2013
120th National Certification Examination (NCE)
Candidate Handbook

NBCRNA
National Board of Certification
& Recertification for Nurse Anesthetists
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This publication contains information about the National Certification Examination (NCE) administered by the NBCRNA. Please keep it available for reference. Candidates are responsible for knowing the contents of this handbook.

All correspondence and requests for information concerning the National Certification Examination (NCE) should be sent by email to certification@nbcrna.com.

The NBCRNA does not discriminate on the basis of race, color, religion, marital status, age, gender, ancestry, physical or mental disability, medical condition or sexual orientation.

NBCRNA credentialing programs are accredited by the following organizations:
Introduction

The National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA) is a not-for-profit corporation organized under the laws of the state of Illinois. It consists of two councils — the Council on Certification of Nurse Anesthetists (CCNA) and the Council on Recertification of Nurse Anesthetists (COR). NBCRNA credentialing provides assurances to the public that certified individuals have met objective, predetermined qualifications for providing nurse anesthesia services. While state licensure provides the legal credential for the practice of professional nursing, private voluntary certification indicates compliance with the professional standards for practice in this clinical nursing specialty. The certification credential for nurse anesthetists has been institutionalized in many position descriptions as a practice requirement or as the standard for demonstrating equivalency. It has been recognized through malpractice litigation, state nurse practice acts, and state rules and regulations.

Vision

The vision of the NBCRNA is to be recognized as the leader in advance practice nurse credentialing.

Mission

The mission of the NBCRNA is to promote patient safety through credentialing programs that support lifelong learning.

History

The certification program for nurse anesthetists was introduced by the American Association of Nurse Anesthetists (AANA) in 1945. It was initially administered by the Credentials Committee of the AANA. In 1975, the AANA approved the establishment of councils for the accreditation and certification processes, and the CCNA assumed the responsibility for the National Certification Examination (NCE). By this action, the profession recognized that credentialing mechanisms, which include examination and certification, function to protect and benefit the public. It is accepted that the profession, with broad input from the community of interest, has the expertise to set standards. In 2007, the CCNA and the COR became independent of the AANA, and together they incorporated as the NBCRNA.

Purpose

The NBCRNA is the organization charged with protecting and serving the public by assuring that individuals who are credentialed have met predetermined qualifications or standards for providing nurse anesthesia services. As such, it is responsible for the following:

1. Formulating and adopting requirements for eligibility for admission to the NCE and for certification of registered nurse anesthetists;
2. Formulating, adopting and administering the NCE to registered nurse anesthetists who have met all requirements for examination and have been found eligible by the NBCRNA;
3. Evaluating candidates' performance on the NCE; and
4. Granting initial certification to candidates who pass the NCE and fulfill all other requirements for certification.

Structure

The NBCRNA Board of Directors is composed of certified registered nurse anesthetists who are actively engaged in clinical practice or in teaching or administration of a nurse anesthesia educational program, a board-certified surgeon and an anesthesiologist who have a current working relationship with nurse anesthetists, and a representative of the public at large.
NCCA Accreditation

The credentialing programs of the NBCRNA are accredited through April 2017 by the National Commission for Certifying Agencies (NCCA), a private not-for-profit organization. The NCCA is the accrediting branch of the Institute for Credentialing Excellence (ICE), which is the national standard-setting organization for credentialing groups including certification boards, licensing boards and associations. The NBCRNA (and before it, the CCNA) has been continuously accredited by the NCCA since 1980.

NCCA accreditation means that NBCRNA credentialing programs meet the highest national voluntary standards for private certification. It indicates that the programs have been reviewed by an impartial commission and deemed to have met the nationally accepted criteria and guidelines of the NCCA.

ABSNC Accreditation

The credentialing programs of the NBCRNA are accredited through July 2017 by the Accreditation Board for Specialty Nursing Certification (ABSNC) of the American Board of Nursing Specialties (ABNS). The NBCRNA (and before it, the CCNA) was one of the first national credentialing organizations to be recognized and accredited by the ABSNC.

The ABNS, established in 1991, is the national peer review program for specialty nursing credentialing organizations. ABNS serves as the national umbrella organization for nursing specialty certification boards authorized and recognized to certify nurse specialists in the United States. It promotes the highest quality of specialty nursing practice through the establishment of standards of professional specialty nursing certification.

General Information

Eligibility Requirements for the NCE

In order for registered nurse anesthetists to be eligible to apply to take the NCE and to receive a certification eligibility notification, a candidate must:

1. Comply with all state requirements for current and unrestricted licensure as a registered professional nurse in all states in which he or she currently holds an active license;

2. Complete a nurse anesthesia educational program accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) (“accredited program”) within the previous 2 calendar years;

3. Submit:
   a. A complete and accurate examination application form electronically signed by the candidate, including the NBCRNA waiver of liability and agreement of authorization, confidentiality and nondisclosure statements.
   b. An electronically prepared transcript of the candidate’s record of performance in an accredited program, on an official transcript form prescribed by the NBCRNA, which is permanently retained by the NBCRNA. The transcript must:
      (1) be submitted directly by the program administrator within 30 days of completion of the program. It must be scanned and attached to the candidate’s electronic application;
      (2) be signed by both the program administrator and the candidate;
      (3) accurately show that all the minimum requirements have been met, and that the candidate completed the accredited program including all the COA-specified competencies. If the candidate attended more than one nurse anesthesia educational program, only one transcript should be submitted, clearly showing the academic and clinical information from both programs.
If the transcript is submitted prior to completion of the program, a Program Completion Verification Form verifying that the candidate has in fact completed the program must be signed and submitted by the candidate’s program administrator after the nurse anesthesia educational program has been completed. Certification eligibility notifications will not be sent until the Program Completion Verification Form is received in the NBCRNA office.

c. Information regarding the candidate’s current and unrestricted license to practice as a registered professional nurse (RN license number, issuing state and expiration date) in all states in which he or she currently holds an active license. At least one license must be current on the candidate's requested examination date.

NOTE: If the nursing license expires between the date the candidate officially completes the nurse anesthesia educational program and the date the NCE is taken, the candidate will be found eligible, provided all of the other requirements for eligibility have been met. However, official NCE results will NOT be released until the NBCRNA has received a copy of the nursing license that was current on the date of the NCE, or a written statement from the state nursing board attesting to the candidate’s valid licensure on that date.

d. An Authentication of Candidate Identity Form signed by the program administrator, including a color passport photo or color digital photo of the candidate taken within the previous 6 months

4. Make the following eligibility certifications:

   a. that his or her license has never been revoked, restricted, suspended or limited by any state; has never been surrendered; and is not the subject of a pending action or investigation;

   b. that he or she does not currently suffer from a mental or physical condition that might interfere with the practice of nurse anesthesia;

   c. that he or she does not currently suffer from drug or alcohol addiction or abuse;

   d. that he or she is not currently participating in a drug-related, alcohol-related or other type of treatment, monitoring or rehabilitation program, including any voluntary programs even if disclosure is not required by the state;

   e. that he or she has not been convicted of and is not currently under indictment for any felony;

   f. that, except for incidents occurring during the nurse anesthesia educational program which were thereafter satisfactorily resolved, he or she has not been the subject of any documented allegations of misconduct, incompetent practice or unethical behavior; and

   g. that he or she has never been the subject of disciplinary action, placed on probation, suspended, or dismissed from a nurse anesthesia educational program for unethical behavior, questions of academic integrity or documented evidence of cheating.

