

A Global Anesthesia Training Framework

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In the opinion of the World Federation of Societies of Anaesthesiologists (WFSA), the most important issue facing the global anesthesia community is the critical shortage of trained anesthesia providers in low- and middle-income countries (LMICs). This contributes to a global crisis where 5 of 7 billion people do not have access to safe surgical and anesthesia care when needed.¹ Relatively few resources have been allocated to address the global anesthesia workforce crisis, and anesthesiologists must urgently innovate and lead on appropriate solutions.

In 2015, the World Health Assembly passed Resolution 68.15 which calls on member states to strengthen anesthesia and surgical care and encourages the development of appropriate core competencies that are part of relevant health curricula, training, and education.² The resolution expresses concern about the inadequate training of the surgical care workforce and urges member states to promote emergency and essential surgery and anesthesia capacity as components integral to achieving universal health coverage (UHC). The resolution goes on to ask the World Health Organization (WHO) to support member states “to devise policies and strategies that enhance the skills of the appropriate health workforce for emergency and essential surgical care and anesthesia, especially at primary health care and first-referral hospital levels.”

The WFSA has an official liaison role with the WHO and is a federation of national anesthesiology societies representing anesthesiologists in 150 countries.³ In

April 2018, the leadership of the WFSA pledged to invest resources to create an Anesthesia Training Framework (ATF) as part of a larger ongoing mission to increase access to safe anesthesia services worldwide. The framework will provide a tool that can be used to expand the number of training programs while ensuring high-quality education and safe care.

This article is an opinion piece and not a formal WFSA position statement. Our intention is to raise awareness and outline the WFSA leadership’s current thinking about an ATF, and suggest a process for its development. This process will include consultation with WFSA member societies and other key stakeholders.

THE NEED FOR AN ATF

In LMICs, many factors limit access to safe anesthesia care; these include inadequate numbers of anesthesia providers, poor workforce planning, limited training capacity, maldistribution of the existing workforce, and variable standards of training. Anesthesia may be delivered by physician anesthesia providers (PAPs) and/or non-PAPs (NPAPs); however, models of care are variable and there is often a lack of coordination between training programs.⁴

The WFSA Global Anesthesia Workforce Survey⁵ found that 43 countries worldwide had a PAP density of <1/100,000 population compared to around 20/100,000 in many high-income countries. Seventy-seven countries had a PAP density of <5/100,000 population. The survey estimated that >136,000 additional PAPs would need to be trained at 2016 population levels to achieve a modest workforce density of 5/100,000 worldwide. When NPAPs were included in the analysis, 70 countries still had a total provider density of <5/100,000. The Lancet Commission on Global Surgery (LCoGS)¹ estimated that there will need to be a doubling of the specialist physician surgical workforce (SAO providers: surgeons, anesthesiologists, and obstetricians) to achieve UHC by 2030.

Many LMICs are starting to address this challenge by developing National Surgical Obstetric and Anesthesia Plans to guide the scale-up of anesthesia and surgical services.^{6,7} No one size fits all and different workforce models will be needed in different countries. The LCoGS recommended the use of task sharing, “in which tasks are transferred from one professional to another to maximize human resources” where “both the specialist provider and the provider with less training share the responsibility for a high quality outcome of the task.”¹ The WHO, in Resolution 68.15, also called on member states to promote

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task sharing as a means of optimizing the health care workforce in appropriate situations.² A recent opinion piece in *Anesthesia & Analgesia* argued that task sharing between PAPs and NPAPs will play a critical role in workforce scale-up, especially in LMICs, and suggested the use of a physician-led, team-based approach to patient care.⁴

In 2017, voting member societies of the WFSA unanimously approved a position statement on UHC that stressed the importance of anesthesiologist leadership in the effective development of anesthesia services and acknowledged the need for different workforce models:

In some countries, the anesthesia need will be met by training anaesthesiologists. In other countries, especially those with limited resources, the need may, in part, be met by training non-anaesthesiologist providers. Anaesthesia is complex and potentially hazardous, and optimal patient care depends on anaesthesia being provided, led or overseen by an anaesthesiologist. The WFSA recognizes that effective teamwork is a vital component of patient safety.⁸

Increasing the number of anesthesia providers is, however, only 1 part of the solution, and we must ensure that we do not sacrifice quality of patient care in the pursuit of quantity of providers. A recent analysis of mortality in 137 countries revealed that there were more deaths due to poor-quality care compared to deaths due to nonutilization of health care. The authors concluded that expansion of service coverage must be accompanied by investments into high-quality health systems.⁹ In a publication entitled *Workforce 2030*, the WHO stated:

Mere availability of health workers is not sufficient: only when they are equitably distributed and accessible by the population, when they possess the required competency, and are motivated and empowered to deliver quality care that is appropriate and acceptable to the sociocultural expectations of the population, and when they are adequately supported by the health system, can theoretical coverage translate into effective service coverage. However, countries at all levels of socioeconomic development face, to varying degrees, difficulties in the education, deployment, retention, and performance of their workforce. Health priorities of the post-2015 agenda for sustainable development ... will remain aspirational unless accompanied by strategies involving transformational efforts on health workforce capability.¹⁰

The WHO-WFSA Standards for a Safe Practice of Anesthesia state that every patient should be cared for at the highest standard of care possible.¹¹ Short-term, “quick fix” solutions to increase provider numbers have the potential to lead to suboptimal care, and delay development of quality, sustainable, long-term solutions.¹²

Given the urgency of the situation, the question for us, as anesthesiologists, is how will we respond? In our view, it is vital that anesthesiologists lead the development of the anesthesia workforce and that we do this in a collaborative and constructive way. If we do not take a leadership role and work with others to provide solutions, we risk becoming disconnected from the majority of anesthesia provision and training. We believe that the creation of an ATF is a timely and essential part of our response to the global anesthesia workforce crisis. It will provide a tool for program development to increase provider numbers and optimize patient care in a safe, coordinated, and locally appropriate way.

OBJECTIVES AND PROPOSED STRUCTURE

Considerable background work was undertaken by a group of WFSA-linked anesthesia educators from a diverse group of countries before formal adoption of the project by the WFSA leadership in April 2018. This work helped to identify some specific objectives and also a number of areas that will require further work and consultation with key stakeholders before final approval of the framework by member societies at the WFSA General Assembly.

The specific objectives are as follows:

- To outline competency-based categories or levels of training that can be used to develop locally appropriate training programs.
- To propose a minimum level of training appropriate for both nonspecialist PAPs and NPAPs.
- To provide curriculum content recommendations and identify key factors that should be considered during program development.
- To create a framework that can be integrated into National Surgical Obstetric and Anesthesia Plans and used by anesthesia educators, health ministries, and others involved in planning the scale-up of the surgical and anesthesia workforce.

The ATF will provide a high-level structure for development of locally appropriate anesthesia training programs rather than a detailed point-by-point list of curriculum objectives. It will be aligned with other work in the global anesthesia and surgical arena, including the LCoGS and the World Bank’s *Disease Control Priorities*, third edition.¹³

Currently, there are numerous pathways for anesthesia provider training and there has been considerable discussion regarding the best categorization of training programs for the purpose of this framework. Here, we present a preliminary categorization (category A, category B, and category C) that is intended to generate discussion and serve as a structure for ongoing work and consultation.

In summary, category A corresponds to a minimum level of training, category B corresponds to an intermediate level of training, and category C corresponds to a higher level of training consistent with existing specialist anesthesiologist training programs. The categories are defined by competencies rather than specific provider type, for example, category A training may be appropriate for a NPAP or a nonspecialist PAP. The type or types of categories chosen for provider training should be determined locally and will depend on the country’s workforce requirements and available resources. Different models of care will be appropriate for different countries, for example, 1 country may choose an anesthesiologist-only model of care provision (category C training only), another country may choose a shared-care model comprising anesthesiologists (category C training) and nonspecialist PAPs (category A or B training), while a third country may choose a shared-care model comprising anesthesiologists (category C training) and NPAPs (category A or B training).

