

Currently, this exam is
NOT ELIGIBLE for testing
with Live Remote
Proctoring (LRP).

2025 CANDIDATE GUIDE NEONATAL NEURO-INTENSIVE CARE (C-NNIC)

*Congratulations on taking the next step in your career
– earning your certification and C-NNIC certification!*

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THIS EXAM'S PURPOSE

The purpose of the Neuro-Neonatal Intensive Care Subspecialty Certification is to provide a competency-based examination that tests specialty knowledge and the application of that knowledge for licensed health care professionals in the US and Canada, who provide neurological care to at-risk or impaired neonates within an intensive care environment to improve overall outcomes.

IT IS IMPORTANT TO READ THE INFORMATION IN THIS GUIDE. IT EXPLAINS ALL POLICIES TO WHICH CANDIDATES WILL BE SUBJECT.

ABOUT THIS GUIDE

This guide lists fees and provides information that will help candidates 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 the test taker with question format, study resources and lists some of NCC administrative policies & procedures. It is recommended that candidates familiarize themselves 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 the candidate is taking the examination. Please download this publication from the NCC website and review the exam administration options. It will answer any questions about the NCC examination process.

If there are other questions, please feel free to contact NCC through the [“Contact Us”](#) page at [NCCwebsite.org](#).

NCC'S PHILOSOPHY OF TESTING

Certification is an evaluative process that provides the opportunity for health care professionals 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 health care professional is regulated by the state, and while certification may be required in some states for specific health care 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 specialty organizations and the educational community. NCC encourages individual to seek out information about how certification relates to licensure requirements, program accreditation of the educational institutions attended, the educational and practice standards of national specialty organizations, and employment expectations.

FEES & GENERAL POLICIES

EXAMINATION AND RELATED FEES

EXAMINATION FEES*

Test Center and Live Remote Proctoring (LRP) Computer Exam Fees are \$210 which includes the non-refundable \$50 application fee.

**Examination fees are subject to change.*

CANCELLATION: 6 HOUR WINDOW

Candidates have six hours from the time they submit an exam application to cancel the exam. The order can be canceled by logging into the account and clicking on "Cancel Application" found under the new certification. Only the candidate can cancel the application and they must meet the 6-hour window. After the six hours they must withdraw or pay for a 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 Testing Center or LRP testing candidate who withdraws from testing will receive \$105 of their \$210 payment, minus any outstanding charges. Bulk Purchase Voucher candidates cannot withdraw.

RETEST FEE

Retest candidates must pay full application and examination fees. There are no discounts and they must complete a 45-day wait period* before resubmitting an application for testing. (*see Retest Policy page 4). Certification exams of the same specialty can only be taken TWICE in a calendar year. Candidates must submit a new application and again demonstrate eligibility and licensure.

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. Vouchers are nonrefundable.

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 at a Test Center or via Live Remote Proctoring (LRP) within the 90-day testing window and did not submit a change request within stated time frames
- who failed to schedule an appointment to test within the first 30 days of their 90-day eligibility window and is unable to schedule their exam within their eligibility window.
- who failed to have proper ID or meet any required rules
- who failed to login to the test portal or appear at the test center (no-show) or who signed in late to the test portal or arrived late to the test center
- who failed to take a scheduled exam for any reason (illness, quarantine, accident, death, etc.)

Test Date Change

Test Center and Live Remote Proctoring (LRP) exam candidates can change their scheduled testing date to another date within their window **once for free**.

Candidates may do this from within their NCC account or handle directly with PSI.

Refer to the NCC testing guide for details.

FEES & GENERAL POLICIES

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). NCC does not accept debit cards or split payments (part check and part credit card).
- Payments can be made by e-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. Vouchers are nonrefundable.
- All payments must be in US funds.
- 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 under Bulk Purchases.

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 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. The license must be kept up to date in the account at all times.

VERIFICATION OF CERTIFICATION

Third party notification of status will NOT be released without authorization from the certified individual. A \$30 fee is required for any third-party notification of test results. Verification requests can only be submitted after official results with score report have been uploaded to the candidate's NCC account.

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.

FEES & GENERAL POLICIES

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. After reviewing the request for special accommodations, NCC will contact the applicant by email. 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

Candidates 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 request** (e.g. After a change request is submitted no other change request can be submitted). 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 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 reapplies for an examination. See website for complete details.

