


Anesthesiologists Have an Important Role in Preclinical Nurse Anesthesia Education

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Abstract: Anesthesiologists do not participate regularly in the preclinical portion of nurse anesthesia training programs (NAPs). This practice is predicated on a historical separation of the early educational tracks of physicians and advanced practice nurses whose professions ultimately came to occupy overlapping niches within the field of anesthesia. The state of affairs has been bolstered by territorial friction between professional organizations, and by the lack of a perceived need for anesthesiologists to become involved at an early stage of nurse anesthesia education given the large number of qualified certified registered nurse anesthesia instructors available to perform this role. Anesthesiologists, however, have significant pedagogical assets to offer NAPs, including expertise in critical analysis and decision-making skills related to perioperative adverse events. In addition, introduction of anesthesiologists into preclinical NAP education has the potential to inject added academic rigor into NAPs currently transitioning to Doctor of Nursing Practice programs. Likewise, NAPs offer a professional haven for those anesthesiologists seeking new challenges in education, and a unique opportunity to shape the future of anesthesia. Most importantly, introducing anesthesiologists into the initial educational phases of the nurse anesthesia profession provides an opportunity to grow trust and understanding between these two professions that are critical for safe, healthy, and lasting partnerships in future years.

Keywords: preclinical education, nurse anesthesia, anesthesiologists

Introduction

Customarily, anesthesiologists are not involved in the preclinical training of nurse anesthesia students (SRNAs) that includes classroom instruction and simulation-based learning. There are a number of cogent reasons, however, to challenge this state of affairs, for NAPs to consider including anesthesiologists as faculty members for this purpose, and for anesthesiologists to consider participating in preclinical nurse anesthesia education. Ultimately, the single, pivotal goal of both groups of anesthesia providers is to foster and provide safe, quality patient care. As such, anesthesiologists and certified registered nurse anesthetists (CRNAs) have a vested interest in each other's professional development: both CRNAs and anesthesiologists benefit from having strong partners, and their success within a care team hinges to a large extent on their supportive interaction. In this context, embedding anesthesiologists in the educational process of nurse anesthetists starting from their first preclinical days offers an opportunity to solidify trust, understanding, and support in future clinical endeavors.

Although anesthesiologists routinely supervise and provide instruction to SRNAs in operating rooms during their clinical rotations, and despite the increasingly similar

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nature of their professional practices – with CRNAs currently working in intensive care units,¹ interventional pain management centers,² and as leaders in Enhanced Recovery After Surgery programs³ – anesthesiologists are not a regular part of NAP traditional didactic or simulation-based teaching endeavors. For example, of the 124 NAP programs accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs, as of 2020, only one has a full-time faculty anesthesiologist on staff.⁴

Why are Anesthesiologists Not Regularly Involved in the Preclinical Education of SRNAs?

There are multiple possible reasons for this situation. Firstly, although the two professions have common roots, their developmental pathways diverged roughly a century ago. At the beginning of the 1900s, three groups of surgeon-directed anesthesia providers existed in the United States: nurses who provided well-practiced anesthetics full-time; physicians, medical students, nurses, and ancillary personnel who worked part-time to deliver largely inept and hazardous anesthetics; and an increasing number of physicians, who like their nurse counterparts, practiced anesthesia full-time and developed well-honed skills as a result.⁵ In 1905, members of the last group (physician-anesthetists) founded the Long Island Society of Anesthetists which eventually morphed into the American Society of Anesthesiologists.⁵ This organization subsequently generated increasing educational, economic, and political support that served to better define physician-delivered anesthesia as a professional specialty.⁵

In contrast, nurse anesthesia evolved as an offshoot of the profession of nursing and followed in the footsteps of its early nineteenth century full-time pioneer practitioners.⁶ As a consequence of the growth of training programs and the demands for anesthesia that resulted from the two world wars, this specialty expanded significantly, and the National Association of Nurse Anesthetists – later the American Association of Nurse Anesthetists (AANA) – was founded in an effort to better delineate the field of practice. Thereafter, in part due to the efforts of their respective professional organizations, academic and certification pathways for nurse and physician anesthesia providers became formalized, with differing educational tracks evolving over the ensuing years.^{5,6}

