

A Study of Anesthesiologist Assistants



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Research Report No. 337

Legislative Research Commission

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Foreword

The 2006 General Assembly directed the Legislative Research Commission to study the certification and scope of practice requirements of anesthesiologist assistants and to compare similarities and differences between Kentucky and other states where anesthesiologist assistants practice. The General Assembly also mandated a comparison of anesthesiologist assistant practice to that of other anesthesia care providers. In the course of the study, anesthesiologist assistant regulation in other states was reviewed and evaluated, along with the regulation of other anesthesia care providers in those jurisdictions. In addition, testimony from interested parties was gathered. This report represents the results of that study.

Legislative Research Commission staff would like to acknowledge the information and testimony provided from several organizations and associations. These included the American Academy of Anesthesiologist Assistants, Kentucky Association of Nurse Anesthetists, Kentucky Society of Anesthesiologists, Kentucky Nurses Association, Kentucky Board of Medical Licensure, Kentucky Medical Association, Kentucky Hospital Association, Kentucky Board of Nursing, Kentucky Association of Physician Assistants, Kentucky Association of Health Plans, and Kentucky Cabinet for Health and Family Services. Additionally, several individuals, including four anesthesiologist assistants, provided information and testimony and are specifically acknowledged in the report.

As directed by the General Assembly, this study was presented to the Legislative Research Commission on December 15, 2006, for eventual referral to the appropriate interim joint committees.

Robert Sherman
Director

Legislative Research Commission
Frankfort, Kentucky
February 6, 2006

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Summary

Senate Bill 175 of the 2006 General Assembly directed a study of anesthesiologist assistants. The study mandate included research of anesthesiologist assistants compared to other anesthesia care providers and discussion of the regulatory environment regarding anesthesia care providers in Kentucky compared to other jurisdictions where anesthesiologist assistants practice.

Anesthesiologist assistants are authorized to practice in Kentucky, along with 14 other states and the District of Columbia. They are allied health professionals who work under the direction of licensed anesthesiologists to develop and implement anesthesia care plans. Anesthesiologist assistants perform a variety of tasks and work exclusively within the anesthesia care team environment. For example, they may administer drugs, establish and maintain patient airway, and assess and monitor patients.

While there are approximately 700 anesthesiologist assistants practicing nationwide, there are only two currently practicing in Kentucky, and both of these practitioners were exempted when the current law requiring anesthesiologist assistants to also be physician assistants was enacted. Kentucky has a unique educational requirement among those jurisdictions that allow practice by anesthesiologist assistants. To practice in Kentucky, the anesthesiologist assistant must have graduated from both an anesthesiologist assistant program and a four-year physician assistant program. Interested parties disagreed on the wisdom of the physician assistant graduation requirement for anesthesiologist assistants. However, the parties that took a position on the issue agreed that this requirement has played a role in the fact that no new anesthesiologist assistants have been licensed in Kentucky under the current system.

There are four accredited anesthesiologist assistant training programs in the United States, with the two oldest founded in 1969. All anesthesiologist assistant programs require either the Graduate Record Examination or Medical College Admission Test entrance exam and a bachelor's degree with prerequisite course work in science, math, and English. The number of course work hours and clinical hours required for completion of the anesthesiologist assistant degree program varies from 63 to 158 hours of course work and from 2,000 to about 2,700 clinical hours. As part of their training, anesthesiologist assistant candidates must complete a clinical rotation in all subspecialties of anesthesia with additional training in regional anesthesia and invasive line placement. The anesthesiologist assistant programs are accredited by the Commission for the Accreditation of Allied Health Education Programs.

Initial certification is awarded upon successful completion of the certifying examination administered by the National Commission for Certification of Anesthesiologist Assistants. Recertification requires documentation of completion of 40 hours of continuing medical education credits every two years and successful completion of the examination for Continued Demonstration of Qualifications every six years.

There have been no major studies comparing patient safety or other relevant factors when anesthesia care is provided in an anesthesiologist assistant environment as opposed to other anesthesia care environments. Research indicates that certified registered nurse anesthetists (nurse anesthetists) are the only other anesthesia care providers that merit a direct comparison with anesthesiologist assistants. At present, there are about 35,000 nurse anesthetists practicing nationally, authorized in every jurisdiction in the United States.

There are many similarities between nurse anesthetists and anesthesiologist assistants, but the four main differences are curriculum prerequisites, scope of practice, practice jurisdictions, and governing entities. First, nurse anesthetist educational programs require specific nursing degree training for admission, while anesthesiologist assistant programs do not specify required undergraduate majors but require some related course work. Second, anesthesiologist assistants are not allowed to practice in any jurisdiction without the direct supervision of an anesthesiologist, while nurse anesthetists may practice under the supervision of any physician or in collaboration without specific supervision in those states that have chosen to "opt-out" of Medicare reimbursement for such services. Third, nurse anesthetists practice in every jurisdiction nationwide under a license or its equivalent, while anesthesiologist assistants practice in only 16 jurisdictions, under licensure in 10 of those jurisdictions and under physician delegation in the other 6. Fourth, nurse anesthetists are always governed by the state's nursing board, while anesthesiologist assistants are always governed by the state's medical board.

Kentucky data was limited since only two anesthesiologist assistants practice in the state. Interviews were conducted with several interested parties for this study. While the interviews were designed to meet the study's mandate of direct comparison among jurisdictions and professions, many also led to that party's view of whether Kentucky should keep or change its current system governing the practice of anesthesiologist assistants. Opinions differed, with parties having strong opinions for or against change and several parties choosing to take a neutral stance on the issue.

Kentucky's treatment of all anesthesia care providers is consistent with other jurisdictions that allow practice by anesthesiologist assistants, with one exception. Kentucky requires that an anesthesiologist assistant attain degrees as both an anesthesiologist assistant and as a physician assistant.

Chapter 1

The Anesthesiologist Assistant Profession

Introduction

Health care providers known as anesthesiologist assistants are a small but growing group whose profession has fairly recent origins. These practitioners are available in several jurisdictions as an option for an anesthesia care team. The majority of states do not currently allow anesthesiologist assistant practice. Some consider anesthesiologist assistants to be highly skilled and highly trained practitioners who are qualified to administer anesthesia under the supervision of an anesthesiologist. Others view anesthesiologist assistants as not having the required educational or other background to safely administer anesthesia care.

This chapter provides an overview of the anesthesiologist assistant profession by exploring what it is, its history, and its current issues. Also, qualifications of anesthesiologist assistants are reviewed by looking at anesthesiologist assistant training and education, certification and licensure requirements, and scope of practice. Finally, Chapter 1 investigates the impact of anesthesiologist assistants on patient safety and access to care.

History and Description of Anesthesiologist Assistants

The first anesthesiologist assistant programs began at Emory University and Case Western Reserve University in 1969.

The first anesthesiologist assistant programs were started at Emory University and Case Western Reserve University in 1969. The impetus of the education program and profession was the physician shortage faced by the field of anesthesiology in the mid-1960s, the shortage of nurses in anesthesia, and the increasing technological demands of the field. In response, three anesthesiologists proposed the concept of an "anesthesia technologist" who would be a member of the anesthesia team and be considered an "applied physiologist" (Gravenstein 356).

It was envisioned that this new anesthesia professional would have a bachelor's degree in science with premedical training and be awarded a master's degree that allowed for both vertical mobility toward a medical degree and lateral mobility into other areas requiring training in biomedical equipment and physiologic measurement. The anesthesiologist assistant would remain under

the supervision of the anesthesiologist as "responsibility and immediate care of the patient must remain within the province of the anesthesiologist; consequently, personnel could not work independently but only under the immediate direction of the anesthesiologist. An advantage in manpower for the anesthesiologist would result, as he could provide attention to several patients with the proper employment of the anesthesia team, as described above" (Gravenstein 357).

A small number of anesthesiologist assistants practice compared to other similar professions, and the practice has remained largely regionalized.

Since its inception, the anesthesiologist assistant profession has grown but remains a largely regionalized profession due to the small number of programs, which until recently numbered only two; and the limited number of jurisdictions, 16, where anesthesiologist assistants are authorized to practice. In 1989, the National Commission for Certification of Anesthesiologist Assistants was formed to establish a national certification process. Today, the American Society of Anesthesiologists considers anesthesiologist assistants to be mid-level anesthesia providers who work under the direction of an anesthesiologist and participate in the provision of anesthesia, performing such tasks as administering drugs, obtaining vascular access, applying and interpreting monitors, establishing and maintaining patient airway, and assisting with preoperative assessment (Emory).

Current Issues Relating to Anesthesiologist Assistants

Florida Anesthesiologist Assistants

Florida began discussing the anesthesiologist assistant profession in 2001. Anesthesia physicians wanted a new type of anesthesia provider to alleviate the shortage of help for anesthesia teams. Also, those physicians felt that using only nurse anesthetists drained the already small pool of nurses available for more generalized work (Lundine).

In 2004, anesthesiologist assistant licensing was implemented in Florida.

In 2004, Florida enacted Senate Bill 626, which established the anesthesiologist assistant profession in that state. The bill required that anesthesiologist assistants be directly supervised by an anesthesiologist, work pursuant to a written protocol filed with the medical board, and practice in accordance with the scope of practice defined in the legislation and as further defined by the medical board. The debate on the issue was intense. The Florida Association of Nurse Anesthetists (FANA) opposed the Florida Society of Anesthesiologists (FSA) to try to prevent anesthesiologist assistants from practicing in Florida. FANA stated

that anesthesiologist assistants were not adequately educated and trained, and FSA argued that they were adequately educated and trained. After much media attention and debate, the bill passed and was signed into law by Governor Jeb Bush (Turpin). The Governor stated that he recognized that there are "differences in training between nurse anesthetists and anesthesiologist assistants, but the difference does not equate to inferiority" (Maine Nurse).

Nova Southeastern University in Ft. Lauderdale, Florida, established a Master of Health Science Anesthesiologist Assistant Program in 2005. This program will graduate anesthesiologist assistant students within the next few years.

Training and Education

CAAHEP Accreditation of Programs

There are four accredited anesthesiologist assistant schools in the U.S. Accreditation is granted by the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

Anesthesiologist assistants graduate from one of four accredited educational programs in the U.S. The programs are located at Emory University in Atlanta, Georgia; Case Western Reserve University in Cleveland, Ohio; Nova Southeastern University in Fort Lauderdale, Florida; and South University in Savannah, Georgia. These programs are accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). CAAHEP is the largest programmatic accreditor in the health sciences field. Through its Committees on Accreditation, CAAHEP reviews and accredits more than 2,000 educational programs in 19 health science occupations and is recognized by the Council for Higher Education Accreditation (Commission. *Home*). The four schools of medicine associated with these programs are accredited by the Liaison Committee on Medical Education. Additionally, the programs meet the criteria for accreditation by the Accreditation Council for Graduate Medical Education for anesthesia residency training programs (Commission. *Standards 2*).

The education requirements are similar among the programs. The *Standards and Guidelines* of CAAHEP requires that the anesthesiologist assistant program build on a pre-professional study of the sciences that would allow a student to pursue an advanced degree program in medical science (6). A bachelor's degree with specific prerequisite courses in science, math, and English are required for entrance into an anesthesiologist assistant program. An entrance exam is also required for admittance (American Society. *Frequently*). Emory, Nova Southeastern, and

South Universities accept entrance exam scores from the Graduate Record Examination (GRE) or the Medical College Admission Test (MCAT). Case Western Reserve University only accepts entrance exam scores from the MCAT.

