ORIGINAL ARTICLE

An Approach for Integrating Anaesthesiology Specialty in the Undergraduate Curriculum - The IIUM Programme

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Summary

Much has been said in various anaesthetic journals[1-5] about the need to teach medical undergraduates in areas such as basic life support skills and resuscitation. Anaesthesiology as a specialty can contribute significantly in this aspect of teaching. The question is how should it be incorporated into the existing curriculum, given the fact that anaesthesiology constitutes a minor role in the undergraduate medical curriculum? This article attempts to answer this question and proposes the possible integration of anaesthesiology with the other major clinical specialties. This curriculum forms the basis of anaesthesiology curriculum at the Kulliyah of Medicine, International Islamic University Malaysia (IIUM).

Key Words: Anaesthesiology, Basic life support, Cardiopulmonary resuscitation, and Integrated undergraduate curriculum stimulation

Introduction

The role of the anaesthesiology specialty in the undergraduate medical curriculum in many medical schools all over the world is very limited, as evidenced by the short duration of students' attachment to this department during their medical training[2,3]. Generally, the duration of attachment to this department is two to three weeks out of the total five to six years. This is also the case with all the three major medical schools (UM, UKM, and USM) in the country. The Kulliyah of Medicine, IIUM that commenced in June 1997, gives similar exposure to anaesthesiology. This is not surprising as anaesthesiology, being a complex and highly technical subject tends to be regarded as a postgraduate specialty. Thus, a short exposure to this specialty seems justifiable to the curriculum planners.

Currently, the anaesthesiologist's role has expanded beyond the confines of the operation suite. Apart from being an airway expert in managing the unconscious patient under anaesthesia, or the critically ill patients in the intensive care unit, anaesthesiologists are now involved in resuscitation as well as acute post-operative and chronic pain management. With these newer responsibilities, the specialty is becoming more important in total patient care and provides an opportunity for students to broaden their experience.

Consequently it seems logical to revise the undergraduate medical curriculum to incorporate the new responsibilities in anaesthesia. Teaching basic anaesthesia can easily be done during the short attachment to the operation suite. Other subjects such as cardiopulmonary resuscitation, care of the critically ill

patient, preoperative evaluation and preparation of the patient for surgery, airway management and pain therapy can be carried out together with other major disciplines such as medicine, surgery, pediatrics, and obstetrics. Integrating these subjects with the other major disciplines would limit or minimize overlapping of information to the students and also allows effective utilisation of human resources. Apart from this, the students can also witness the inter-specialty co-operation between anaesthesiology and the other major disciplines such as internal medicine, surgery, pediatric and obstetric and gynecology. Aspects of CPR are given early in the curriculum to stimulate the students' interest and to enable them to become competent instructors for the lay public and school children.

This article describes the approach used in integrating anaesthesiology into the undergraduate medical curriculum at the Kulliyah of Medicine, IIUM, with regards to its objective, content and structure of the course, teaching-learning methods and assessment of students. However, it is not the intention of the author to compare, at this time with other programs in other medical schools, as it has just begun to be implemented.

Objective of the Course

The main objective of the anaesthesiology course is that upon graduation, every student will acquire basic understanding and competencies in the following areas namely, cardiopulmonary resuscitation (CPR), basic airway management, basic trauma care, preoperative evaluation and preparation of patients for surgery, basic anaesthesia, pain management, basic oxygen therapy, basic care of the critically ill patients and fluid resuscitation.

Content and Structure of the Course

The specialty input begins in year two *(pre-clinical phase)* and ends in year five *(clinical phase)*. In the pre-clinical phase, anaesthesiologists are involved in the teaching of basic respiratory and pain physiology, and cardiopulmonary resuscitation that includes a two hour lecture, a videotape presentation on basic CPR and demonstration on mannequin during the cardiovascular and respiratory modules.

