

Professional Practice Analysis: Validity Evidence for the Continued Professional Certification Examination for Nurse Anesthetists

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Introduction: This article presents the results of the 2015 professional practice analysis (PPA) conducted by the National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA). The goal of the PPA was to establish and validate a content outline and test specifications for NBCRNA's examination for the continued professional certification (CPC) program. In professional certification test development, a PPA establishes the content validity of an examination and serves as the key evidentiary link between the test and clinical practice. **Methods:** The PPA used survey and rating scale methodologies to collect data on the relative emphasis of various aspects of the nurse anesthesia knowledge domain and competencies. Overall, 726 survey responses were analyzed by a panel with expertise in clinical anesthesia and testing methodology, using conventional statistics and the Rasch rating scale model. Descriptions of how the survey results were used to develop test specifications are also provided. **Results:** The results of the analysis provided strong validity evidence for the content outline and test specifications. **Conclusion:** To a great extent, the responses of the PPA survey exhibited a high-degree endorsement for the knowledge statements included on the outline and thus serve as a basis of content validation for the CPC examination.

Keywords: Certification, nurse anesthetists, practice analysis, testing

The National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA), an autonomous body with multidisciplinary and public representation, is responsible for specifying the requirements for earning and maintaining the certified registered nurse anesthetist (CRNA) credential. Through its credentialing processes, NBCRNA seeks to maintain a high level of knowledge, skill, and professionalism among nurse anesthetists and to foster high-quality anesthesia care for patients.

Consistent with its mission, NBCRNA has developed a continued professional certification (CPC) program for certification maintenance. The program, following a continued competency model, consists of two 4-year cycles (total of 8 years) and four major components (See Table 1).

The objective of the CPC examination (CPCE) is to assess core knowledge common to the practice of all nurse anesthetists, irrespective of practice setting. The core clinical knowledge areas are represented by the four core knowledge domains of the examination. For the first CPC cycle, the CPCE is not a pass/fail examination, and certification status will not be contingent on meeting a *passing standard* (i.e., a passing score). Rather, examinees in the first CPC cycle will be subject to a *performance standard* examination. Its purpose is simply to identify potential areas where

a CRNA may need additional education. For the first CPCE, CRNAs will maintain their certification, even if they do not meet the performance standard. Additional continuing education (CE) (e.g., an additional core module) will be required in any area of weakness. For the second and subsequent CPC cycles, examinees will be subject to a passing standard, and passing the CPCE (in four attempts) will be required to maintain certification.

The first CPC cycle began August 1, 2016, and the first CPCE must be available in the second 4-year cycle (beginning 2020). To form a foundation for the content development for the CPCE, NBCRNA conducted a national professional practice analysis (PPA) study of the responsibilities and duties of nurse anesthetists at the recertification level, that is, a level higher than entry level. The purpose of the PPA was to define logical, practice-related, research-based content to support various elements of the CPC program.

Practice Analysis Study

To provide leadership and oversight for the project, NBCRNA appointed a practice analysis panel of 16 subject matter experts (SMEs) who represent the profession demographically and reflect the nurse anesthetists who will participate in the CPC program.

TABLE 1

NBCRNA's CPC Program Components

- 60 credits of assessed continuing education (CE) every 4 years ("class A^a" CE)
- 40 credits of professional development every 4 years ("class B^b" CE)
- Four core modules^c, one in each core area, every 4 years
- One CPC examination every 8 years.

^a In order to qualify for Class A credits, the learning activities must be prior approved by an accredited CE provider and include an assessment of some type to show that learning has occurred and is related to nurse anesthesia practice.

^b Class B requirements for professional development are CEs earned for activities that enhance knowledge of anesthesia practice, support patient safety, or foster an understanding of the health care environment. A few examples include: grand rounds, morbidity and mortality conferences, precepting, teaching, infection prevention courses, data collection, mission trips, and public education.

