

Modernising postgraduate medical education: evolving roles of The Hong Kong Jockey Club Innovative Learning Centre for Medicine in the Hong Kong Academy of Medicine

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Introduction

The Hong Kong Jockey Club Innovative Learning Centre for Medicine (HKJCILCM) was established by the Hong Kong Academy of Medicine (HKAM) on 10 December 2013 as a state-of-the-art facility specifically focused on simulation-based learning (SBL). Since then, the HKJCILCM has evolved to become the education arm of the HKAM. Here, we review this evolution in celebration of the 10th anniversary of the HKJCILCM.

Establishment of the Centre

The publication of *To Err is Human: Building a Safer Health System* by the Institute of Medicine set forth the agenda to build a safer health system.¹ The report concluded that the high rates of preventable medical errors were caused by faulty systems, processes, and conditions, rather than individual ‘bad apples.’¹ Improvements to patient safety would require the design of a safer healthcare system; the establishment of this system would involve a paradigm shift in medical education.¹

Simulation-based learning offers many advantages. It provides a safe environment for learners to practise and learn from their mistakes. Simulated tasks can be repeated and standardised; their difficulties can be controlled to match various levels of expertise among learners. Moreover, rare events can be practised without the delays involved in real-world encounters.² However, until the early 2000s, the adoption of SBL was slow among HKAM Colleges, medical schools, nursing schools, and the Hospital Authority.

By 2010, there was increasing evidence regarding the effectiveness of SBL in enhancing quality healthcare and patient safety³; various authorities supported a greater role for SBL in medical education.^{4–7} Consistent with this trend, the HKAM published a position paper on postgraduate medical education in 2010, which recommended greater adoption of simulation in postgraduate medical training, along with the establishment of SBL

centres.⁸ Under the leadership of the then President Dr Donald Kwok-tung Li, the Council of the HKAM decided in 2012 to establish a centre of excellence for innovative learning in medicine on the seventh floor of the HKAM Building. Through collaborations with simulation centres at Hospital Authority hospitals and medical schools, the HKJCILCM was intended to facilitate trainee instruction at HKAM Colleges, provide continuing education opportunities to Fellows and other healthcare professionals, and support research. It was established in December 2013 with a generous donation of HK\$53.5 million from The Hong Kong Jockey Club Charities Trust.

To achieve the highest standards, the HKAM formed a partnership with the Center for Medical Simulation (CMS) in Boston of the United States that was led by Professor Jeffrey Cooper. The CMS team provided advice regarding development of the HKJCILCM, including its agenda, the promotion of simulation in medical education, assessments and research, faculty development, continuing medical education programmes, and scientific research collaborations. The HKAM’s partnership with the CMS remains strong and robust to this day.

Early years

During its early years, the HKJCILCM faced several challenges. Although the original objectives of the Centre had been established, its role among simulation training centres in Hong Kong was unclear. At times, the HKJCILCM was engaged in competition to attract trainers, and some training programmes overlapped. Also, in those years, access to the Centre by public transportation was difficult, and it was not a popular location for training activities.

Various measures were undertaken to address these challenges. The Centre was equipped with an array of training equipment, including partial-task trainers, advanced laparoscopic and endoscopic simulators, high-fidelity human patient simulators, as well as interactive virtual reality platforms (eg,

XVR and Igloo [with 360° visualisation]), to enhance training scope and experience. The HKJCILCM team also supported and collaborated with the Academy's Disaster Preparedness and Response Institute (a project concluded in October 2022), the Hospital Authority, The University of Hong Kong, The Chinese University of Hong Kong, City University of Hong Kong, and our Colleges to develop and implement training courses at the Centre. Fellows and trainees were encouraged to use the training equipment to practise individual clinical skills. Furthermore, the HKJCILCM established an internship programme for students in the Department of Biomedical Engineering at The Hong Kong Polytechnic University. The first intern was accepted into the programme in July 2017, further enhancing the Centre's role in education and research.

