International Training Program for Nurse Anesthetists at Faculty of Medicine Siriraj Hospital: Current and Future Directions

Patchareya Nivatpumin
Department of Anesthesiology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Since 1957 (2500 Buddhist Era (B.E.)), spanning a duration of 66 years, Department of Anesthesiology at Faculty of Medicine Siriraj Hospital, Bangkok, has undertaken the instruction of Thai nurses to specialize in anesthesiology. This educational initiative addresses the paucity of anesthesiologists in Thailand, necessitating the pivotal role played by nurse anesthetists in the provision of care for patients undergoing diverse surgical interventions and procedures within the operating theater, especially in provincial and regional hospitals. Thailand demonstrates a shared characteristic with several global regions, encompassing specific countries in America, Europe, Africa, and Asia regions, where nurses are granted the authority to administer anesthesia. This empowerment stems from a shortage of qualified anesthetists in these areas.[1] In 1970, the training of nurse anesthetists expanded to encompass nurses nationwide, leading to the establishment of a dedicated school for nurse anesthetist training. This training regimen has undergone continuous refinement, with the program's duration set at one year. In 1993, the Thai Nurse Anesthetist training program achieved standardization and certification by the Royal College of Anesthesiologists of Thailand. Nevertheless, it is noteworthy that certain countries still lack training programs for anesthetic nurses. This article aims to delineate the origin, current practices, and future trajectories of the international training program for nurse anesthetists.

The inception of the training program

The establishment of the program ensued in response to an appeal for international training from the Human Resource Division of the Ministry of Health of the Royal Government of Bhutan. This imperative arose due to the absence of a training program for nurse anesthetists within Bhutan. Prof. Jariya Lertakyamanee, serving as the Head of Department of Anesthesiology at Faculty of Medicine Siriraj Hospital, undertook the commitment to inaugurate this program. Consequently, the first training cohort commenced in 2013, marking the Faculty of Medicine Siriraj Hospital as the pioneering institution for this one-year training course.

The training programs were conceived under the guidance of a training committee during the academic year 2013. The complete course spanned from 1st August to 31st July,

Correspondence to: Patchareya Nivatpumin, E-mail: patchareya.niv@mahidol.ac.th
Received April 26, 2023, Revised November 20, 2023, Accepted November 20, 2023

intentionally commencing on a date distinct from that of Thai anesthetic nurse students, who commence their program on 1st October each year. Prospective students were required to possess a valid registered nurse certificate for admission. Subsequent to the inaugural batch in 2013, a second cohort was initiated in the academic year 2016, as illustrated in Figure 1 and 2. The refinement and evolution of the training program were facilitated through collaboration with the training committee during that academic year.

Details of the current training program

The commencement of the program incorporated an orientation phase and a practical workshop in the initial week, involving hands-on exercises such as intravenous cannulation, airway management, and preparation for the administration of regional anesthesia. The curriculum was bifurcated into two principal components: the theoretical segment and the practical component. The theoretical segment, conducted in English, was instructed by consultant anesthesiologists (Table 1). In the practical component, the primary objective for all students was the delivery of safe anesthesia to patients. Students were mandated to execute precise bag-mask ventilation, endotracheal intubation, and intravenous cannulation, among other procedures, under the meticulous supervision of anesthesiologists. Additionally, the students were obliged to proficiently execute anesthesia procedures in the operating theater and administer standard post-anesthesia care to patients.

The students were systematically assigned rotations across various operating units within the hospital. These rotations encompassed several significant areas, namely general surgery, orthopedic surgery, ear-nose-throat surgery, gynecological surgery, and trauma surgery. As the course progressed over two months, additional rotations were introduced, covering disciplines such as neurosurgery, eye surgery, plastic surgery, urological surgery, obstetrical surgery, and the acute pain unit. In line with the committee's



Figure 1 Five anesthetic nurse graduates from the academic year 2013-2014: the first batch



Figure 2 Ten anesthetic nurse graduates from the academic year 2016-2017: the second batch

Table 1 Core curriculum

Theory part	
Basic	Anesthetic equipment Monitoring Aseptic technique Anatomy and physiology of respiratory system Anatomy and physiology of cardiovascular system Airway management Positioning in anesthesia Inhalational anesthetic agents Intravenous anesthetic agents Neuromuscular blocking agents Opioids Preanesthetic evaluation, preparation and premedication Intravenous fluid administration Blood and blood component replacement Local anesthetic agents Common vasopressor drugs related to anesthesia Post-anesthesia care
Advance	General anesthesia Complications of general anesthesia Patient care during regional anesthesia Pediatric anesthesia Obstetrics anesthesia Neuroanesthesia Anesthesia for ear, nose and throat operations Anesthesia for ophthalmic surgery Anesthesia in geriatric patients Anesthesia for patients with liver disease Anesthesia for patients with renal disease Anesthesia for patients with lungs disease Anesthesia for patients with cardiovascular disease Anesthesia for patients with endocrine disorders Anesthesia in trauma and burn patients Anesthesia in obese patients Ambulatory anesthesia Anesthesia for outside operating room Sedation Postoperative pain management
Practical part	
Clinical practice in the operating theater Hands-on workshop in intravenous cannulation, airway management, and regional anesthesia Preoperative simulation training Crisis management simulation training Advances cardiac life support training	

commitment to providing a learner-centered experience for all nursing students, elective rotations were implemented. This allowed students the autonomy to select rotations according to their preferences, including options such as the pain clinic and any specific operating theater unit.