RETEST POLICY

Candidates may retake the examination if they do not pass. They must reapply 45 days after the test was taken, submit all applicable fees and documentation, and re-establish eligibility according to the appropriate deadlines. There is no limit to the number of times a candidate 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 45 days from the date their exam was taken before they can submit a new application to retest.

- this date is provided in the candidate's results notification
- this 45-day wait period affects all modes of testing

Any loss of power, internet or connection for any reason 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 at a Test Center. Candidates will have to wait 45-days before they can reschedule and they must follow NCC's retest policy. A decision on the timing of a second attempt will be made after NCC reviews the test exposure. There is no need to complete a new application, **but candidates MUST notify NCC of the internet disconnection issue as soon as computer access is available.**

If a retest application is submitted prior to the 45-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. Candidates should carefully examine the merits of any individual exam preparation offering before participating.

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.

REVOCAION

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, or for failing to pay designated certification or maintenance fees.

**POLICIES ARE SUBJECT
TO CHANGE
WITHOUT NOTICE.**

GENERAL POLICIES (CONTINUED)

INTERNET DISCONNECTIONS

If the candidate has started the exam and is disconnected, please use the PSI tech lines if testing with LRP or if at a Test Center discuss immediately with the proctor to attempt to get reconnected and continue testing.

If the candidate is 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 they were exposed to. If a candidate is disconnected and cannot be reconnected and has tested for under 15 minutes, with less than 10% exposure to the exam they may be able to reschedule within their current eligibility window. **Candidates must work directly with PSI that day to reschedule and if they run into any issues they must notify NCC within 3 days of testing.** If a candidate tests for longer than 15 minutes and/or saw more than 10% of the questions on the exam they will have to wait 45 days before they can reschedule, and they must follow NCC's retest policy. A decision on the timing of a second attempt will be made after NCC reviews the test exposure. Please note, candidates will need to retest at a Test Center. Please notify NCC of the internet disconnection issue as soon as computer access is available.

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 "C-NNIC", 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.

ABOUT THE EXAM

ABOUT THE EXAM

TIMED EXAMINATION

Two (2) hours are allotted to complete the examination.

EXAM FORMAT

The Neonatal Neuro-Intensive Care examination consists of up to 125 test questions. 100 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 possible answers, two distractors and only one correct answer.
- The answer options are alphabetized by the first word in each answer option to randomize the answers.
- 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:

MDs, RNCs, APRNs, Respiratory Therapists 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 MDs, RNCs, APRNs, Respiratory Therapists 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 Neonatal Neuro-Intensive Care examination, please visit the NCC website under the section on NCC Leadership.

Content team members are MDs, RNCs, APRNs, Respiratory Therapists or other identified experts who:

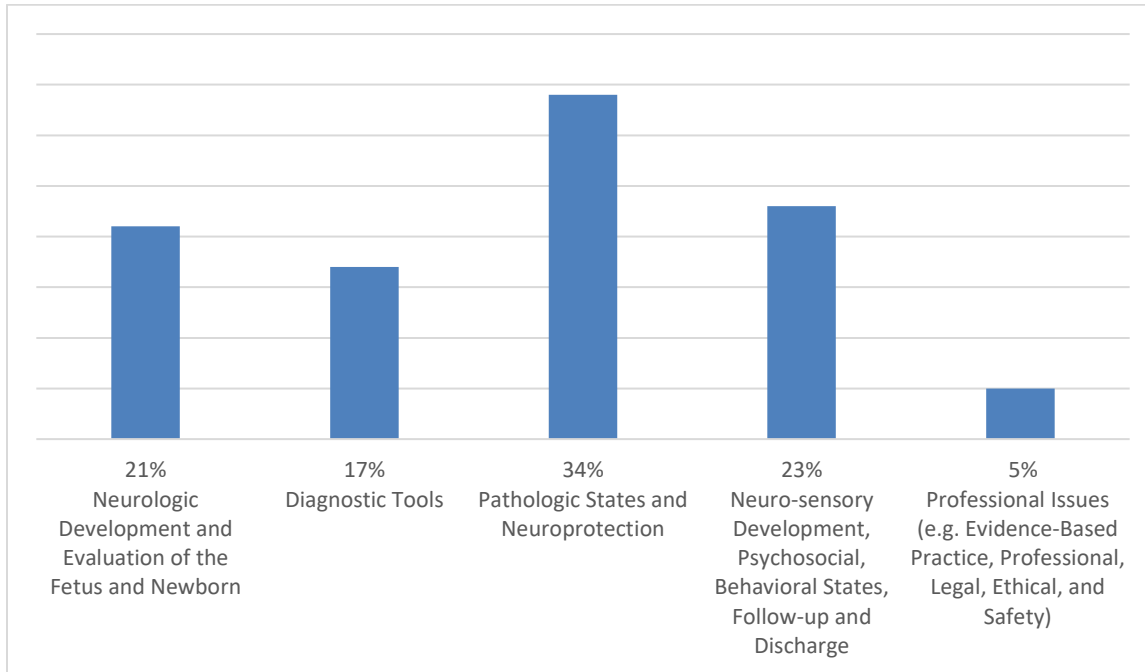
- develop and update the test outline and competency statements
- review test items developed by item writers
- review item statistics from exam administrations and pretest examinations
- approve the exam forms to be administered
- review item banks

