Simulation in Anaesthesia

Anaesthesia as a speciality has grown beyond the operating room and involves much broader and wider tasks than just making patients sleep. Different points of patient care are being managed by anaesthetists like, which include but not limited to, performing invasive procedures, use of rapidly acting drugs and operating complex devices. Therefore, the role of anaesthetists is to improve and expertise to much higher of training so that the safety of patients is not compromised in any way.

It has been seen that the apprenticeship model has been used for the training of anaesthesia. In such model, gradual exposure to various cases over the period of their training was used to gain expertise in managing difficult cases and life threatening situations. The present era of technology advancement has refined the methods of training by incorporating "simulation based learning" into the training process.

The word "Simulate," as per Oxford dictionary, means "Imitation of a situation or process."[1] Till now simulation has been used successfully in various fields (aviation and military) for training and evaluation.[2] For the training of pilots in aviation industry, simulation has played a key and promising role.

Simulation in medical curriculum means recreating or imitating part of some clinical scenario for purpose of training. The major advantage of simulation in anaesthesia is that it provides a safe and repeatable learning environment where anaesthesiology residents/trainees can practice and gain confidence in various life saving skills (laryngoscopy, intubation, basic and advanced airway and vascular access skills) on mannequins without endangering the life of a patient. Moreover, simulation is also helpful to train the postgraduates in clinical scenarios that are not common in daily anaesthesia practice. In western world countries, it is an integral part of anaesthetic academic training and is used for progressive professional development.[3]

Simulators for anaesthesia training can range from a simple airway model to teach skills like airway management to a full-size mannequin patients Sim Man® from Leardal and Human Patient Simulator-HPS II from METI® - to name a few. These above mentioned mannequins had preinstalled software and the person operating this software can make the mannequin as realistic as a real patient. Different scenarios can be recreated on these mannequins like simulating a bronchospasm or a hypotension at the time of induction, fluid requirements in sepsis/shock, the learner is expected to manage the situation and based on his actions either the mannequin responds or the person operating the software of mannequin quickly resolves the condition with the view that normal physiology is maintained.

Anaesthesiologists are the doctors mostly indulged in critical care scenarios. The most widespread use of simulation in anaesthesiology is to provide crisis management training. Simulation allows postgraduate residents/trainees to experience clinical case scenarios that are uncommon in daily practice and requiring great expertise and precision such as surgical cricothyrotomy and chest drain insertion.

Simulators are also used as an assessment tool of testing various skills and competencies of anaesthesia trainees. Boulet describes various issues involved in the process.[4] The Outcome Project of the Accreditation Council for Graduate Medical Education (ACGME) in the US has advocated reliable means of assessing competencies.[5] Objective structured clinical examination (OSCE) has been used to assess the theoretical aspects and technical skills in different clinical specialties. The designing of the above mentioned examination has the format to test all candidates in a uniform manner. The individual assessor's bias has been removed by the use of objective nature of the examination. Simulation yields very well to the demands of OSCE stations in acute care and various specialties.

Not only the teaching of simulation based anaesthesia practice is to educate in crisis management but also focus is drawn on teaching the basic skills too. Simulators can be used to recreate realistic environment (in such a way that the postgraduate trainee can practice repeatedly) for routine skills of patient monitoring and management of life saving/critical events.

Although simulation based learning has various above mentioned advantages but it comes with its set of limitations too. First is that till what extents, can a simulator imitate the real-life situation. Moreover, the trainee must be aware of the difference between real patient anatomy and the simulator.

Summary

Simulation with the help of the use of current technology is offering innovative and reproducible/repeatable training

experience. Different non-technical aspects of an anaesthetist's daily work could also be addressed to during such training. Simulators are also used for the assessment of various skills and competencies.

Sanjeev Kumar Jain, Rohit Kumar Varshney[1]

Departments of Anatomy and [1]Anaesthesia, Teerthankar Mahaveer Medical College, Teerthankar Mahaveer University, Moradabad, Uttar Pradesh, India

Address for correspondence: Dr. Rohit Kumar Varshney, Department of Anaesthesia, Teerthankar Mahaveer Medical College, TMU, Moradabad, Uttar Pradesh, India.
E-mail: rohitmaxy@gmail.com

References

1. Gaba DM. The future vision of simulation in healthcare. Simul Healthc 2007;2:126-35.
2. Helmreich RL, Davies JM. Anaesthetic simulation and lessons to be learned from aviation. Can J Anaesth 1997;44:907-12.
3. Weller J. Effective management of anaesthetic crises-design, development and evaluation of simulation based course. In: Riley RH, editor. Manual of Simulation in Healthcare. New York: Oxford University Press; 2008.
4. Boulet JR, Murray DJ. Simulation-based assessment in anesthesiology: Requirements for practical implementation. Anesthesiology 2010;112:1041-52.
5. Tetzlaff JE. Assessment of competency in anesthesiology. Anesthesiology 2007;106:812-25.

Access this article online

Quick Response Code:

Website: www.actamedicainternational.com

DOI: 10.4103/ami.ami_88_18

How to cite this article: Jain SK, Varshney RK. Simulation in anaesthesia. Acta Med Int 2018;5:53-4.