The International Federation of Nurse Anesthetists is improving anaesthesia patient care through a voluntary Anesthesia Program Approval Process (APAP) for schools and programmes. It is the result of a coordinated effort by anaesthesia leaders from many nations to implement a voluntary quality improvement system for education. These leaders firmly believe that meeting international education standards is an important way to improve anaesthesia, pain management and resuscitative care to patients worldwide.

By 2013, 14 anaesthesia programmes from France, Iceland, Indonesia, Philippines, Sweden, Switzerland, Netherlands, Tunisia and the USA had successfully completed the process. Additional programmes were scheduled for review in 2014. Faculty from these programmes, who have successfully completed APAP, show how anaesthesia educators throughout the world seek to continually improve education and patient care by pledging to meet common education standards.

As national governments, education ministers and heads of education institutions work to decrease shortages of healthcare workers, they would benefit from considering the value offered by quality improvement systems supported by professional organizations. When education programmes are measured against standards developed by experts in a profession, policy makers can be assured that the programmes have met certain standards of quality. They can also be confident that graduates of approved programmes are appropriately trained healthcare workers for their citizens.

**Keywords:** Accreditation, Anaesthesia, Approval, Education, Improvement, International, Nurse, Quality, Standards

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Background
The International Federation of Nurse Anesthetists (IFNA) is an affiliate member of the International Council of Nurses. IFNA was founded in 1989 by 11 countries (Caulk & Ouellette 2011). Although the Federation had grown to 41 country members in 2013, it is still not well known that anaesthesia is administered by nurses in many countries throughout the world. The fact that nurses commonly administer anaesthesia worldwide was first confirmed in a 1996–1999 study conducted by Lt Col Maura S. McAuliffe, PhD, CRNA, FAAN and Beverly Henry, PhD, RN, FAAN (McAuliffe & Henry 1996). The researchers found that nurses administered anaesthesia in 106 countries; nurses provided anaesthesia in 77% of rural areas of the world and in 75% of urban areas; 57% were required to have physician anaesthesiologists supervise their work; all had formal education but some had to leave their countries to become educated; 50% reported continuing education was not available; and 74% reported that hospital policies as well as governmental regulations guided the practice of nurse anaesthesia.

In June 2010, IFNA established a voluntary Anesthesia Program Approval Process (APAP) (IFNA 2013b) that offers three levels of approval: Level #1: Registration; Level #2 Recognition; Level #3 Accreditation. Establishment of APAP met IFNA’s ongoing efforts to fulfil its mission to enhance the quality of anaesthesia care by promoting its international education standards (IFNA 2013a). Key to establishing a voluntary approval process was the availability of a set of education standards approved by IFNA’s Country National Representatives soon after IFNA was chartered (Educational Standards for Preparing Nurse Anesthetists; IFNA 2012). The Education Standards are used as the ‘ruler’ for measuring a programme’s success in implementing the criteria (see Table 1). Programmes that are not able to fully adhere to the standards because of minimal resources or local restrictions are given credit for what they have done and encouraged to meet all standards overtime (Ouellette & Horton 2010, 2011a,b).

Need for education of healthcare workers
According to the World Health Organization (WHO), a desperate shortage of health workers in the world means that millions of people die or are disabled unnecessarily (WHO 2008). It is estimated that about 800 women die every day because of complications of pregnancy and childbirth (WHO 2013). A large part of the problem is simply that not enough health workers are being educated and trained in many areas of the world. Efforts are underway to train individuals, in place of physicians, to perform surgery or give anaesthesia in many countries to help alleviate the shortage (WHO 2008).

IFNA recognizes that nurse anaesthetists give essential health care in many countries and their use can help decrease a shortage of health workers; however, non-physician students of anaesthesia may be nurses, non-nurses or a mixture of both. Further, anaesthesia education in the world ranges from no training to formal schools. There are differences in faculty qualifications, wide variations in student qualifications and varying levels of resources. IFNA believes that promoting common international education standards for all non-physician anaesthesia programmes can improve health care. Based on this belief, and for the purposes of programme approval, it is IFNA’s policy to approve programmes that admit students who are nurses or who are educated in another scientific area that prepares students to succeed in their anaesthesia education. Although IFNA strongly supports a nursing background for admission, it also believes in an approval process that recognizes the differences that currently exist in the educational preparation of health professionals worldwide that result

Table 1 International Federation of Nurse Anesthetists Educational Standards Topical Outline

| I. Prerequisites |
| II. Selection process |
| III. Curriculum |

Content of the program
As a minimum, the program curriculum will contain the following topics or courses as they relate to the practice of nurse anaesthetists.
A. Expert role
B. Communicator role
C. Collaborator role
D. Manager role
E. Professional role
F. Health advocate role
G. Scholar role
H. Clinical Practicum Requirements
IV. Graduate Competencies
V. Location
VI. Length of the program
VII. Faculty/Teaching Personnel Requirements
VIII. Evaluation
IX. Graduation

Note: The nurse anaesthetist roles are based on the CanMeds Role Model Diagram with permission of the Royal College of Physicians and Surgeons. Educational Standards for Preparing Nurse Anesthetists reprinted with permission of IFNA.