Table 1.1
Anesthesiologist Assistant Education Programs

Name of Anesthesiologist Assistant Program	Location	Entrance Exam Required For Program*	Term of Program	Number of Clinical Hours in Program	Curriculum Hours in Program	CAAHEP Certified
Emory University School of Medicine Master of Medical Science Program in Anesthesiology	Atlanta, GA	GRE or MCAT	24 months (6 semesters)	2,500 hours	78 hours	Yes
Case Western Reserve University Master of Science in Anesthesia Program	Cleveland, OH	MCAT	24 months (6 semesters)	2,000 hours	63 hours	Yes
Nova Southeastern University Master of Health Science Anesthesiologist Assistant Program	Ft. Lauderdale, FL	GRE or MCAT	27 months (7 semesters)	2,592 hours	132 hours	Yes
South University Master of Medical Science Anesthesiologist Assistant Program	Savannah, GA	GRE or MCAT	28 months (9 quarters)	2,718 hours	158 hours	Yes

*Other admission requirements for all four schools include a bachelor's degree with some specific prerequisite course work in science, math, and English.

Source: Staff research of all four institutions.

The 16 jurisdictions where anesthesiologist assistants work by license, regulation, certification, or physician delegation all require through statute or regulation that anesthesiologist assistants have graduated from an accredited anesthesiologist assistant program. Beyond this requirement, passing the national certifying exam and participating in continuing education sessions, staff research

indicates no other specific educational requirements in any of the jurisdictions.

A potential fifth anesthesiologist assistant school, located in Kansas City, Missouri, is currently seeking accreditation.

In Missouri, a fifth school has requested accreditation. The University of Missouri Board of Curators approved in July 2006 the creation of a Master of Science in Anesthesia program to be offered at the University of Missouri-Kansas City's School of Medicine. The program is now seeking accreditation from CAAHEP and hopes to begin accepting prospective anesthesiologist assistant students in the summer of 2007 (Corey).

Curriculum and Clinical Hours

CAAHEP has created guidelines on curriculum and clinical hours for anesthesiologist assistant school programs.

The *Standards and Guidelines* of CAAHEP establish basic guidelines for the curriculum of an anesthesiologist assistant program. CAAHEP states that "the curriculum should be designed on an advanced degree model and require a minimum of two full academic years. The curriculum should provide an early integration of clinical and didactic instruction with supervised clinical practice" (Commission. *Standards* 5). Further, CAAHEP indicates that "Clinical rotations should afford students a variety of patient care experiences as well as a consistency of learning opportunities among individual students. External rotations at affiliated sites should be planned based on the desired educational outcomes set by the program" (5).

CAAHEP requires the basic science curriculum to include appropriate content in anatomy, biochemistry, physiology, and pharmacology, with particular emphasis on the cardiovascular, respiratory, renal, nervous, and neuromuscular systems. Appropriate study components of other basic medical sciences are compulsory, including microbiology, pathology, and immunology. Medical biophysics appropriate to anesthesia practice is also required, and it includes and emphasizes the principles underlying the function of the devices used in anesthesia delivery systems, in life support systems such as ventilators, and in basic and advanced patient monitors. Also required are the principles of medical instrumentation that emphasize the design, function, operation, and calibration of patient monitoring devices. CAAHEP mandates training in the function, calibration, and use of the equipment in associated clinical laboratories (e.g., blood gas analyzers). Another essential condition of anesthesiologist assistant program curricula is that instruction be provided on the concepts of data analysis as related to collecting, processing, and presenting basic science and clinical data in medical literature, emphasizing methods that support an understanding of clinical decision making. Instruction is

required on patient assessment, including techniques of interviewing to elicit a health history and performing a physical examination at the level appropriate for preoperative, intraoperative, and postoperative anesthetic evaluations. Another prerequisite is extensive instruction in the clinical practice of anesthesia and patient monitoring, principally in an operating room setting but also in preoperative areas, postoperative recovery areas, intensive care units, pain clinics, affiliated clinical laboratories, and other supporting services. Also, curricula must discuss clinical quality assurance conferences and literature reviews (5-6).

Anesthesiologist assistant programs consist of master's degree training in anesthesia lasting between 24 and 28 consecutive months. The four programs require between 2,000 and 2,700 clinical hours and between 63 and 158 curriculum hours.

The four current anesthesiologist assistant programs require between 24 and 28 consecutive months to complete master's degree training in anesthesia. The programs mandate that students complete between 2,000 and 2,700 clinical hours of training and between 63 and 158 curriculum hours before a degree will be awarded.

Certification and Licensure Requirements

All 16 jurisdictions where anesthesiologist assistants practice require individual certification by the National Commission for Certification of Anesthesiologist Assistants (NCCAA).

Currently, 16 jurisdictions allow anesthesiologist assistants to practice. Of those 16, 10 (including Kentucky) allow practice through direct licensure of the anesthesiologist assistant. The other six jurisdictions allow anesthesiologist assistants to practice under the concept of "physician delegation." (See Chapter 2 for more detail on the jurisdictions and distinctions.) Regardless of the practice scheme chosen, all of these jurisdictions require that each anesthesiologist assistant receive certification by the National Commission for Certification of Anesthesiologist Assistants (NCCAA).

NCCAA certifies anesthesiologist assistants through a three-stage process. First, NCCAA administers a general "certifying" examination for initial applicants. This examination must be passed in order to practice in any jurisdiction as an anesthesiologist assistant. Second, anesthesiologist assistants are required to register credit for continuing medical education (CME) taken in two-year cycles. In each two-year period, the anesthesiologist assistant must complete at least 40 hours of CME classes approved by NCCAA. Third, anesthesiologist assistants must successfully complete an Examination for Continued Demonstration of Qualifications (CDQ) every six years, beginning six years after initial certification. The anesthesiologist assistant must still meet CME requirements during the year when the CDQ exam is taken (National Commission. *Certification*).

NCCAA Certificate and Examination

To receive initial certification, each anesthesiologist assistant must pass a certifying examination developed by the NCCAA and the National Board of Medical Examiners.

According to NCCAA, the certification process begins with the Certifying Examination for Anesthesiologist Assistants. This annual examination is a written standardized national examination. The NCCAA notes that "(I)tems on the examination are designed to assess each candidate's entry-level knowledge and his/her skill in applying that knowledge related to the duties of a practicing anesthesiologist assistant" (*Certification*).

In 1990, NCCAA and the National Board of Medical Examiners developed the first certifying examination. NCCAA notes that these first efforts were driven by creating content grids based on practice surveys of supervising anesthesiologists and practicing anesthesiologist assistants.

The first certifying examination for anesthesiologist assistants was offered in 1992. In each subsequent year, NCCAA has prepared the certifying examination by appointing a test committee of anesthesiologist assistants, anesthesiologists, and testing and measuring experts. The test committee consults with the National Board of Medical Examiners to write the test items, construct the examination, set testing standards, and establish systems for examination scoring and reporting (*Certification*).

Continuing Education

Anesthesiologist assistants must complete 40 hours of continuing medical education (CME) every two years.

After initial certification, each anesthesiologist assistant must maintain the NCCAA required level of continuing medical education to continue to practice. According to NCCAA's rules that accompany the CME registration form, "continued certification is contingent upon registration of 40 hours of continuing medical education every two years, including the year in which the CDQ Examination is taken." Excess CME hours cannot be saved for subsequent years.

NCCAA accepts CME credit for programs approved by the American Medical Association, the American Association of Physician Assistants, and the Accreditation Council for Continuing Medical Education. Of the 40 hours every registration period, the NCCAA rules require 30 hours "in the field of anesthesia or one of its subspecialties," with the remaining 10 hours in any approved medical topic. Any instruction in American Heart Association Advanced Cardiovascular Life Support counts toward the 30 hours of anesthesia courses (National Commission. *Rules 1*).

If an anesthesiologist assistant is a current full-time student in a school of medicine accredited by the Liaison Committee on Medical Education, the NCCAA grants that student the full 40 hours of CME for the registration period. The Liaison Committee on Medical Education, which is sponsored by both the American Medical Association and the Association of American Medical Colleges, identifies itself as "the nationally recognized accrediting authority for medical education programs leading to the M.D. degree in U.S. and Canadian medical schools"

The NCCAA randomly audits anesthesiologist assistant CME submissions, and anesthesiologist assistants are required to comply with audits to maintain NCCAA certification. The audit period is for the preceding two-year CME cycle. An anesthesiologist assistant who fails (or fails to comply with) the audit will be decertified and will only be eligible for recertification after passing a certifying examination (National Commission. *Rules 1*).

Continued Demonstration of Qualifications Examination

Anesthesiologist assistants are required to take an Examination for Continued Demonstration of Qualifications (CDQ) once every six years.

Once every six years, an anesthesiologist assistant is required to sit for the Examination for Continued Demonstration of Qualifications, which the NCCAA has been offering annually since 1998. The National Board of Medical Examiners cooperates with NCCAA to prepare the CDQ examination, just as it does for the initial certifying examination. According to the commission, "(T)he CDQ Examination is designed to test the cognitive and deductive skills of the practicing anesthesiologist assistant who has successfully entered and continues to participate in the certification process for anesthesiologist assistants administered by NCCAA" (*Certification*).

Only currently NCCAA-certified anesthesiologist assistants are allowed to sit for the CDQ examination. Also, as with the CME requirements mentioned above, any anesthesiologist assistant who fails to register for the CDQ examination must retake the initial certifying examination to be eligible to regain certification (National Commission. *Certification*).

The content of the CDQ examination consists of 16 categories. While these categories are identical to those of the initial certifying examination, they are weighted and covered differently between the two examinations. The 16 general topics covered are airways, anesthesia, cardiovascular, hematology and coagulation, instrumentation and monitoring, metabolism and endocrine, neuro,

neuromuscular, obstetrics and perinatology, pediatrics and neonatology, pharmacology, physics, regional anesthesia and pain therapy, renal, respiration, and miscellaneous (National Commission. *Certification*). Each category contains numerous subgroups of eligible information.

Scope of Practice

Anesthesiologist assistant scope of practice generally revolves around supervision, the anesthesia care team concept, and prescriptive authority.

The scope of practice for anesthesiologist assistants is similar in each of the 16 jurisdictions where anesthesiologist assistants practice. Differences can exist based on specific statutes, regulations, and regulating board policies. But overall, each scope of practice follows a typical set of authorities. An example of these similar scope of practice authorities is set forth in the Florida Statutes: 458.3475, regarding medical practice; and 459.023, regarding osteopathic medicine. The text of those statutes may be found in Appendix A.

Supervision

A component within an anesthesiologist assistant's scope of practice is the necessary type of anesthesiologist supervision. All 16 jurisdictions where anesthesiologist assistants practice require direct supervision within the facility where the anesthesiologist assistant is administering anesthesia. The exact level of supervision depends on each jurisdiction. Some jurisdictions only dictate that a plan for anesthesia be formulated with the anesthesiologist and that the plan is then implemented by the anesthesiologist assistant. Some jurisdictions require that, after an anesthesia plan is formulated, the anesthesiologist must be physically present in the room for certain phases or procedures. Other jurisdictions only require that the anesthesiologist be present in the facility for consultation or for a possible emergency.