At this time, these processes are distinctly separable. Students entering NAPs have had a minimum of one year (and an average of 2.9 years) of clinical exposure and

technical training as intensive care nurses,⁷ but limited exposure to graduate-level science. As a result, the first year (or more) of nurse anesthesia education is exclusively preclinical, with didactic sessions occurring in classrooms and simulation centers. Advanced principles of pharmacology, physiology, pathophysiology, as well as the fundamental elements of anesthesiology constitute the curriculum during this period.⁸ In contrast, anesthesia residents are grounded from day one in the medical concepts mastered during medical school education, and their subsequent pedagogy is almost entirely practice based. These distinct models of education make instruction by an anesthesiologist during the initial part of NAP education less than intuitive, and expectations related to fund of knowledge and cognitive approach to medical issues need to be reset for a physician anesthesia provider assuming a didactic role in this setting.

In addition to the differences in educational models of the two professional specialties, it is likely that there has not been a perceived need for anesthesiologists to teach in the preclinical portions of NAPs. Not only is there a large cadre of well-qualified CRNAs to perform this role, but also, unlike anesthesiologists, CRNAs have a first-hand understanding of the mindset of SRNAs entering these programs, of the students' fund of medical knowledge and cognitive approach to patients and disease processes, and of the specific educational goals that the students need to master in order to achieve professional success. In addition, while there may be a difference between academic and community practices, many anesthesiologists are more comfortable teaching at a clinical level, rather than a preclinical one, since that is what they do during the majority of their professional time. These physicians are largely practitioner-educators, and, except for some guest lecturing or teaching related to their specific subspecialty, many likely feel out of their element when transported into a classroom or simulation center on a regular basis. Furthermore, there is a significant economic incentive for anesthesiologists to engage in clinical rather than didactic teaching: reimbursement as a physician providing anesthesia services is significantly greater than the salary of a graduate school professor.⁹

What are Reasons for Closer Academic Collaboration Between Anesthesiologists and NAPs?

Despite these impediments, there are numerous reasons, both for CRNAs and for anesthesiologists, to consider the opportunities afforded by regular involvement of anesthesiologists

in the preclinical aspects of nurse anesthesia training. Early involvement of anesthesiologists with nurse anesthesia education likely will encourage and help cement future constructive working partnerships. Productive professional relationships are built on foundations that include leveraging shared goals and values,^{10–13} supporting individual perspectives, opinions and styles,^{13,14} encouraging efficient bidirectional communication,^{11,13,15} developing reciprocal respect, trust and accountability,^{11–13,15,16} and establishing clear expectations regarding roles and responsibilities.¹¹ These processes require time and mutual experiences to mature, and can be facilitated by early, close interaction of anesthesiologists with SRNAs. Specifically, collaborative relationships may be effectively cultivated by student–teacher interactions that are commonplace when students are first learning the fundamentals of their trade and often are most impressionable, modeling themselves on their mentors’ professional behavior.^{14,17}

As such, the early introduction of anesthesiologists into the professional development of nascent nurse anesthesia providers can lay the foundation effectively for future partnered endeavors involving these two groups of providers that highlights their shared true north, the safe provision of quality perioperative care. This concept of a common vision lies at the heart of all effective team-based care, including the Anesthesia Care Team model and the Perioperative Surgical Home,¹⁸ and it is a well-established tenant of such health delivery models that early integration of educational experiences in otherwise siloed training programs promotes the development of team competency.^{11,19} While not entirely equivalent to interprofessional educational endeavors – given the large professional overlap of CRNAs and anesthesiologist – the concept of incorporating anesthesiologists into NAP preclinical education as a means to promote an effective amalgam of anesthesia providers is predicated on very similar principles: that partnered education strengthens health care systems and improves patient outcomes.²⁰ Within the global community, such educational integration within the field of anesthesia is particularly critical, given the pressing need for a flexible, task-sharing approach that includes anesthesiologists and non-anesthesiologist providers.²¹

How Can NAPs Benefit?