In addition, NCC uses volunteers for standard setting and content validation studies/job analysis studies.

EXAMINATION CONTENT



Neonatal Neuro-Intensive Care



The chart shows the percentage distribution of questions on the Neonatal Neuro-Intensive Care exam across the major content categories covered on the examination.

EXAMINATION CONTENT

EXAM OUTLINE

Areas of knowledge to be tested on the Neonatal Neuro-Intensive Care examination are listed in the following outline. This list is not intended as an all-inclusive review. It is provided only to help candidates evaluate their own practice.

Percentages identified for the topic areas represent the number of test questions assigned to each content area. These percentages do not necessarily reflect the content of future examinations.

10.00	Neurologic Development and Evaluation of the Fetus and Newborn (21%)
	Normal CNS development
	Antepartum and Intrapartum Neurological Risk Factors and Outcomes
	Neurologic Assessment
11.00	Diagnostic Tools (17%)
	Neurological Monitoring and Evaluation
	Neurologic Imaging and Evaluation
12.00	Pathologic States and Neuroprotection (34%)
	Neurologic Pathophysiology
	Neuroprotection, Management and Maintenance of Health
13.00	Neuro-sensory Development, Psychosocial, Behavioral States, Follow-up and Discharge (23%)
	Neuro-sensory Environmental Experiences
	Pain/Stress Pathways and Impact on Behavioral and Physiological Parameters
	Interprofessional Collaboration, Family-Centered Care, Palliative and End-of-Life Care
14.00	Professional Issues (e.g. Evidence-Based Practice, Professional, Legal, Ethical, and Safety) (5%)

EXAMINATION CONTENT

ASSOCIATED COMPETENCIES

- Identify antepartum and intrapartum indicators of neurological risk and their implications to the fetus and neonate.
- Systematically assess neonatal neurological status utilizing clinical neurological assessment skills and diagnostic imaging to differentiate abnormal from normal.
- Understand and utilize bedside neuro-monitoring tools to identify alterations in cerebral function and perfusion and implement appropriate interventions.
- Apply knowledge of the pathophysiology of neurologic complications in the neonate including risk factors, presentation, and outcomes to implement diagnostic, therapeutic interventions and plan of care.
- Develop an individualized plan of care to prevent additional injuries, maintain and promote health for neonates with neurologic complications improve overall outcomes.
- Utilize knowledge of neurosensory development, pain and stress pathways and current clinical condition to implement evidence-based strategies to minimize adverse outcomes.
- Identify patient and family needs (e.g. psychosocial behavioral states, social determinants of health) and collaborate with family and interprofessional team for discharge planning/follow-up needs.
- Identify professional, legal, and ethical issues that present when caring for neonates with neurologic complications.

STUDY GUIDE

NEUROLOGIC DEVELOPMENT AND EVALUATION OF THE FETUS AND NEWBORN

I. Normal CNS Development

- Fetal CNS and sensory development
 - Neural tube
 - Prosencephalic
 - Synaptogenesis
 - Organization
 - Proliferation, migration, myelination
 - Pruning
 - Apoptosis
 - Overproduction of neurons
 - Neural plasticity

II. Antepartum and Intrapartum Neurologic Risk

Factors and Outcomes

- Maternal risk factors to fetal CNS development
 - Genetic predisposition
 - Maternal health
 - Placental health
 - Toxin exposure
 - Infection
- Neurologic risks to the fetus and neonate during labor and delivery, stabilization, resuscitation and transition
 - Perinatal emergencies
 - Delivery instrumentation
 - Preterm labor and delivery
 - Fetal assessment
 - Nonstress test and stress test
 - Biophysical profile
 - Doppler measurements
 - Cord gas interpretation