Anesthesiologist assistant supervision ratios vary among jurisdictions, ranging from 4:1 to 2:1.

Another aspect of anesthesiologist assistant supervision is the ratio of anesthesiologist assistants to anesthesiologists. The ratios range from one anesthesiologist supervising two anesthesiologist assistants to one anesthesiologist supervising four anesthesiologist assistants. The levels of supervision for each jurisdiction that requires this supervision may be found in Appendix B.

Prescriptive Authority

Prescriptive authority for anesthesiologist assistants is rare, with only Alabama, Georgia, and Kentucky permitting it.

A second component of an anesthesiologist assistant's scope of practice is prescriptive authority. Prescriptive authority is not

common among jurisdictions that have anesthesiologist assistant practice. Only three states allow anesthesiologist assistants to prescribe drugs. Alabama allows anesthesiologist assistants, under the direct supervision of an anesthesiologist, to prescribe noncontrolled substances. Georgia allows anesthesiologist assistants to prescribe noncontrolled and controlled substances through an approved job description and under the direct supervision of an anesthesiologist. Kentucky allows an anesthesiologist assistant to prescribe noncontrolled substances if he or she is a licensed physician assistant.

Anesthesia Care Team Model

The Anesthesia Care Team model envisions the anesthesiologist as always present and as the supervisor of the other anesthesia care providers.

A third component of the scope of practice of anesthesiologist assistants is that they practice as part of an Anesthesia Care Team. This is defined by the American Academy of Anesthesiologist Assistants as a team approach to anesthesia management in which an anesthesiologist concurrently supervises anesthetists during the performance of the technical aspects of an anesthetic procedure. Within the Anesthesia Care Team, an anesthesiologist and an anesthesiologist assistant work together to provide anesthesia care in the belief that the interests of patient safety are best served with an anesthesiologist's involvement in the delivery of every anesthetic. The medical direction lies with the anesthesiologist, who may then designate aspects related to the implementation of an anesthetic plan to the anesthesiologist assistant.

The national organizations for both anesthesiologists and anesthesiologist assistants endorse the Anesthesia Care Team model.

The American Society of Anesthesiologists (ASA) supports the Anesthesia Care Team model and believes that certain tasks may be delegated but that responsibility for the care team and the patient's safety should ultimately rest with the anesthesiologist. The team may include core members such as anesthesiology fellows and residents, nurse anesthetists and student nurse anesthetists, or anesthesiologist assistants and anesthesiologist assistant students. Other health professionals who contribute to the core team include postanesthesia nurses, critical care nurses, respiratory therapists, and support personnel and technicians. Emphasis is placed on optimizing patient safety, and the ASA lists anesthesiologist responsibilities that include management of personnel, preanesthetic evaluation of the patient, prescribing the anesthetic plan, management of the anesthetic, postanesthesia care, and anesthesia consultation (American Society. *Statement*).

Patient Safety

The relatively small number of anesthesiologist assistants compared to other anesthesia providers such as anesthesiologists and nurse anesthetists creates a small sample size and number of incidents to measure. No studies have been published in peer-reviewed journals assessing the impact of anesthesiologist assistants on patient safety. An unpublished study conducted at University Hospitals of Cleveland (UHC)—and highlighted by the American Academy of Anesthesiologist Assistants—compared the outcomes of anesthesiologist assistants and certified registered nurse anesthetists as part of the hospital's quality assurance process. At UHC, anesthesiologist assistants and certified registered nurse anesthetists are part of the anesthesiology health care team operating under the medical direction of an anesthesiologist as required by Ohio statute (Allinger. *UnivHosp*).

An unpublished study conducted by the University Hospitals of Cleveland found comparable adverse effects in surgeries whether the anesthesia care involved anesthesiologist assistants or nurse anesthetists.

In a review of data from 1999 to 2003, UHC examined the complications rates associated with surgery cases in which an anesthesiologist assistant or certified registered nurse anesthetist had been involved. A total of 46,845 surgery cases, both pediatric and adult, were reviewed, with 23,137 cases involving anesthesiologist assistants and 23,708 involving certified registered nurse anesthetists. Researchers did not randomize for severity of cases but reported that the risk factors associated with the patient population and types of procedures were similar for each group. The results of the study indicated that the overall intraoperative and immediate postoperative complications rates, or adverse events, were no higher for anesthesiologist assistants than the rates of adverse events for certified registered nurse anesthetists (Allinger. *UnivHosp*).

Given the lack of peer-reviewed research studies on patient safety outcomes for anesthesiologist assistants, another indicator that might be used is data on disciplinary actions against anesthesiologist assistants reported to the state board of medical licensure. Since the most anesthesiologist assistants are employed in Georgia and Ohio, those states might be expected to have data available on disciplinary actions. Due to the categorization of anesthesiologist assistants as physician assistants under Georgia statutes, however, disciplinary actions against anesthesiologist assistants are not distinguished from those against physician assistants in the reports made available by Georgia's Composite State Board of Medical Licensure. Ohio, on the other hand, differentiates between anesthesiologist assistants and physician assistants. From 2000 to 2004, there were no disciplinary actions

against anesthesiologist assistants reported by the State Medical Board of Ohio. This is not as rigorous a measure of patient safety outcome as that used in the UHC study. Overall, the lack of data limits the conclusions that can be made about patient safety outcomes for anesthesiologist assistants.

Patient Access to Care

Information is limited and opinions differ on what impact anesthesiologist assistants have on patient access to care.

Discussions of access to health care primarily focus on health insurance coverage or the lack of it. However, having a sufficient number of health care professionals to provide the services needed also plays an important role in maintaining adequate access to health care. Due to the growth and aging of the nation's population, the U.S. Department for Health and Human Services estimates that there will be an increasing need for physician services, particularly for the services of specialists and specialties that focus on the care of the aging (3). Between 2005 and 2020, baseline projections are for a 25 percent increase in the number of anesthesiologists required to meet the health care needs of the nation's population (27). The National Center for Workforce Analysis also has projected a shortage in the supply of nurses (Health Resources 1). According to the American Association of Nurse Anesthetists, this shortage includes certified registered nurse anesthetists (*America's Nurse*).

Given the current and future need for anesthesia providers, it is suggested by some that anesthesiologist assistants may be able to help alleviate the lack of anesthesia providers. Some researchers have found that the increase in the number of nonphysician professionals such as physician assistants and nurse practitioners improved access to care and provided services to populations that would have been managed by physicians or would have gone without services (Hooker 174). There have not been similar studies on the impact that anesthesiologist assistants have had on access to care. Some believe that while anesthesiologist assistants may have a positive impact on access to care, that impact may be limited due to the requirement that anesthesiologist assistants practice under the direct supervision of anesthesiologists.

Chapter 2

Anesthesiologist Assistants in Kentucky Compared to Other Jurisdictions

Training and Education

Kentucky has unique educational requirements for anesthesiologist assistants.

Among jurisdictions that authorize anesthesiologist assistant practice, only Kentucky requires that anesthesiologist assistants meet the requirements of certification as both physician assistants and anesthesiologist assistants (201 KAR 9:175). Georgia and Alabama regulate both anesthesiologist assistants and physician assistants as assistants to physicians but do not require physician assistant training for anesthesiologist assistants.

Kentucky also restricts the types of physician assistant programs that qualify an individual as an anesthesiologist assistant, requiring a four-year physician assistant program. According to the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), only 24 of the 135 accredited physician assistant programs in the United States are baccalaureate programs (Accreditation). Shorter programs are permissible for physician assistants seeking licensure in Kentucky; the restriction applies only to physician assistants practicing as anesthesiologist assistants. The only accredited physician assistant program in Kentucky, located at the University of Kentucky, is a 24-month master of science program.

Kentucky's statutes and regulations differ somewhat on physician assistant educational programs. KRS 311.550(17) requires that a program be accredited by ARC-PA (the American Medical Association's accrediting body), or predecessor or successor bodies. 201 KAR 9:175, on the other hand, requires accreditation by the Commission on Accreditation of Allied Health Education Programs or the Committee on Allied Health Education and Accreditation (CAHEA). CAAHEP no longer accredits physician assistant programs, and the American Medical Association now accredits through ARC-PA, not CAHEA (American Medical Assn.).

Certification and Licensure Requirements

Sixteen jurisdictions allow anesthesiologist assistant practice. Ten (including Kentucky) authorize direct licensure, certification, or registration, while six authorize practice through physician delegation.

There are 16 jurisdictions (including Kentucky) where anesthesiologist assistants are authorized to practice, either through 1) direct licensure, certification, or registration, or 2) under the principle of a supervising physician's delegatory authority.

Direct licensure, certification, or registration for anesthesiologist assistants has the same meaning as it does for other licensed professions. With direct licensure, a government-related entity confers a license upon each individual who meets the various requirements for training, education, national certification (if applicable), examination, continuing education, and ongoing ethical behavior. While a license may be more difficult to acquire than practice by physician delegation, the American Society of Anesthesiologists and the American Academy of Anesthesiologist Assistants both believe licensure more clearly defines the anesthesiologist assistant profession. The licensing scheme for anesthesiologist assistants is contained within state law through either statutes created by the legislature or through administrative regulations, usually promulgated by the state's medical board (American Society. *Frequently*).

Physician delegatory authority is a more fluid concept than direct licensure and can mean different things in different jurisdictions. The American Society of Anesthesiologists describes physician delegatory authority as follows:

It is well accepted in various medical specialties, including anesthesiology, that the board of medicine may grant a physician the authority to delegate tasks or duties related to the practice of medicine to qualified individuals so long as the physician: 1) remains ultimately responsible to the patient and 2) assures that the individual performing the tasks is qualified to do so (American Society. *Frequently*).

Many laws pertaining to physician delegatory authority mandate that the physician assure that the anesthesiologist assistant is qualified by experience, education, or training (e.g., Colo. Rev. Stat. §12-36-106(3)(l); Mich. Comp. Laws §333.16215; W.Va. Code §30-3-14(c)(16)). Thus, while the anesthesiologist assistant in a physician delegation jurisdiction does not receive a license directly from the medical board in that jurisdiction, the anesthesiologist assistant still must meet nationally accredited training, certification, and other ongoing NCCAA requirements.

Table 2.1 shows how each jurisdiction handles anesthesiologist assistant practice.

Table 2.1
Type of Anesthesiologist Assistant Practice by State

Jurisdiction	Direct license, regulation, or certification	Practice privilege through physician delegation
Alabama	X	
Colorado		X
District of Columbia	X	
Florida	X	
Georgia	X	
Kentucky	X	
Michigan		X
Missouri	X	
New Hampshire		X
New Mexico	X	
Ohio	X	
South Carolina	X	
Texas		X
Vermont	X	
West Virginia		X
Wisconsin		X

Sources: Allinger. *AA Work States*; staff research.

Three Kentucky border states allow anesthesiologist assistant practice. Ohio and Missouri use direct licensure, while West Virginia employs physician delegation.