   If the candidate does not so certify, he or she must provide full documentation of the reasons therefore with sufficient specificity to allow the NBCRNA to evaluate the possible impact of the problem on the candidate’s current ability to take the NCE or practice nurse anesthesia, and to resolve the issue to the NBCRNA’s satisfaction; and

5. Sign the waiver of liability and agreement of authorization, confidentiality and nondisclosure statements clarifying that the individual has read, understands and intends to be legally bound by those statements. These statements include, but are not limited to:
a. understanding that he or she can be disqualified from taking or continuing to sit for an examination, or from receiving examination scores, if the National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA) determines, through proctor observation, statistical analysis or any other means, that he or she was engaged in collaborative, disruptive, or other irregular behavior before, during the administration of, or following the examination.

b. understanding that the content of the NCE, and each individual NCE item, is the property of the NBCRNA, is copyrighted and is strictly confidential information.

c. understanding that any retention, possession, copying, distribution, disclosure, discussion, or receipt of any examination question, in whole or in part, by written, electronic, oral or other form of communication, including but not limited to emailing, copying, or printing of electronic files, and reconstruction through memorization and/or dictation, before, during, or after an examination, is strictly prohibited. In addition to constituting irregular behavior subject to disciplinary action such as denial of eligibility or revocation of certification, such activities violate the NBCRNA's proprietary rights, including copyrights, and may subject the responsible individuals to legal action resulting in monetary damages.

d. acknowledging that he or she has not been the recipient of any NCE questions, nor has he or she been involved in any disclosure, distribution or discussion of any NCE questions, and after taking the NCE he or she will not disclose, distribute, or discuss any NCE question. Further, he or she will inform the NBCRNA if he or she is aware of anyone who discloses any NCE question(s) or asks him or her to disclose any NCE question(s).

Significance of Eligibility Status

A candidate who holds “certification eligible” status with the NBCRNA has successfully completed an accredited nurse anesthesia educational program and has been granted eligibility status to take the NCE by the NBCRNA. The candidate with certification eligible status has not passed the NCE required to be a certified registered nurse anesthetist, is not certified by the NBCRNA, and may not use the designation “CRNA” after his or her name.

Candidates should be aware of state laws governing nurse anesthesia practice prior to certification. It is recommended that the NCE be taken as soon after graduation as possible.

Ineligibility to Take the NCE

Candidates will be found ineligible to take the NCE for any one or more of the following reasons:

1. If the transcript does not show that the minimum academic and clinical requirements have been met and that the candidate has completed an accredited program;

2. If the transcript is not on an official transcript form prescribed by the NBCRNA, or is not completed accurately. The use of correction fluid, pencil corrections or erasures is prohibited;

3. If, in the determination by the NBCRNA, the candidate is guilty of cheating on the NCE;

4. Failure to make the required eligibility certifications and to provide sufficient documentation to resolve the issue to the satisfaction of the NBCRNA;

5. Failure to meet any of the other eligibility requirements, including failure to sign or accept the waiver of liability and agreement of authorization, confidentiality and nondisclosure statements; or

6. Failure to pass the NCE within 2 years following graduation from an accredited nurse anesthesia educational program.
Conditional Eligibility

1. Grant of Conditional Eligibility
Candidates who hold a restricted license to practice as a registered professional nurse or who are required to participate in a recovery program or other non-disciplinary monitoring program may, at the discretion of the NBCRNA, be granted conditional eligibility to take the NCE, provided that all other certification eligibility requirements have been fulfilled.

Examples of conditions include requirements for supervision and requirements that a candidate remain in a drug or alcohol abuse or recovery program for a specified period of time.

2. Conditional Eligibility Period
Conditional eligibility shall remain in effect for the eligibility period described below, as long as the candidate complies with all terms of the conditions on his or her license. It shall be revoked for failure to comply.

Expiration of Eligibility Status
Eligibility to sit for the NCE lasts for a period of 90 days, or until the candidate takes the NCE, whichever occurs first. Eligibility will expire 90 days from the date of issue of the certification eligibility notification or on the date that the candidate takes the NCE.

If a candidate does not take the NCE within the 90-day eligibility period, or takes and fails the NCE, he or she will be required to reapply for admission to the NCE and resubmit the full $725 application fee.

Revocation of Eligibility Status
The NBCRNA will automatically revoke a candidate’s eligibility to take the NCE in the following circumstances:

1. Failure by the candidate to maintain current and unrestricted licensure as a registered professional nurse in at least one state;
2. Withdrawal by a school official of his or her affirmation signature from the candidate’s official transcript;
3. Failure by the candidate to complete an accredited nurse anesthesia educational program;
4. Adjudication by a court that the candidate is mentally incompetent;
5. Conviction of or pleading no contest to a felony that is, in the view of the NBCRNA, related to the practice of nursing or nurse anesthesia; or
6. Failure by the candidate to successfully pass the NCE within 2 years after graduation.

The NBCRNA may, at its discretion, deny, revoke or suspend a candidate’s eligibility to take the NCE for any of the following reasons:

1. Circumstances change so as to render one of the eligibility certifications made by the candidate invalid;
2. Falsification of the NCE application, intentional misstatement of material fact or deliberate failure to provide relevant information on the examination application or to the NBCRNA at any time, or assisting another person to do any of the above;
3. Failure by the candidate to maintain current and unrestricted licensure as a registered professional nurse in every state of practice;
4. Cheating or assisting another person to cheat on the NCE, or otherwise engaging in dishonest or other improper behavior at any time in connection with the NCE;
5. Documented evidence of gross incompetence, unethical conduct or moral turpitude which, in the opinion of the NBCRNA, represents a significant threat to patient well-being;

6. Conviction of or pleading no contest to a felony; or

7. Documented evidence of retention, possession, copying, distribution, disclosure, discussion, or receipt of any NCE question, in whole or in part, by written, electronic, oral or other form of communication, including but not limited to emailing, copying or printing of electronic files, and reconstruction through memorization and/or dictation, before, during or after the NCE.

### Requirements for Certification

The NBCRNA has established the following requirements for certification. The candidate must:

1. Fulfill all eligibility requirements for admission to the NCE; and
2. Pass the NCE.

### Denial of Certification

The NBCRNA will automatically deny a candidate’s certification for any of the following reasons:

1. Failure by the candidate to maintain current and unrestricted licensure as a registered professional nurse in at least one state;
2. Failure by the candidate to pass the NCE;
3. Adjudication by a court that the candidate is mentally incompetent; or
4. Conviction of or pleading no contest to a felony that is, in the view of the NBCRNA, related to the practice of nursing or nurse anesthesia.

The NBCRNA may, at its discretion, deny a candidate’s certification for any of the following reasons:

1. Circumstances change so as to render one of the eligibility certifications made by the candidate invalid;
2. Falsification of the NCE application, intentional misstatement of material fact or deliberate failure to provide relevant information on the examination application or to the NBCRNA at any time, or assisting another person to do any of the above;
3. Failure by the candidate to maintain current and unrestricted licensure as a registered professional nurse in every state of practice;
4. Cheating or assisting another person to cheat on the NCE, or otherwise engaging in dishonest or other improper behavior at any time in connection with the NCE;
5. Conviction or pleading no contest to a felony;
6. Documented evidence of retention, possession, copying, distribution, disclosure, discussion or receipt of any examination question, in whole or in part, by written, electronic, oral or other form of communication, including but not limited to emailing, copying or printing of electronic files, and reconstruction through memorization and/or dictation, before, during or after the NCE; or
7. Documented evidence of gross incompetence, unethical conduct or moral turpitude which, in the opinion of the NBCRNA, represents a significant threat to patient well-being.
Conditional Certification

1. Grant of Conditional Certification

Nurse anesthetists who have a restricted license to practice as a registered professional nurse and, where applicable, as a nurse anesthetist, or who are required to participate in a recovery program or other non-disciplinary monitoring program, may be granted conditional certification, provided that all other certification requirements have been fulfilled. The conditional certification will reflect any conditions imposed by the appropriate state licensure authority.

Examples of conditions include requirements for supervision and requirements that the anesthetist remain in a drug or alcohol abuse or recovery program for a stated period of time. The conditional certification card and certificate shall state that certification is conditioned on the anesthetist's compliance with the terms of his or her license conditions.

2. Conditional Certification Period

Conditional certification shall remain in effect as long as the anesthetist complies with all terms of the conditions on his or her license. It shall be revoked for failure to comply. The anesthetist shall be responsible for providing the NBCRNA with adequate documentation that he or she has complied with all licensure conditions for the requisite period of time. A request to change conditional certification to full certification must be accompanied by written documentation sufficient to demonstrate to the NBCRNA that all conditions have been removed.

Recognition of Certification by the NBCRNA

Each nurse anesthetist who passes the NCE and fulfills the requirements for certification by the NBCRNA may use “CRNA” after his or her name. The term stands for Certified Registered Nurse Anesthetist. CRNA is not punctuated with periods.