III. Neurologic Assessment

- Comprehensive neurologic exam at all gestational ages
 - Cranial nerves- basic function and testing
 - Neonatal reflexes
 - Primitive
 - Deep tendon
 - Motor function and neuromuscular maturity (Gestational age assessment)
 - Tone
 - Posture
 - Strength
 - Activity
 - Level of consciousness
- Head examination and development (visual, palpation)
 - Positional molding
 - Cephalohematoma
 - Caput
- Impact of pharmacological agents on the neonatal neurologic exam
 - Benzodiazepines
 - Opioids
 - Maternal drugs
 - SSRI
 - Magnesium sulfate
 - Anesthesia
- Abnormal findings
 - Dysmorphic features
 - Hair tufts
 - Dimples
 - Birth marks
 - Congenital anomalies

STUDY GUIDE

DIAGNOSTIC TOOLS

I. Neurologic Monitoring and Evaluation

- Cerebral monitoring
 - EEG/aEEG/NIRS
 - Classification
 - Background patterns
 - Artifact
 - Clinical use
 - Indications and limitations
 - Voltage
 - Continuity
- Clinical indications and significance of normal and abnormal findings of EEG/aEEG
 - Background patterns
 - Seizures
 - Impedance
- Patient care needs during neurologic monitoring
 - Skin assessment and protection

II. Neurologic Imaging and Evaluation

- Neurologic Imaging
 - MRI
 - Sequences (Myelinated and Unmyelinated)
 - Diffusion weighted
- Clinical indications of neuro imaging (MRI, Cranial Ultrasounds, CT scan)
- Identification of anatomical structures and recognition of significant neuro-imaging findings
 - Intraventricular hemorrhage
 - Periventricular leukomalacia
 - Hypoxic ischemic encephalopathy
 - Post-hemorrhagic hydrocephalus
 - Stroke
 - Intracranial hemorrhage
 - Subdural
 - Subgaleal
 - Congenital brain malformations
- Patient care needs during neurological imaging
 - Thermoregulation
 - Comfort measures
 - Off unit transport

STUDY GUIDE

PATHOPHYSIOLOGIC STATES AND NEUROPROTECTION

I. Neurologic Pathophysiology

For all injuries: incidence, etiology, clinical presentation, complications, diagnostics, lab studies, treatments, management

- CNS Malformations
 - Anatomical
 - Chiari
 - Vascular
 - Genetic
 - Horner Syndrome
 - Congenital Hypoventilation syndrome
 - Congenital hydrocephalus
 - Neural tube defects
 - Anencephaly
 - Myelomeningocele
 - Spina bifida occulta
 - Encephalocele
 - Holoprosencephaly
 - Agenesis of the corpus callosum
 - Septo-optic dysplasia
 - Micro/Macrocephaly
 - Schizencephaly/lissencephaly
 - Dandy-Walker malformation
 - Cerebellar hyper/hypoplasia
- Intracranial, intraventricular, cerebellar hemorrhages and periventricular leukomalacia
 - Subdural
 - Subarachnoid
 - Intraventricular hemorrhage
 - Grading
 - Complications
 - Post hemorrhagic hydrocephalus
 - Ventricular reservoir
 - Shunts
 - Periventricular hemorrhagic infarction
 - Cerebellar hemorrhage
 - Periventricular leukomalacia
- Perinatal Asphyxia and hypoxic ischemic encephalopathy
 - Overview
 - Hypoxia, hypoxemia, anoxia
 - Asphyxia and ischemia
 - Neonatal encephalopathy
 - HIE
 - Phases of injury
 - Classifications
 - Biochemical findings
 - Diagnostic and imaging findings
 - Therapeutic hypothermia
 - Contraindications
 - Timing
 - Considerations
 - Complications
 - Medications/ comfort measures
- Encephalopathies
 - Bilirubin
 - Glucose
 - Hypoglycemia
 - Inborn errors of metabolism
 - Metabolic screening
- Seizures
 - Classification
 - Electrographic
 - Electroclinical
 - Focal or generalized
 - Types/causes
 - Management/Treatments
 - Assessment and evaluation
 - Antiepileptics
 - Electrolyte considerations
- Neonatal stroke
 - Perinatal ischemic stroke classifications
 - Arterial (Prenatal/Fetal, Neonatal)
 - Venous stroke
 - Periventricular venous infarct
 - Cerebral sinovenous thrombosis
 - Neonatal hemorrhagic stroke
- CNS infections
 - Common pathogens
 - Bacterial (early and late onset)
 - Fungal
 - Viral

