the neonate and differentiate abnormal from normal
- Recognize normal values and deviations in clinical laboratory and diagnostic data and identify potential significance
- Utilize biophysical monitoring techniques to identify body system alterations
- Develop an individualized plan of care for the restoration, maintenance and promotion of health for the high risk neonate and family unit during hospitalization and following discharge
- Implement diagnostic, therapeutic and educational plans in collaboration with other health care providers to provide direct care for the high risk neonate and family
- Assess the neonate's family, community and environment to identify areas of risk
- Identify life-threatening states and initiate appropriate interventions
- Evaluate the plan of care in collaboration with other health care providers and the family and modify the plan of care as indicated
- Identify professional nursing issues which impact on the role of the neonatal nurse
I. Maternal Risk Factors and Birth History
- Effects of maternal medical complications
  - hematologic
    - thrombocytopenia
  - hypertension
    - chronic, gestational hypertension, HELLP Syndrome
  - infections
    - CMV, Toxoplasmosis, syphilis, herpes, hepatitis, HIV, gonorrhea, chlamydia
    - renal disease
- Problems associated with amniotic fluid and membranes
  - amniotic bands
  - oligohydramnios
  - polyhydramnios
  - PROM and chorioamnionitis
- Significance of findings:
  - alpha-fetoprotein/triple quad/screen
  - biophysical profile
  - diagnostic ultrasound
- Recognize neonatal significance of fetal heart rate patterns
  - altered variability
  - decelerations
    - early, late, variable
    - tachycardia, bradycardia
- Effects of maternal medications on the neonate
  - tocolytics
  - analgesia, anesthesia
- Problems in labor - impact on the neonate
  - breech and other malpresentation
  - maternal hemorrhage
  - meconium
- Obstetric emergencies (impact on the neonate)
  - abruptio placenta
  - cord prolapse
  - placenta previa
- Impact of methods of delivery on the neonate
  - forceps, vacuum, cesarean

II. Physical and Gestational Age Assessment
- Interpretation of growth curves
  - weight, length and head circumference
- Physical and neuromuscular characteristics
  - preterm
  - term
  - post-term
  - AGA
  - SGA
  - LGA
- Associated risks with
  - Preterm
  - post-term
  - SGA/IUGR
  - LGA
- Normal/abnormal findings regarding:
  - general appearance
  - head, eyes, ears, nose & throat
  - neck
  - chest
  - cardiovascular
  - respiratory
  - abdomen
  - genitalia
  - extremities
  - spine/back
  - skin
  - maintaining skin integrity
  - neuromuscular and reflexes
STUDY GUIDE

GENERAL MANAGEMENT

I. Resuscitation and Stabilization

- Neonatal Cardiopulmonary Resuscitation
  *(Per the American Heart Association & the American Academy of Pediatrics)*
  - initial evaluation (ABC)
  - indications for ventilation
  - indications for intubation
  - indications for cardiac compressions
  - medications
- Use of drugs
  - epinephrine
  - volume expanders
- Resuscitation and stabilization of the neonate with
  - diaphragmatic hernia
  - hydrops fetalis
  - perinatal asphyxia
  - upper airway obstruction

II. Fluids and Electrolytes and Glucose Homeostasis

- Normal fluid and electrolyte requirements
- Monitoring fluid and electrolyte status
  - electrolytes
  - urine output
- Effects of
  - humidity
  - maturity
  - temperature
- Specific problems
  - dehydration and overhydration
  - gastrointestinal abnormalities
  - insensible water loss
  - patent ductus arteriosus
  - post-asphyxia
  - third spacing
- Parenteral fluid therapy

III. Nutrition and Feeding

- Nutritional requirements and effects of excess & deficiency
  - calories
  - carbohydrates
  - fat
  - minerals
  - protein
  - vitamins
- Enteral feeding
  - minimal enteral feedings (gut priming)
- Gavage feeding
- Bolus vs continuous feedings
- Feeding cues
- Feeding techniques
- Bottle feeding
  - formula composition
- Breast feeding
  - stimulating production
  - composition of breast milk
  - donor milk
- Parenteral nutrition
  - indications
  - composition
  - complications
- Dietary supplements
  - breast milk fortifiers
  - glucose polymers
  - iron
  - MCT
  - Vitamins
  - probiotics
- Nutritional management for
  - bronchopulmonary dysplasia
  - prematurity
  - short gut syndrome
  - short gut syndrome
IV. Oxygenation, Ventilation and Acid Base

Homeostasis

- Oxygenation: interpretation and management
  - hypoxia/hypoxemia
  - oxygen saturation
  - principles re: increasing/decreasing FiO₂ levels
  - pulse oximeter