A newly certified registered nurse anesthetist receives an initial certification card and a wall certificate with his or her official notification of certification by the NBCRNA.

A list of all registered nurse anesthetists who are newly certified by the NBCRNA is posted monthly on the NBCRNA website.

Revocation of Certification

The NBCRNA will automatically revoke an anesthetist's certification for any of the following reasons:

1. Failure by the anesthetist to maintain current and unrestricted licensure as a registered professional nurse in at least one state;
2. Adjudication by a court that the anesthetist is mentally incompetent; or
3. Conviction of or pleading no contest to a felony that is, in the view of the NBCRNA, related to the practice of nursing or nurse anesthesia.

The NBCRNA may, at its discretion, after due and thorough deliberation, revoke an anesthetist's certification for any of the following reasons:

1. Circumstances change so as to render one of the eligibility certifications made by the anesthetist invalid;
2. Falsification of the NCE application, intentional misstatement of material fact or deliberate failure to provide relevant information on the examination application or to the NBCRNA at any time, or assisting another person to do any of the above;
3. Failure by the anesthetist to maintain current and unrestricted licensure as a registered professional nurse and, where applicable, authorization to practice nurse anesthesia, in all states in which the candidate practices. Anesthetists employed by the United States government must maintain licensure in one state or territory of the United States;

4. Cheating or assisting another person to cheat on the NCE, or otherwise engaging in dishonest or other improper behavior at any time in connection with any NCE;

5. Conviction of or pleading no contest to a felony;

6. Documented evidence of retention, possession, copying, distribution, disclosure, discussion or receipt of any NCE question, in whole or in part, by written, electronic, oral or other form of communication, including but not limited to emailing, copying or printing of electronic files, and reconstruction through memorization and/or dictation, before, during or after the NCE; or

7. Documented evidence of gross incompetence, unethical conduct or moral turpitude which, in the opinion of the NBCRNA, represents a significant threat to patient well-being.

Review and Appeal Process

1. Discipline and Appeals

Certified registered nurse anesthetists may be subject to disciplinary review based on irregular behavior, fraudulent credentials, or legal, regulatory or credentialing actions. Review and appeal of disciplinary actions may be available pursuant to NBCRNA Policies and Procedures for Discipline and Appeals, which can be accessed on the NBCRNA website, www.NBCRNA.com, or requested from the NBCRNA.

2. Review and Appeal Process for Adverse Decisions

Adverse decisions by the NBCRNA may be subject to review and appeal pursuant to the NBCRNA Policies and Procedures for Discipline and Appeals, which can be accessed on the NBCRNA website, www.NBCRNA.com, or requested from the NBCRNA.

Recertification

Graduates of nurse anesthesia educational programs accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs who achieve a passing score on the NCE are granted initial certification by the NBCRNA. A newly certified registered nurse anesthetist is eligible to apply for recertification within the required time frame after initial certification. Nurse anesthetists who apply for recertification must meet the requirements for recertification as specified in the NBCRNA Criteria for Recertification which is available on the Recertification page of the NBCRNA website.

Examination Information

Purpose of the NCE

The NBCRNA administers the NCE to measure the knowledge, skills and abilities necessary for entry-level nurse anesthesia practitioners.

Description of the Examination

The NCE for registered nurse anesthetists is a variable-length computerized adaptive test. The examination is for entry into nurse anesthesia practice. Each candidate will take a minimum of 100 test questions — 70 questions representing the NCE content outline and 30 random, non-graded pretest questions. The maximum number of questions is 170 questions, which includes the 30 random, non-graded pretest questions. A maximum of three hours is allowed for the test period.
In 2009, in addition to multiple-choice question formats (consisting of a stem and four response options), the NCE began featuring alternative question formats, which consist of the following:

**Multiple Correct Response (MCR):** This question format is similar to a multiple-choice (MC) question. However, MCR questions consist of a stem and four to eight response options, and a correct response consists of more than just one option. The examinee must select all of the correct response options in order to be awarded credit. The question stem will indicate how many response options are correct.

**Calculation:** Examinees are asked to respond by typing in a numerical response, typically a whole number (no decimals) or a number consisting of 1 or 2 decimal places. It is very important that the response to calculation questions be entered in the form of a number (e.g., 2 or 2.11), and NOT the word form of a number (e.g., “two” or “two point one-one”).

Example: What is 2+2?
Correct: 4
Incorrect: Four

A calculator application will be available for calculation items that may be computationally complex.

**Drag and Drop:** These questions involve clicking and dragging objects to corresponding targets, and may take the form of matching or placing objects in order.

**Hotspot:** Examinees indicate their answer by using their mouse to click on a region of a presented image or figure. When a region is selected, an “X” appears on the selected region. Examinees can change their answer (before moving to the next question) simply by clicking on another region in the image.

**Graphics/Video:** Any of the question formats described above may be augmented with multimedia as stimuli for the question.

The questions are presented one at a time on a computer screen. Each question may be viewed as long as the candidate wishes, but the candidate cannot go back to previous questions once an answer choice has been recorded; nor can the candidate leave a question unanswered.

An important principle of test construction is that only questions that demonstrate acceptable performance are used to compute examinee scores. Questions that have never been used before have unknown performance characteristics, and it would be unfair to use such questions in computing examinee scores. Therefore, it is necessary to pretest these questions and evaluate their performance. There are 30 such questions on the NCE. They appear throughout the examination and are not necessarily the first 30 or last 30 questions. Those questions that survive the complex evaluation process are retained for use on future examinations. The pretest questions are not used to score the examination.

The NBCRNA Board of Directors appoints a representative group of certified registered nurse anesthetists to serve on the Certification Examination Subcommittee. This subcommittee meets annually to write and review test questions for the approved item bank and to update the item bank each year. Performance statistics for questions are continually monitored by the NBCRNA.

**Computerized Adaptive Testing**

The NCE is administered by computer using a methodology called computerized adaptive testing (CAT). CAT is a method of administering tests that uses current technology and is based on the psychometric framework of Item Response Theory (IRT). With CAT, each candidate’s test is individualized; it is assembled interactively as the candidate is taking the test. Test questions are stored in a large item bank and classified by content category and level of difficulty. After a candidate answers a question, the computer calculates an estimate of competence and chooses the next question of appropriate content and difficulty. This process is repeated for each question, thus creating an examination that both fulfills the test plan requirements and is tailored to each individual’s knowledge and skills.
Each test conforms to the content outline, which assures inclusion of test questions in all of the major content areas. All questions are chosen from the same item bank. The passing point is identical for all candidates, assuring that the difficulty level to pass the NCE is consistent for all candidates. All candidates have the opportunity to demonstrate their ability level, as the NCE will not end until a pass or fail decision is determined.

**Administration**

The NBCRNA contracts with Pearson VUE to administer the NCE at test centers located in major cities throughout the United States.

**Examination Content**

The NBCRNA maintains responsibility for the examination content outline and test specifications, maintains an item bank of approved test questions, and sets the passing score. In addition, the NBCRNA determines individual eligibility for admission to the NCE.

Content validity for the NCE has been documented through a professional practice analysis (PPA) initially performed by the CCNA in 1987 and subsequently every 4-5 years. The PPA ensures that the NCE reflects the knowledge of an entry-level nurse anesthesia practitioner. Content validation is provided by linkages between the PPA, knowledge and skill statements, and the test items. The job analysis is essential to the continued accreditation of the certification program and validation that the NCE is fair, job-related, and legally defensible.

The following outline, developed from responses to the 2011 PPA and a review by the NBCRNA, is provided to assist candidates in preparing for the NCE. The test content outline is only a guide that suggests topics and topical areas used to generate and categorize examination questions. It is not all-inclusive, as some elements apply to more than one area. This means that not only must candidates validate their knowledge of a subject, but they also must be able to integrate this knowledge across the spectrum of anesthesia practice. Candidates should be aware that anesthetics and anesthesia adjuncts are constantly evolving. It may be appropriate for the content to include older agents as a mechanism to compare and contrast with new agents. Drug dosing is, of course, an essential part of pharmacologic knowledge and application.