STUDY GUIDE

PATHOPHYSIOLOGIC STATES AND NEUROPROTECTION (CONTINUED)

- Degenerative Disorders
 - Gray matter
 - Tay-sachs disease
 - Menkes disease
 - White matter
 - Krabbe disease
 - Canavan disease
 - Alexander disease
 - Mixed
 - Peroxisomal
 - Mitochondrial
 - Zellweger spectrum disorder
- Neuromuscular disorders
 - Components of the motor system
 - Level above the lower motor neuron
 - Lower motor neuron
 - Genetic spinal muscular atrophies
 - Peripheral nerve
 - Neuromuscular junction
 - Myasthenic syndromes
 - Muscle (Myopathies)
- Injuries at birth
 - Subgaleal
 - Caput succedaneum
 - Cephalohematoma
 - Skull fractures
 - Linear
 - Depressed
 - Peripheral nerve injury
 - Brachial plexus
 - Phrenic/diaphragmatic
 - Facial paralysis
- Postnatal Trauma
 - Falls
 - Shaken baby
 - SUID/SIDs
- Drug exposure
 - Neonatal opioid withdrawal syndrome (NOWS)/
Neonatal Abstinence Syndrome (NAS)
 - Iatrogenic
 - Eat, sleep, console
 - Non-pharmacologic and pharmacologic management
 - Safe discharge

II. Neuroprotection, Management, and Maintenance of Health

- Eligibility, contraindications, and interventions to initiate therapeutic hypothermia, maintaining treatment and rewarming
 - Perinatal risk factors
 - Fluid requirements
 - Electrolyte monitoring
 - Nutrition
 - Comfort measures
 - Complications
- Recognition and management of apnea
 - Prematurity
 - Central
 - Obstructive
 - Mixed
- Interventions to prevent or minimize brain injury
 - Positioning (neutral head positioning)
 - Delayed cord clamping
- Maternal and neonatal pharmacological agents
 - Corticosteroids
 - Magnesium sulfate
 - Caffeine
 - Maternal antibiotics
- Hemodynamic stability
 - Blood pressure
 - Vital signs
- Thermoregulation
 - Temperature instability
 - Consequences of hypo/hyperthermia
- Optimize ventilatory strategies

STUDY GUIDE

NEURO-SENSORY DEVELOPMENT, PSYCHOSOCIAL BEHAVIORAL STATES, FOLLOW-UP AND DISCHARGE

I. Neurosensory Environmental Experiences

- Auditory, Visual, Vestibular, Olfactory, Tactile
- Therapeutic positioning
 - Neutral body alignment
 - Appropriate containment
 - Swaddle
 - Skin-to-skin
 - Facilitated hold
- Protected sleep
 - Environment of care (clustered care times, cycled lighting, reducing noxious stimuli, language nutrition)
 - Maturation of sleep cycles
 - Negative effects of sleep deprivation

II. Pain and Stress pathways and the impact on behavioral and physiologic parameters

- Neurobehavioral development
 - Habituation
 - Motor organization
 - State organization
- Pain assessment
 - Special considerations
 - neurologically compromised neonate
 - sedated/paralyzed
- Neonatal pain management
 - Non-pharmacologic
 - Pharmacologic
- Stress response
 - Hormones and neurotransmitters
 - HPA axis
 - Stress cues
 - Toxic stress
- Trauma informed care
- Long term outcomes related to pain and stress

III. Interprofessional Collaboration, Family-Centered Care, Palliative and End-of-Life Care

- Family centered and integrated care
 - Parental-neonatal attachment
 - Stress and separation
 - Participation in decision making and daily caregiving
 - Culturally and spiritually sensitive care
- Discharge preparation/process
 - Developmental follow up
 - Specialty follow up
 - Hearing screening
 - Family support
 - Teaching
 - SIDS prevention
 - Motor, cognitive and language delays
- End-of-life care/ palliative care/ grieving process
 - Non-initiation
 - Comfort care
 - Redirection of care
 - Compassionate Care
 - Palliative sedation
 - Declaring brain death
- Palliative care
 - Enhance quality of life (infant and family)
 - Family and staff support
- Grief