Three of Kentucky's border states authorize anesthesiologist assistant practice, with Ohio and Missouri implementing direct licensing, and West Virginia authorizing practice through physician delegation. The four accredited anesthesiologist assistant education programs are in three states: one in Florida, two in Georgia, and one in Ohio. These states have authorized anesthesiologist assistant practice. A map showing the proximity of the anesthesiologist assistant education programs to anesthesiologist assistant practice jurisdictions may be found in Appendix C.

All states that authorize practice by anesthesiologist assistants govern their practice through the state's medical licensing board. While the traditional focus of medical licensing boards is on physician (and sometimes osteopathic) licensing, with increasing frequency, medical boards are governing other allied health professions. Some of the jurisdictions that allow anesthesiologist

assistant practice have established an advisory committee specifically for anesthesiologist assistants. These committees do not have the power to make rules or promulgate regulations, but they advise the medical licensing board on issues and rules relevant to anesthesiologist assistant practice. The theory behind these advisory committees is that the members, many of whom are practitioners of the allied health profession, will be in a better position to make judgments based on their day-to-day exposure to the profession. In Kentucky, anesthesiologist assistants are governed by the Physician Assistant Advisory Committee because they are deemed to be a type of physician assistant (KRS 311.842).

There are broad consistencies among the jurisdictions in terms of licensure, certification, registration, or physician delegation. Kentucky differs from the other jurisdictions in that a physician assistant degree is part of the prerequisite training for an anesthesiologist assistant before a license will be granted. This training is in addition to the anesthesiologist assistant degree that must also be obtained. KRS 311.862, which contains this requirement, "grandfathered" those anesthesiologist assistants already practicing in Kentucky before July 15, 2002. This exception applied to two anesthesiologist assistants in Kentucky, both of whom are still practicing and who remain the only anesthesiologist assistants licensed in Kentucky.

Concerning the educational requirement for any future anesthesiologist assistants, KRS 331.862(2)(a) specifically requires that the anesthesiologist assistant graduate from both a four-year physician assistant program and a two-year anesthesiologist assistant program. See Appendix D for the full text of KRS 331.862 and its related educational statutes.

Scope of Practice

There is little variation in the scope of practice for anesthesiologist assistants in each of the 16 jurisdictions where anesthesiologist assistants practice. However, differences exist and can be established in statutes, regulations, and regulating board policies. Anesthesiologist assistant scope of practice generally revolves around supervision, the anesthesia care team concept, and prescriptive authority.

Anesthesiologist supervision is required for any anesthesiologist assistant practice. Jurisdictions usually set out how many anesthesiologist assistants an anesthesiologist may supervise at

once, otherwise known as the supervision ratio. Supervision ratios allowed in each jurisdiction may be found in Appendix B.

Anesthesiologist assistants are granted prescriptive authority in only three of the 16 jurisdictions where they practice. Kentucky is one of these three jurisdictions, and it allows an anesthesiologist assistant to prescribe noncontrolled substances if he or she is a licensed physician assistant. Alabama allows anesthesiologist assistants, under the direct supervision of an anesthesiologist, to prescribe noncontrolled substances. Georgia allows anesthesiologist assistants to prescribe noncontrolled and controlled substances through an approved job description and under the direct supervision of an anesthesiologist. Table 2.2 shows the range of anesthesiologist assistant prescriptive authority.

Table 2.2
Anesthesiologist Assistant Prescriptive Authority

State	Noncontrolled Substances	Controlled Substances
Alabama	Yes*	No
Colorado	No	No
District of Columbia	No	No
Florida	No	No
Georgia	Yes**	Yes**
Kentucky	Yes***	No
Michigan	No	No
Missouri	No	No
New Hampshire	No	No
New Mexico	No	No
Ohio	No	No
South Carolina	No	No
Texas	No	No
Vermont	No	No
West Virginia	No	No
Wisconsin	No	No

* Signature must be authenticated by supervising anesthesiologist.

** The supervising anesthesiologist may delegate this authority through an approved job description.

***The authority to prescribe noncontrolled substances exists if the anesthesiologist assistant is also a licensed physician assistant.

Source: Staff research.

Emerging Trends

Recent trend analysis is relatively neutral. Since 2000, the legislatures in two jurisdictions have taken positive actions toward anesthesiologist assistants, while two have taken negative actions against anesthesiologist assistants.

It is difficult to identify a trend in state regulation of anesthesiologist assistants. The four states that have passed legislation since 2000 are evenly divided between permitting and prohibiting anesthesiologist assistant practice.

Recent Actions Against Anesthesiologist Assistant Practice

In 2000, Mississippi prohibited its physician assistant statutes from being construed as authorizing "the licensure of anesthesiologist's assistants" (Miss. Code Ann. § 73-26-1). In other words, Mississippi excludes anesthesiologist assistants from the definition of "physician assistants." This does not actually prohibit the licensure of anesthesiologist assistants but prevents the use of that statutory chapter as legal justification.

In 2001, Louisiana passed House Bill 1828, which proclaimed that "A physician shall not delegate any medical tasks or duties related to the selection, delivery, or administration of anesthesia to an anesthesiologist assistant or anesthesia assistant." This bill was vetoed. In 2004, the legislature succeeded in passing a bill that added a subsection of statutes governing certified registered nurse anesthetists (Acts 2004, No. 279, § 1). After a lengthy section of legislative findings in favor of certified registered nurse anesthetists, the legislature stated its intent "to prevent the introduction of anesthesiologist assistants into Louisiana" (LSA-R.S. 37:930(G)(2)). Further, it limited the administration of anesthetic to specific types of health care professionals:

No health care provider or other person, other than a certified registered nurse anesthetist, physician, dentist, perfusionist, or other explicitly authorized provider, shall select or administer any form of anesthetic to any person either directly or by delegation unless explicitly authorized by this Title (LSA-R.S. 37:930(G)(3)).

Recent Actions Favoring Anesthesiologist Assistant Practice

Missouri, on the other hand, in 2003 enacted a statutory scheme authorizing and regulating anesthesiologist assistants in that state. Legislative history for the previous five years reveals no prior bills relating to anesthesiologist assistants in Missouri, and only one bill has subsequently amended those statutes—a 2006 bill that applied

the physician automatic license revocation provisions to physician assistants and anesthesiologist assistants.

As discussed in more detail in Chapter 1, the University of Missouri-Kansas City has announced plans to open an anesthesiologist assistant educational program and expects to matriculate its first students in the fall of 2007.

Florida passed legislation in 2004 authorizing anesthesiologist assistant practice. The anesthesiologist assistant program at Nova Southeastern University in Ft. Lauderdale has been recently accredited by CAAHEP.

In the 2005-2006 session, the North Carolina Senate passed House Bill 1330, authorizing licensure of anesthesiologist assistants. The bill passed the Senate in June, but no action was subsequently taken in the House.

Types of States Where Anesthesiologist Assistants Practice

At this time, 12 of the jurisdictions that allow anesthesiologist assistant practice are east of the Mississippi River. Further, the majority of the jurisdictions are in the South and Midwest.

Florida is the most populous state allowing anesthesiologist assistant licensure, while Texas is the most populous state allowing anesthesiologist assistant practice through physician delegation.

There is no definitive trend as to whether anesthesiologist assistants primarily practice in states with large or small populations. Five of the nation's 10 most populous states allow anesthesiologist assistant practice, but the same is true for two of the three least populous jurisdictions. Many anesthesiologist assistant jurisdictions are similar in population to Kentucky. Table 2.3 demonstrates this range.

Table 2.3
State Population Ranking of
Anesthesiologist Assistant Jurisdictions

State or Jurisdiction	2005 Population Rank
Texas	2
Florida	4
Ohio	7
Michigan	8
Georgia	9
Missouri	18
Wisconsin	20
Colorado	22
Alabama	23
South Carolina	25
Kentucky	26
New Mexico	36
West Virginia	37
New Hampshire	41
Vermont	49
District of Columbia	50

Source: U.S. Census Bureau.

Federal Position Toward Anesthesiologist Assistants

The federal government recognizes anesthesiologist assistants as providers of anesthesia services and allows reimbursement for their services. Under 42 C.F.R. 410.69, Medicare Part B will pay for anesthesia services and related care provided by a certified registered nurse anesthetist or an anesthesiologist assistant "who is legally authorized to perform the services by the State in which the services are furnished." That regulation also defines an anesthesiologist assistant as a person who works under the direction of an anesthesiologist and is a graduate of a certified anesthesiologist assistant program. The Centers for Medicare and Medicaid Services under 42 C.F.R. 482.52 includes anesthesiologist assistants among the list of authorized providers who may administer anesthesia. The TRICARE program, the health care program for active and retired military personnel and their dependents, also includes anesthesiologist assistants as authorized providers (32 C.F.R. 199.6). For TRICARE, an anesthesiologist assistant may provide anesthesia services if he or she works under the direct supervision of an anesthesiologist who bills for the service.

Chapter 3

Anesthesiologist Assistants Compared to Other Anesthesia Providers

Types of Providers

The federal government and the ASA consider direct anesthesia care to be permissible only when administered by an anesthesiologist, an anesthesiologist assistant, or a nurse anesthetist.

The existing types of anesthesia care providers are surprisingly limited. The American Society of Anesthesiologists (ASA), in its Statement on the Anesthesia Care Team, identifies what it considers the main contributors to anesthesia. The ASA care team model assumes the presence of an anesthesiologist. The ASA care team statement identifies potential members of the care team.

Physicians

Anesthesiologist – director of the anesthesia care team - a physician licensed to practice medicine who has successfully completed a training program in anesthesiology accredited by the ACGME, the American Osteopathic Association or equivalent organizations.

Anesthesiology Fellow – an anesthesiologist enrolled in a training program to obtain additional education in one of the subspecialties of anesthesiology.

Anesthesiology Resident – a physician enrolled in an accredited anesthesiology residency program.

Nonphysicians

Nurse Anesthetist – a registered nurse who has satisfactorily completed an accredited nurse anesthesia training program.

Anesthesiologist Assistant – a health professional who has satisfactorily completed an accredited anesthesiologist assistant training program.

Student Nurse Anesthetist – a registered nurse who is enrolled in an accredited nurse anesthesia training program.

Anesthesiologist Assistant Student – a health professions graduate student who has satisfied the required coursework for admission to an accredited school of medicine and is enrolled in an accredited anesthesiologist assistant training program.

Other personnel involved in perianesthetic care

Postanesthesia Nurse – a registered nurse who cares for patients recovering from anesthesia.

Perioperative Nurse – a registered nurse who cares for the patient in the operating room.

Critical Care Nurse – a registered nurse who cares for patients in a special care area such [as] the intensive care unit.

Obstetric Nurse – a registered nurse who provides care to laboring patients.

Neonatal Nurse – a registered nurse who provides cares to neonates in special care units.

Respiratory Therapist – an allied health professional who provides respiratory care to patients.

Support personnel whose efforts deal with technical expertise, supply and maintenance

Anesthesia Technologists And Technicians

Anesthesia Aides

Blood Gas Technicians

Respiratory Technicians

Monitoring Technicians

The only practitioners the ASA considers to be "core members" of the anesthesia care team are those labeled as either "physicians" or "nonphysicians" in the groupings above. This analysis is consistent with that of the federal government, which only authorizes hospital

participation through the Centers for Medicare and Medicaid if the anesthesia services are provided by an anesthesiologist, an anesthesiologist assistant who is under the supervision of an immediately available anesthesiologist, or a certified registered nurse anesthetist (42 C.F.R. 482.52). That regulation also discusses how certified registered nurse anesthetist independence and scope of practice differs depending on whether a state has chosen to opt-out by requesting an exemption from physician supervision of nurse anesthetists. The nurse anesthetist supervision issue is explored in more detail throughout this chapter.