In the clinical phase, students are exposed to the theory and practice of *Basic Life Support, Advanced Cardiac Life Support, Trauma Life Support, Airway Management* and *Defibrillation* during attachments in the departments of medicine, surgery, orthopaedic and anaesthesia. In addition to lectures, students will gain practical training at the clinical skill laboratory. A working manual, *"Manual of Basic Resuscitation and Life Support for Medical Undergraduates"* is provided to each student in order to enhance the acquisition of knowledge. Hands-on teaching using mannequins, charts and pictures are heavily used. In the practical session, the students discuss a *problem-based clinical scenario* that illustrates the basic principles of the topic being discussed. Students are encouraged to learn in groups and to assist each other throughout the process of learning.

The following are the details of the various contents that could be incorporated into the major clinical discipline. The clinical skills laboratory is used during practical sessions.

a) Medicine rotation

i) Basic Life Support

Year three students are expected to acquire the knowledge and skills of performing one-man CPR, two-man CPR and management of upper airway obstruction by foreign body

ii) Advanced Cardiac Life Support

All final year students are expected to learn the basic principles of advanced care following cardiac arrest. They should be able to recognize and treat the common arrhythmia that lead to cardiac arrest. The necessary skills that are required of them include defibrillation and ECG diagnosis. In addition, they should be able to manage patients with shock and pulmonary edema and be well versed with the common drugs used in resuscitation. They should also acquire basic knowledge of providing emergency cardiac care for patients not in full cardiac arrest as well as management in the immediate post-resuscitation phase.

b) Paediatric rotation

i) Paediatric Basic Life Support

Year three students are expected to acquire the knowledge and skills of performing infant CPR, infant airway management and resuscitation of the newborn.

ii) Paediatric Advanced Life Support

Final year students are expected to learn basic principle of advanced cardiac care in the pediatric age group.

c) Orthopedic rotation

i) Trauma Life Support

Year four students are expected to acquire basic concept of trauma management. The topics that are covered include aspects of resuscitation in trauma patient, stabilization and transport of the injured and the concept of triage. They will also develop basic understanding of managing life threatening injuries, shock and disaster management.

d) Surgical rotation

i) General Surgery

During the surgical rotation, the students must be able to appreciate the close relationship between the specialty and the anaesthesiology specialty. They should achieve basic understanding of total patient care starting from admission to preoperative evaluation and preparation for surgery, consent, management of common complications arising from surgery such as post operative emesis, fluid resuscitation and post operative pain care.

ii) Acute Pain Management

The students must acquire knowledge and skills in managing acute pain associated with trauma and surgery. They must understand and apply basic pharmacological principles in prescribing analgesics to achieve satisfactory pain relief while avoiding or minimizing side effects. During the surgical attachment, students are exposed to the concept *of Acute Pain Service* that is widely practised in this country.

e) Obstetric rotation

The anaesthesiology input that can be incorporated into this discipline includes pain management in labour (particularly epidural analgesia, entonox and opioid analgesia) and resuscitation in pregnancy.

f) Anaesthesiology rotation

During the three-week rotation in the fourth year, students learn basic principle of airway management and procedures of anaesthetizing a patient. The general purpose of this rotation is to give students some insight to the intricacies of the specialty, particularly with regards to the drugs used, the procedures undertaken and the problems encountered. Patients undergoing general anaesthesia provide excellent opportunities for the student to appreciate and apply the knowledge of the management of the unconscious patient. In addition to that, hopefully they could appreciate and perhaps learn to develop special communication skills with patients and realize the importance of having good rapport with the surgical team to provide optimum outcome for the patients.

Teaching-Learning Methods

In the integrated system such as ours, the use of clinical skills laboratory is vital in enhancing the learning process of the students. Teaching materials in the form of mannequins, charts, pictures, real equipment, old anaesthetic machine and others are usually kept in this laboratory. In this laboratory, students are able to practice a wide range of clinical skills, in circumstances that simulate the reality of the clinical environment. They also have the opportunity to develop their psychomotor skills in a safe learning environment whilst under the supervision of clinical teachers.