STUDY GUIDE

PROFESSIONAL ISSUES

(E.G. EVIDENCE-BASED PRACTICE, PROFESSIONAL, LEGAL, ETHICAL AND SAFETY)

- Evidence-based research
 - Risks and outcomes
 - Benchmarking
 - QI/process improvement
 - Best practice guidelines and bundles
 - Translocation science
- Professional practice
 - Communication
 - Teamwork
 - Continuity of care
 - Patient safety
 - Education and training
 - Compassion fatigue
 - Self-care
 - Simulation
 - Cultural care
- Ethical and legal issues that impact the neurologically impaired neonate

STUDY RESOURCES

- Bissinger, et al. Golden Hours, 2nd ed., NCC, 2019.
- Bissinger, et al. Handbook of Neonatal Neurology, NCC, 2024.
- Blackburn, Maternal, Fetal, & Neonatal Physiology, Elsevier, 2018
- Fanaroff, et al., Klaus & Fanaroff's Care of the High-Risk Neonate, Elsevier-Saunders, 2019.
- Gardner, et al., Handbook of Handbook of Neonatal Intensive Care: An Interprofessional Approach, Elsevier, 2021.
- Gleason, et al., Avery's Diseases of the Newborn, Elsevier, 2023.
- Goldsmith, et al., Assisted Ventilation of the Neonate: An Evidence-Based Approach to Newborn Respiratory Care, Elsevier, 2022.
- Kimberlin, et al., Red Book 2024: Report of the Committee on Infectious Diseases, AAP, 2024.
- Martin, et al. Fanaroff and Martin's Neonatal-Perinatal Medicine: Diseases of the Fetus and Infant, Elsevier, 2024
- Polit, et al., Essentials of Nursing Research: Appraising Evidence for Nursing Practice, LWW, 2021.
- Lockwood, et al., Creasy & Resnik's Maternal Fetal Medicine Principles and Practice, Elsevier, 2022.
- Stark, et al., Cloherty and Stark's Manual of Neonatal Care 9th ed., Wolters Kluwer, 2022.
- Taketomo, Pediatric and Neonatal Dosage Handbook, 30th ed, Wolters Kluwer, 2023.
- Verklan, et al., Core Curriculum for Neonatal Intensive Care Nursing, Elsevier, 2021.
- Volpe, et. al., Neurology of the Newborn, Elsevier, 20258.
- Walsh, et al., Neonatal and Pediatric Respiratory Care, Elsevier, 2023.
- Witt, CL., Wallman, C., Tappero and Honeyfield's Physical Assessment of the Newborn, Springer, 2024.

SAMPLE QUESTIONS

NEONATAL NEURO-INTENSIVE CARE

SAMPLE QUESTIONS

Listed below are five sample questions to acquaint the candidate 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. A very low birth weight neonate is at increased risk for germinal matrix hemorrhage due to

- A. decreased cerebral arterial blood flow
- B. fragility of the germinal matrix
- C. increased blood-brain barrier

Answer: B

Bissinger, et al. Golden Hours, 2nd ed., NCC, 2019, p. 318

2. What is the preferred imaging technique for the routine follow-up of ventriculomegaly?

- A. computerized tomography
- B. magnetic resonance imaging
- C. ultrasound

Answer: C

Bissinger, et al. Handbook of Neonatal Neurology, NCC, 2024. p. 149

3. A neonate term neonate with hypoxic ischemic encephalopathy developed seizures at 24 hours of life. What is the first line agent for treatment?

- A. Diazepam
- B. Phenobarbital
- C. Phenytoin

Answer: B

Volpe, et. al., Neurology of the Newborn, Elsevier, 2025. P. 427

4. A term neonate with prenatal history of polyhydramnios has no suck and no gag after a routine vaginal delivery. What cranial nerves should be evaluated?

- A. III
- B. VII
- C. IX

Answer: C

Verklan, et al., Core Curriculum for Neonatal Intensive Care Nursing, Saunders Elsevier, 2021, p. 633

5. A 10-day-old 28-week-gestaional-age neonate has had repeated heel sticks for labs, and now demonstrates pain behavior when the heel is being touched gently by the mother. The explanation for this response is

- A. conditioning
- B. habituation
- C. hyperalgesia

Answer: C

Gardner, et al., Handbook of Neonatal Intensive Care: An Interprofessional Approach, Elsevier, 2021, p. 277.