Physician requirements differ from those for anesthesiologist assistants and nurse anesthetists.

Anesthesiologists, as physicians, have a different set of educational, licensing, and other requirements than that of nurse anesthetists or anesthesiologist assistants. Anesthesiology (as well as all practice of medicine) is regulated by the state medical board. Jurisdictions enact medical practice acts under their power to protect "the health, safety, and general welfare of their citizens" as broadly permitted by the U.S. Constitution. All states, the District of Columbia, and all U.S. Territories have a medical practice act that is enforced by a medical board (Federation). The basic requirements of medical practice are longstanding and variation is limited.

The anesthesia care providers directly comparable to anesthesiologist assistants are nurse anesthetists.

The anesthesia care providers that warrant a direct detailed comparison to anesthesiologist assistants are nurse anesthetists. No other anesthesia care provider is in a similar situation to anesthesiologist assistants, in terms of authorization and limitations of practice. The remainder of this chapter will emphasize the differences and similarities of these two professions.

Kentucky Differences and Similarities Between Anesthesiologist Assistants and Nurse Anesthetists

Training and Education

Kentucky anesthesiologist assistant and nurse anesthetist training is similar, but educational admission requirements differ significantly.

Kentucky nurse anesthetists and Kentucky anesthesiologist assistants graduate from similar master's degree training programs. The main difference in the programs are the admission requirements. For example, the Trover Foundation/Murray State University Program of Anesthesia, the only nurse anesthetist program in Kentucky, requires for admission that the candidate have a bachelor's degree in nursing from an accredited institution, hold a license in the state as a registered nurse, and have a minimum of one year of professional nursing experience in an acute critical care setting. These requirements differ from those for

anesthesiologist assistant programs because anesthesiologist assistant programs require only a bachelor's degree in any field and completion of specific science, math, and English courses. Some admission requirements are similar, such as grade point average and entrance exam requirements. According to the Kentucky Association of Nurse Anesthetists, there are 102 nurse anesthetist programs and four anesthesiologist assistant programs in the U.S.

Certification and Licensure Requirements

Nurse anesthetists are governed by the Kentucky Board of Nursing, while anesthesiologist assistants are governed by the Kentucky Board of Medical Licensure.

In Kentucky, nurse anesthetists are governed by the Board of Nursing. Anesthesiologist assistants are governed by the Kentucky Board of Medical Licensure, under the purview of the Physician Assistant Advisory Committee. In many (primarily rural) counties throughout Kentucky, nurse anesthetists are the only anesthesia care providers available. As a result of this and other factors, nurse anesthetists have some autonomy in terms of providing anesthesia care.

Kentucky law does not require nurse anesthetists to be directly supervised by a physician. Hospital and medical practice group requirements may differ, and in some cases, these internal policies may require surgeon or other physician supervision.

Scope of Practice

The main scope of practice differences between anesthesiologist assistants and nurse anesthetists in Kentucky are supervision and prescriptive authority.

In Kentucky, the scope of practice of anesthesiologist assistants and nurse anesthetists are similar with regard to administering to the needs of patients, delivery of anesthesia, and critical care capabilities. The main differences between the two professions are in supervision and prescriptive authority. Nurse anesthetists may practice under the supervision of any physician, not just an anesthesiologist, while anesthesiologist assistants must be supervised by an anesthesiologist. Nurse anesthetists are not required to have the supervising physician in the same facility when they administer anesthesia, whereas anesthesiologist assistants do require this presence.

Nurse anesthetists in Kentucky, as defined in KRS 314.011, are advanced registered nurse practitioners. Advanced registered nurse practitioners in Kentucky can, according to KRS 314.042, prescribe noncontrolled and controlled substances if they have entered into a written "Collaborative Agreement for the Advanced Registered Nurse Practitioner's Prescriptive Authority for Non-Scheduled Legend Drugs," a written "Collaborative Agreement for the Advanced Registered Nurse Practitioner's Prescriptive

Authority for Controlled Substances," or both. Anesthesiologist assistants can prescribe noncontrolled substances if they also hold an approved physician assistant license in Kentucky, but they cannot prescribe controlled substances.

Kentucky Geographic Distribution of Anesthesia Care Providers

As of this writing, Kentucky contains 472 anesthesiologists, 203 nurse anesthetists, and two anesthesiologist assistants.

The chart in Appendix E and the map in Appendix F show the number and geographic distribution of anesthesiologists, nurse anesthetists, and anesthesiologist assistants in Kentucky. There are 472 licensed anesthesiologists, 203 licensed nurse anesthetists, and two licensed anesthesiologist assistants. There are 64 counties in which anesthesiologists, nurse anesthetists, or anesthesiologist assistants are practicing. Twelve of the counties have only anesthesiologists practicing, 18 counties have only nurse anesthetists practicing, and 32 counties have both anesthesiologists and nurse anesthetists practicing. Two counties, Jefferson and Pike, have all three of the professions represented in practice. As might be expected, the highest concentrations of anesthesia providers are found in the larger metropolitan areas.

Kentucky Compared to Other Anesthesiologist Assistant Jurisdictions in Treatment of Comparable Anesthesia Care Professions

Training and Education

Kentucky and the 15 other anesthesiologist assistant jurisdictions require graduation from an accredited anesthesiologist assistant program. The four anesthesiologist assistant programs are all graduate-level programs. Kentucky and these 15 other jurisdictions also allow nurse anesthetists to practice, but the educational programs required are not all graduate-level programs. Four jurisdictions—the District of Columbia, Michigan, Vermont, and West Virginia—do not require a graduate-level degree to practice as a nurse anesthetist.

Also, as previously stated in this chapter, the components of the Kentucky training programs for anesthesiologist assistants and nurse anesthetists are similar except for the admission requirements. This is also the case in the other 15 anesthesiologist assistant jurisdictions.

Table 3.1 shows the nurse anesthetist educational requirements in each of the jurisdictions where anesthesiologist assistants also practice.

Table 3.1
Nurse Anesthetist Educational Requirements

Jurisdiction	Requires graduation from a nurse anesthetist program?	Requires accreditation of the nurse anesthetist program?	Is the nurse anesthetist education program required to be a graduate-level program?
Alabama	Yes	Yes	Yes Effective January 1, 2004
Colorado	Yes	Yes	Yes Effective July 1, 2008
District of Columbia	Yes	Yes	No
Florida	Yes	Yes	Yes Effective October 1, 2004
Georgia	Yes	No*	Yes Effective July 1, 2006
Kentucky	Yes	Yes	Yes Effective January 1, 2005
Michigan	No	No	No
Missouri	Yes	Yes	Yes Effective July 1, 1998
New Hampshire	Yes	Yes	Yes Effective July 1, 2004
New Mexico	Yes	Yes	Yes Effective January 1, 2001
Ohio	Yes	No*	Yes Effective January 1, 2001
South Carolina	Yes	Yes	Yes Effective January 1, 2004
Texas	Yes	Yes	Yes Effective January 1, 2003
Vermont	Yes	Yes	No
West Virginia	No	No	No
Wisconsin	Yes	Yes	Yes Effective July 1, 1998

* No explicit requirement, but completion of an accredited program is implied since the state requires nurse anesthetists to be certified.

Source: American Association of Nurse Anesthetists. *State Legislative & Regulatory Requirements (50-state Summaries)*; staff research.

Certification and Licensure Requirements

Certification and licensure requirements are similar among the states, with the notable exception being Kentucky's requirement that anesthesiologist assistants attain a four-year physician assistant degree in addition to an anesthesiologist assistant degree.

In jurisdictions where anesthesiologist assistant practice is recognized, anesthesiologist assistants and nurse anesthetists receive similar treatment by the legislature, especially in those jurisdictions where anesthesiologist assistants are licensed. Kentucky is the exception among jurisdictions that license anesthesiologist assistants due to its different anesthesiologist assistant educational requirements.

One common distinction between nurse anesthetists and anesthesiologist assistants in all states is that nurse anesthetists are allowed to practice with varying degrees of independence, while anesthesiologist assistants cannot practice without a supervising anesthesiologist. Anesthesiologist assistants and anesthesiologists wish to maintain this differing relationship.

Nurse anesthetist practice is regulated under different authority than that of anesthesiologist assistants. In all 16 jurisdictions, the two primary sources for nurse anesthetist practice recognition are the jurisdiction's Nurse Practice Act and the state Board of Nursing's Rules and Regulations.

Another difference is that anesthesiologist assistant students in good standing may potentially sit for their national certification examination as soon as 180 days prior to graduation from an anesthesiologist assistant program (National Commission. *Certification*). Nurse anesthetists may only sit for their certifying examination if they are in compliance with all state requirements for current and unrestricted licensure as a registered professional nurse and have already completed a nurse anesthetist educational program (Council on Certification 4). However, in many jurisdictions, new nurse anesthetist graduates may temporarily practice without national certification. Table 3.2 shows how this nurse anesthetist practice is (or is not) authorized in each of the 16 jurisdictions where anesthesiologist assistants also practice.

Table 3.2
Length of Time New Certified Registered Nurse Anesthetist Graduates
May Temporarily Practice Without National Certification

Jurisdiction	Until the earlier of:	Until a single event has occurred:	Other
Alabama	1 year, or until first exam results		
Colorado		First exam results	
District of Columbia	6 months, or until first exam results		
Florida		1 year ⁺⁺	
Georgia	6 months, or until first exam results		
Kentucky		First exam results	
Michigan			Temporary practice is not available
Missouri		First exam results	
New Hampshire	180 days, or until first exam results		
New Mexico		Approx. 12 months ⁺⁺	
Ohio			No reference given
South Carolina		1 year ⁺⁺	
Texas	1 year, or until first exam results		
Vermont		First exam results	
West Virginia			No reference given
Wisconsin			No reference given

⁺⁺ Receipt of certification exam results is not listed as a factor affecting the time allowed.

Source: American Association of Nurse Anesthetists. *State Legislative & Regulatory Requirements (50-state Summaries)*; staff research.

Like anesthesiologist assistants, nurse anesthetists must be nationally certified in order to practice in their specialty.