Anesthesiologists have significant academic substance to offer NAPs. A major goal in the early education of baccalaureate-prepared registered nurses seeking to become

advanced practice CRNAs is to enhance critical thinking and dynamic decision-making skills to a level comparable with safe, real-time practice in an operating room setting,^{22,23} and anesthesiologists can be pivotal in this process. Crises are intrinsic to the practice of anesthesiology, and the use of diagnostic algorithms to interpret and appropriately react to adverse events underlies the precompiled responses and abstract reasoning that allow for rapid and successful intraoperative decision-making. In fact, analysis and interpretation of untoward perioperative circumstances are predicated on an understanding of physiologic concepts that has been formalized in compendiums of differential diagnoses.^{24–26} Many anesthesiologists, as a result of their background and training, can assist student nurse anesthesia providers in acquiring precisely such critical analysis and decision-making skills. Specifically, because formulation and utilization of differential diagnoses is an ingrained method of organized thinking for anesthesiologists, it is natural for them to teach using this cognitive model. As such, nurse anesthesia students exposed to anesthesiologist instructors during their preclinical experiences may learn early in their training to use a systematic diagnostic approach that employs patient data to adjust epistemic confidences selected from a list of possible diagnoses compiled based on physiologic principles. This approach can first be introduced to nurse anesthesia students didactically, and then reinforced via simulated management of common perioperative clinical crises.^{27,28} In this context, a recent observational study involving nurse anesthesia students after 14 months of instruction consistently identified a major weakness in their education as the ability to formulate differential diagnoses of clinical problems in real time.²⁹

Given the current transitional state of NAPs from master’s to Doctor of Nursing Practice (DNP) programs that resulted from recommendations of the American Association of Colleges of Nursing and the AANA,³⁰ it is an opportune time to encourage and support the introduction of anesthesiologists into preclinical NAP education. Part of the reason for this metamorphosis in NAPs is the recognition that nurse anesthetists will benefit from additional depth and breadth of training in a dynamic and increasingly complex healthcare environment.³⁰ Anesthesiologists, by virtue of their different educational backgrounds and cognitive skill sets, offer a source of readily available instructors to provide precisely such added dimensions to NAPs. For example, the introduction of an oral examination – with its teaching emphasis on the development of real-time differential

diagnoses as an approach to perioperative crisis management – has been an anesthesiologist-driven innovation serving as a benchmark process in at least one nascent NAP DNP program.²⁹

How Can Anesthesiologists Benefit?

Of equal importance, involvement in preclinical NAP education may offer unique opportunities for some anesthesiologists. It is relatively easy for many health care providers, anesthesiologists included, who have practiced within the confines of the current health care system to lose sight of the original reasons that motivated them to pursue clinical medicine in general, and anesthesia in specific, as a life-long endeavor. More precisely, it is too common for providers functioning within larger medical systems to forget the passion, excitement, and optimistic sense of empowerment associated with their initial exposure to the principles and practice of anesthesia delivery. Nurse anesthesia students transitioning from bedside endeavors to learning the principles of perioperative care exude these emotions on a daily basis, and re-exposure of seasoned anesthesiologists to these early emotional foundations of practice can be psychologically rejuvenating and of enormous professional benefit. While medical students and anesthesia residents may be equally enthusiastic, teaching in residency programs comes *par-in passu* with clinical responsibilities that may pose issues for a subset of providers (see discussion of burnout). In essence, NAPs can provide a much-needed therapeutic re-set for clinicians otherwise engrossed in the daily minutia of medicine as big business.

Furthermore, teaching nurse anesthesia students at a preclinical stage in their training offers unique educational challenges to anesthesiologists rooted in the day-to-day aspects of patient care. Fundamental lessons of physiology and pharmacology must be recalled with the detail and clarity needed to teach these subjects to an inquisitive and often well-informed audience. Functioning as an instructor in a classroom or simulation center translates into stepping outside comfort zones for many individuals accustomed to teaching anesthesia only in the operating room. It means becoming fluid with mannequin-based high fidelity simulation (and in the pandemic era, of distance learning with computer screen-based anesthesia simulation), of real and virtual office hours with students, and of innovative active learning techniques including flipped classrooms, educational games, spaced learning, interleaving, and retrieval practice.³¹ These teaching roles allow extensive

opportunities for creativity and professional development for anesthesiologists whose practices otherwise exclusively involve clinical endeavors, and at the same time offer them the unique prospect of helping shape future anesthesia providers from their earliest days in training.