Our position is that anesthesiologists with category C training are an essential part of the anesthesia workforce in any country, whether the country chooses an anesthesiologist-only model of care or a shared-care approach. We

recognize that, given the current workforce deficits in some countries, direct supervision of providers with category A training will not always be possible in the near future. Our intent is to provide a categorization that enhances, rather than limits, the content and quality of anesthesia training and subsequent strengthening of the workforce. Training to a higher level than the minimum outlined in the ATF should always be the aim; individual countries should see category A training as a step in the development of a strong, sustainable workforce rather than an end state.

Our intention is to align category A training with the surgeries offered in a first-level surgical facility, as defined by the LCoGS: a surgical facility able to perform the Bellwether procedures (cesarean section, laparotomy, treatment of open fracture). The Bellwether concept is sometimes misunderstood to mean the ability to perform only these 3 procedures; in fact, the Bellwether procedures are a marker for a surgical system that can perform a much wider range of emergency and essential operations. Currently, many first-level surgical facilities in remote areas are staffed by relatively poorly trained surgical and anesthesia providers.^{1,14} We therefore argue that category A training should provide the knowledge and skills to deliver safe anesthesia for the Bellwether and other related procedures and note that, in many environments, this level of training will represent a considerable step-up from existing informal or low-level training programs for NPAPs.

Category B training is an intermediate level of training that will deliver the knowledge and skills to provide anesthesia for a wider range of emergency and essential procedures in relatively uncomplicated patients. There may be additional training in some subspecialty areas, for example, pediatric anesthesia, pain management, and training in nonclinical areas such as research and teaching. There will be increased emphasis on basic science topics and training to perform a greater range of anesthetic techniques, for example, plexus blocks and invasive monitoring.

Category C training is consistent with current anesthesiologist (specialist PAP) training programs. This category is aimed at delivering the knowledge and skills for the provision of anesthesia for a wide range of surgical procedures, including specialized surgery in complicated patients. There will be an emphasis on perioperative medicine, including critical care and advanced subspecialty care that is not included in category A or B training. Category C training will include additional education in nonclinical areas such as teaching, research, and leadership. It will also include in-depth coverage of basic science topics and a wide range of anesthetic techniques, for example, awake fiberoptic intubation and 1-lung ventilation.

In addition to categorization of competencies, the ATF will provide guidance on important training considerations such as entry criteria, duration, and assessment. These areas are potentially complex, and we plan to outline a list of factors that should be considered during local program development rather than produce a set of rigid recommendations.

CONTROVERSIES AND POTENTIAL OBSTACLES

A number of issues will need to be addressed during the development of the ATF. The definition of a minimum level

of training (category A) is challenging. In our view, this level of training should correspond with the knowledge and skills for safe provision of anesthesia for emergency and essential surgical procedures (as defined by the LCoGS and Disease Control Priorities, third edition) at a first-level hospital. However, anesthesia for these procedures can vary considerably in complexity. Some patients presenting at a first-level surgical facility may require a relatively simple surgical procedure but be very unwell, for example, a woman with eclampsia requiring an emergency cesarean section, or a patient with multiple injuries requiring a laparotomy. In some remote facilities, the least trained health workers have to manage the sickest patients with the fewest resources.¹⁴ This paradox highlights the need for category A training to be comprehensive enough for anesthesia providers to be able to manage a range of common surgical procedures, recognize their limitations, and be able to identify, stabilize, and transfer complicated patients if possible in the local health care environment. The paradox also highlights the potential value of a shared-care model, whereby anesthesia providers with different levels (categories) of training may work together in a complementary manner to provide a wider breadth of anesthesia services.