*The NBCRNA reserves the right to determine examination content, to classify examination questions and to determine the percentage of test questions from each topical area. The approximate percentages of questions in each major content area are provided in the Examination Content Online, which starts on the next page.*
Examination Content Outline

I. Basic Sciences (25%)

A. Anatomy, physiology and pathophysiology

1. Cardiovascular
   a. Dysrhythmias
   b. Ischemic heart disease/angina
   c. Myocardial infarction
   d. Hypertension
   e. Congestive heart failure
   f. Endocarditis
   g. Valvular heart disease
   h. Cardiomyopathy
   i. Peripheral vascular disease
   j. Congenital heart disease
   k. Pericardial diseases

2. Respiratory
   a. Bronchitis
   b. COPD/emphysema
   c. Asthma
   d. Pneumonia
   e. Tuberculosis
   f. Pulmonary embolism
   g. COR pulmonale
   h. Pulmonary hypertension
   i. Upper respiratory tract infection
   j. Acidosis
   k. Adult respiratory distress syndrome
   l. Epiglottitis
   m. Sleep apnea

3. Central nervous system
   a. Seizures
   b. CVA
   c. Hydrocephalus
   d. Parkinson’s
   e. Multiple sclerosis
   f. Myasthenia gravis
   g. Alzheimer’s/dementia
   h. Demyelinating disease
   i. Intracranial hypertension
   j. Intracranial tumor
   k. Intracranial aneurysm
   l. Autonomic hyperreflexia
   m. Neuropathy/myopathy
   n. Psychiatric disorders
   o. Cerebral palsy
   p. Spinal cord injury

4. Musculoskeletal
   a. Fractures
   b. Rheumatoid arthritis
   c. Lupus erythematosus
   d. Muscular dystrophy
   e. Scoliosis
   f. Malignant hyperthermia

5. Endocrine
   a. Diabetes mellitus
   b. Diabetes insipidus
   c. Hypo/hyperthyroidism
   d. Cushing’s disease
   e. Addison’s disease
   f. Pituitary dysfunction
   g. Parathyroid dysfunction
   h. Pheochromocytoma
   i. Acromegaly
   j. Hypo/hyperaldosteronism

6. Hepatic
   a. Hepatitis
   b. Cirrhosis
   c. Hepatic failure
   d. Porphyria

7. Renal
   a. Kidney stones
   b. Acute renal failure
   c. Chronic renal failure
   d. Uremia
   e. Nephritis

8. Hematologic
   a. Anemia
   b. Sickle cell/hemoglobinopathies
   c. Polycythemia
   d. Platelet disorders
   e. Hemophilia
   f. Von Willebrand’s disease
   g. Disseminated intravascular coagulation

9. Gastrointestinal
   a. Peptic ulcer disease
   b. Ulcerative colitis
   c. Diaphragmatic hernia
   d. Hiatal hernia
   e. Gastroesophageal reflux disorder (GERD)
   f. Gallstones/gall bladder disease
   g. Pancreatitis
   h. Carcinoid syndrome
   i. Pyloric stenosis
   j. Bowel obstruction

10. Immune
    a. Allergic responses and anaphylaxis
    b. AIDS/HIV
    c. Immunosuppression
    d. Latex allergy
    e. Sepsis
    f. Angioedema

11. Other conditions
    a. Abnormal lab tests
    b. Cancer
    c. Glaucoma
    d. Thermoregulation
    e. Trauma
    f. Shock
    g. Substance abuse (alcohol, tobacco, other)
    h. Airway difficulties
    i. Diagnostic data
       (1) Chest X-ray
       (2) Pulmonary function tests
       (3) Echocardiogram
       (4) Cardiac catheterization
       (5) CAT/MRI
       (6) Ultrasound
       (7) Electrocardiogram
       (8) Stress tests
    j. Burns

B. Pharmacology

1. General principles
   a. Pharmacodynamics
   b. Pharmacokinetics
   c. Anaphylaxis
   d. Drug interactions

2. Inhalation anesthetics
   a. Nitrous oxide
   b. Isoflurane
   c. Desflurane
   d. Sevoflurane

3. Intravenous agents
   a. Barbitalates
      (1) Thiopental
      (2) Methohexital
   b. Opioid agonists
      (1) Morphine
      (2) Fentanyl
      (3) Alfentanil
      (4) Sufentanil
      (5) Meperidine
      (6) Remifentanil
(7) Hydromorphone
  c. Opioid agonist-antagonists
     (1) Nalbuphine
     (2) Butorphanol
d. Benzodiazepines
     (1) Diazepam
     (2) Midazolam
     (3) Lorazepam
e. Other sedative/hypnotics
     (1) Propofol
     (2) Ketamine
     (3) Etomidate
f. Dexmedetomidine

4. Local anesthetics
   a. Procaine
   b. Chloroprocaine
   c. Tetracaine
d. Cocaine
e. Benzocaine
f. EMLA
g. Bupivacaine
h. Lidocaine
i. Mepivacaine
j. Ropivacaine

5. Muscle relaxants
   a. Succinylcholine
   b. Pancuronium
   c. Vecuronium
d. Atracurium
e. Rocuronium
f. Cisatracurium

6. Antagonists
   a. Edrophonium
   b. Neostigmine
c. Naloxone
d. Flumazenil
e. Pyridostigmine
f. Physostigmine

7. Neuraxial analgesics
   a. Opioids
   b. Clonidine

8. Anticholinergics/Cholinergic agonists

9. Nonsteroidal anti-inflammatory drugs

10. Miscellaneous oral analgesics
    a. Acetaminophen
    b. Codeine
c. Oxycodone
d. Hydrocodone
e. Tramadol

11. Sympathomimetics

12. Digitalis and related drugs
13. Alpha and beta receptor antagonists
14. Antihypertensives
    a. Sympatholytics
    b. Clonidine
c. ACE inhibitors
d. Angiotensin II receptor inhibitors
e. Nitrovasodilators
f. Nitric oxide
15. Antidysrhythmics
16. Calcium channel blockers
17. Bronchodilators
18. Psychopharmacologic therapy
    a. Selective serotonin reuptake inhibitors
    b. Tricyclic antidepressants
c. MAO inhibitors
d. Lithium
19. Prostaglandins
20. Histamine receptor antagonists
21. Serotonin antagonists
22. Insulin
23. Oral hypoglycemics
24. Diuretics
25. Antacids
26. Gastrointestinal prokinetic medications
27. Anticoagulants
    a. Heparin
    b. Heparin reversal — protamine
    c. Low molecular weight heparins
d. Oral anticoagulants
e. Oral anticoagulants reversal
f. Thrombolitics
g. Thrombin inhibitors
28. Antimicrobials
29. Chemotherapeutics
30. Antiepileptic drugs including gabapentin
31. Antiparkinsonian drugs
32. Drugs used to treat lipid disorders
33. Herbal remedies and dietary supplements
34. Minerals and electrolytes
35. Dantrolene
36. Corticosteroids
37. Tocolytics
38. Uterotonics

C. Applied chemistry, biochemistry, physics

1. Chemistry
   a. Aqueous solutions and concentrations
   b. Acids, bases and salts
2. Biochemistry
   a. Hepatic metabolism
   b. Cellular mechanisms for action
c. Drug receptor interaction
3. Physics
   a. Units of measurement
   b. Gases and gas laws
c. Solubility, diffusion and osmosis
d. Pressure and fluid flow
e. Electricity and electrical safety
f. Vaporization and humidification
g. Measurement of oxygen, carbon dioxide and hydrogen ion

II. Equipment, Instrumentation and Technology (15%)
10. Anesthetic circuits
   a. Rebreathing, circle system
   b. Non-rebreathing
   c. Modified non-rebreathing
11. Pneumatic and electronic alarm devices

B. Airway equipment
   1. Face masks
   2. Laryngoscope
      a. Rigid
      b. Flexible/fiberoptic
      c. Videoscope
   3. Endotracheal tube
   4. Endobronchial tube including double lumen tubes
   5. Airways
      a. Oral
      b. Nasal
   6. Tracheostomy tubes
   7. Laryngeal mask airway
   8. Intubating laryngeal mask airway
   9. Jet ventilation
10. Lighted stylet
11. Other
   a. Retrograde wire
   b. Eschmann catheter
   c. Combitube
   d. Cook exchange catheter