Like anesthesiologist assistants, nurse anesthetists must be nationally certified in order to practice in their specialty. The Council on Certification of Nurse Anesthetists (CCNA) conducts the certification process for nurse anesthetists. The American Association of Nurse Anesthetists (AANA) initiated the CCNA in 1945, and the CCNA remains an "autonomous, multidisciplinary body existing under the corporate structure of the AANA" (Council on Certification 3). The CCNA *Certification Handbook* describes its function by noting that "(W)hile 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" (3). A nurse who has achieved CCNA certification may use "CRNA" after his or her name (8). The CCNA *Certification Handbook* on pages 13-19 describes the examination content, which includes the following general categories:

- I. Basic Sciences
 - A. Anatomy, physiology, and pathophysiology
 - B. Pharmacology
 - C. Chemistry, biochemistry, physics
- II. Equipment, instrumentation, and technology
 - A. Anesthetic delivery systems
 - B. Airway equipment
 - C. Monitoring devices
- III. Basic principles of anesthesia
 - A. Preoperative assessment
 - B. Preparation of patient
 - C. Fluid/blood replacement
 - D. Positioning
 - E. Interpretation of data
 - F. Airway management
 - G. Local/regional anesthesia
 - H. Monitored anesthesia care/conscious sedation
 - I. Pain management
 - J. Others
 - K. Postanesthesia care/respiratory therapy
- IV. Advanced principles of anesthesia
 - A. Surgical procedures and procedures related to organ systems
 - B. Pediatrics
 - C. Obstetrics
 - D. Geriatrics
- V. Professional issues
 - A. Legal
 - B. Quality improvement
 - C. Safety standards (professional and organizational)

The AANA is also affiliated with the Council on Recertification of Nurse Anesthetists, which, similarly to the CCNA, identifies itself as an "autonomous body, with multidisciplinary and public representation." The Council on Recertification recertifies each certified registered nurse anesthetist (CRNA) for a two-year period. It also monitors and adapts recertification and continuing

education criteria, and creates and sustains investigatory, appellate, and resolution services when problems arise with or for individual applicants (Council on Recertification).

For recertification compliance, each two years, the Council on Recertification requires maintenance of a nursing license, documentation of 40 hours of approved continuing education credits, practice records, and certification that the CRNA has no impairments that could limit or prevent the CRNA from administering anesthesia or providing safe care.

Table 3.3 shows nurse anesthetist certification requirements in each of the jurisdictions where anesthesiologist assistants also practice. Further, it delineates whether the certification must specifically be that provided by the AANA, whether recertification is required, and how nurse anesthetist practice is recognized in each jurisdiction.

**Table 3.3
Nurse Anesthetist National Certification and
Recertification Requirements and Practice Recognition**

Jurisdiction	Is certification required?	Is recertification required?	AANA certification?¹	Type of practice recognition
Alabama	Yes	Yes	Yes	Licensure, certification, and approval
Colorado	Yes	No reference	Yes	Registration
District of Columbia	Yes	Yes	Yes	Licensure
Florida	Yes	Yes	Yes	Certification
Georgia	Yes	Yes	Yes	Authorization
Kentucky	Yes	Yes	Yes	Registration
Michigan	No*	No*	Yes*	Certification
Missouri	Yes	Yes	No	Recognition
New Hampshire	Yes	Yes	No	Licensure
New Mexico	Yes	Yes	Yes	Licensure
Ohio	Yes	Yes	Yes	Authorization
South Carolina	Yes	Yes	No	Licensure
Texas	Yes	Yes	No	Authorization
Vermont	Yes	Yes^^	No	Endorsement
West Virginia	Yes*	Yes*	No	Not Specified**
Wisconsin	Yes*	Yes*	No	Not Specified

¹ "Yes" means certification by the AANA Council on Certification of Nurse Anesthetists is specifically mentioned as an option. "No" means the jurisdiction authorizes a national certifying body recognized by the board, without specifically mentioning AANA as an option.

* Certification is not required to practice, but the practitioner may not use the title "CRNA" or "NA" without certification or recertification.

** The nursing regulations make indirect reference to "recognition," but this is not specifically indicated.

^^ The recertification requirement may be waived. If waived, evidence of continued competency must be shown.

Source: American Association of Nurse Anesthetists. *State Legislative & Regulatory Requirements (50-state Summaries)*; staff research.

Scope of Practice

In the 16 jurisdictions where both anesthesiologist assistants and nurse anesthetists practice, the scope of practice for the two professions have many of the same components. For example, both professions work within an anesthesia care team environment; although, the groups may interpret that concept differently. Both professions have similar scopes of practice for assessing patients, administering anesthetics, and postanesthesia care. The main difference in the scope of practice across the 16 jurisdictions is the required level of physician supervision over any anesthesiologist assistant or nurse anesthetist.

Anesthesiologist assistants in all 16 jurisdictions must be directly supervised by an anesthesiologist at all times. Historically, nurse anesthetists have not been required to be directly supervised by an anesthesiologist, but they must be supervised by a licensed physician. However, the Centers for Medicare and Medicaid Services amended traditional regulatory requirements in 2001 by allowing individual states to opt-out of the federal supervision requirement for nurse anesthetists (American Association. Professional Practice). By June 2005, 14 states had opted out. Three of these states—New Hampshire, New Mexico, and Wisconsin—are among the 16 jurisdictions that allow both anesthesiologist assistants and nurse anesthetists to practice. In these three jurisdictions, nurse anesthetists may practice completely independently of any physician. Kentucky considered the federal supervision opt-out for nurse anesthetists in 2003 and decided not to remove its physician supervision requirement for nurse anesthetists.

Chapter 4

Opinions of Interested and Affected Parties

Overview

This study used interviews and data from interested parties as an additional resource.

This study considered interviews and data from parties interested in and materially affected by anesthesiologist assistant practice. Several unique aspects of the anesthesiologist assistant profession impacted the scope of the outside party information. First, the profession is relatively new, with the nation's oldest anesthesiologist assistant schools being founded in 1969. Second, there is a small number of anesthesiologist assistant practitioners nationwide, given that there are four accredited anesthesiologist assistant schools nationally and 16 jurisdictions (including Kentucky) that authorize anesthesiologist assistant practice. Third, there are only two anesthesiologist assistants practicing in Kentucky, and both of these practitioners were exempted when the current law requiring anesthesiologist assistants to also be physician assistants was enacted. Fourth, no major controlled studies on anesthesiologist assistants have been conducted to examine their safety record or compare their safety record to other anesthesia care providers. Finally, there is a gap in the availability of outside neutral materials since no substantial academic literature on the subject exists.

Parties Interviewed

Project staff contacted numerous parties who had an interest in the issue of anesthesiologist assistants within the larger context of anesthesia care. Many of the parties who were contacted agreed to be interviewed, and many also submitted written comments or materials. The following parties and organizations were interviewed for this study:

- American Academy of Anesthesiologist Assistants (AAAA);
- Kentucky Association of Nurse Anesthetists (KyANA);
- Kentucky Society of Anesthesiologists (KSA);

- Kentucky Nurses Association (KNA);
- Kentucky Board of Medical Licensure (KBML);
- Kentucky Medical Association (KMA);
- Kentucky Hospital Association (KHA);
- Scott Woodward: one of the two anesthesiologist assistants currently practicing in Kentucky;
- Ben Cornette: one of the two anesthesiologist assistants currently practicing in Kentucky; and
- Soren Campbell and Tracy Davis: two anesthesiologist assistants who live in Kentucky but practice out of state.

Anesthesiologist Assistants Compared to Other Anesthesia Care Providers

Parties compared anesthesiologist assistants to other anesthesia care providers along such areas as supervision, education, and salaries.

All parties noted that anesthesiologist assistants must be supervised by an anesthesiologist and agreed that this was the main difference between anesthesiologist assistants and nurse anesthetists. KyANA and KNA indicated that this lack of independence would necessitate two providers in a county, while many Kentucky counties now have a nurse anesthetist or no provider at all. Woodward stated that nurse anesthetists could command a much higher salary in the rural areas where the hospital or practice group can't recruit an anesthesiologist.

KBML and KMA endorsed the use of properly supervised anesthesiologist assistants. Both were satisfied with anesthesiologist assistant training, education, safety, and performance compared to that of other anesthesia care providers.

AAAA argued that anesthesiologist assistants and nurse anesthetists are very similar. Woodward said that anesthesiologist assistants and nurse anesthetists both have the same job, with relatively equal salaries. AAAA indicated that it believes that both groups serve the needs of the anesthesia profession well.

While AAAA viewed anesthesiologist assistants and nurse anesthetists as the only two groups that are mid-level anesthesia providers, KyANA and KNA disagreed with the characterization of nurse anesthetists as “mid-level providers.”

KyANA and KNA expressed concern about anesthesiologist assistant educational prerequisites and national standards compared to those for nurse anesthetists. Also, KyANA indicated that anesthesiologist assistants are allowed to take their certifying exam up to six months before graduation. On the other hand, Cornette argued that nurse anesthetists upgraded their training (eventually leading to the master's degree requirement) as a result of the amount of training that anesthesiologist assistants were getting in the two original schools.

KyANA said that nurse anesthetists are required to have physician supervision unless the jurisdiction has chosen to request a Medicare opt-out. The collaborative agreements or supervision also vary by state or hospital policy, although Cornette felt that this usually meant the nurse anesthetist was supervised by the surgeon. KyANA, KNA, Woodward, and AAAA agreed that this gave nurse anesthetists more flexibility than anesthesiologist assistants. However, KSA stated that this required link made anesthesiologist assistants more integral to the anesthesia care team, and Cornette added that the care team model created a more cooperative environment.

Anesthesiologist Assistant Practice Issues

Most of the parties interviewed noted that educational requirements were a primary issue in the comparison between Kentucky and other states concerning anesthesiologist assistants. That is, Kentucky requires anesthesiologist assistants to attain a four-year physician assistant degree in addition to an anesthesiologist assistant degree. No other state authorizing anesthesiologist assistant practice has this physician assistant education requirement.

Table 4.1 shows party responses on this education issue, along with party opinions on several other areas of anesthesiologist assistant practice and governance.

**Table 4.1
Party Opinions on Anesthesiologist Assistant Practice Issues**

Interview Participant	Should Kentucky remove the physician assistant education requirement for anesthesiologist assistants?	Have Kentucky's current requirements kept out new anesthesiologist assistants?	Should anesthesiologist assistants practice in Kentucky under direct licensure or physician delegation?	Should there be a supervision ratio for anesthesiologist assistants to anesthesiologists? (If so, proposed ratio?)
AAAA	Yes	Yes	Direct Licensure	2:1
KyANA	No	Yes	Direct Licensure	Opposed (should be 1:1)
KSA	Yes	Yes	Direct Licensure	2:1
KNA	No	Yes	Direct Licensure	Not addressed
KBML	Yes*	Yes**	Direct Licensure***	2:1
KMA	Yes*	Yes**	Physician Delegation***	2:1
KHA	Yes	Yes	Direct Licensure	Should be defined in law
Woodward	Yes	Yes	Direct Licensure	Not addressed
Cornette	Yes	Yes	Direct Licensure	Not addressed
Campbell & Davis	Yes	Yes	Direct Licensure	Should be same as that for nurse anesthetists

*Stated it was officially neutral (not advocating for change, but would not oppose it).

**This was not stated directly but could be inferred from several party statements.

***Would prefer use of the term "certification" over the current "licensure" scheme in Kentucky.

All but one of the parties interviewed thought that governance of anesthesiologist assistants should remain within the Kentucky Board of Medical Licensure. Woodward advocated a separate board for anesthesiologist assistants, with at least one anesthesiologist representative.

Campbell and Davis stated that the physician assistant requirement is difficult to meet, since there are few four-year physician assistant programs that would fulfill the requirement.

Nurses were concerned about the educational prerequisites and national standardization for anesthesiologist assistants.

