

Education of Nurse Anesthetists in the United States

Introduction

The nurse anesthesia profession is known for its highly respected educational system and its strong commitment to quality education. Nurse anesthesia education has evolved since the first organized course in anesthesia for graduate nurses in 1909 into a sophisticated educational system in which more than 80 programs in the United States are affiliated with, or operated by, universities and offer a minimum of a master's degree upon completion. Approximately one-half of the programs are within schools of nursing, with the remainder housed within schools of health science and other appropriate graduate schools. These nurse anesthesia graduate programs operate with more than 500 clinical education sites. The programs range from 24 to 36 months in length, depending upon university requirements, and are at the master's degree level or higher. They provide over 2,000 enrolled students a graduate-level science foundation along with clinical anesthesia experience to prepare them to become competent nurse anesthesia providers.

Nurse Anesthesia Program Requirements

All nurse anesthesia programs in the United States are accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA), which is recognized by the U.S. Secretary of Education and the Commission on Higher Education Accreditation as the sole accrediting authority for nurse anesthesia programs. The COA has served as an autonomous accrediting agency following a change in the bylaws of the American Association of Nurse Anesthetists (AANA) in 1975. Prior to 1975 and since 1955, the AANA was listed by the U.S. Commissioner of Education as being the recognized agency to accredit nurse anesthesia schools. The COA requires that each program undergo a systematic self-study and be reviewed at the program site by COA-appointed anesthesia educators. An ongoing monitoring of accredited programs is accomplished through COA annual reports and progress reports. The purpose of this review process is to document that each program is in compliance with the *Standards for Accreditation* of the COA. This stringent process helps to ensure the effectiveness of nurse anesthesia clinical and didactic education.

Nurse anesthesia educators have met bi-annually since 1945 at the AANA's Assembly of School Faculty to support existing nurse anesthesia faculty and to develop new faculty. These meetings also serve as an opportunity for the educators to discuss and formulate recommendations concerning the maintenance and improvement of the COA's standards. These recommendations are then forwarded to the COA for consideration.

The administration of a nurse anesthesia program includes program management of faculty and students, fiscal program management, maintenance of COA accreditation and other higher education accreditation requirements of the university, faculty continuing education, and program evaluation. COA standards require that each nurse anesthesia program employ Certified Registered Nurse Anesthetists (CRNAs) with graduate degrees in the roles of program director and assistant program director. Each

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program must also be able to show organizationally that it provides an extensive, educationally sound curriculum combining both academic theory and clinical practice. Each program must devise policies and procedures using outcome criteria to promote student learning while enhancing the program's quality and integrity.

Each nurse anesthesia program performs ongoing evaluation and assessment to determine its integrity and educational effectiveness. Each program continuously monitors and evaluates its didactic and clinical curriculum, including curriculum content, admissions policies, faculty, and clinical sites used for student educational experiences. These aspects of the program are evaluated periodically to determine their relevance to anesthesia practice.

Admission to a nurse anesthesia program requires graduation from an accredited school of nursing, a baccalaureate degree, current licensure as a registered nurse, and at least 1 year of professional experience in an acute care setting. Most applicants have acquired extensive clinical experience in areas such as coronary, respiratory, post anesthesia, and surgical intensive care units.

Nurse Anesthesia Program Curriculum

The didactic curricula of nurse anesthesia programs are governed by COA standards and provide students the scientific, clinical, and professional foundation upon which to build sound and safe clinical practice. Most nurse anesthesia programs range from 45 to 75 graduate semester credits in courses pertinent to the practice of anesthesia. The science curriculum of graduate nurse anesthesia programs includes a minimum of 30 semester credit hours of courses in anatomy, physiology, pathophysiology, pharmacology, chemistry, biochemistry, and physics. Courses in anesthesia practice provide content such as induction, maintenance, and emergence from anesthesia; airway management; anesthesia pharmacology; and anesthesia for special patient populations such as obstetrics, geriatrics, and pediatrics. Students are instructed in the use of anesthesia machines and other related biomedical monitoring equipment and are evaluated didactically using such traditional evaluation methods as examinations, presentations, and papers. Patient anesthesia simulators are an emerging technology used in many programs to develop dexterity and critical thinking skills essential for the practice of nurse anesthesia.