C. Monitoring devices
   1. Central nervous system
      a. Evoked potential
      b. Intracranial pressure
      c. Modified EEG monitor (BIS, PSArray)
      d. Cerebral oximetry
   2. Cardiovascular
      a. Electrocardiogram
      b. Arterial pressure monitoring
      c. Noninvasive blood pressure monitoring
      d. Central venous pressure monitoring
      e. Pulmonary artery pressure monitoring/SvO2
      f. Cardiac output
      g. Precordial/esophageal stethoscope/Doppler
   3. Pulmonary/airway monitoring
      a. Capnography
      b. Airway gas analysis
      c. Pulse oximetry
d. Airway pressure
   e. Blood gas analysis
   4. Peripheral nerve stimulator
   5. Urinary output monitoring
   6. Temperature monitoring
   7. Maternal/fetal monitoring
   8. Others
      a. Fluid/blood warmers
      b. Forced air warming blanket
      c. Heat and moisture exchanger (HME)
d. Blood salvage (cell saver)

III. Basic Principles of Anesthesia (30%)

A. Preoperative assessment and preparation of patient

B. Fluid/blood replacement
   1. Fluid therapy (crystalloids and colloids)
   2. Hemotherapy (blood component therapy)

C. Positioning (technique, physiologic alterations, complications)
   1. Prone
   2. Supine
   3. Lithotomy
   4. Lateral
   5. Sitting
   6. Beach chair
   7. Trendelenburg
   8. Reverse Trendelenburg

D. Interpretation of data
   1. Lab tests
   2. Diagnostic data
   3. Intraoperative monitoring data

E. Airway management, including difficult airway
   1. Mask
   2. Cricothyrotomy
   3. Fiberoptics
   4. Intubation
   5. Supralaryngeal management

F. Local/regional anesthetics (technique, physiologic alterations, complications)
   1. Infiltration
   2. Topical
   3. Regional blocks
      a. Subarachnoid block
      b. Epidural block
      c. Combined spinal/epidural
      d. Caudal block
      e. Brachial plexus block
      f. Airway blocks
      g. IV regional (Bier) block
      h. Retrolublar/peribulbar block
      i. Ankle block
      j. Digital block
      k. Wrist block
      l. Sciatic block
      m. Femoral block
      n. Popliteal block
   4. Ultrasound guided nerve block
   5. Nerve stimulator guided nerve block

G. Monitored anesthesia care/conscious sedation

H. Pain management
   1. Epidural analgesia
   2. Infiltration nerve blocks
   3. Intrathecal narcotics
   4. PCA management

I. Other techniques
   1. Hypotensive
   2. Hypothermia
J. Postanesthesia care/respiratory therapy

K. Pain theory (anatomy, physiology and pathophysiology)

IV. Advanced Principles of Anesthesia (30%)

A. Surgical procedures and procedures related to organ systems

1. Intra-abdominal
   a. Gall bladder
   b. Liver
   c. Pancreas
   d. Spleen
   e. Stomach
   f. Renal
   g. Diaphragm
   h. Intestine
   i. Herniorrhaphy
   j. Bladder
   k. Abdominal/gyn
   l. Prostatectomy
   m. Laparoscopy
   n. Bariatrics

2. Extrathoracic
   a. Breast biopsy
   b. Mastectomy
   c. Plastic and/or reconstructive

3. Extremities
   a. Lower
   b. Upper
   c. Total joint replacements
   d. Vein stripping

4. Genital and urologic
   a. Transurethral resection
   b. Cystoscopy
   c. Dilatation and curettage
   d. Hysterectomy
   e. Hysteroscopy
   f. Anal/rectal
   g. Penis/testes

5. Head
   a. Extracranial
      (1) Cranioplasty
      (2) Rhizotomy
      (3) Ear
      (4) Eye
      (5) Face
      (6) Nose
   b. Intracranial
      (1) Decompression (burr holes)
      (2) Space-occupying lesion
      (3) Vascular
      (4) Transsphenoidal hypophysectomy
      (5) Stereotactic procedures
   c. Oropharyngeal
      (1) Fractures
      (2) Reconstructive
      (3) Orthodontic/dental
      (4) Pharynx
      (5) Reconstructive and/or plastic surgery

6. Intrathoracic
   a. Diaphragm
   b. Esophagus
   c. Heart
   d. Lung
   e. Mediastinoscopy
   f. Thoracoscopy

7. Neck
   a. Cervical spine (anterior and posterior approach)
   b. Larynx/trachea
   c. Lymph node biopsies
   d. Parathyroid/thyroid
   e. Neck tumors
   f. Radical neck
   g. Rigid laryngoscopy
   h. Tracheotomy
   i. T&A

8. Neuroskeletal
   a. Laminectomy
   b. Fusions
   c. Spinal cord procedures
   d. Surgical sympathectomy
   e. Vertebroplasty

9. Vascular
   a. Carotid
   b. Thoracic
   c. Abdominal
   d. Upper extremity
   e. Lower extremity
   f. Porto-systemic shunts
   g. Renal artery
   h. Vena cava filter
   i. Endovascular procedures

10. Diagnostic/therapeutic
    a. Venous/arterial catheterization
    b. Cardioversion
    c. CAT scan
    d. MRI
    e. Electroconvulsive therapy
    f. Interventional radiology
    g. Electrophysiology
    h. Steroid therapy
    i. Radiation therapy
    j. Endoscopy
    k. Bronchoscopy
    l. Esophagoscopy/gastroscopy

11. Management of other complications
    a. Anesthetic
    b. Surgical

12. Other surgical procedures
    a. Trauma
    b. Burns
    c. Resuscitation
    d. Pacemakers
    e. Lithotripsy
    f. Organ transplants
    g. Organ harvest
       (1) Living donor
       (2) Cadaver
    h. Laser

B. Pediatrics

1. Anatomy, physiology and pathophysiology
   a. Normal
   b. Prematurity
   c. Congenital anomalies

2. Pharmacology

3. Anesthesia techniques/procedures

4. Management of complications

C. Obstetrics

1. Anatomy, physiology and pathophysiology

2. Pharmacology

3. Anesthesia techniques/procedures
   a. Caesarean section
   b. Vaginal delivery
   c. Labor epidurals
   d. Intrathecal
   e. Postpartum tubal ligation
   f. Vaginal birth after caesarean section
   g. High risk
h. Non-obstetric surgery in the parturient
4. Management of complications

D. Geriatrics
1. Anatomy, physiology and pathophysiology
2. Pharmacology

E. Obesity
1. Anatomy, physiology and pathophysiology
2. Pharmacology

Sample questions and answers appear on pages 25–28 of this handbook.

References for Review

The principal anesthesia textbooks used in nurse anesthesia educational programs should provide information related to all the major content areas on the NCE. Research articles and review books are not used as references. The NBCRNA does not sponsor or endorse any review courses, review manuals or particular texts that can be used in preparation for the NCE. The NBCRNA does not make old tests or retired questions available to anyone.

Registration Information

Examination Dates

The NCE is offered year round and may be taken after the candidate has been deemed eligible by the NBCRNA and has scheduled an appointment with Pearson VUE to take the test. Candidates may schedule an appointment to take the NCE on any date that space is available at any Pearson VUE test center of their choice. Attention should be paid to the fact that not all test centers are open seven days a week or operate on the same schedule. Immediate scheduling is not guaranteed by either NBCRNA or Pearson VUE.

Fees

The NCE application fee ($725) and any other applicable fees must be paid electronically through the NBCRNA Online Certification Portal. All fees must accompany the online application form. Institutional checks, personal checks or money orders will not be processed. The NBCRNA does not directly invoice individuals or institutions for payment of any examination fees.

Application Process

For a candidate to be considered for eligibility to take the NCE, all of the following materials must be submitted to the NBCRNA by the candidate’s nurse anesthesia educational program administrator:

1. A completed application electronically signed through the Online Certification Portal. This document is permanently retained by the NBCRNA.

   All candidates must sign the waiver of liability and agreement of authorization, confidentiality and nondisclosure statements on the application form.