KyANA and KNA stated that the anesthesiologist assistant educational requirements should not be changed; the current system has worked for 18 years, and reducing the physician assistant educational requirement (and reducing medical professional training requirements generally) is not in the public's

best interest. The primary educational concern of the KyANA is the anesthesiologist assistant school prerequisites more than the issue of the anesthesiologist assistant school curriculum itself. However, KyANA sees a lack of standardization for anesthesiologist assistants. KyANA noted that it saw a lack of clinical experience by anesthesiologist assistants and pointed to the lack of recognition of anesthesiologist assistants by other health care providers or a majority of states. KyANA also stated that the U.S. military has active-duty nurse anesthetists, but it does not maintain active anesthesiologist assistants in its ranks. The organization said it does not believe that physician assistants should be administering anesthesia.

KyANA noted that anesthesiologist assistants and nurse anesthetists function similarly in a care team, but the main difference is that anesthesiologist assistants need supervision. When nurse anesthetists alone are used in the care team setting, the anesthesiologist has the ability to "float" among surgeries. A 2:1 or 4:1 nurse anesthetist to anesthesiologist supervision ratio is common in the care team setting.

In addition to removing the physician assistant education requirement, anesthesiologist assistants advocated redefining employment and physician physical presence standards.

AAAA advocated changing the provision in KRS 311.862 mandating that anesthesiologist assistants be "employed by a supervising physician in anesthesia" so that anesthesiologist assistants can also be employed by the facilities that utilize their services, like surgery centers or hospitals.

AAAA also wanted KRS 311.862 changed in reference to physician supervision, specifically the physician being "physically present in the room during induction and emergence" and secondly the physician being "available to provide immediate physical presence in the room." AAAA argued that these should be replaced with language stating that the anesthesiologist must be immediately available and is not concurrently performing any other procedure. AAAA thought the Kentucky supervision provisions should follow the federal guidelines and the guidelines of the American Society of Anesthesiologists for the supervision of anesthesiologist assistants and certified registered nurse anesthetists.

Anesthesia Care Provider Jobs and Salaries

Cornette and KyANA felt that anesthesiologist assistant and nurse anesthetist salaries are generally comparable. However, while Cornette did not think that more anesthesiologist assistants would

affect wages, KyANA and KHA agreed that nurse anesthetists salaries could be driven down by adding anesthesiologist assistants. While KyANA feared that nurse anesthetists would move out of state for higher salaries, KHA believed that a salary balance would be beneficial. AAAA added that the rise of nurse anesthetists salaries may eventually slow as well.

KyANA, KNA, AAAA, KSA, Campbell and Davis, Woodward, and Cornette felt that more anesthesiologist assistants would choose to practice in this state if the physician assistant educational requirement for anesthesiologist assistants was removed. AAAA predicted an additional six anesthesiologist assistants in the beginning. KSA agreed that the numbers would initially be small but added that over time the number of anesthesiologist assistants in Kentucky would grow and be a benefit to the anesthesia profession. Campbell and Davis, Woodward, and Cornette felt that more anesthesiologist assistants could help fill some of the anesthesia care vacancies that currently exist.

Anesthesiologist Assistant Impact on Kentucky Health Care

Other responses focused on the role of anesthesiologist assistants within the overall scheme of Kentucky health care. Areas such as costs, safety, provider need, and urban and rural impacts were explored. Table 4.2 indicates party responses on several of these issues.

Table 4.2
Anesthesiologist Assistant Impact on Kentucky Health Care

Interview Participant	Should anesthesiologist assistants be viewed as substantially equivalent to nurse anesthetists?	Are more anesthesia providers needed in Kentucky?	Would more anesthesiologist assistants in Kentucky have a greater impact in urban or rural areas?	Would more anesthesiologist assistants in Kentucky increase or decrease the costs of medical care?
AAAA	Yes	Yes	Urban	Decrease
KyANA	No	Yes*	Urban (but urban areas are already well staffed)	Increase ⁺⁺
KSA	Yes	Yes	Urban	Decrease
KNA	No	Yes*	Urban	Increase
KBML	Yes	No	Did not differentiate	Not addressed
KMA	Yes	No	Urban	Not addressed
KHA	Split**	Yes	Urban	Decrease
Woodward	Yes	Yes	Urban	Neither
Cornette	Yes	Yes	Urban	Neither
Campbell & Davis	Yes	Yes	Urban***	Decrease

* Indicated that provider need should be filled by more nurse anesthetists.

** Split among membership polled, with 43 percent considering the two professions equivalent and 57 percent considering them not equivalent.

*** However, also said anesthesiologist assistants could change the economics of the health care market enough to make it feasible to bring a combination of anesthesiologists and anesthesiologist assistants to areas that are currently underserved.

⁺⁺ Of particular concern was the impact on free-standing office-based surgery centers.

Impact on Urban vs. Rural Areas

KSA and AAAA believed that in the long term, nurse anesthetists would be impacted. They stated that many jobs would still be available to nurse anesthetists but that a reallocation of resources may occur and shift some nurse anesthetists into rural areas because they can practice independently.

KyANA feared that adding this layer could add new burdens and inefficiencies, especially for rural areas, and in some cases could

triple costs for hospitals. KyANA noted that, in vast areas of Kentucky, counties rely on a hospital in a neighboring county, and currently many of those hospitals have only nurse anesthetists as anesthesia providers. If hospitals closed due to high costs, it would further strain health care in the rural areas.

Safety and Quality of Care

KNA felt that increasing the availability of anesthesiologist assistants in Kentucky would lead to an increase in accidents, malpractice claims, and malpractice premiums. The KNA believed that adding anesthesiologist assistants would create confusion for patients, compounding existing difficulty of anesthesiologists and nurse anesthetists.

AAA, KSA, and Campbell and Davis felt that patient safety and quality of care would improve if more anesthesiologist assistants practiced in Kentucky, due both to training and the anesthesia care team model. KHA emphasized that properly trained anesthesiologist assistants can help patients.

The KBML priorities of safety and supervision are primarily an issue of public protection. If proper supervision and qualifications are maintained, KBML and KMA felt the public could benefit in both the urban and rural settings.

Other Issues for Related Practitioners

KBML and KMA felt that physicians could have added risk any time a new allied health professional is added under the physician's supervision because physicians are the first target for malpractice litigation. KBML did not anticipate disciplinary changes for anesthesiologists since the situation is analogous to their supervision of physician assistants under the current scheme.

Cornette thought that anesthesiologist assistant licensing changes would have no effect on physicians and that the effect on physician assistants would be minimal, if any, since their route to becoming an anesthesiologist assistant would still be just as open. Woodward commented that nurse anesthetists would always be in the majority (compared to anesthesiologist assistants) because there are so many more nurse anesthetist schools. Also, KyANA stated that there are now more than 550 nurse anesthetists in Kentucky. Nationally, there are 35,000 licensed nurse anesthetists. There are 102 nurse anesthetist programs nationally compared to four anesthesiologist assistant programs

Other Parties Contacted

Other parties were contacted regarding this study, but were not interviewed. These parties are listed below.

Kentucky Association of Health Plans. This organization indicated that it "appreciates the opportunity to provide comments for...[the study]...on anesthesiologist assistants. The Kentucky Association of Health Plans wishes to be included in the report as 'neutral' on the certification of anesthesiologist assistants."

Kentucky Academy of Physician Assistants and American Academy of Physician Assistants. (In the statement that follows, "AAs" means anesthesiologist assistants, and "PAs" means physician assistants.) The academies responded by saying: "Thank you for...contacting us regarding AA licensing. [The] Kentucky Academy of Physician Assistants and American Academy of Physician Assistants position is neutral in regard to AAs being licensed as AAs. We believe the law is clear that AAs do not qualify to be licensed as PAs or to work or represent themselves as PAs."

Kentucky Board of Nursing. While the Kentucky Board of Nursing stated that it was interested in the study and its findings, the board did not wish to issue an opinion on anesthesiologist assistants or their practice. The Board of Nursing supplied public record statistical information but felt that, since it is both a state agency and has no jurisdiction over anesthesiologist assistants, it would not be appropriate for the board to comment on the study.

Kentucky Cabinet for Health and Family Services. The cabinet declined to be interviewed, but Chris Corbin, director of the cabinet's Office of Health Policy, submitted a written statement from the cabinet. The statement indicated a neutral position toward any specific statutory change regarding anesthesiologist assistants. The cabinet noted that Kentucky's history of "atypical regulatory practices" regarding health care and health insurance has inadvertently caused providers to leave Kentucky. Further, arguably inconsistent licensure and certification standards have resulted in few anesthesiologist assistants in Kentucky. The cabinet suggested a comprehensive study comparing these standards to those of other relevant states and hoped that this comparison could provide guidance on the issues. The cabinet felt that any potential

legislative changes should emphasize access to care, consumer protection, and reasonable regulation of the profession.

Dr. George Kargas Dr. Kargas is an anesthesiologist who practices in Somerset and who is active on anesthesiologist assistant issues. He supplied reference materials for use in the study.

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Appendix A

Florida Anesthesiologist Assistant Scope of Practice Statutes

An example of scope of practice authority is set forth in the Florida Statutes, 458.3475 regarding Medical Practice and 459.023 regarding Osteopathic Medicine. The text of those identical statutes is below.

(3) *PERFORMANCE OF ANESTHESIOLOGIST ASSISTANTS.*

(a) An anesthesiologist assistant may assist an anesthesiologist in developing and implementing an anesthesia care plan for a patient. In providing assistance to an anesthesiologist, an anesthesiologist assistant may perform duties established by rule by the board in any of the following functions that are included in the anesthesiologist assistant's protocol while under the direct supervision of an anesthesiologist:

1. Obtain a comprehensive patient history and present the history to the supervising anesthesiologist.
2. Pretest and calibrate anesthesia delivery systems and monitor, obtain, and interpret information from the systems and monitors.
3. Assist the supervising anesthesiologist with the implementation of medically accepted monitoring techniques.
4. Establish basic and advanced airway interventions, including intubation of the trachea and performing ventilatory support.
5. Administer intermittent vasoactive drugs and start and adjust vasoactive infusions.
6. Administer anesthetic drugs, adjuvant drugs, and accessory drugs.
7. Assist the supervising anesthesiologist with the performance of epidural anesthetic procedures and spinal anesthetic procedures.
8. Administer blood, blood products, and supportive fluids.
9. Support life functions during anesthesia health care, including induction and intubation procedures, the use of appropriate mechanical supportive devices, and the management of fluid, electrolyte, and blood component balances.
10. Recognize and take appropriate corrective action for abnormal patient responses to anesthesia, adjunctive medication, or other forms of therapy.
11. Participate in management of the patient while in the postanesthesia recovery area, including the administration of any supporting fluids or drugs.
12. Place special peripheral and central venous and arterial lines for blood sampling and monitoring as appropriate.

(b) Nothing in this section or chapter prevents third-party payors from reimbursing employers of anesthesiologist assistants for covered services rendered by such anesthesiologist assistants.

(c) An anesthesiologist assistant must clearly convey to the patient that he or she is an anesthesiologist assistant.

(d) An anesthesiologist assistant may perform anesthesia tasks and services within the framework of a written practice protocol developed between the supervising anesthesiologist and the anesthesiologist assistant.

