

Bridging the Gap: Nurse Anesthesia as a Pathway to Global Health Equity

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Abstract

Access to safe anesthesia care remains one of the most profound inequities in global health. *Bridging the gap* between evidence and policy, this article argues that integrating nurse anesthesia within advanced practice nursing frameworks offers a viable and ethical pathway toward global health equity. Drawing from international exemplars and emerging programs in low- and middle-income countries, the paper highlights evidence for the safety, cost-effectiveness, and sustainability of nurse anesthesia education. It concludes with recommendations for policy alignment, workforce development, and global partnerships aimed at realizing universal access to safe anesthesia care.

Introduction: Anesthesia and the Geography of Access

Anesthesia sits at the intersection of science, skill, and social justice. Without it, safe surgery, emergency obstetrics, and trauma management are impossible, yet anesthesia workforce shortages persist in every region of the world. The *Lancet Commission on Global Surgery* (2015) estimated that five billion people lack access to safe surgical and anesthesia services, a gap that reflects deep structural inequities in global health. Bridging this gap requires expanding the scope of advanced practice nursing to include anesthesia as a recognized and empowered pathway to equitable surgical care.

While many nations have embraced advanced practice nursing in primary care, maternal health, and chronic disease management, anesthesia remains conspicuously absent from most national frameworks. This omission perpetuates disparities in access, outcomes, and professional recognition. In regions where the anesthesia workforce is scarce, nurses often provide perioperative care informally or without official credentialing. Formalizing and supporting nurse anesthesia within global advanced practice nursing (APN) frameworks offers not only a solution to workforce scarcity but also a tangible strategy for advancing equity in health systems worldwide.

A Proven Model: Evidence and Outcomes of Nurse Anesthesia Practice

The evidence supporting nurse anesthesia as a safe and effective model is robust. Certified Registered Nurse Anesthetists (CRNAs) in the United States have provided anesthesia care for more than 150 years and deliver over 50 million anesthetics annually. Numerous comparative studies demonstrate that outcomes for nurse anesthetists are equivalent to those of physician anesthesiologists when controlling for patient acuity and setting [1]. Cost analyses also reveal that nurse anesthesia services are less expensive, a critical advantage in resource-limited systems.

Globally, variations of this role already exist. In Norway and Sweden, nurse anesthetists are fully integrated within anesthesia teams and participate in advanced clinical decision-making [2]. In several African countries, such as Ghana, Zambia, and Ethiopia, non-physician anesthesia providers, including nurses, are responsible for the majority of surgical anesthesia, often in rural or district hospitals. Asemu *et al.* [3] demonstrated that targeted educational interventions for non-physician anesthetists in Ethiopia significantly improved quality of care and workforce retention. These examples confirm that, when provided appropriate education, regulatory authority, and

institutional support, nurse anesthetists can safely expand anesthesia capacity and reduce preventable mortality.

The International Council of Nurses [4] formally recognizes the nurse anesthetist as an advanced practice role requiring master's-level preparation, clinical expertise, and autonomous decision-making within interprofessional teams. Despite this endorsement, policy uptake remains limited. The gap between demonstrated effectiveness and formal recognition reveals a persistent disconnect between evidence and regulation.

Policy Gaps and Structural Barriers within APRN Frameworks

Advanced practice nursing frameworks have advanced rapidly in primary care and acute-care domains, but integration of anesthesia has lagged. Wheeler *et al.* [5] found that among the 126 countries surveyed, fewer than 15 percent included anesthesia practice within the legal or educational definitions of APN. In many jurisdictions, anesthesia is still regarded as a physician-exclusive domain, reflecting historical hierarchies rather than contemporary workforce realities.

These policy gaps produce several consequences. First, they restrict educational development: without a recognized role, universities and ministries of education have limited incentive to establish graduate-level nurse anesthesia programs. Second, regulatory ambiguity limits professional mobility. Nurse anesthetists trained in one country often cannot practice in another, even within regions facing identical workforce shortages. Third, omission from APRN frameworks limits access to funding streams, professional associations, and continuing-education opportunities that could ensure ongoing competency.

The result is a fragmented system in which nurse anesthetists operate in isolation or under provisional supervision without standardized career progression. The absence of policy coherence undermines both professional legitimacy and patient safety. Integrating anesthesia into APN legislation would align nursing regulation with actual practice and create a foundation for quality assurance and international collaboration.

Global Contexts: Adaptation, Not Replication

Integrating nurse anesthesia globally does not imply exporting a single Western model. Instead, it requires adaptation to local educational, cultural, and resource contexts. Countries that have successfully introduced nurse anesthesia illustrate the importance of flexibility and partnership.

In Ethiopia, government-led collaborations with academic partners strengthened non-physician anesthesia education through competency-based curricula and mentorship [3].

In Chad, a south-south academic partnership established a basic anesthesia training program for nurses, demonstrating significant improvements in surgical capacity and local autonomy [6]. These programs emphasize the value of peer collaboration among LMICs, rather than dependency on high-income-country models.

In high-income nations, nurse anesthesia roles are well integrated within team-based systems. Scandinavian models highlight shared responsibility between nurse anesthetists and physicians, supported by advanced education and interprofessional trust [2]. These diverse examples show that context-specific design, grounded in local needs and mutual respect, produces sustainable results.