2. Information regarding the candidate’s current and unrestricted license to practice as a registered professional nurse (RN license number, issuing state and expiration date) in all states in which he or she currently holds an active license. At least one license must be current on the candidate’s requested examination date.

3. An original 2013 NBCRNA Transcript of Student Record.

4. An Authentication of Candidate Identity Form.

5. Written requests for special services, if applicable.
Application Procedure – Program Administrators » The program administrator must submit all the necessary materials, including the original 2013 NBCRNA Transcript of Student Record, to the NBCRNA office. Transcripts and materials may be submitted 1) up to 4 weeks prior to the official completion date of the nurse anesthesia educational program, or 2) upon official completion of the nurse anesthesia educational program. The official completion date is the date that the student has completely finished the nurse anesthesia educational program and all degree requirements (i.e., there are no makeup days, hours, classes, comprehensive exams or thesis for which the student is responsible).

The decision as to when to submit a completed transcript is at the discretion of the program administrator. Regardless of when a transcript is submitted, it must document that the candidate has met the minimum academic and clinical requirements necessary to complete an accredited program including the specified competencies.

These requirements are set by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) and published in the COA Standards for Accreditation of Nurse Anesthesia Educational Programs.

If the transcript has been submitted prior to the nurse anesthesia educational program completion date, the program administrator must sign and submit, on or after the student’s official completion date, a Program Completion Verification Form verifying that the candidate has in fact completed the nurse anesthesia educational program. Certification eligibility notifications will not be sent until the Program Completion Verification Form is received in the NBCRNA office. The Program Completion Verification Form is available to program administrators in the Program Administration section of the Certification page on the NBCRNA website.

Application Procedure – Candidates » An online application must be completed by the candidate and paid for electronically. It must be reviewed and submitted along with the official 2013 NBCRNA Transcript of Student Record by the program administrator. An application that is incomplete, incorrectly filled out, without the correct fee or without a current and unrestricted professional nursing license will not be processed. No application materials may be submitted directly by the candidate.

Notification of Candidate Eligibility

Notification of eligibility or ineligibility is sent to a candidate after his or her application has been approved and verification of completion of a nurse anesthesia educational program has been received. This process should be completed within 2-4 weeks after receipt of the official documentation of nurse anesthesia educational program completion at the NBCRNA office.

Eligible candidates will receive an official NBCRNA certification eligibility notification via email. The information in the notification is used to schedule an appointment to take the examination with Pearson VUE, either via its website or its Candidate Call Center. All scheduling must be done by the candidate directly with Pearson VUE; the NBCRNA is not responsible for resolving scheduling conflicts. The certification eligibility notification expires 90 days from the date of issue, or on the date on which the candidate takes the NCE, whichever comes first.

There is a $50 fee for the NBCRNA to send duplicate eligibility notifications due to an out-of-date email address or name change.

Requests for State Board of Nursing Notification of Eligibility

The NBCRNA does not automatically notify state boards of nursing of a candidate’s eligibility to take the NCE. Any requests a candidate may have, such as verification letters to state boards of nursing, must be submitted in writing with the application.

Requests for notifications to state boards generally will be processed within 2-4 weeks from the time the official verification of completion of a nurse anesthesia educational program has been received in the NBCRNA office. However, if the official completed transcript has to be returned to the program administrator for corrections, this time may be longer.

The candidate is expected to be familiar with the state board of nursing requirements for licensure to practice as a nurse anesthetist in the state where he or she intends to practice. Therefore, candidates are responsible for submitting the correct forms or requests for verification to the NBCRNA so they can be completed at the time the application for the NCE is processed.

Acknowledgment of Receipt of Materials or Confirmation of Eligibility

Due to the large volume of correspondence the NBCRNA receives, email and telephone confirmation of receipt of transcripts, eligibility status, and when letters to state boards of nursing regarding eligibility status were sent cannot be acknowledged.
A candidate who has not received an electronic eligibility notification from the NBCRNA within 4 weeks of the completion date of the nurse anesthesia educational program is requested to contact the NBCRNA by email at certification@nbcrna.com.

Change of Name and Address
The name that the candidate used on the official NBCRNA application form is the name that is submitted to Pearson VUE on the eligibility file.

When a candidate appears at the test center, the first and last name, as they appear on the original NBCRNA certification eligibility notification, and 2 pieces of identification (both bearing a signature and one bearing a photo) must all match. Candidates will not be allowed to take the test if their identification does not bear the same first and last names as their eligibility file at the test center.

Name or address changes are not accepted at the test center. If a candidate changes his or her name and/or address after the certification eligibility notification has been sent, the NBCRNA should be notified immediately by email at certification@nbcrna.com of the change.

Special Services for Persons with Documented Disabilities
A candidate with a documented disability may request a reasonable accommodation for the NCE by submitting his or her request and supporting documentation in writing to the NBCRNA with his or her completed application, or as soon thereafter as the candidate learns of the need for the accommodation. In addition to documentation of the reason for the request from a recognized health care provider, an official letter from the program administrator documenting the types of accommodation provided during the nurse anesthesia educational program is required.

The NBCRNA will work directly with the candidate and Pearson VUE to attempt to make reasonable modifications in the testing environment and procedures to make it possible for a candidate with a documented disability to take the NCE under conditions that will accurately reflect the candidate’s aptitude or achievement level. The inability to read English is not considered a disability and does not make a candidate eligible for special services.

Scheduling Information
The certification eligibility notification contains detailed information about scheduling an appointment with Pearson VUE to take the NCE. This information will include the expiration date of the candidate's eligibility for the NCE. Appointments cannot be scheduled prior to receipt of this email eligibility notification from the NBCRNA, or after the expiration date.

It is strongly recommended that candidates contact Pearson VUE to make an appointment for the NCE as soon as possible after receipt of the NBCRNA certification eligibility notification. Candidates may schedule an appointment to take the NCE on any day that space is available at a Pearson VUE test center. When making an appointment, candidates should take into account that not all test centers are open seven days a week, operate on the same schedule or have the same seating capacity. Pearson VUE usually schedules appointments at least two weeks in advance. A confirmation number for the scheduled appointment will be given to the candidate by Pearson VUE and should be retained until the NCE has been taken.

Scheduling an appointment to take the NCE is strictly between the candidate and Pearson VUE; the NBCRNA will not intervene in these arrangements. No refunds will be made if a candidate is unable to schedule the NCE before his or her eligibility expiration date. If the candidate does not take the NCE within the 90-day eligibility period, or takes the NCE and fails it, he or she will have to reapply to the NBCRNA to take the NCE, pay the full application fee and complete the registration process.

Refunds for Cancellations and No-Shows
If a candidate cancels his or her scheduled examination no later than 48 hours before the the date and time of the scheduled appointment, a 50% refund of the application fee will be returned if requested. Requests for refunds due to cancellations must be submitted in writing to the NBCRNA. Cancellations of appointments must be made directly with Pearson VUE.

A candidate who fails to appear for the scheduled test, arrives more than 15 minutes after the scheduled start time for taking the test, or changes or cancels a test within 48 hours before the date and time of the scheduled appointment will not receive any refund of his or her application fee; nor can the fee be applied to another examination. The candidate will have to reapply to the NBCRNA to take the NCE, pay the full application fee and complete the registration process.
If the candidate experiences an emergency, he or she must provide the NBCRNA with a written description and documentation for review by email at certification@nbcrna.com. NOTE: Recording the wrong date or time for the scheduled appointment or forgetting to bring the required current, valid identification is not considered an emergency.

Examination Administration

Admission to the Test Center

Candidates arriving at the test center will be asked for the following before admission to the test: presentation of 2 separate forms of current, valid identification (ID), both of which must bear a signature and one of which must bear a photo. The photo ID can be a current government-issued ID such as a passport, driver’s license, state ID or military ID; an unexpired school ID or employee ID; or a valid RN license. Both pieces of ID must have the same first and last names as they appear on the certification eligibility notification sent via email by the NBCRNA. Candidates who appear without the specified identification will not be permitted to take the NCE and will be required to pay the $75 reauthorization fee in order to receive a new eligibility notice.