In addition to adopting Standards of Education, Standards of Practice, Standards on Patient Monitoring and a Code of Ethics have been published for use by the international community of nurse anaesthetists. Available at http://ifna-int.org (accessed 20 December 2013).
in nurses and non-nurses being students in anaesthesia programmes. IFNA believes that an inclusive approval process provides the greatest opportunity to improve anaesthesia care to patients now and in the future (IFNA 2013b).

Importantly, APAP is designed to work with anaesthesia programmes as they currently exist if they pledge to meet the education standards to the best of their abilities. This includes an admission standard that specifies applicants have completed a basic nursing education programme of at least 36 months. Once approved, programmes will be contacted at 5-year intervals for a progress report on their success towards fully meeting the standards.

Development of APAP
In 1997, Marjorie Peace Lenn, PhD, executive director of the Center for Quality Assurance in International Education and consultant on APAP, suggested that IFNA consider the development of an IFNA quality assurance programme for nurse anaesthesia education programmes (Caulk & Ouellette 2011, p. 82). Her idea resulted in IFNA’s Education Committee developing the programme approval process.

Work on APAP began in 2006 with a project involving three anaesthesia programmes located in the Netherlands, USA and Sweden. Faculty and student evaluations on the quality of the curriculums were developed and completed by the three programmes. Independent analysis of the evaluations by Education Committee members from Africa, Sweden, Switzerland, Taiwan and the USA were compared to determine the reliability of the evaluation questions. The project was successful and the evaluations continue to be used in the application and renewal processes for Level #2 Recognition and Level #3 Accreditation.

In June 2010, the IFNA Education and Research Foundation awarded a grant to the Education Committee for a ‘Pilot Accreditation Project’. Information on eligibility requirements and the application process were posted on IFNA’s website. IFNA’s Country National Representatives also encouraged one or more nurse anaesthesia programmes in their countries to complete applications. After all applications were received, Ecole Des Infirmiers Anesthesistes at Hopital SalPetriere in Paris France was selected to complete the accreditation process. Approved expenses were paid by the IFNA Education and Research Foundation’s grant. A team of three nurse anaesthetists visited the programme. Two of the on-site visitors were members of IFNA’s Education Committee; one member chaired the on-site visit team. The third on-site visitor was a nurse anaesthetist from France with knowledge of education and regulation in France. She helped the team consider cultural and national influences on the education of students during the review process. The programme in Paris, France was awarded Level #3 IFNA Accreditation at the end of the pilot project. It was recognized as the first programme in the world to receive this award during the 2012 World Congress for Nurse Anaesthetists held in Ljubljana, Slovenia.

Implementing APAP
Three categories of approval are available. Offering several categories of approval recognizes the (1) diversity of nurse anaesthesia programmes throughout the world; (2) the capacity of a programme given its national or regional context; (3) the resources available to individual programmes; (4) a commitment of diverse programmes to work towards meeting a common standard of educational quality (IFNA 2013b). The three levels of approval are:

- Level #1: Registration: A programme must pledge to comply with the IFNA Education Standards to the best of its ability. The pledge includes the signature of the anaesthesia programme director and the highest institutional official. The programme is also required to submit its curriculum. The programme’s identity, title of award and curriculum will be posted on IFNA’s website with a statement that IFNA has not approved the curriculum but it is being posted for information only.
- Level #2: Recognition: A programme must pledge to meet the IFNA Education Standards to the best of its ability. The pledge includes the signature of the anaesthesia programme director and the highest institutional official. The programme is required to submit its curriculum and related material for review by the IFNA Education Committee. The curriculum is audited to determine if it complies with the curriculum requirements in the Education Standards. Following a successful audit, the programme’s identity, title of award and curriculum will be posted on IFNA’s website with a statement that IFNA has audited the curriculum and determined it substantially meets its requirements.
- Level #3: Accreditation: To be eligible for Level 3 Accreditation, a programme must limit student enrolment to nurses in addition to pledging to meet the Education Standards. The programme is required to submit its curriculum and related material in a written self-study for review by the Education Committee. The information is also evaluated by a team of on-site visitors to determine if the programme meets all of the Education Standards. Following a successful comprehensive review, the programme’s identity, title of award and curriculum are posted on IFNA’s website to be shared with others.