A common denominator across settings is investment in education. Whether through master's-level programs or modular training, successful initiatives embed simulation, clinical mentoring, and continuous assessment. The ICN [4] guidelines advocate flexible, competency-based education that can be adapted for regional accreditation. Such approaches protect patient safety while allowing countries to scale their anesthesia workforce responsibly.

Equity and Ethics: Beyond Workforce Pragmatism

Integrating nurse anesthesia into advanced practice frameworks is not merely a policy choice; it is an ethical obligation grounded in the right to health. WHO defines universal health coverage as ensuring that all people receive quality health services without financial hardship. Access to surgery and anesthesia is intrinsic to this goal, yet it remains one of the most unevenly distributed services globally. The ethical question, therefore, is not whether nurses *can* provide anesthesia, but whether nations can justify withholding training and recognition when lives are at stake.

The gendered history of nursing complicates this conversation. Anesthesia remains a specialty traditionally dominated by men at the physician level and by women at the nursing level. The continued exclusion of nurse anesthesia from advanced practice legislation reflects not only professional territoriality but also structural gender bias. Recognizing anesthesia as an APN specialization affirms nursing as a discipline capable of technical expertise, leadership, and autonomous practice in high-acuity care.

Equity considerations extend beyond gender. Rural populations, Indigenous communities, and those living in fragile or post-conflict states are disproportionately affected by anesthesia shortages. In many of these contexts, establishing nurse anesthesia programs is the only realistic path toward safe surgical access. Shahbaz and Howard [7] documented that low- and lower-middle-income Asian countries face anesthesia workforce densities far below WHO minimum

recommendations, with a growing reliance on unaccredited or ad hoc training. The absence of recognized educational pathways perpetuates inequities in both care quality and workforce dignity.

From a global-justice perspective, integrating nurse anesthesia aligns with the principles of distributive justice and capability enhancement. By enabling nurses to practice to the full extent of their education, health systems expand collective capacity and reduce dependency on expatriate or rotating providers. It also honors the ethical tenet of proportionality: aligning professional preparation with population need.

Education and Policy Alignment: Building Capacity through Partnership

Bridging the policy gap requires coordinated action across education, regulation, and professional governance. Three priorities emerge.

1. Policy Recognition and regulatory frameworks

National nursing councils and ministries of health should formally recognize anesthesia within advanced practice legislation. Integration into the APN scope clarifies accountability, establishes credentialing standards, and protects patients and practitioners alike. Countries such as Norway and the United States demonstrate that regulatory clarity enhances both safety and workforce satisfaction [1,2].

2. Education and accreditation

Education must be competency-based, evidence-informed, and adaptable. The ICN [4] recommends master's-level preparation with structured clinical mentorship. In LMICs where graduate infrastructure is limited, modular or diploma-to-degree models can build capacity over time. Partnerships between universities, ministries, and international associations can provide curricular resources without imposing cultural or linguistic uniformity. Investment in simulation technology and virtual exchange can further expand reach while maintaining safety standards.

3. Interprofessional collaboration

Sustainable change depends on collaboration between nurses, physicians, and policymakers. Opposition often arises from misunderstanding of scope rather than empirical concern. Transparent role delineation and team-based training mitigate professional resistance. Programs that embed joint simulation or shared faculty appointments, as seen in several Scandinavian systems, foster mutual respect and safety culture. Collectively, these

strategies create an ecosystem in which nurse anesthesia is normalized as one expression of advanced practice nursing rather than an exception.

The Broader Impact: Strengthening Health Systems

Integrating nurse anesthesia has ripple effects across health systems. First, it enhances resilience. In crises, from pandemics to natural disasters, countries with flexible anesthesia workforces can maintain essential surgical and obstetric services. Second, it supports rural health development by enabling local surgical capacity, reducing the need for costly patient transfers. Third, it advances the professionalization of nursing, signaling to students and communities that nursing encompasses high-acuity, technology-intensive domains as well as preventive care.

Economic modeling reinforces these benefits. Expanding anesthesia capacity through nurse training programs is far more cost-effective than relying solely on physician expansion, particularly when public budgets are constrained [3]. Moreover, retention rates for locally trained nurse anesthetists are higher than for expatriate physicians, ensuring long-term system stability.

These practical outcomes strengthen the equity argument: integrating nurse anesthesia is not only morally right but also economically rational.

Conclusion: A Global Call to Action

Safe anesthesia care should not depend on geography. The global distribution of anesthesia providers mirrors structural inequities—between rich and poor countries, urban and rural regions, men and women, and professions with or without political voice. The expansion of advanced practice nursing has demonstrated the transformative potential of nursing in closing access gaps across disciplines. It is time for anesthesia to be included in that movement.

Integrating nurse anesthesia within national APN frameworks would align policy with evidence, education with practice, and moral commitment with action. The path forward involves partnership, not replication: countries can adapt the role to their own contexts while maintaining global standards for safety and quality. Doing so honors the principles of universal health coverage, gender equity, and professional dignity that underpin modern health policy.

Ultimately, the question is not whether the world can afford to invest in nurse anesthesia education—it is whether we can afford *not* to. Every cesarean section safely performed, every trauma patient stabilized, and every rural surgery completed by a well-trained nurse anesthetist is a measure of

equity achieved. Recognizing and integrating this role within advanced practice nursing is one decisive step toward global health equity.

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