The learning activity is mostly student centered, with the teachers functioning as facilitator. For example, in the process of acquiring the knowledge and skills of cardiopulmonary resuscitation, the students will have to read about the topic first before the teaching session. The working manual, *"Manual of Basic Resuscitation and Life Support for Medical Undergraduates"* which is

provided to each of them is sufficient for this purpose. At the learning session, a *problem-based clinical scenario* that illustrates the basic principles of the topic being discussed is distributed. The teacher demonstrates the required skill on the mannequins and the students will then follow. This would enable them to master the skills before trying them on patients.

Assessment of Students

The knowledge and skills acquired are evaluated at the end of the learning session by means of a checklist. Students are responsible for their own learning, and they are required to complete the checklist to ensure that they reach the learning objectives. At the end of each clinical attachment, the knowledge and skills acquired from the lectures and various practical sessions are evaluated in an MCQ examination. Students must achieve a high score (80%) and are required to re-sit should they fail to do so. Ideally, evaluation of the basic clinical skill should also be carried out, but this is not possible at the moment. Perhaps in the future, passing in both MCQ and practical evaluation should be a prerequisite for qualification as a doctor.

Discussion

In the Kulliyah of Medicine, IIUM, the teaching of basic medical sciences in the first phase *(year 1 and 2)* is based on the integrated system. Its first batch of students is currently in the phase II of the curriculum. This phase takes a year and emphasises on the clinical skill development and junior clerkship. Phase III, which is the extension of phase II, focuses mainly on the concept of patient management, extends over two years. The Hospital Tengku Ampuan Afzan is the main teaching hospital of the university.

Training medical undergraduates in the clinical phase *(phase II and III)* is very challenging. It takes a lot of commitment and dedication on the part of the academic staff, university's management as well as the students. The main curriculum structure lies on the shoulders of the medical, surgical, orthopedic, obstetric and gynecology, pediatric, and psychiatry specialties. The input from these specialties constitutes a major portion *(i.e. 73% of the academic weeks)* of the whole medical course.

Clinical rotations in specialties such as ENT, ophthalmology, anaesthesiology, radiology and dermatology enable students to acquire additional clinical skills for the management of these patients. They also give opportunities for them to appreciate different requirements of the specialties. As qualified doctors, the ability to appreciate the nature of work in other specialties improves working relationship and may contribute towards better patient care.

Anaesthesiology can play a bigger role in undergraduate medical teaching. Implementing the program described in the existing medical curriculum is not easy but not impossible. Perhaps, the most appealing part of this curriculum is the fact that different specialties are working together! Success can only be assured if the specialties involved are clear about their responsibilities and are ready to work as a team. For this Kulliyah, the anaesthesiology specialty is committed to the integrated concept, as it believes that acquisition of essential clinical skills required of a doctor will be more effectively achieved in this way. The role of the clinical skill laboratory is vital to the success of the curriculum. However, continuous auditing of the curriculum is required to evaluate the effectiveness of this concept at the practical level. Since this curriculum is newly introduced, it is far from ideal. In later years it needs evaluation before any conclusion could be made of its success or shortcoming. Until then, the anaesthesiology specialty of this Kulliyah is promoting this concept of integration of knowledge and working together with other specialties as a team in its undergraduate medical curriculum. It is envisaged that this approach would inculcate the spirit of comradeship and respect of other specialties among medical undergraduates that will be useful in later years.

Conclusion

There is a need to integrate the anasthesiology specialty in the undergraduate medical curriculum. Besides teaching basic anaesthesia, which is usually carried out in the short three-week clinical attachment, this specialty can certainly play an important role in other areas particularly in resuscitation and pain management. It is not impossible to integrate this specialty with the other major specialties especially in the environment where integration of the medical knowledge is highly recommended, such as the Kulliyah of Medicine, IIUM. The role of the clinical skill laboratory would certainly make this possible.

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