



# MALAYSIAN SOCIETY OF ANAESTHESIOLOGISTS

**Year Book 2020/2021**  
*Evolution and Revolution*

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# MALAYSIAN SOCIETY OF ANAESTHESIOLOGISTS

## Year Book 2020/2021

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# CONTENTS

- 2 Foreword from the President of the Malaysian Society of Anaesthesiologists
- 3 Preface from the Editors
- 4 Acknowledgements - Reviewers
- 5 **Difficult Airway Management: Review of Evidence and Application to Daily Clinical Practice**  
*Mohd Nizamuddin Ismail*
- 17 **D'anaesthésie Et D'analgésie Loco-Régionale: Coup D'oeil Through the Past, the Present and the Future**  
*Mohamed Asri Mohamed Zaini, Muhammad Salman Borhan, Mohd Fauzi Ibrahim, Muhamad Rasydan Abd Ghani*
- 25 **Evolution of Mechanical Ventilation: From Clinician-Oriented to Patient-Oriented**  
*Shahir Asraf Abdul Rahim, Allison Yeoh Sin Yi, Wong Shee Ven, Mohd Basri Mat Nor*
- 31 **Evolution and Assessment of Biomarkers in Perioperative and Critical Care Medicine**  
*Azrina Md Ralib, Afif Hakimi Aidid, Mohd Amiruddin Mohd Nor, Ahmad Akmal Aziz, Soo Ki Yang*
- 41 **Painless Labour Experience: The Past and the Way Forward**  
*Iqbalmunawwir Ab Rashid, Nurmunirah Mohd Sobri, Nuraiman Imam Supaat*
- 48 **Chronic Low Back Pain in Malaysia: Overview of the Current Practice and Future Direction**  
*Abdul Hadi Mohamed, Ahmad Akmal Aziz, Mohamed Asri Mohamed Zaini*
- 55 **Technology-Enhanced Learning and Teaching in Anaesthesia: Is it the Time to Move Forward?**  
*Nur Fariza Ramly, Nurfatihah Alias, Saw Yee Horng, Noor Liyana Mohamad Saad*
- 61 **Artificial Intelligence versus Human Intelligence in Anaesthesia: Who is Winning?**  
*Nazhan Afeef Mohd Ariff @ Ghazali*
- 66 **Burnout amongst Anaesthesiologists: The Forgotten Issue**  
*Suhaila Nanyan, Nadiah Hamdan, Najibah Syakirah Ab Rahman*
- 71 **Human Factors in the Provision of Safe Anaesthesia: A Continuous Effort**  
*Farah Nadia Mohd Hanafiah, Nurhidayah Abd Halim*
- 78 **Ethical Decisions in Anaesthesia and Critical Care**  
*Ariff Osman*

# Foreword

As the President of Malaysian Society of Anaesthesiologists (MSA), it is with great pride that I write the foreword for the MSA Year Book 2020/2021. With the rise of the COVID-19 pandemic, the profile of our profession has now risen higher in the eyes of the public, and as such it is imperative that we as anaesthesiologists keep abreast with the latest advances for patient safety. Hence, this 11<sup>th</sup> issue of the MSA Year Book serves to update our members on the current best practices in the field of anaesthesia, critical care and pain medicine.

The theme chosen for this year is *“Evolution and Revolution”*, which is apt as we learn to move forward with living and working in the new norm. The book’s content is a mixture of clinical practicality, human factors, and cutting-edge technology in anaesthesia. I believe this book will energise our members and serve as an up-to-date guide in enhancing our knowledge in anaesthesiology, critical care, and pain medicine. Congratulations to both editors, Associate Professor Dr Azrina Md Ralib and Assistant Professor Dr Nur Fariza Ramly from International Islamic University Malaysia for their excellent leadership and commitment in ensuring the Year Book’s high quality.

I would like to thank all the authors for taking the time and effort to pen down their ideas and producing such informative articles. Last but not least, sincere gratitude to all the reviewers for sharing their experience in making this book a success.

To all members, I hope all of you will enjoy reading this book.

Stay safe, stay healthy.

**Professor Dr Ina Ismiarti Shariffuddin**  
President  
Malaysian Society of Anaesthesiologists

# Preface

We would like to thank the Malaysian Society of Anaesthesiologists (MSA) for entrusting us to be the editors of the MSA Year Book 2020/2021. Our utmost appreciation to all authors and reviewers who have contributed their precious time in ensuring the successful publication of this Year Book.