- Methods of oxygenation/ventilation
  - indications, complications
  - noninvasive ventilation
  - extracorporeal membrane oxygenation (ECMO)
  - high flow nasal cannula

- Mechanical ventilation
  - conventional
  - high frequency
  - other methods of oxygen delivery (hood, nasal cannula)

- Blood gases: interpretation and management
  - metabolic acidosis (compensated & uncompensated)
  - metabolic alkalosis (compensated & uncompensated)
  - respiratory acidosis (compensated & uncompensated)
  - respiratory alkalosis (compensated & uncompensated)
  - mixed
  - serum lactate

V. Thermoregulation and Integumentary

- Mechanisms of heat loss and production
  - assessment of thermal state
  - responses to hypothermia and cold stress
  - responses to hyperthermia

- Maintaining a neutral thermal environment

- Management of thermoregulation problems
  - evaporation
  - conduction
  - convection
  - radiation
  - hypothermia and cold stress
  - hyperthermia

VI. Pharmacology, Pharmacokinetics and Pharmacodynamics

- Principles of neonatal pharmacology
  - administration methods/issues
  - absorption from GI tract, skin and muscle
  - blood drug levels (toxic vs therapeutic)
  - drug distribution in the body
  - drug excretion
  - drug incompatibilities
  - drug withdrawal (therapeutic drugs)
  - drug resistance

- Dosage calculations

- Common drugs
  - anesthetics and analgesia (sedatives)
  - antibiotics
  - anticonvulsants
  - antiviral drugs
  - bronchodilators
  - cardiovascular agents
  - CNS stimulants (caffeine, etc)
  - Diuretics
  - muscle relaxants

- Management of the drug exposed neonate
  - Fetal alcohol syndrome
  - Neonatal abstinence syndrome and scoring
  - Substance use and abuse

- Laboratory drug testing
VII. Neuroprotective and Neurodevelopmental Care

- Neurobehavioral development
  - Habituation
  - motor organization
  - state organization
  - sensory/interaction capabilities
- Self regulatory (stability) and stress responses
  - autonomic
  - motoric
  - state/sleep cycles
  - attentional
- Impact of the NICU environment
  - physical
  - light
  - sound
  - social
  - caregiver-infants interactions
  - patterns of caregiving
- Intervention strategies
  - reducing noise levels
  - reducing light levels/diurnal patterns
  - altering care patterns
  - handling/positioning
  - kangaroo care/skin-to-skin
  - nonnutritive sucking
- Provision of sensory experiences
  - auditory
  - tactile
  - visual
  - vestibular and proprioceptive
- Pain
  - assessment
  - non-pharmacologic interventions

VIII. Infection and Immunology

- Interpret laboratory values
  - WBC and differential
  - cerebrospinal fluid
- Immature host defenses
- Neonatal sepsis/meningitis
- Viral and fungal infections
  - candidiasis
  - cytomegalovirus
  - hepatitis B
  - herpes
  - HIV/AIDS
  - toxoplasmosis
  - varicella
- Specific bacterial infections such as
  - E coli infection
  - Group B Streptococcal infection
  - Early/late onset staphylococcal infection
  - syphilis
  - enterovirus
- Infection control procedures
  - nosocomial infection
Assess and Manage Pathophysiologic States

I. Cardiovascular
- Transition to Extrauterine Life
- Cyanosis
  - central vs peripheral
  - cardiac vs pulmonary
- Specific Problems
  For all problems: presentation/ assessment causes, management, complications, outcome
  - arrhythmias
  - cardiac tamponade
  - congestive heart failure
  - congenital heart defects
    - AV canal
    - coarctation of the aorta
    - hypoplastic left heart
    - pulmonary stenosis and atresia
    - tetralogy of fallot
    - transposition of the great vessels
    - total anomalous pulmonary venous return
    - ventricular septal defect
  - cyanotic vs acyanotic disease
  - hypertension
  - patent ductus arteriosus
  - shock
- Cardiovascular assessment
  - blood pressure
  - EKG
  - cardiopulmonary monitoring
  - indwelling lines

II. Respiratory
- Normal pulmonary function, surfactant
- Specific respiratory problems
  For all problems: presentation/ assessment causes, management, complications, outcome
  - apnea of prematurity
  - bronchopulmonary dysplasia
  - diaphragmatic hernia/paralysis
  - hypoplastic lungs
  - meconium aspiration
  - persistent pulmonary hypertension
  - pneumothorax/air leaks
  - pulmonary hemorrhage
  - respiratory distress syndrome
  - transient tachypnea of the newborn
- Specific therapies
  For all problems: presentation/ assessment causes, management, complications, outcome
  - endotracheal intubation
  - suctioning
  - surfactant replacement therapy
  - chest tubes and drainage systems