^c Core modules provide a synopsis of the current literature and evidence-based knowledge in the four areas of anesthesia practice that apply to all CRNAs, regardless of practice focus: Airway Management, Applied Clinical Pharmacology, Human Physiology and Pathophysiology, and Anesthesia Equipment and Technology. Core modules also feature an assessment component.

Note. NBCRNA = National Board of Certification and Recertification for Nurse Anesthetists; CPC = continued professional certification;

The panel also included representatives from the Continuing Education and Practice Committees of the American Association of Nurse Anesthetists (AANA), the membership and advocacy body for the nurse anesthesia profession, and two former chairs of the certification examination committee. The panel was charged with analyzing the practice of nurse anesthesia at the recertification level and reviewing, evaluating, and revising the knowledge elements included in the proposed CPCE content outline. The panel convened regularly from February to June 2015 via conference calls and at a one-and-a-half-day meeting in June 2015.

NBCRNA desired to adhere to the standards in the professional certification community for the conduct of PPA studies. The guidelines have their foundation in logically sound and legally defensible procedures drawn from psychometric literature and case law. The principles and procedures are outlined in federal regulation (Uniform Guidelines on Employee Selection Procedures) and manuals, such as *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], 2014). NBCRNA testing staff employed these standards and those of the National Commission for Certifying Agencies (NCCA, 2015) in all phases of the study.

As the primary process for identifying the competency areas and knowledge needed for proficient performance in a profession, PPA studies offer a clear, useful basis for defining the essential components of credentialing programs, especially assessments. Validation through systematic PPA studies helps to docu-

ment that the proficiency inferred when a candidate achieves a credential has a sound link to the significant elements of practice that characterize the profession.

The 2015 PPA study is an integral part of ensuring that the examination component of the CPC program has practice-related validity and that the aspects of nurse anesthesia addressed by the program reflect the requirements of practice settings, patient groups, and conditions. The study identified the criticality and frequency of essential knowledge and skills relevant to the demonstration of continued competency in nurse anesthesia. These ratings play an important role in determining the content of the CPCE. According to national testing standards, credentialing agencies should repeat their validation studies on a periodic basis commensurate with the degree of change in the profession (AERA, 2014; National Commission for Certifying Agencies [NCCA], 2015). NBCRNA had previously performed content validation studies in 1996 (Zaglaniczny & Healey, 1998), 2001 (McShane & Fagerlund, 2004), 2007 (Muckle, Apatov, & Plaus, 2009), and 2011 (Plaus, Muckle, & Henderson, 2011).

This article describes the 2015 PPA study, including summaries of the survey methodology used to validate the domains and subdomains of the CPCE content outline, the demographic profile of survey respondents, the survey results, and the decisions made by NBCRNA regarding revisions to the test blueprint. Although this article deals chiefly with the nurse anesthesia profession, the process outlined and results presented have implications for all nurses and regulators. Recertification requirements and practices in health care credentialing are changing. More and more credentialing programs are embracing principles of lifelong learning and continued competence and integrating them into certification maintenance requirements. For instance, the advanced practice registered nursing communities have jointly incorporated some of these themes in their recent consensus model (National Council of State Boards of Nursing, 2008). As the components of these credentialing programs evolve over time, change must be transparent, guided by thoughtful deliberation, and driven by data and evidence-based practices. This article demonstrates that the foundation of the testing component for NBCRNA's ground-breaking CPC program was established using a process that involves guidance and expertise from qualified practitioners, empirical data derived from standard research techniques, and input from a substantial segment of the nurse anesthetist constituency.

Survey Design

After a review of educational materials related to PPA and other psychometric principles of assessment design and an orientation to the PPA project, the panel conducted a preliminary review of the proposed CPCE content outline, which was based on a 2009 PPA of recertification requirements for nurse anesthetists (Plaus et al., 2011). This review resulted in several revisions to some knowl-

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