Our theme for this year is '*Evolution and Revolution*'. We look upon the past and how it has evolved or revolved to the current practice and the future prospect. We cover specific domains in our specialty which include Clinical Anaesthesiology, Critical Care, and Pain Medicine. In the era of rapid progress of technology in our life, its contribution to our daily clinical practice and to the teaching and learning in our specialty are discussed. Last but not least, ethics, safety and social issues that impact our daily clinical life are dealt with in the final three articles.

It is our hope that these articles could enrich our esteemed colleagues on the specific topics covered that could help our clinical practice. Finally, our thanks go to the MSA secretariat who has provided excellent logistics that make this publication possible.

Happy reading!

**Associate Professor Dr Azrina Md Ralib**  
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# Technology-Enhanced Learning and Teaching in Anaesthesia: Is it the Time to Move Forward?

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In the midst of the COVID-19 pandemic, medical education in hospitals and universities is severely affected. On the verge of sudden conversion to online education, there are many different aspects of it that triggers discomfort to the educators and the students. However, there are also many areas that have proven to be beneficial for medical education. Adapting the online technology into medical education should be blended with the conventional model of teaching and learning, not to replace or move away from it. A more precise online model of teaching and learning should be developed by including the concept of adult learning and implementing the model based on knowledge acquisitions, clinical skills development, communication skills and professionalism. A flexible model that is learner-centric, incorporates active participation and networking, with microlearning modules, is an ideal model for medical education, including anaesthesia education.

## INTRODUCTION

Recently we are hit with the COVID-19 situation which demanded most of our attention and expertise. We are greeted with the urgency to cope with the COVID-19 pandemic while struggling to adapt with the limited medical resources to match the outgrowing clinical service needs. Since the high service load compels everyone to be involved with pandemic preparedness, having knowledge and skills in anaesthesia and intensive care are considered of value in the wake of this scenario. Maintaining continuing medical education activities during this pandemic is a challenge to the medical fraternity.<sup>1</sup>

## INFORMAL ANAESTHESIA EDUCATION IN HOSPITAL SETTING

In Malaysia, the junior doctors (or medical officers) in anaesthesia are trained to achieve a certain level

of competence in their clinical work in order to provide high quality and safe medical care.<sup>2</sup> Similar with any medical disciplines, practising anaesthesia also requires medical knowledge, clinical skills and professionalism. In the hospital setting, the young doctors learn anaesthesia first-handedly by engaging with real patients, thus in a way equipped them with the required social and professional skills of a good clinician.<sup>2,3</sup> Nevertheless, the teaching in hospitals still follows the conventional approach of work-place trainings, which are predominantly competency-based. The junior doctors usually learn new skills and techniques from the senior colleagues or the specialists by observing how they were done, and then performed these themselves while under supervision. That is traditionally one of the informal but effective ways of assessing competency in anaesthesia skills such as central line insertion, intubation and bag-mask ventilation. As they become more experienced, they will then be responsible for training and supervising the other more junior doctors. The 'see one, do one, teach one' concept of training became relevant for this type of informal training of junior doctors especially in hospital settings. An observation by Kotsis and Chung, into a surgical residency program that utilises this 'see one, do one, teach one' method of teaching, despite still being applicable, they suggested for 'see many, learn for the outcome, do many with supervision and learn from the outcome, and finally teach many with supervision and learn from outcome'.<sup>4</sup>

In spite of this scenario in hospital settings, without a structured framework of clinical anaesthesia education, the perceptions of learning are more passive and teacher-oriented.<sup>3</sup> Their whole learning activities are usually evaluated by simple observational assessment by the more senior doctors or specialists. The continuing medical education, the webinars and the online anaesthesia websites



became additional resources for their informal learnings and usually are duly adequate to enhance their knowledge and skills. Nowadays, while becoming priorities to provide services in the heat of the pandemic, the routine activities of teaching and learning in hospital settings are facing a major interruption.

## **ANAESTHESIA EDUCATION IN PANDEMIC**

In the university scenario, the pandemic affects the education ecosystem in a different continuum, and medical education is equally hit hard.<sup>1,5-7</sup> All the aspects of face-to-face teaching and learning activities are not allowed to mitigate the risk of COVID-19 infection among students. As a result, the teaching and learning activities are moved to e-learning platforms which implicate a digital divide among the students. One of the transformation goals in Malaysia Education Blueprint of Higher Education 2015-2025, mentioned towards globalised online learning, but unfortunately the internet penetration rate in Malaysia only stands around 84.2%.<sup>8</sup> Limited access to good online facilities required for online learning such as a reliable computer with supported software and hardware, and a stable internet connection, usually are the basis of the digital divide among students. This also becomes financial and logistic burdens to some of the less fortunate students. In response to these, in October 2020, the Ministry of Higher Education has announced a 'Data Plan and Device Package' focusing on the less fortunate students, with the assistance amounting up to RM 24 million.<sup>9</sup> This is mainly aimed to abolish the digital discrimination and to provide good facilities for online teaching and learning activities to everyone in universities.