(e) An anesthesiologist assistant may not prescribe, order, or compound any controlled substance, legend drug, or medical device, nor may an anesthesiologist assistant dispense sample drugs to patients. Nothing in this paragraph prohibits an anesthesiologist assistant from administering legend drugs or controlled substances; intravenous drugs, fluids, or blood products; or inhalation or other anesthetic agents to patients which are ordered by the supervising anesthesiologist and administered while under the direct supervision of the supervising anesthesiologist.

Appendix B

Anesthesiologist Assistant Supervision Levels and Ratios

Jurisdictions With Direct Anesthesiologist Assistant Licensure, Regulation, and/or Certification

Jurisdiction	Supervision Level	Supervision Ratio Anesthesiologist: Anesthesiologist Assistant
Alabama	Direct Within Facility	1:4
District of Columbia	Direct Within Facility	1:4
Florida	Direct Within Facility	1:2*
Georgia	Direct Within Facility	1:2**
Kentucky	Direct Within Facility	1:2
Missouri	Direct Within Facility	1:4
New Mexico	Direct Within Facility	1:3
Ohio	Direct Within Facility	Not Defined
South Carolina	Direct Within Facility	1:2
Vermont	Direct Within Facility	Not Defined

Source: Staff research.

* Will increase to 1:4 after July 1, 2008.

** Anesthesiologist may supervise more than two anesthesiologist assistants while on call as a solo practitioner or as a member of a group practice setting.

**Jurisdictions With Anesthesiologist Assistant
Practice Through Physician Delegation**

Jurisdiction	Colorado	Michigan	New Hampshire	Texas	West Virginia	Wisconsin
Supervision Level	Direct Within Facility	Direct Within Facility	Direct Within Facility	Direct Within Facility	Direct Within Facility	Direct Within Facility
Supervision Ratio Anesthesiologist : Anesthesiologist Assistant	1:4	1:4	1:4	1:4	1:4	1:4

Source: Staff research.

Appendix D

Kentucky Anesthesiologist Assistant Statutes

Current as of December 1, 2006

311.862 Practice as anesthesiology assistant.

- (1) A physician assistant who was practicing as an anesthesiology assistant in Kentucky prior to July 15, 2002, may continue to practice if the physician assistant:
 - (a) Met the practice, education, training, and licensure requirements specified in KRS 311.844 and 311.846;
 - (b) Is a graduate of an approved program accredited by the Committee on Allied Health Education and Accreditation or the Commission on Accreditation of Allied Health Education Programs that is specifically designed to train an individual to administer general or regional anesthesia; and
 - (c) Is employed by a supervising physician in anesthesia.
- (2) A physician assistant who has not practiced as an anesthesiology assistant in Kentucky prior to the July 15, 2002, shall meet the following requirements prior to practicing as an anesthesiology assistant:
 - (a) Graduation from an approved four (4) year physician assistant program as specified in subsection (1)(b) of this section and graduation from another two (2) year approved and accredited program that consists of academic and clinical training in anesthesiology;
 - (b) Compliance with the practice, education, training, and licensure requirements specified in KRS 311.844 and 311.846; and
 - (c) Employment with a supervising physician in anesthesia.
- (3) A physician assistant practicing as an anesthesiology assistant shall not administer or monitor general or regional anesthesia unless the supervising physician in anesthesia:
 - (a) Is physically present in the room during induction and emergence;
 - (b) Is not concurrently performing any other anesthesiology procedure; and
 - (c) Is available to provide immediate physical presence in the room.

Effective: July 12, 2006

History: Amended 2006 Ky. Acts ch. 78, sec. 10, effective July 12, 2006. -- Created 2002 Ky. Acts ch. 130, sec. 34, effective July 15, 2002.

Legislative Research Commission Note (7/12/2006). 2006 Ky. Acts ch. 78, sec. 11, provides: "A physician assistant who is certified in Kentucky and in good standing on the effective date of this Act [July 12, 2006] shall automatically be licensed under Sections 1 to 10 of this Act [KRS 311.840, 311.842, 311.844, 311.845, 311.846, 311.848, 311.850, 311.852, 311.856, and 311.862] and shall be issued a physician assistant license upon annual renewal."

311.844 Licensing of physician assistants -- Requirements -- Endorsement from other state -- Renewal of license.

- (1) To be licensed by the board as a physician assistant, an applicant shall:
 - (a) Submit a completed application form with the required fee;
 - (b) Be of good character and reputation;
 - (c) Be a graduate of an approved program; and
 - (d) Have passed an examination approved by the board within three (3) attempts.
- (2) A physician assistant who is authorized to practice in another state and who is in good standing may apply for licensure by endorsement from the state of his or her credentialing if that state has standards substantially equivalent to those of this Commonwealth.
- (3) A physician assistant's license shall be renewed upon fulfillment of the following requirements:
 - (a) The holder shall be of good character and reputation;
 - (b) The holder shall provide evidence of completion during the previous two (2) years of a minimum of one hundred (100) hours of continuing education approved by the American Medical Association, the American Osteopathic Association, the American Academy of Family Physicians, the American Academy of Physician Assistants, or by another entity approved by the board;
 - (c) The holder shall provide evidence of completion of a continuing education course on the human immunodeficiency virus and acquired immunodeficiency syndrome in the previous ten (10) years that meets the requirements of KRS 214.610; and
 - (d) The holder shall provide proof of current certification with the National Commission on Certification of Physician Assistants.

Effective: July 12, 2006

History: Amended 2006 Ky. Acts ch. 78, sec. 3, effective July 12, 2006. -- Created 2002 Ky. Acts ch. 130, sec. 25, effective July 15, 2002.

Legislative Research Commission Note (7/12/2006). 2006 Ky. Acts ch. 78, sec. 11, provides: "A physician assistant who is certified in Kentucky and in good standing on the effective date of this Act [July 12, 2006] shall automatically be licensed under Sections 1 to 10 of this Act [KRS 311.840, 311.842, 311.844, 311.845, 311.846, 311.848, 311.850, 311.852, 311.856, and 311.862] and shall be issued a physician assistant license upon annual renewal."

311.846 Examination -- Educational and training programs.

- (1) The examination of the National Commission on Certification of Physician Assistants for licensure as a physician assistant shall be approved by the board.
- (2) Educational and training programs approved by the board shall include physician assistant programs that are accredited by the Accreditation Review Commission on Education for Physician Assistants or its predecessor or successor agencies.
- (3) Training programs for the provision of general or regional anesthesia shall be accredited by the Committee on Allied Health Education and Accreditation or the Commission on Accreditation of Allied Health Education Programs.
- (4) A trainee enrolled in an approved program shall be supervised and the training program shall be responsible for the services provided by the trainee. A trainee shall have the same scope of practice as a physician assistant and shall not be considered to be practicing without authorization while enrolled in a training program.

Effective: July 12, 2006

History: Amended 2006 Ky. Acts ch. 78, sec. 5, effective July 12, 2006. -- Created 2002 Ky. Acts ch. 130, sec. 26, effective July 15, 2002.

Legislative Research Commission Note (7/12/2006). 2006 Ky. Acts ch. 78, sec. 11, provides: "A physician assistant who is certified in Kentucky and in good standing on the effective date of this Act [July 12, 2006] shall automatically be licensed under Sections 1 to 10 of this Act [KRS 311.840, 311.842, 311.844, 311.845, 311.846, 311.848, 311.850, 311.852, 311.856, and 311.862] and shall be issued a physician assistant license upon annual renewal."

Appendix E

Number and Type of Anesthesia Providers by County

County	Number of Anesthesiologists	Number of Nurse Anesthetists	Number of Anesthesiologist Assistants
Adair	0	1	0
Allen	0	0	0
Anderson	1	0	0
Ballard	0	0	0
Barren	3	2	0
Bath	0	0	0
Bell	1	1	0
Boone	5	1	0
Bourbon	0	0	0
Boyd	12	5	0
Boyle	4	0	0
Bracken	0	0	0
Breathitt	1	1	0
Breckinridge	0	0	0
Bullitt	0	0	0
Butler	0	1	0
Caldwell	0	0	0
Calloway	1	2	0
Campbell	0	2	0
Carlisle	0	0	0
Carroll	0	0	0
Carter	0	0	0
Casey	0	0	0
Christian	4	2	0
Clark	1	0	0
Clay	0	1	0
Clinton	0	0	0
Crittenden	0	0	0
Cumberland	0	0	0
Daviess	9	1	0
Edmonson	0	0	0
Elliott	0	0	0
Estill	0	0	0

County	Number of Anesthesiologists	Number of Nurse Anesthetists	Number of Anesthesiologist Assistants
Fayette	118	18	0
Fleming	0	2	0
Floyd	3	2	0
Franklin	3	2	0
Fulton	1	0	0
Gallatin	0	0	0
Garrard	0	0	0
Grant	0	0	0
Graves	2	1	0
Grayson	1	0	0
Green	0	0	0
Greenup	3	0	0
Hancock	0	0	0
Hardin	13	1	0
Harlan	2	1	0
Harrison	0	1	0
Hart	0	0	0
Henderson	3	1	0
Henry	0	0	0
Hickman	0	0	0
Hopkins	4	9	0
Jackson	0	0	0
Jefferson	179	41	1
Jessamine	0	0	0
Johnson	3	2	0
Kenton	20	10	0
Knott	0	0	0
Knox	1	2	0
Larue	0	0	0
Laurel	4	0	0
Lawrence	1	1	0
Lee	1	0	0
Leslie	0	0	0
Letcher	1	1	0
Lewis	0	0	0
Lincoln	0	0	0
Livingston	0	0	0

County	Number of Anesthesiologists	Number of Nurse Anesthetists	Number of Anesthesiologist Assistants
Logan	0	1	0
Lyon	0	0	0
McCracken	11	15	0
McCreary	0	0	0
McLean	0	0	0
Madison	0	2	0
Magoffin	0	0	0
Marion	1	2	0
Marshall	0	1	0
Martin	0	0	0
Mason	1	2	0
Meade	0	0	0
Menifee	0	0	0
Mercer	0	1	0
Metcalf	0	0	0
Monroe	0	0	0
Montgomery	0	3	0
Morgan	0	0	0
Muhlenberg	1	1	0
Nelson	1	1	0
Nicholas	0	0	0
Ohio	0	3	0
Oldham	1	1	0
Owen	0	1	0
Owsley	0	0	0
Pendleton	0	0	0
Perry	7	0	0
Pike	9	4	1
Powell	0	0	0
Pulaski	10	3	0
Robertson	0	1	0
Rockcastle	0	0	0
Rowan	3	3	0
Russell	0	1	0
Scott	4	0	0
Shelby	2	3	0
Simpson	0	0	0

County	Number of Anesthesiologists	Number of Nurse Anesthetists	Number of Anesthesiologist Assistants
Spencer	0	0	0
Taylor	1	4	0
Todd	0	0	0
Trigg	0	2	0
Trimble	0	0	0
Union	0	1	0
Warren	11	11	0
Washington	0	1	0
Wayne	0	0	0
Webster	0	0	0
Whitley	3	0	0
Wolfe	0	0	0
Woodford	1	0	0
Total	472*	184**	2

* Total does not include 27 anesthesiologists identified as having locum tenens licenses.

** Total does not include 19 nurse anesthetists whose county of employment was unknown and 87 nurse anesthetists who were identified as holding out-of-state licenses.

Sources: Kentucky Board of Medical Licensure; Kentucky Board of Nursing.