The efficacy of scenario-based simulation training was evident across all anesthetic personnel.[2,3] Various simulation training sessions were conducted for students, covering preoperative simulation, perioperative crisis management, and cardio-pulmonary resuscitation with advanced cardiac life support training, following the latest guidelines from the American Heart Association. Additionally, a hands-on workshop focusing on the application of regional anesthesia was arranged (Figure 3). To enhance their educational experience, the students were provided with the opportunity to engage in departmental conferences. These sessions, conducted in English, encompassed topic reviews and interesting case conferences, delivered twice a week by anesthetic residents.

Training program evaluation

The training program integrated both theoretical and practical assessments, with all examinations administered in the English language. Direct observation procedural (DOP) skill forms were utilized for assessment purposes. Practical examinations were implemented to assess the clinical judgment of the students. Upon the successful completion of all examinations, students graduated and were awarded a training certificate (Figure 4), officially certified by the Department of Anesthesiology, Faculty of Medicine Siriraj Hospital.



Figure 3 A hands-on workshop on regional anesthesia

Challenges in the training program

The training program faced several challenges. In Thailand, the predominant language is Thai, encompassing both spoken and written forms, including medical patients' charts. Consequently, students encountered significant difficulties in communicating with patients and interpreting medical charts. To address this hurdle, consultant anesthesiologists, anesthetic nurses, residents, and Thai anesthetic nurse students in the operating theater provided substantial assistance. Verbal communication required translation into Thai. Over time, many Bhutanese nurses, who underwent training in Thailand, acquired proficiency in common Thai



Figure 4 Graduation ceremony in July 2017

sentences, facilitating smoother communication. Despite this, anesthetic records, such as the pre-anesthetic evaluation form and intra-operative anesthetic note, were predominantly in English. Therefore, documenting patients' information, the types and quantities of medications administered, and anesthetic data in the anesthesia-related documents posed no significant challenge for them.

Future directions

The existing training program deviates from the major nurse anesthetist training course outlined by the International Federation of Nurse Anesthetists (IFNA). Notably, the incorporation of research and theoretical integration components, as outlined in IFNA guidelines[4], was omitted from our program. Nevertheless, the training committee is contemplating the incorporation of an additional research segment, with plans to implement it in future iterations. Language courses in Thai, specifically focusing on basic conversations related to anesthesia, such as history-taking for preoperative evaluation, intraoperative patient positioning, and postoperative patient recovery, are also being considered for inclusion in the initial week of training.

Moreover, recognizing the shortage of anesthesiologists in Bhutan, there is a keen emphasis on regional anesthesia, including spinal anesthesia training, for anesthesia nurses. To address this need, a hands-on workshop involving the application of spinal blocks on a mannequin has been organized for all nurses. This choice acknowledges the constraint in Thailand, where nurse anesthetists lack authorization to conduct regional anesthesia procedures.

Additionally, a simulation training program addressing crisis scenarios related to regional anesthesia is under development for all students.

Currently, ongoing efforts are directed toward the continual refinement of the training regimen. Regular convening of the anesthetic nurses training committee is pivotal in the perpetual enhancement of the program. Furthermore, collaborative endeavors involving various divisions within the Faculty of Medicine Siriraj Hospital, such as the simulation center and international relations, are integral to optimizing training outcomes. The structured curriculum and the core competency course herein detailed can serve as a model for analogous institutions in Thailand, facilitating the adoption of comparable educational objectives.

Lastly, the author expresses sincere appreciation to Prof. Jariya Lertakyamanee, former Head of the Department of Anesthesiology, Faculty of Medicine Siriraj Hospital, for providing a valuable opportunity to the nurse training committee and the author to initiate the program course. Gratitude is extended to Assist. Prof. Benjarat Yokubol, former Director of the Thai nurse anesthetist training program, for her substantial support. Additionally, the heartfelt thanks are extended to Assoc. Prof. Siriporn Pitimana-aree, Assist. Prof. Somkiet Aroonpruksakul, and Assoc. Prof. Orawan Phongraweewan, both past and current Heads of our department. Recognition is also accorded to Assist. Prof. Kamheang Vacharaksa, Assist. Prof. Sukanya Dej-Arkom, Assoc. Prof. Phuriphong Songarj, Asso. Prof. Namtip Triyasunant, Assoc. Prof. Saowaphak Lapmahapaisan, Dr. Parichad Apidechakul, and Miss Aungsumat Wangdee for their invaluable assistance throughout the program. Special thanks are extended to numerous consultants and anesthetic nurses, whose names may not be explicitly mentioned in this article. Finally, appreciation is extended to the program secretary, Miss Nichaon Ruttana-nukool, who adeptly manages a substantial volume of paperwork.