III. Gastrointestinal and Gastrourinate
- Normal gastrointestinal function
- Maturation of GI tract
- Specific GI problems
  For all problems: presentation/ assessment, causes, management, complications, outcome
  - GE reflux
  - GI bleeds perforation/peritonitis
  - Hirschsprung’s disease
  - intestinal obstructions (duodenal, jejunal, ileal, imperforate anus)
  - meconium ileus/plug
  - malrotation/volvulus
  - necrotizing enterocolitis
  - omphalocele/gastrochisis
  - short gut syndrome
  - ostomy care
  - colitis
  - bloody stools
  - protein allergies
- Renal function/urinary output
- Specific genitourinary problems
  For all problems: presentation/ assessment, causes, management, complications, outcome
  - Genital
    - ambiguous genitalia
    - inguinal hernia
    - testicular torsion
  - Urinary tract
    - asphyxial renal damage
    - renal abnormalities
    - renal failure
    - renal vein thrombosis
    - CBC
    - hematocrit, hemoglobin

IV. Hematopoietic
- Interpret laboratory values
platelets
total and direct serum bilirubin
direct and indirect antibody test
Kleihauer Betke test

• Developmental differences
  fetal vs adult hemoglobin
  RBC differences

• Administration of blood and blood products
techniques
  risks

• Hyperbilirubinemia
  physiologic jaundice
  causes of direct hyperbilirubinemia
  causes of indirect hyperbilirubinemia
  phototherapy

• Specific hematologic problems
  anemia
  coagulopathies/DIC
  polycythemia and hyperviscosity
  Rh and ABO incompatibility/ hydrops fetalis
  Thrombocytopenia

V. Neurological/ Neuromuscular
For all problems: presentation/ assessment, causes,
management, complications, outcome

• Birth injuries (neuromuscular)

• Hydrocephalus

• Hypoxic ischemic encephalopathy

• Neural tube defects

• Germinal matrix hemorrhage

• Intraventricular hemorrhage

• Periventricular leukomalacia

• Seizures

• Subdural hemorrhage

VI. Genetic, Metabolic and Endocrine
• Interpret laboratory values
  calcium, phosphorus magnesium
  glucose

• Metabolic screening
  PKU

Thyroid
CAH
Sickle cell
Galactosemia

• Glucose homeostasis

• Specific metabolic/endocrine problems
  For all problems: presentation/ assessment, causes,
  management, complications, outcome
  hypocalcemia and hypercalcemia
  rickets
  hypoglycemia and hyperglycemia
  infant of diabetic mother
  thyroid disorders
  adrenal disorders

• Mendelian inheritance patterns
  autosomal recessive
  autosomal dominant
  sex-linked

• Chromosomal anomalies and diseases
  Trisomy 13
  Trisomy 18
  Trisomy 21
  Multifactorial diseases
  DiGeorge
  Turners

VII. Head, Eyes, Ears, Nose and Throat
• Eye prophylaxis

• Specific problems
  For all problems: presentation/ assessment, causes,
  management, complications, outcome
  cephalhematoma
  choanal atresia
  cleft palate/lip
  retinopathy of prematurity
  tracheal stenosis/atresia
  tracheomalacia
  tracheostomy
  vocal cord paralysis
  subgaleal
  trachea-esophageal atresia (TEF)
  esophageal atresia
  micronathia
PSYCHOSOCIAL SUPPORT

1. Discharge Management, Family-Centered Care, Grieving, Palliative Care, Mental Health
   • General discharge planning and parent teaching
carseats
CPR
CCHD screening
feeding
immunizations
SIDS/safe sleep/plagiocephaly
Visitors
Shaken baby

• Discharge planning and parent teaching for infants with special needs
  nutrition
  medications
  special equipment needs
  special care needs
  developmental follow up
  visual screening
  hearing screening
  motor delay (including cerebral palsy)
  cognitive/language delay

• Anticipatory grief

• Stages of grieving and common behaviors and interventions

• Factors which impede/enhance grief process

• Pathologic responses

• Maternal/paternal differences (incongruent grieving)

• Specific circumstances
  chronic sorrow
  death of a twin (triplets, etc)
  repeated obstetric loss (recurrent abortion, stillbirth, preterm delivery)
  sibling responses

• Support systems and referrals
  bereavement groups
  parent support groups
  palliative care

• Parent-infant attachment behaviors

• Parental stress responses
  high risk birth
  changes in status
  transfer

• Barriers to parent infant interaction

• Specific circumstances
  adolescent parents
  grandparents and other extended family
  long distance nurturing of parent/infant attachment
  sibling responses and interventions