Admission Procedures

After the initial verification of identity, the candidate will be asked to sign a roster, to place both palms on a palm vein scanner, and to have his or her photo taken. The use of biometric technology at Pearson VUE test centers for added security is a part of the admission procedures for all NBCRNA examinations.

Electronic devices (including but not limited to cell phones, tablets and e-readers), reference books, notes and other study materials may not under any circumstances be brought into the test center. Personal belongings (including bags, watches and wallets) may not be taken into the testing room; they must be stored in designated areas. An erasable note board will be available at the test center for use during the examination; scratch paper is not permitted.

Test Center Environment

It is unlikely that an NBCRNA certification candidate will be the only person taking an examination in the test room. Individuals taking other examinations may be present. Some examinations may require full use of the computer keyboard, and there may be accompanying keyboard noise. In addition, Pearson VUE personnel and other individuals may leave and enter the test room during the certification candidate’s test period.

Test centers will make every effort to keep movement of personnel and noise levels to a minimum during examination administrations. However, if a certification candidate believes that noise may be a distraction, he or she should request earplugs at the test center to use during the NCE. Individual test rooms are not available at test centers.

Candidates with a documented disability shown to require special testing services should refer to the “Special Services for Persons with Documented Disabilities” section on the previous page.

Taking the Test

At the beginning of the NCE, a Statement of Confidentiality and Nondisclosure Agreement will appear that students must read, acknowledge and agree to. If the candidate does not indicate agreement, he or she will not be allowed to begin the NCE, and will have to contact the NBCRNA in writing for reauthorization and pay the $75 reauthorization fee. The content of the NCE, and each individual NCE question, is the property of the NBCRNA, is copyrighted and is strictly confidential information. The retention, possession, copying, distribution, disclosure, discussion or receipt of any NCE question, in whole or in part, by written, electronic, oral or other form of communication, including but not limited to emailing, copying or printing of electronic files, and reconstruction through memorization and/or dictation, before, during or after the NCE is strictly prohibited.

Candidates should read the directions for entering responses carefully before beginning the test. There is no tutorial, and there are no practice questions. The NCE begins with the appearance of the first exam question. There is a “help” screen that can be referred to at any time during the examination to refresh a candidate’s memory as to how to enter responses. At any time before or during the NCE, candidates may request help regarding the use of the computer.
Questions are presented one at a time on the computer screen. Each question must be answered as it is presented. The question on the screen must be answered before the candidate can move on to the next screen. Candidates should consider each answer carefully and make their best choice.

Once a candidate confirms an answer and goes on to the next question, he or she is not allowed to go back to any previous questions. Psychometric research has shown that, in general, candidates do not significantly improve their scores by reviewing and changing answers.

Examination Length

Each candidate must answer a minimum of 100 questions. As a candidate takes the NCE, questions are selected based on his or her responses to previous questions. Once 100 questions have been answered, the test will continue, if necessary, until the candidate’s performance is estimated as being either above or below the passing standard with a predetermined level of certainty. Thus, different candidates will have to answer varying numbers of questions and use varying amounts of time. The maximum number of questions is 170 during a three-hour maximum testing period.

Improper Behavior in Connection with the Examination

When applying for the NCE, each candidate must agree to the NBCRNA waiver of liability and agreement of authorization, confidentiality and nondisclosure statements.

The consequences of violating this agreement may include, but are not limited to, the following:

a. loss of eligibility to take the NCE now and in the future;

b. invalidation of NCE results;

c. revocation of certification;

d. assessment of monetary damages.

During the NCE, the performance of all candidates will be monitored. Any candidate who gives or receives assistance, or otherwise engages in dishonest or improper behavior during the NCE, will be required to cease taking the NCE and leave the test center. Test center personnel will notify the NBCRNA office of any improper behavior during the NCE.

After reviewing a reported incident, the NBCRNA will determine whether there is reason to believe that a candidate has engaged in cheating or other improper behavior, or has otherwise violated the security of the NCE. If the NBCRNA determines that there is reason to so believe, it may, at its discretion, take any of the following actions:

1. order the candidate to retake the NCE at a time and place to be determined by the NBCRNA;

2. refuse to release the test results of the candidate and, thereby, deny his or her current application for certification;

3. require the candidate to wait a specified period of time before reapplying to take the NCE;

4. revoke the candidate’s eligibility to sit for the NCE in the future; or

5. take a combination of any of the above actions or such other action that the NBCRNA may deem appropriate in the particular circumstances before it.
Post-Examination

Improper Behavior After the Examination
Any individual who removes or attempts to remove materials from the test center, or who receives, discusses, discloses, reproduces, distributes, displays or otherwise misuses a test question or any part of a test question from the NCE by written, electronic, oral or other form of communication, including but not limited to emailing, copying or printing of electronic files, and reconstruction through memorization and/or dictation, will be subject to legal action and monetary damages. Any candidate who engages in such improper behavior also may face denial or revocation of eligibility for certification, or denial or revocation of certification.

Problems at Test Centers
Candidates will have access to a proctor at the test center. As a rule, if a problem occurs with the computer and a candidate has to restart his or her test on the scheduled test day, the test will be resumed at the point of interruption since the questions and answers are saved. However, if the test cannot be resumed on the same day and the candidate has to reschedule his or her test, a new NCE will be administered. There will be no charge to the candidate for rescheduling a test if the problem was caused by circumstances at the Pearson VUE test center.

Problems related to admission or administration of the NCE, including any problems related to conditions at a test center, should be reported immediately at the test center before leaving, and as soon as possible, but no later than 3 days after the examination, by email to the NBCRNA office at certification@nbcrna.com. Reports to the NBCRNA should include the candidate’s full name, address and signature, as well as a description of the conditions that caused the problem(s) at the test center. After reviewing a report of a problem at a test center, the NBCRNA may, at its discretion, determine whether a new NCE should be administered or another action should be taken. Reports submitted from a program administrator will be considered only if they are accompanied by the candidate’s report. The NBCRNA will not consider notice of test administration problems that are received later than 3 days after the examination date.

Report of Examination Results
The NCE is scored based on candidate performance in the form of a correct/incorrect response to each question and the difficulty of the questions that an examinee is administered. A numerical estimate of the test taker’s ability is determined using Item Response Theory (IRT). A candidate’s ability estimate is calculated after each item and is used to determine when the NCE will stop and the pass/fail decision for the candidate. A candidate must obtain a minimum ability estimate, determined by the NBCRNA in order to pass the examination. A pass/fail decision is made when ONE of the following conditions has been met:

1. The candidate has clearly demonstrated competence. This decision may be reached at any point between 100 and 170 items.
2. The candidate has clearly demonstrated incompetence. This decision may be reached at any point between 100 and 170 items.
3. The maximum number of questions (170) has been administered. The pass/fail decision is based on whether the candidate’s ability level is above or below the pass/fail point.
4. The maximum amount of time (3 hours) is reached. A fail decision is made if the candidate has not completed the minimum 100 questions in this time period. If the candidate has completed more than 100 questions, the pass/fail decision is based on whether the candidate’s ability level is above or below the pass/fail point.

Notification of Examination Results
Candidates will receive a preliminary pass/fail report when they check out of the test center. This is preliminary only. Validated, official results will be sent by the NBCRNA via first-class mail within 2-4 weeks after the test date. The pass/fail test results will be sent to the name and address listed on the candidate’s NCE application form unless the candidate has notified the NBCRNA, within 24 hours after taking the test, of a different name or address.
Passing candidates will receive notification that they have passed the NCE, along with the official certification documents from the NBCRNA. They will not receive score information. Pass score data is not available to candidates because that information is often misused by employers and other parties to distinguish among candidates.

Failing candidates will receive notification of failing the NCE. The official result documents from the NBCRNA will also include their total scaled score and diagnostic scaled scores for the four content areas of the NCE — not the actual number of questions answered correctly. The total scaled score reflects the candidate's performance with respect to the content standard (passing score) that has been established by the NBCRNA. The content area scores reflect relative performance compared to other content areas.

The only information available to candidates regarding the results of the NCE will be the information provided on the official results documents from the NBCRNA. Because of the need to maintain test security, test questions cannot be made available for review. Neither the NBCRNA nor Pearson VUE provides a list of the questions.