The successful culmination of the training program is attributed to the significant collaboration of consultant anesthetists from the Faculty of Medicine Siriraj Hospital, along with the concerted effort of anesthetic nursing staff, residents, and nursing students. The author earnestly anticipates that the students will acquire substantial knowledge and clinical practice skills, thereby equipping them to return to their respective countries and make a meaningful contribution to the well-being of patients in their hometowns.

References

1. McAuliffe MS, Henry B. Countries where anesthesia is administered by nurses. AANA J. 1996;64:469-79.
2. Fletcher JL. AANA journal course: update for nurse anesthetists--anesthesia simulation: a tool for learning and research. AANA J. 1995;63:61-7.
3. Overstreet M, McCarver L, Shields J, Patterson J. Simulation and rubrics: technology and grading student performance in nurse anesthesia education. Nurs Clin North Am. 2015;50:347-65.
4. Fang YL, Huang HH, Jiang S, et al. Nurse anesthetist training center on IFNA standards in mainland China. Nurse Educ Today. 2021;99:104775.



Mr. Tshering Dorji

International nurse anesthetist student, the academic year 2013-14
Nurse anesthetist, Phuentsholing General Hospital, Chukha Dzongkhag, Bhutan

"We personally owe a debt of gratitude to the Faculty of Medicine Siriraj Hospital (Anesthesia Department) for all guidance and the lectures; without these, we wouldn't have acquired or accomplished the training mandates. Siriraj Hospital l provided us with a conducive environment with friendly professors, mentors, and trainee colleagues. Here in Bhutan, we are working independently because there are only a few anesthesiologists. I am working in the southwestern town of Phuentsholing where we have general surgery, orthopedic surgery, gynecology/ obstetrics surgeries, ophthalmologic surgery and dental surgery. It is challenging, but we are mindful that the only means of updating knowledge is through the internet. We are still hoping for an opportunity to visit Siriraj Hospital to acquire recent updates on anesthesiology."



Mr. Tenzin

International nurse anesthetist student, the academic year 2016-17
Nurse anesthetist, Trashigang District Hospital, Trashigang, Bhutan

"Arjarns and senior staffs are genuinely resourceful and greatly supportive, so the learning environment is very conducive for Bhutanese students. I remember Arjarn Saowaphak Mee used to give us voluntary tuition every early morning, and Arjarn greatly helped those friends who couldn't make up semester exams. The knowledge and practical skills I got were beyond my expectations, so due to those skills, I could work very well alone without an anesthesiologist (as we have a shortage) in Eastern Bhutan, which covers around 5 districts with General surgical and gynecologist services. However, it will be of great help for future trainees if they get a chance for regional anesthesia practice as well. Thank you Arjarn once again for helping Bhutanese nurse anesthesia students, in fact, it's a great contribution to Bhutan as a nation"



Assoc. Prof. Phuriphong Songarj

Director of the International Training Program, the academic year 2016-17

"It was indeed a good opportunity for me when I was entrusted with the responsibility of overseeing the international nurse anesthetist training program. During that period, I lacked experience even in regular programs, having never been involved in such initiatives before. A significant challenge for me was ensuring the successful conclusion of this program. Fortunately, we cultivated a strong collaborative effort between the anesthesiologist staff and seasoned nurse anesthetists. We strategically divided the program into two parts, focusing on augmenting students' knowledge and skills concurrently with imparting Thai cultural insights. Witnessing the students' graduation from this program brought us immense joy and a profound sense of pride."



Assoc. Prof. Namtip Triyasunant

Current Director of Thai Nurse Anesthetist Training Program, Department of Anesthesiology, Faculty of Medicine Siriraj Hospital

"Our international curriculum is based on the course syllabus of nurse anesthetist students of The Royal College of Anesthesiologists of Thailand. The curriculum provided classes, including lectures, hands-on workshops, problem-based learning, and practical teaching in all anesthesia services. Our mission is to offer our trainees an outstanding educational and clinical experience, enabling them to enhance both their knowledge and clinical skills, pivotal for their future responsibilities. As core faculty members, we have dedicated ourselves to developing courses tailored to meet the diverse backgrounds of our learners. We sincerely appreciate the interest shown by everyone in our program."