The education programme also requires restructuring to fit the online capacity and constraint. The method of assessments had to be revisited to ensure the online model of formative and summative assessments are able to achieve the similar par, if not higher, with its face-to-face equivalent. This can become substandard in anaesthesia education where the expected level of competencies and clinical skills are difficult to be assessed through online platforms.

Due to the overnight conversion to online education, the educators also bear the brunt of education divide, where the work-place training is no longer a choice.<sup>6</sup> In the beginning of the pandemic, the educators struggled to provide online classes alongside the clinical services demand. This is due to the fact that the operation theatre or the intensive care unit can no longer be the educational field for anaesthesia students and doctors.

The valuable student-patient direct interaction is not permitted in the pandemic era to prioritise the students' safety.<sup>6</sup> This precipitates concern on the lack of hands-on experience especially in the specialties that required clinical and interpersonal skills such as anaesthesia. This affects the postgraduate students doing clinical attachment also, as the caseloads are lesser in number and variety due to the major shift of elective surgeries to selective semi-emergency cases only in most hospitals. This duly disrupts the experiential learning opportunities, including in subspecialties training.

These seismic events affecting the anaesthesia education, will stay on our shore as long as the COVID-19 threats are within the nation. Perhaps this is the time to change our strategies and upscale our effort in the anaesthesia education arena. Embracing the technology, instead of being miserable by it, might be the best choice to upgrade the anaesthesia education in parallel with the advances of tele-education.

## **ADOPTING THE CONCEPT OF ADULT LEARNING IN ONLINE ANAESTHESIA EDUCATION**

According to Malcolm Knowles, an American educator who coined the concept of adult learning or andragogy, adults learn things differently, as compared to children.<sup>10-13</sup> In his theoretical framework, there are five assumptions of the characters of adult education. Firstly, adults are usually self-driven and independent. This is a favourable characteristic for online learning, where the learning is more active and student-centered. Adult learners are normally able to self-motivate towards their own goal, which is the second

character of andragogy. They drive their motivation mainly with the intention to become sustainable and relevant in the field.

As a person matures also, he/she accumulate a reservoir of personal or professional experiences that form the foundation of his/her continuous learning process. This third andragogy characteristic differentiate between adult and children learning; the good and bad experiences assimilated with his/her new understandings to enhance the knowledge. In medical practice, clinical experiences are highly regarded as precious possession.

The two last characteristics are readiness and orientation, where adult learners are usually more ready to engage and can orientate or apply their knowledge to solve the specific issues or gaps. This is so relevant in medical education where the knowledge and skills built up the competency level.

### **TECHNOLOGY-ENHANCED LEARNING AND TEACHING: FORMULATING A RELEVANT DESIGN**

While an andragogy concept is agreed upon as a good substance for e-learning, a relevant model of online learning is still required to achieve all the matrices of learning outcomes. For instance, a two-hour face-to-face lecture may not achieve the same impact when it is done online. There will be a lack of real-time feedback in terms of limited two-way communication. Long hours online lectures also may become a challenge to the students to focus on the screen. Jeffries in his book, 'An Introduction to Medical Teaching'<sup>14</sup> purported that a typical adult learner's attention span wanes after about 15 to 20 minutes.

Online teaching, which is a backstabbing spear when it is done incorrectly, can become a stress factor for the medical educators. In Malaysia, the educators in the anaesthesiology fraternity also have to balance the time between teachings, research activities, clinical services, and administrative duties. Therefore, they need a teaching strategy that is dynamic and flexible to fit their time. The conventional online

live lectures, where the educators repeat the similar contents to different groups or batches of students, may be redundant and not relevant anymore.

It may also become troublesome to explain certain practical skills to new students through online lectures without using proper media. Imagine trying to explain the rapid sequence induction on the online platform to the fresh undergraduate students; the task is indeed less hassle during conventional hands-on sessions in hospital.

A study by O'Doherty *et al.*<sup>15</sup> identified the barriers of development and implementation of online learning in medical education. They are related to familiar themes of inadequate technical skills among the medical educators, limited resources, lack of institutional strategies and support, and the negative attitudes of the educator himself/herself. In the paper, they suggested some solutions, which are neither impossible nor costing a lot of money, but mainly need a healthy change of attitude towards this new norm.

Online or distance learning is defined as the use of electronic technology and media to deliver, support, and enhance both learning and teaching that involves communication between learners and teachers utilising the online contents. It can encompass a wider learning outcome matrix when it is not only limited to lectures or webinars, customised to the adult learning needs, while fulfilling the pillars of medical education in knowledge, skills and professionalism.