• Specific interventions with parents and extended family
  counseling techniques
  parent teaching

• Shared decision making
  parent-staff disagreements regarding treatment

• Principles of culturally sensitive care

• Maternal psychiatric issues
  Post traumatic stress disorder
  Post-partum depression
Ethical Principles
- Autonomy
- Beneficence
- Non-maleficence
- Justice

Professional/Legal Issues
- Professional Regulation Practice
- Staffing issues
- Legal liability
  - Consent
  - Documentation/medical records
  - Negligence/malpractice

Evidence based practice
- Terminology
- Reliability
- Validity
- Significance
- Levels of Evidence
- Quality Improvement
- Research utilization

Patient Safety
- Communication
- Interprofessional practice
STUDY RESOURCES

• Bissinger, et al., Golden Hours, NCC, 2019.
• Guido, Legal and Ethical Issues in Nursing, Pearson, 2013.
• Snell, et al., Care of the Well Newborn, Jones & Bartlett, 2017.
SAMPLE QUESTIONS

NEONATAL INTENSIVE CARE NURSING SAMPLE QUESTIONS

Listed below are five sample questions to acquaint you with the test question format. These questions do not reflect the scope or the difficulty level of the questions on the actual examination. The reference from which each question is derived is also cited. However, other references might substantiate a different answer, and the answer shown here might be substantiated by other references.

The rigorous review to which actual test questions are subject is not applied to these sample questions. The focus that should be attended to in reviewing these items is format, not content.

1. Functional closure of the ductus arteriosus occurs as a result of
   A. fibrosis of the ductal muscle
   B. increased arterial oxygen tension
   C. increased left atrial pressure

   Answer: B


2. A premature neonate has been consistently engaging in hand-to-mouth movements. The nurse should
   A. provide a time out for care giving activities
   B. recognize these behaviors as a form of self-consolation
   C. swaddle and hold the infant for awhile

   Answer: B


3. After six hours of IV calcium replacement, the serum calcium level of a neonate remains below normal. Which of the following laboratory values should be obtained as the next step in evaluating the neonate’s condition?
   A. Serum magnesium
   B. Serum phosphorus
   C. Urine calcium

   Answer: A


4. The primary etiology of transient tachypnea of the newborn is thought to be
   A. asphyxia at birth
   B. retained lung fluid
   C. surfactant deficiency

   Answer: B


5. A 1300 gm neonate wearing only a diaper is placed in a single walled incubator with an inside temperature of 35°C (95°F). By what method is the neonate most likely to experience heat loss?
   A. Convection
   B. Evaporation
   C. Radiation

   Answer: C


**Scoring & Test Report**

**How Exams Are Scored**

NCC examinations are criterion-referenced. This means the passing score is based on a predetermined criterion. This criterion is a statistical ability level established by the Content Team based on evaluation of criticality of content and the test questions’ past statistical performance. Questions used to determine pass/fail have proven statistical history that demonstrates the question is appropriate for use to measure an individual’s ability level.

There is no set percentage passing level. **An ability level for each candidate is calculated based on the number of questions they answer correctly (there is no penalty for wrong answers).** Pass/fail is determined based on this ability level as compared to pass/fail standard which is a predetermined ability criterion. When different forms of the examination are used, a process called equating is initiated. This procedure converts all results to a common scale. So someone who takes a slightly more difficult form of the exam will need to answer fewer questions correctly than someone who takes a slightly easier form of the exam.

NCC utilizes the item response theory of psychometrics for the analysis of its examinations. Item response theory (Rasch analysis) is the study of test and item scores based on assumptions concerning the mathematical relationship between abilities and item responses. This is a commonly used system, and such examinations as the NCLEX and other health related certification examinations utilize this type of psychometric analysis.

Test reports identify pass/fail status, and they give feedback on the various content areas of the examination in the form of word descriptors: very weak, weak, average, strong and very strong. No percentages or standard scores are given. These descriptors are based on the items within a given subtest. The overall pass/fail decisions are based on the full test, and the verbal descriptors are intended to provide suggested feedback on strengths and weaknesses in various content areas. Since this feedback is based on relatively few items, general verbal descriptions are given instead of subtest scores. These word descriptors are for information only, and they should be interpreted cautiously due to the small number of items included in each content area.
SAMPLE TEST REPORT

You will receive an official test results report from NCC. Shown below is a sample test result report for a candidate who has passed the examination.