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.

HAND SCORING YOUR EXAMINATION

If you believe there might be a discrepancy in your test results, you may request a hand score for a fee of \$55. *There are no refunds for hand scores.*

You must make this request via the NCC website within 60 days of receiving the pass/fail report by selecting that option from your NCC profile at [NCCwebsite.org](https://www.nccwebsite.org) or go to the certification tab <https://www.nccwebsite.org/certification-exams>, scroll down to "Other helpful information" and click "Exam hand score request" to submit your request.

SCORING & TEST REPORT

SAMPLE TEST REPORT

Candidates will receive an official test results report from NCC. It will be located in your NCC account. Shown below is a sample test result report for a candidate who has passed the examination.

NEONATAL NEURO-INTENSIVE CARE EXAMINATION

Test Results

NAME

DATE:

ADDRESS

Pass/Fail:

PASS

Maintenance Due Date:

Your credential is designated as: C-NNIC (Certified - Neonatal Neuro-Intensive Care)

EXAM CONTENT REPORT

Overall pass/fail decisions are based on your overall exam performance. A candidate must obtain a score equal to or higher than the “passing score” to pass the exam. A candidate’s performance on the examination is not compared to the performance of others taking the examination.

In addition, the test report provides you with 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 items within a given subtest and 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. Word descriptors for scoring are set using these ability levels and utilize equal intervals of scale above and below the pass point to provide additional feedback. See the Important Facts and Information on Test Results and Scores page for more detail. 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.

Content Area (Percentage of Questions on Exam)	Your Results:
Neurologic Development and Evaluation of the Fetus and Newborn (21%)	VERY STRONG
Diagnostic Tools, and Professional Issues (22%)	WEAK
Pathologic States and Neuroprotection (34%)	AVERAGE
Neuro-sensory Development, Psychosocial, Behavioral States, Follow-up and Discharge (23%)	AVERAGE

TERMS OF CERTIFICATION AND CERTIFICATION MAINTENANCE

AFTER PASSING THE EXAM

CREDENTIAL

Successfully completing the Neonatal Neuro-Intensive Care exam entitles you to use the credential C- NNIC (Certified – Neonatal Neuro-Intensive Care).

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 score report letter that shows a passed examination.

MAINTENANCE AUDITS

Certificants must maintain the conference/CE description and/or objectives, along with the CE certificate which are required to be uploaded if chosen for random audit. Pre-approval of CE does not exempt a certificant from random audit.

**NO CONTINUING
EDUCATION IS ISSUED FOR
TAKING THE
NEONATAL NEURO-
INTENSIVE CARE EXAM.**

MAINTAINING CERTIFICATION

- NCC certification must be maintained every three years.
- Certification that is not maintained will lapse.
- The NCC certification maintenance program allows you to continue your certification status by obtaining 15 hours of continuing education credit
- For continuing education credit to be used for certification maintenance it must be earned between the date of your notification of certification and the date your maintenance is due.
- The maintenance process includes submitting a maintenance application prior to the maintenance due date with appropriate fees and requested documentation. All CE must be in Neonatal Neuro-Intensive Care. Using NCC CE modules does NOT automatically maintain your certification. Individuals must submit a maintenance application and pay a maintenance fee in addition to any CE fees.
- Maintenance applications are subject to random audit. If an individual is chosen for audit, they will be required to upload CE certificates and course descriptions. These records should be maintained during each maintenance cycle, until the maintenance application has been approved. Individuals can upload these documents in their maintenance application throughout their maintenance cycle. *Documents from NCC modules are already on file with NCC and therefore are not requested or audited.*
- The maintenance due date is the last day the certification is active. ***NCC Certified professionals do not need to wait until their maintenance deadline to apply.*** As long as they have obtained the required contact hours of continuing education credit - maintenance applications can be submitted up to 12 months before this date to avoid a lapsed certification while the maintenance application is in review. Maintenance will be due in the quarter in which they were notified of their certification (*not the date on which they took the examination*). Maintenance due dates can be found by signing into the certified professional's NCC account. Sign into the account using the associated email and password.

The NCC website has more detailed information

For more information about the certification maintenance program, click the purple "Maintain your Certification" box.