Considering the shortage of qualified simulation trainers in Hong Kong, the HKJCILCM focused on faculty development from its inception. Initially, the Centre contracted with the CMS's Institute of Medical Simulation to provide five 'Simulation as a Teaching Tool' Instructor Courses, and two Advanced Courses on Debriefing, over 5 years. However, high demand led to the completion of all seven courses within the first 2 years. In 2015, the HKJCILCM began to develop its own faculty development programme; the 4-day Comprehensive Simulation Educator Course (CSEC) was first conducted in June 2016. The CSEC was initially supervised and later endorsed by the CMS. In 2018, a 2-day Debriefing Skills for Simulation Instructors (DSSI) course was developed to provide debriefing skill training to simulation educators who may not be involved in the development of simulation curricula or design of simulated case scenarios. These faculty development initiatives have had a substantial impact, such that 542 trainers completed the CSEC and 354 trainers completed the DSSI course by September 2023. These alumni are now trainers in various healthcare professional education and training organisations in Hong Kong. Additionally, through an agreement with the Hospital Authority, the HKJCILCM established a 2-month full-time Visiting Scholar programme at the CMS. Ten scholars from the HKJCILCM have completed the programme since 2014.

Consolidation of early achievements

Since 2016, the HKJCILCM has provided access to its library collection of peer-reviewed journals and books. This resource was made available to all Fellows and trainees, allowing them to remain informed about SBL and medical education. Furthermore, arrangements were established whereby Colleges could borrow the HKJCILCM's equipment for

training and examination purposes outside of the HKJCILCM facility. The HKJCILCM also offered its medical simulation expertise to assist Colleges with the development of their own programmes. By leveraging the knowledge and experience of the HKJCILCM, Colleges were able to implement effective simulation-based programmes tailored to their particular specialty needs.

Over time, the role of the HKJCILCM became clearer. The main focus shifted to ensuring programme quality and standards, maintaining trainer competency, and providing guidance to our Colleges (and other institutions) regarding the use of SBL. A quality assurance structure was developed to ensure quality in all courses organised by the HKJCILCM; the structure was also intended to maintain trainer competency. In November 2017, the HKAM published its Position Statement on SBL, which provided guidance regarding the safe and effective use of SBL methods in postgraduate education and training for healthcare professionals.⁹

Subsequently, a certification programme for HKJCILCM's Simulation Trainers was developed, along with a structured system for standards maintenance. After approval by the Council of the HKAM, the first cohort of HKJCILCM-Certified Simulation Trainers was approved in early 2019 for a 3-year cycle. By September 2023, 62 trainers were participating in the programme.

Evolution to greater heights

Since its inception, the HKJCILCM has been actively involved in medical education. In the early years, it regularly led organising efforts for the annual HKAM Medical Education Conference and other scientific meetings. Through a collaborative initiative with The University of Hong Kong–Shenzhen Hospital, the HKJCILCM organised a symposium and workshops regarding SBL in July 2019; these events were held in Shenzhen on the mainland and attracted considerable interest from participants across Guangdong Province. Subsequently, multiple doctors from Shenzhen joined the faculty development programme in Hong Kong to establish a group of local trainers.

Over the past decade, leaders at the HKAM have increasingly recognised the need to strengthen the Academy's efforts to modernise postgraduate medical education. Considering its experience and success in promoting SBL, the HKJCILCM was regarded as the appropriate body to serve as the Academy's educational arm. A strategic planning retreat was conducted in November 2020 to extensively discuss this vision. Based on a survey among the members of the HKAM Education Committee, three high-priority interrelated topics were identified as areas for development:

competency-based medical education (CBME), workplace-based assessment (WBA), and e-learning.

The HKAM Position Paper on Postgraduate Medical Education, published in 2010, emphasised the need of transition from traditional process-oriented training to CBME.⁸ To accomplish this important transition, the following four strategies have been implemented¹⁰:

1. Engagement: Because CBME is a complex concept, conference speeches and presentations, as well as published articles, have been used to promote and clarify its importance, meaning, and implementation methods.

2. Redesign: It is important for Colleges to adjust their training and assessment standards and procedures to align with CBME principles. This process was streamlined at a strategic education and training workshop organised by the HKAM, which culminated in the publication of a position paper in 2023 that summarised recommendations from the discussion.¹¹

3. Faculty development: Because the implementation of CBME requires trainers to learn modern teaching skills, faculty development is essential. The Workgroup on Faculty Development has been assembled with representatives from most Colleges, and resources have been provided to support this initiative. The Basic Medical Education Course, developed by the Hong Kong College of Emergency Medicine, has been evaluated and approved as a model training programme for faculty development. An intercollegiate curriculum for faculty development is currently in development.