While a shared-care model could offer many advantages, the design of the ATF should assume that NPAPs or nonspecialist PAPs working in first-level surgical hospitals may be required to practice independently. Supervision by anesthesiologists may be remote or absent,^{1,4} and, therefore, category A training needs to be comprehensive enough to equip providers with the competencies to practice alone in such a setting. We do not support a lower level of training because of the potential impact on patient safety and the risk that governments or other organizations will misinterpret a lower level of training as the default minimum standard for all anesthesia providers.

The ATF may not align completely with existing training programs. It is important to note that the ATF will primarily be aimed at the development of new anesthesia training programs; it is not intended to supplant existing programs that are working well. We also envisage that most existing programs will fit broadly within our proposed categories of training. For example, the International Federation of Nurse Anesthetists (IFNA) has produced detailed curricula for both Certificate and Master's programs,¹⁵ and the content of these programs could fit broadly within the scope of category B training.

Some anesthesiologists and their professional societies advocate for anesthesiologist-only provision of anesthesia. The ATF will offer options for categories of training and will not dictate a particular model of care. It is vital that different countries determine their own models of anesthesia care, and we argue that national anesthesiologist societies should play a leading role in this process. The model chosen will depend on local workforce requirements and resources, and in many environments, a shared model of care is likely to be appropriate. We also argue that, where a mixed provider model is used, there must be coordination of training programs and a team approach to delivery of patient care.

Further development of the ATF will require engagement by key nonanesthesiologist stakeholders, including

the IFNA and surgical organizations; this will be vital if the ATF is to be accepted as a tool for workforce planning and training program development. Our intention is that the ATF will encourage dialogue and collaboration that will improve the quality of training programs worldwide.

Ultimately, the ATF will have value only if it is used by anesthesiologists, NPAP provider organizations, governments, and other stakeholders during surgical and anesthesia workforce planning and as a tool for the development of locally appropriate training programs. The likelihood of implementation will be increased if the WFSA engages stakeholders early in the process and continues to advocate for rational, appropriate anesthesia development at WHO and government levels.

NEXT STEPS

The WFSA leadership suggests the following process for the further development of the ATF:

- Creation of awareness of the need for a framework and the process that the WFSA is undertaking.
- Formation of a WFSA ATF Ad Hoc Committee, tasked with a review of the work to date, further research, discussion with educational experts, and formulation of a consultation document. This committee will have gender and geographical balance as well as representation from LMICs and high-income countries. The consultation document will provide a description of competencies for each category of training and an outline of other factors that should be considered when developing a locally appropriate training program.
- Consultation with member national societies, the IFNA, and other stakeholders.
- Finalization of the ATF by the Ad Hoc Committee.
- Interim endorsement of the ATF by the WFSA Board and Council.
- Final endorsement of the ATF by the WFSA General Assembly at the World Congress of Anaesthesiologists in 2020.

Considerable preliminary work has already been done on the competencies that may be appropriate for each category of training, but further detail is required. Input from individuals, member national societies, and other key stakeholders will be sought and welcomed. We do not underestimate the challenges involved with formulating a document that will have general applicability but also enough detail to be a useful tool.

There is potential for the ATF to be a stimulus for other educational tools. An example could be the development of a detailed training program based on the minimum level defined by category A. We are currently considering the feasibility of such a project and whether this would be a useful tool for anesthesiologist member societies. There is also potential for the WFSA to become involved with certification of such a program.

OUR RESPONSE TO THE GLOBAL ANESTHESIA WORKFORCE CRISIS

Now is an exciting time for global anesthesia and surgery. There is unprecedented awareness of the global issues, and

we are increasingly defining the nature and scale of lack of access to safe anesthesia and surgery. It is also a pivotal time for our specialty. If anesthesiologists do not engage and lead the response to the ongoing anesthesia workforce crisis, we risk becoming irrelevant at a time when others are trying to find solutions.

The proposed ATF will be a vital part of our response. It will provide a structured approach to workforce development that can be used as a basis for locally appropriate programs. There is much work to do, and we look forward to excellent engagement by anesthesiologists and other stakeholders worldwide. ■■

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