There are many benefits that can be gained from online learning such as the flexibility and the accessibility. Most people in Malaysia have digital literacy and are comfortable with online interactions. This includes the familiarity with knowledge acquisition from the various forms of open sources and media, that provide unlimited access to materials that are more readily updated than conventional written data. There are many applications that can be used as teaching and learning tools that can attract the students and also provide a concept of gamification in learning.

Instead of using the normal presentation slides to deliver a lecture, the educators can convert the slides into voice annotated slides or an interactive slide deck for self-learning. Singhal *et al.*<sup>16</sup> came up with twelve brilliant ideas to incorporate gamification in medical education.

A positive attribute of the online model, to be able to provide synchronous and asynchronous learning, can benefit both students and educators alike. A synchronous learning, where the content delivery occurs with the presence of both students and educators, can be designed as teacher-led learning, such as interactive lectures;<sup>17</sup> or it can be student-led activities such as problem-based learning (PBL)<sup>18,19</sup> or group discussions. An interactive session between the educator and students can allow real-time feedback through this model. The timing and location of the sessions can be flexible to suit both educators and students. For maximal gain, the lecture-based model should adopt the microlearning strategy,<sup>20</sup> where splitting contents into smaller sections, no longer than 1 hour, can enhance student engagement with better chance of information retention.

In asynchronous learning, the content delivery does not involve the interaction in real-time between the students and the educator. Example is the flipped classroom model<sup>21</sup> where the instructions are given to students for a specific task prior to the classes. This instructional strategy may include giving the student a task to review some articles relating to a certain topic, listen to podcasts, or to watch a pre-recorded lecture prior to lessons. Therefore, during the actual lesson, the interaction will be more beneficial and involves more educated discussion instead of a teacher-led session. This model is suitable for young doctors in hospital settings and also for undergraduate and postgraduate students.

There are also a variety of skill-based simulator learning techniques in anaesthesia without involving the real patients, which become relevant during this era of COVID-19. Simulation using standardised patients through online platforms can be used as a training in history taking during

preoperative assessment. From there, the student can formulate anaesthesia management for the patient. Some virtual reality applications and high-fidelity mannequin simulators also can be used to train in crisis management and also relevant procedures such as bronchoscopy, line insertion, regional blocks and echocardiography.

Online learning also can nurture both solo learning and collaborative learning. Tasks can be given on an individual basis or as a group work. Thus, the students should not feel isolated during the distance learning, as it is still possible to have positive interaction between group members.<sup>22</sup> Activities such as PBL, roleplays and case discussions are all based on collaborative learning and relevant to anaesthesiology education.

On the other hand, there is an angle of online learning that requires consideration, which is the assessment modality. Thus far in Malaysia, the summative assessment in anaesthesia postgraduate programme involves written and viva voce modalities. The examination activities were heavily affected during this COVID-19 pandemic due to the ban on interstate travel for the students and examiners. Universities have to adopt decentralised examinations for the written paper, where the examinations are held in the candidates' service hospitals. Due to the format of the written examination which involves multiple choice questions and short answer questions, it is difficult to convert the examinations into online examinations. Some other non-medical disciplines already adopt the remote proctoring examination model<sup>23</sup> that enables students to take a timed examination while the proctoring software, with or without a remote human proctor, monitors the students' desktop, webcam audio and video. The software can detect any attempt of cheating while disabling the online searches on the desktop during the examination, whereas the human proctor will help with the identification of the candidates and observing for any suspicious cheating behaviour during the examination.

Another new trend in the online education scenarios is the massive open online courses (MOOCs). MOOC

utilises both the synchronous and asynchronous learnings with more dynamic contexts around its content. Some of the examples of popular international platforms for MOOC are edX and Coursera that offer open online courses. The MOOC model can also be adopted in our anaesthesia education, where a very structured program can be developed by credentialled educators, aiming at providing a formal extra-hour education that can benefit young doctors in hospitals or other related healthcare personnel.<sup>24-26</sup>

### IS ONLINE LEARNING SUITABLE FOR ANAESTHESIA EDUCATION?

Despite the fact that this current situation forced us to convert to online learning, and there are models

to personalise the online learning towards medical education, a solely distance learning model may not be ideal for anaesthesia education. There is still a need to blend the online learning with the traditional didactic method to fully achieve the level of competency. While it can be utilised in both synchronous and asynchronous ways to provide knowledge-based education, the lacking matrices in clinical and communication skills still require hands-on clinical training with real patients in hospital. Therefore, it is about time that we move on to include the technology-enhanced teaching and learning models in our medical education system, but not to replace it.

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