4. Research: Because postgraduate medical education is a relatively new field with a limited academic footprint, there is a need to generate context-specific knowledge to guide the progress of the HKJCILCM. This research often involves qualitative methods with which our Fellows may have limited familiarity. Simulation approaches involving mentorship from experienced scholars are under consideration as initial steps towards project-based learning. An online course regarding qualitative research for medical education has been established as a learning resource.

Competency-based medical education requires fundamental changes in assessment methods, which highlight the need for various measures that include authentic tasks and direct observation in a clinical setting.¹² As a component of the CBME approach, WBA has become crucial in efforts to evaluate performance and contribute to the education of trainee doctors. Our strategy at the HKJCILCM involves the development of a standard workshop, which could be tailored to the specific needs of our partner Colleges. We have already collaborated with several Colleges, including

the Hong Kong College of Orthopaedic Surgeons, the Hong Kong College of Anaesthesiologists, Hong Kong College of Physicians, and the Hong Kong College of Otorhinolaryngologists, to provide workshops that focus on providing effective feedback to trainee doctors. However, Carless¹³ emphasised the requirement for feedback literacy to ensure effective feedback utilisation; we are addressing this aspect through a pilot workshop established in collaboration with the Hong Kong College of Otorhinolaryngologists.

Because of the coronavirus disease 2019 pandemic, members of the HKJCILCM have shifted towards e-learning as an alternative to traditional face-to-face teaching methods. Although our experience with e-learning has not been entirely satisfactory, we have identified unique benefits, including flexibility for learners and the ability to engage with topics at a self-selected pace. Moreover, the use of reusable e-learning materials has provided valuable time savings for trainers and trainee doctors, allowing them to focus on practical learning activities.

Members of the HKJCILCM have facilitated e-learning through three strategies. First, we established the eHKAM Learning Management System (LMS) Taskforce, consisting of representatives from all 15 Colleges, the HKJCILCM, and other relevant Departments of the HKAM, to conduct a systematic process of needs analysis, selection, vetting, and implementation of our LMS. The LMS of the HKAM has been operational since 2022. Second, we have developed and delivered the Learning Online Educator course, which is intended to equip our Fellows with the technological skills and educational expertise necessary to teach online. The educational framework is based on the community of inquiry model, whereby our participants are empowered to use e-learning as an instrument for adult learning through an inquiry process.¹⁴ Finally, our project team provides technical support to the Colleges' programmes through mechanisms approved by the eHKAM LMS Taskforce.

Conclusion

Through its emphasis on the need to modernise medical education, the ground-breaking report *To Err is Human: Building a Safer Health System* initiated a major paradigm shift. To encourage this shift, the HKAM established the HKJCILCM, which initially focused on SBL development and more recently expanded to include CBME, WBA, and e-learning. This experience has provided a few important lessons. First, CBME is a constantly evolving approach intended to achieve better healthcare through effective medical education,¹⁵

and the role of the HKJCILCM will continue to adapt in response to new innovations. Second, we must focus on innovations in both technology and education. Although technologies such as simulation and e-learning are intriguing, we must remember that such technologies are intended to enhance education; their effective use requires a thorough understanding of educational theories. This principle has guided us in the development and implementation of the CSEC, the DSSI course, and the Learning Online Educator course.

Finally, efforts to transform educational practices can only be successful if all stakeholders participate. On behalf of the HKJCILCM, we would like to take this opportunity to express our deepest gratitude and appreciation to the following Fellows and partners for their generous contributions and unwavering support to the evolution and development of the HKJCILCM: Dr Donald KT Li, Prof CS Lau, Prof Gilberto KK Leung, Dr YF Chow, Prof Philip KT Li, Prof Paul BS Lai, Dr CC Lau, Dr HT Luk, Dr WK Tung, Dr Francis PT Mok, Prof NG Patil; Presidents of all HKAM Colleges; Convenors and Faculties of all HKJCILCM courses; members of all HKJCILCM Committees, Subcommittees and Working Groups; the Hong Kong Jockey Club Charities Trust; Center for Medical Simulation in Boston of the United States; Hospital Authority; The University of Hong Kong; The Chinese University of Hong Kong; The Hong Kong Polytechnic University; and The Hong Kong Society of Simulation for Healthcare. Your support, commitment, and invaluable insights have been crucial to our progress and success in the transformation of postgraduate medical education in Hong Kong.

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All authors contributed to the editorial, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

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