NEONATAL INTENSIVE CARE NURSING EXAMINATION

Test Results

NAME

DATE

ADDRESS

Pass/Fail: PASS

EXAM CONTENT REPORT

The following provides information regarding your performance on the different content areas tested on the examination.

Test reports identify pass/fail status, and they give feedback on the various content areas of the examination in the form of word descriptors: Very weak, weak, average, strong and very strong. No percentages or standard scores are given. These descriptors are based on the items within a given subtest. The overall pass/fail decisions are based on the full test, and the verbal descriptors are intended to provide suggested feedback on strengths and weaknesses in various content areas. Since this feedback is based on relatively few items, general verbal descriptions are given instead of subtest scores. These word descriptors are for information only, and they should be interpreted cautiously due to the small number of items included in each content area.

<table>
<thead>
<tr>
<th>Content Area &amp; Percentage</th>
<th>Your Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of Questions Asked:</td>
<td></td>
</tr>
<tr>
<td>General Assessment</td>
<td>AVERAGE</td>
</tr>
<tr>
<td>(9%)</td>
<td></td>
</tr>
<tr>
<td>General Management</td>
<td>AVERAGE</td>
</tr>
<tr>
<td>(44%)</td>
<td></td>
</tr>
<tr>
<td>Assess &amp; Manage Pathophysiologic States</td>
<td>VERY STRONG</td>
</tr>
<tr>
<td>(39%)</td>
<td></td>
</tr>
<tr>
<td>Psychosocial Support; Professional Issues</td>
<td>WEAK</td>
</tr>
<tr>
<td>(8%)</td>
<td></td>
</tr>
</tbody>
</table>
**TERMS OF CERTIFICATION AND CERTIFICATION MAINTENANCE**

**WHEN YOU PASS THE EXAM**

**CREDENTIAL**
Your NCC certification status entitles you to use the credential RNC-NIC® (Registered Nurse Certified – Neonatal Intensive Care Nursing)

**TERMS OF CERTIFICATION**
NCC certification is awarded for a period of three years.

The effective date for certification is the date on the official NCC letter that tells you that you have successfully completed the certification process.

---

**MAINTAINING YOUR CERTIFICATION**

- NCC certification must be maintained every three years.
- Certification that is not maintained will expire
- The NCC certification maintenance program allows you to continue your certification status by obtaining specific hours of continuing education credit as defined in your Education Plan, which is generated by your Continuing Competency Assessment (CCA).
- For continuing education credit to be used for certification maintenance it must be earned AFTER you have taken your Assessment and in the areas defined by your Education Plan before your maintenance is due.
- The maintenance process includes submitting a maintenance application prior to your maintenance due date with appropriate fees and requested documentation. Using NCC CE modules does NOT automatically maintain your certification. You must submit a maintenance application and pay a maintenance fee in addition to any CE fees.
- Maintenance applications are subject to random audit. If you are chosen for audit, you will be required to upload CE certificates and course descriptions. These records should be maintained during each maintenance cycle, until your maintenance application has been approved. You can upload these documents in your maintenance application throughout your maintenance cycle.

You may apply for maintenance up to 1 year before your maintenance date. As long as you have obtained the required contact hours of continuing education credit—**you do not need to wait until your maintenance deadline to apply**. Maintenance will be due in the quarter in which you were notified of your certification (not the date on which you took the examination). Your maintenance due date can be found by signing into your NCC account. Sign into your account using your email and password.

**The NCC website has more detailed information**
For more information about the certification maintenance program and the Continuing Competency Assessment (CCA), click the purple "Maintain your Certification" box.
CONTINUING COMPETENCY ASSESSMENT (CCA)

NCC views certification as a process that functions throughout an individual nurse or nurse practitioner's career. It reflects life-long learning, ongoing professional development and is supported by maintaining specialty knowledge competencies.

The standard process for the NCC Certification Maintenance Program makes use of an assessment tool and resulting personal education plan:

- Complete the continuing competency assessment (CCA) that reflects the current knowledge competencies aligned with your certification specialty at the beginning of each new certification maintenance cycle.

- Earn CE as specified by the education plan developed from your assessment. Your education plan outlines the CE needed to maintain your NCC certification. *Only CE earned after you have taken your assessment can be used to maintain your certification. It must address the CE needs as outlined by your educational plan.*

This program provides continuing validation that NCC certified nurses and nurse practitioners are maintaining their specialty knowledge competencies based on current practice and examination content.

Download Continuing Competency Assessment brochures for details by clicking the links below.

Four Steps to Continuing Competency
https://www.nccwebsite.org/content/documents/cms/cca-steps.pdf

Continuing Competency Assessment - Education Plan Examples
https://www.nccwebsite.org/content/documents/cms/cca-education-plans.pdf