Not everyone who tests on the same day at the same center will receive their official validated results at the same time because results are sent via USPS and may take differing amounts of time. Verification procedures for individual records may also take differing amounts of time.

Any candidate who does not receive the pass/fail test results within 4 weeks after taking the NCE should contact the NBCRNA by email at certification@nbcrna.com.

Program Administrators » Program administrators receive a list of all their students’ scores upon request. Results will not be released to any other persons without written authorization from the candidate.

State Boards of Nursing » State boards of nursing verification forms are routinely processed with candidates’ results and generally are sent to the boards electronically within 2 business days following results processing.

Employers/Third Parties » Candidates should carefully consider making time-sensitive employment-related commitments that require immediate verification of certification (i.e., passing the NCE). Processing of results may take up to 4 weeks following the date of the examination, and processing will not be altered for individual requests. Within 24 hours following processing of candidate results, the NBCRNA posts the notification of certification on the Credential Verification page of the NBCRNA website.

Confidentiality

Any information or material that is received or generated by the NBCRNA in connection with testing, the certification of a candidate, the recertification of a nurse anesthetist, or any NBCRNA review, disciplinary or appeal proceeding will be kept confidential and will not be released except where release is authorized by the individual or required by law. However, the following information may be disclosed: the name of the nurse anesthesia educational program attended, dates of attendance, completion date, certification eligible status, certification status, dates of recertification, current recertification status and reportable disciplinary actions.

The NBCRNA shares the following certificant/recertificant information with the AANA: name, address, phone number, nurse anesthesia education program information, certification/recertification status, and CE earning period.

Verification of Examination Results

Because of the sophistication of computerized online scoring and extensive quality-control procedures, errors in scoring are virtually nonexistent. However, a candidate who receives a failing score may request that his or her NCE results be verified.

Requests for verification of NCE results must be made in writing no later than 6 months after the test date and must include the following information: candidate’s name, ID #, last 4 digits of the social security number, date of birth, test date and signature. Requests should be sent via email to certification@nbcrna.com.

Reaplication Procedures

Candidates who fail the NCE must reapply for eligibility to take the examination. The Retake Application Form is included with the official NCE results that a failing candidate receives from the NBCRNA.
The following materials must be submitted to the NBCRNA to retake the NCE: 1) the completed NCE Retake Application Form; 2) proof of current and unrestricted professional nursing license; and 3) if it has been one year or more since the last submission of a photo ID form, a signed and notarized Authentication of Candidate Identity Form with a color passport or color digital photo taken within the last 6 months attached. Once the examination fees and required materials have been submitted, candidates should allow 2-4 weeks for retake application processing. Processing time frames may vary and will not be altered for individual requests.

Candidates granted eligibility will receive a new certification eligibility notification, which must be used to schedule an appointment with Pearson VUE to take the test.

The NCE must be taken and passed within 2 years of official completion of an accredited nurse anesthesia educational program as documented on the NBCRNA Transcript of Student Record submitted by the program administrator. The NCE may be taken up to 4 times within each of the 2 years following the official completion date. The full $725 application fee will be required each time a candidate reapplies for the NCE.

Candidates who do not take and pass the NCE within 2 years of completion of their nurse anesthesia educational program will not be eligible to apply to take the NCE unless they enter and complete another unabridged accredited nurse anesthesia educational program.
Sample Questions

The following questions are examples of the type of multiple-choice (MC) questions that appear on the NCE. An answer key is provided on page 28. For samples of the alternative question format types — multiple correct response (MCR), calculation, hotspot, and drag and drop questions — see the Certification page, Exam Tutorial and Item Writing section of the NBCRNA website (www.NBCRNA.com).

1. In the elderly, the time needed for clinical recovery from neuromuscular blockade is significantly increased for:
   A. cisatracurium.
   B. vecuronium.
   C. pipecuronium.
   D. mivacurium.

2. Considerations for the management of a patient with myotonic dystrophy under general anesthesia should include a(an):
   A. anticholinesterase reversal.
   B. midazolam premedication.
   C. short-acting nondepolarizer.
   D. succinylcholine infusion.

3. Which drug would have a normal pharmacokinetic profile in a patient with severe liver disease?
   A. Pancuronium
   B. Succinylcholine
   C. Mivacurium
   D. Atracurium

4. Which of the following neuromuscular blocking agents is a benzylisoquinoline compound?
   A. Vecuronium
   B. Succinylcholine
   C. Pancuronium
   D. Mivacurium

5. When providing positive pressure ventilation via a bag-valve-mask device, inspiratory pressure should be limited to:
   A. 15 cm H₂O
   B. 25 cm H₂O
   C. 40 cm H₂O
   D. 50 cm H₂O

6. What is the first sign of magnesium toxicity when used for seizure prophylaxis in preeclampsia?
   A. Respiratory depression
   B. Hypotension
   C. Cardiac conduction defects
   D. Loss of deep tendon reflexes
7. In the hypothermic patient undergoing left atrial to femoral bypass for repair of a thoracolumbar aneurysm, the most common dysrhythmia encountered with atrial cannulation is:
   A. atrial fibrillation.
   B. bradycardia.
   C. junctional rhythm.
   D. ventricular tachycardia.

8. Intrathecal narcotic administration is associated with:
   A. loss of proprioception.
   B. skeletal muscle weakness.
   C. selective sensory blockade.
   D. sympathetic nervous system denervation.

9. A mass spectrometer measures the concentrations of inhaled agents by measuring:
   A. intensity of transmitted light.
   B. paramagnetism.
   C. molecular weight.
   D. pH sensitivity.

10. The best indicator for CAD in the pre-operative assessment for vascular surgery patients is:
    A. electrocardiogram.
    B. history and physical.
    C. presence of S3 gallop.
    D. exercise tolerance.

11. An increase in the drug half-life in the geriatric population is usually due to:
    A. age-associated induction of cytochrome P450 activity.
    B. a shift from first-order to zero-order kinetics.
    C. reduced liver blood flow.
    D. increased volume of distribution.

12. What is the most likely complication of combined spinal/epidural analgesia during labor and delivery?
    A. Higher than anticipated dermatome level of analgesia.
    B. Epidural catheter insertion into the intrathecal space.
    C. Epidurally administered drug leakage into the intrathecal space.
    D. Higher incidence of fetal bradycardia.

13. Which agent is MOST likely to maintain renal blood flow during periods of induced hypotension?
    A. Nitroglycerin
    B. Nitroprusside
    C. Fenoldopam
    D. Trimethaphan

14. What is the threshold pressure (psi) for a primary pressure fail-safe device on an anesthesia machine?
    A. 10
    B. 20
    C. 30
    D. 40
15. Radial nerve block often can be determined by the patient’s inability to perform which of the following actions of the arm?

A. Flexion
B. Extension
C. Pronation
D. Adduction

16. The check valve in the low pressure system is designed to:

A. prevent excessive airway pressures.
B. prevent scavenged gases from reentering the circuit.
C. facilitate equipment testing before induction of anesthesia.
D. minimize the pumping effect associated with positive-pressure ventilation.

17. Autonomic hyperreflexia can:

A. develop immediately after spinal cord injury.
B. result in hypotension and tachycardia.
C. be prevented by “light” anesthesia.
D. be treated with vasodilators or alpha blockers.

18. The most common preventable critical incident associated with anesthesia equipment is:

A. failure to ventilate caused by circuit disconnection.
B. barotrauma caused by excessive positive pressures.
C. hypoxia caused by a delivery piping misconnection.
D. overdose due to vaporizer cross fill contamination.

19. A patient in the PACU is found to have residual neuromuscular blockade despite reversal with neostigmine and glycopyrrolate. Which of the following would further impair reversal?

A. Hyperkalemia
B. Hypoalbuminemia
C. Respiratory acidosis due to hypoventilation
D. Residual synthetic opioids
Answers to Sample Questions

1. (b)  
2. (c)  
3. (d)  
4. (d)  
5. (b)  
6. (d)  
7. (a)  
8. (c)  
9. (c)  
10. (d) 
11. (d) 
12. (c) 
13. (c) 
14. (b) 
15. (b) 
16. (d) 
17. (d) 
18. (a) 
19. (c)