The supervised clinical residency of nurse anesthesia education provides students the opportunity to incorporate didactic anesthesia education into the clinical setting. Nurse anesthetists are prepared to administer all types of anesthesia, including general, regional, selected local and conscious sedation, to patients of all ages for all types of surgeries. They are taught to use all currently available anesthesia drugs, to manage fluid and blood replacement therapy, and to interpret data from sophisticated monitoring devices. Other clinical responsibilities include the insertion of invasive catheters, the recognition and correction of complications that occur during the course of an anesthetic, the provision of airway and ventilatory support during resuscitation, and pain management. To meet COA standards and be eligible to take the Council on Certification of Nurse Anesthetists (CCNA) Certification Exam, a student must have performed a minimum of 450 anesthetics, which must include specialties such as pediatric, obstetric, cardiothoracic, and neurosurgical anesthesia. This anesthesia experience includes the care of not only healthy

but also critically ill patients of all ages for elective and emergency procedures. In most programs, this minimum is surpassed early in their clinical practicum and the average number of anesthetics performed upon graduation is 773. The results of a 1998 survey of program directors show that Nurse anesthesia programs provide an average of 1595 hours of clinical experience for each student.

During their clinical anesthesia experience, students are supervised by CRNAs or anesthesiologists who provide instruction in the safe administration and monitoring of various techniques, including both general and regional anesthesia. The clinical faculty also evaluate the technical and critical thinking skills of students on a regular basis.

Scholarly Activities

With the evolution of nurse anesthesia programs into the graduate education framework, there has been an increase in program requirements for scientific inquiry, statistics, and faculty-guided student research. This scholarly activity may be in the form of a scholarly project. Areas of student scholarly activities include study surveys, animal studies, bench laboratory research, and clinical studies. Research studies may include quantitative research using descriptive and experimental design and qualitative research using valid research methods. Students may do collaborative scholarly work with nurse anesthesia faculty and faculty from other university departments such as pharmacology, physiology, and anesthesiology. Students are encouraged and assisted by faculty to present their scholarly work at professional nurse anesthesia meetings and to publish in the professional literature.

This addition of a scholarly requirement to nurse anesthesia graduate programs has increased the demand for higher education for nurse anesthesia faculty. The number of doctorally prepared CRNAs is increasing to meet the increased demand for university faculty requirements, student mentoring, and other nurse anesthesia scholarly endeavors.

Certification and Recertification

Upon completion of a COA-accredited program, a graduate is eligible to take the national certification examination that is developed and administered by the CCNA. The purpose of this examination is to measure the knowledge and critical thinking skills required of an entry-level nurse anesthesia provider. Each graduate of an accredited nurse anesthesia program must successfully pass this examination to earn the title of Certified Registered Nurse Anesthetist.

CRNAs are recertified by the Council on Recertification of Nurse Anesthetists, which focuses its efforts on ensuring that CRNAs maintain their skills and keep current with progressive and technological knowledge. The recertification period for CRNAs is two years. This recertification must be maintained for an individual to practice as a CRNA in the United States and to stay in compliance with state nursing regulations.

Summary

From the commencement of the professional education in nursing, a minimum of 7 calendar years of education and training is involved in the preparation of a CRNA. Graduates of accredited nurse anesthesia programs who pass the rigorous, psychometrically sound Certification Examination are qualified to practice as Certified Registered Nurse Anesthetists. Recertification, which includes a practice and

continuing education requirement, must be met every 2 years. In the United States, nurse anesthesia education has flourished for more than a century by continuing to meet increasingly stringent educational standards. Today, the profession and regulatory agencies set the standard of quality for nurse anesthesia education, which has resulted in the safe delivery of anesthesia by CRNAs.

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