Approving decisions
The Education Committee considers available material before reaching a decision on approval. The decision is then forwarded to the IFNA President as a recommendation to the Board of
Officers for consideration. Following a successful approval process, the programme receives an official certificate signed by IFNA’s President and Education Committee Chair. Fourteen anaesthesia programmes were approved from June 2010 to June 2013 since APAP was launched:

- Level #1 Registration
  - Nurse Anesthesia Program – Pangkalpinang, Indonesia
  - ACES’ Nurse Anesthesia Program, Lucena City, Quezon, Philippines
  - Amstel Academie, Anesthesia Program, Amsterdam, The Netherlands
  - École Supérieure des Sciences et Techniques de la Santé de Tunis, Tunis, Tunisia
  - Fontys University of Applied Sciences, Opleiding Anesthesiemedewerker, Eindhoven, The Netherlands
  - University of Gothenburg, Postgraduate Programme in Specialist Nursing – Anaesthesia Care, Gothenburg, Sweden
  - Lund University, Faculty of Medicine, Department of Health Sciences, Specialist Nurse Anesthesia Program, Lund, Sweden
  - University of Alabama at Birmingham, Nurse Anesthesia Program, Birmingham, Alabama, USA
  - University Medical Center Groningen, School of Nursing and Health, Groningen, Netherlands
  - University of Tennessee Health Science Center, College of Nursing, Nurse Anesthesia Option, Memphis, Tennessee, USA
  - University of Iceland, Faculty of Nursing, Specialized Nursing Postgraduate Diploma, The National University Hospital of Iceland, Reykjavik, Iceland

- Level #2 Recognition
  - Ecole Des Infirmiers Anesthesistes, Hopital SalPetriere, Paris, France
  - University Hospital Basel, Postgraduate Course in Anesthesia Nursing – Basel, Switzerland
  - Wake Forest University Baptist Medical Center, Nurse Anesthesia Program, Winston-Salem, North Carolina, USA

**APAP evaluation plan**

Following the first 2 years of operation, information about APAP was obtained from programme faculty, on-site visitors, IFNA committees and IFNA authorities. The information was analysed and changes were made to improve the process and associated documents. Written reports were presented to IFNA’s Executive Committee before sending them to IFNA’s Country National Representatives with requests for local or national publication.

An ongoing evaluation plan is being implemented by the IFNA Education Committee that is responsible for APAP. This includes an annual self-evaluation by the committee and feedback from the IFNA Executive Committee. Examination of the impact of IFNA Education Standards and APAP procedures on education and patient care will occur through periodic evaluations by IFNA Country National Representatives, APAP education programme faculty and administrators from parent institutions. All evaluations will be analysed to identify APAP’s strengths, weaknesses and plans to improve. Progress reports will consist of formal reports to IFNA authorities, presentations at World Congresses and other meetings, publications, poster sessions and newsletters to APAP programmes.

**Implications for health policy**

APAP offers a collegial approach to improving anaesthesia education and promoting the administration of anaesthesia by nurses. It takes cultural, national and regional differences into consideration. APAP is the result of a coordinated effort by anaesthesia leaders from many nations to implement a voluntary quality improvement system for education. These leaders firmly believe that meeting international education standards is an important way to improve anaesthesia, pain management and resuscitative care to patients worldwide.

As national governments, education ministers and heads of education institutions work to decrease shortages of healthcare workers, they would benefit from considering the value offered by quality improvement systems supported by professional organizations. When education programmes are measured against standards developed by experts in a profession, policy makers can be assured that the programmes have met certain standards of quality. They can also be confident that graduates of approved programmes are appropriately trained healthcare workers for their citizens.

**Conclusion**

IFNA has developed the APAP for non-physician anaesthesia programmes in support of its mission. This quality improvement system encourages programmes to comply with IFNA’s Educational Standards for Preparing Nurse Anesthetists. Three levels of approval are available. Levels #1 and #2 are available to programmes pledging to meet the Education Standards to the best of their abilities while Level #3 is only available to programmes admitting nurses. Progress towards meeting all of the standards (Levels #1 and #2) and changes in programmes (all Levels) are reviewed at 5-year intervals.

APAP aims to encourage the education of nurses as anaesthetists as a nursing background provides an excellent foundation in comprehensive patient care for the advanced practice nurse. Importantly, IFNA believes that if nurses are used for preoperative, intraoperative or postoperative care of patients, they
should be appropriately educated in quality programmes (Caulk & Ouellette 2011, p. 71).

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Authors contributions
BJH drafted the manuscript while SPA, MR, H-JY and KBB discussed key items, provided critical review and suggested revisions for important content.

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