While such opportunities clearly have intrinsic value, they may be of particular utility to that subset of physician providers beginning to experience one or more of the elements of “burnout” – emotional exhaustion, depersonalization, and reduction in personal achievements.³² Burnout, not only contributes to psychosocial exhaustion and stressful interpersonal relationships, it also adversely impacts patient care, contributes to depression and substance abuse among anesthesiologists, and results in the premature retirement of many highly trained and experienced health care professionals.^{32,33} Stress represents a common denominator related to the development of such burnout in anesthesiologists, and stress precipitants more often than not relate to the increasingly numerous, complex, and time-consuming consequences of patient care – for example, demands related to the responsibility, quality, efficiency, and timing of such care, and the angst associated with novel ethical demands of the health system.³² Although providing preclinical education outside the operating theatre is not stress-free, the stress associated with teaching in a classroom (real or virtual) or simulation center clearly differs in its origins, nature and intensity. Perhaps most importantly, the specific stressors associated with burnout among anesthesiologists practicing clinical medicine are predominantly absent.

Interestingly, there is no data to demonstrate that involvement in educational initiatives helps combat anesthesiologists’ burnout. Certainly, burnout in teachers is a well-described phenomenon,³⁴ and burnout among academic anesthesia providers is widespread.^{35,36} This condition, however, appears to be associated with some factors that solely relate to clinical care (eg, number of operating room hours worked and nights on call). Likewise, anesthesiologists’ employment in residency programs almost uniformly involves patient-care commitments, so the stressors associated with teaching in that setting overlap significantly with those of community anesthesia practice. These factors include stressful patient scenarios, operating room production pressures, surgeon behavior, and excessive work hours involving night and weekend on-calls.^{33,37} All of these clinical elements are absent from pre-clinical instruction in NAPs.

What are Potential Obstacles to Such Academic Collaboration?

Unfortunately, even after the potential advantages have been identified for NAPs and anesthesiologists, there are significant impediments to such joint ventures, in addition to those obstacles posed by professional organizations.³⁸ Like many relatively homogeneous university groups, academic nursing programs including NAPs resist incorporating “outsiders” into their folds. The foundations of these territorial reflexes are likely numerous, but the bottom line is that an anesthesiologist in a NAP may not be readily accepted as a peer by other NAP faculty. Instead, he or she may be viewed as an anomaly, with equal parts suspicion and concern. The way forward in these situations involves a clear appreciation of both the origins of these circumstances and of the potential benefits of change, and a proactive, concerted endeavor on the part of NAP leadership to involve these physicians as integrated, legitimate, full-fledged faculty members in research, teaching, community, and social activities. Every effort should be made to encourage comradery and interpersonal support in order to collectively prevent a stranger-in-a-foreign-land scenario. In this process, regular departmental conferences and collaborative thinking serve key functions, and promote an environment of mutual respect and understanding that is essential to successful group amalgamation.⁵

There is a reciprocal problem in the physician community that functions as another, comparable impediment to preclinical partnership of anesthesiologists and NAPs. Anesthesiologists seeking to make a professional commitment to teaching in classroom and simulation center NAP courses may be viewed by their colleagues as dedicating their careers to activities that are not commensurate with their medical training, despite the fact that similar activities for a physician in a medical school are considered laudatory. Unfortunately, there is a hierarchical perspective of health care providers pervasive among many physicians that ranks nurses, including advanced practice nurses such as nurse anesthetists, below physicians.³⁹ Not only does this longstanding paradigm handicap effective cooperation of healthcare team members, but it also functions as a barrier to integration of anesthesia physicians into the preclinical aspects of nurse anesthesia education. Effective interprofessional collaboration in both pedagogy and clinical care requires that this cultural perspective be challenged and revised.

Conclusion

As such, although not without very real obstacles, a professional niche exists for anesthesiologists in the preclinical teaching of nurse anesthesia students. This option offers a unique opportunity for anesthesiologists and nurse anesthetists to solidify their professional relationship from the beginning days of NAP education and thereby to build trust, understanding, and support in future clinical endeavors. It provides NAPs access to a supply of well-trained anesthesia providers who bring with them not only valuable insight and clinical experience, but also ingrained cognitive approaches that are crucial to the professional education of SRNAs. Likewise, at a time of accelerated burnout among anesthesiologists, NAPs offer a professional haven for those anesthesiologists seeking new challenges in education, and a unique opportunity to shape the future of anesthesia from the ground up. There are multiple historical reasons for the lack of involvement of anesthesiologists in this role to date. However, given the current transition of NAPs to DNP programs, there is an added incentive to making these opportunities available and appropriately supporting them. Increasing the professional integration of these two categories of anesthesia providers by encouraging participation of anesthesiologists in the preclinical education of NAPs can be a major win-win for both groups, and most importantly, for the patient recipients of their joint care.

Disclosure

The authors report no conflicts of interest in this work.

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