



HONG KONG ACADEMY OF MEDICINE

Position Paper on Postgraduate Medical Education

2010

Hong Kong Academy of Medicine Position Paper on Postgraduate Medical Education

Introduction

1. Postgraduate medical education is facing numerous challenges. The rate of technology innovation and the amount of new knowledge accumulating day after day call for further and further sub-specialization. The global trend of limitation in work hours for doctors-in-training could reduce training time and affect the efficacy of conventional apprenticeship type of postgraduate medical education. This has prompted the Hong Kong Academy of Medicine (the Academy) to think about how best to train a doctor in the limited time and resources available. Educational research in the last few decades sheds light on how an adult learns new knowledge or skills. To keep pace with these developments, apart from providing a structured training programme dedicating training resource for trainees, the competencies expected of a doctor completing the Fellowship training, the curriculum design, the method of training and the means of assessment need to be revisited.

2. This position paper is the result of series of discussion, starting from the Postgraduate Medical Education Workshop organized by the Academy in June 2009. It serves to highlight the proposed key reforms to postgraduate medical education that are required to modernize the Fellowship training system such that the Academy will produce Fellows meeting the needs of the society in a sustainable manner.

“Hong Kong’s Specialist”: the new generation of specialist doctors

3. The healthcare delivery model is constantly evolving with the advancement in medical technology and knowledge; sub-specialization; changing social, economic and political environment; and the patient safety movement. The scope of practice for a newly graduated fellow in specialties like medicine and surgery, who breeds a variety of new subspecialties, has now become just “general specialist practice”, obviously very different compared to twenty years ago. This “general specialist” should be competent to manage day-to-day common specialty problems, or the majority of their own specialty practice independently. This “general specialist” concept can be observed in other specialties apart from medicine and surgery.

4. Apart from being a general specialist, how does this “Hong Kong’s Specialist” look like? The “Hong Kong’s Specialist” is expected to possess certain generic competencies that can be distilled and broken down into domains of generic qualities, abilities and skills. Ideally all these have to be definable, measurable and assessable, but there are limitations at present. The Royal College of Physicians and Surgeons of Canada (RCPSC) put them under the CanMEDS framework (CanMEDS) (*RCPSC, 2005*). The Accreditation Council for Graduate Medical Education (ACGME) defined a set of six core competencies (*ACGME, 2007*). The medical profession in United Kingdom also agreed on a Consensus Statement on the Role of the Doctor in 2008 (*Medical Schools Council, 2008*). The Australian Medical Council (AMC) specifies the expectation of a medical specialist (*AMC, 2009*). Summarizing all these together, the “Hong Kong’s Specialist” should possess seven broad domains of competencies, namely *professional expertise, health promoter, inter-personal communication, team working, academic, manager-leader, professionalism*.

Recommendation 1: Academy should define the generic core competencies that every specialist should possess.

5. Professional expertise refers to the necessary knowledge and skills for clinical practice in the relevant specialty in the provision of independent safe and quality service. Health promoter is a role that every doctor should undertake apart from treatment of diseases.

Teaching and learning communication

6. Good doctoring depends on building a good and therapeutic doctor-patient relationship, which will enhance effects of medical treatment. Communication is also vital to the roles of health promoter, team-working, manager-leader roles and to future specialist practice, such as in risk communication.

7. Many Academy Colleges are now assessing communication skills during their Intermediate or Final examinations. Doctors-in-training need to accumulate experience on communication, just as they need to accumulate clinical experience. Therefore as the doctors gain more and more experience in clinical practice, they need to continue to learn how to communicate effectively. The importance of communication in medical practice has to be highlighted. Communication teaching and clinical skill teaching should be done hand-in-hand.

Recommendation 2: Communication skills should form part of the specialist training and be formally assessed during the training process (formative assessment), and / or during summative assessment.

Academic: learner roles

8. Academic includes four areas, learning, teaching, continuous professional development and research. Learning is an active process of knowledge-seeking, acculturation, skills and experience acquisition. While the Academy provides the teachers, environment and materials for clinical learning, doctors-in-training must be responsible for their own learning process, including learning by enquiry. They should secure their own chances for effective learning and training.

9. Six years of postgraduate education is not enough to learn everything doctors need for their life long career. These six years of training suffice to lay down a good foundation and cultivate the doctors-in training for the life long learning culture that is integral to practice of medicine (*Hong Kong Academy of Medicine, 2007*). The “Hong Kong’s Specialist” must learn how to be an effective learner taking on all the modern concepts of education such as context-based learning and transferability of knowledge. Therefore apart from learning new knowledge, skills and attitudes, the “Hong Kong’s Specialist” would be expected to manage uncertainty, ambiguity and complexity, and be able to work out solutions from basic principles. They must know their own limits, understand the importance of teamwork and know when to call for assistance.

10. Research training helps to make the minds of doctors more inquisitive, thereby advancing the knowledge of medicine. Although only a very small minority of doctors will be engaged in research work in their career, understanding research, and ability to critically appraise research papers are the competencies that the “Hong Kong’s Specialist” should possess.

Academic: teacher and trainer roles

11. All doctors, in particular the specialists, should share responsibility in mentoring doctors-in-training. The doctors-in-training should learn to be a teacher and trainer early on in their professional career, as “passing on the knowledge” involves a change in attitude, and this culture of teaching should be cultivated early on. Teaching enhances learning and retention of knowledge (*Peets et al., 2009*). The training for a doctor to become a proficient trainer should focus not only on learning the skills for teaching, but also recognizing the style to fit into the requirement of trainee at different learning stages.

12. There is a difference between clinical and educational supervision. While clinical supervision helps the trainees to develop their clinical skills over specific situations, educational supervisors would enable the learners to develop their own learning needs so that they will move towards the end-product that the educational supervisors have set.

13. Resources need to be allocated for trainers, in terms of time and recognition, for them to teach effectively. While apprenticeship is observing and learning from what the master does over a long period of time, clinical training should involve a lot more active teaching. Experiential learning in apprenticeship is definitely useful; however, the benefits of systematic and structured learning cannot be underestimated (*Kirschner et al., 2006*).

Recommendation 3: More resources have to be spent on training and trainers. Specialists should be taught how to become a proficient teacher and be given the necessary tools, recognition and awards. The Academy and Colleges should conduct such training sessions and serve as a resource centre for trainers.

Manager-leader and professionalism

14. Healthcare resources are scarce. Apart from managing and using these resources judiciously, a doctor should be the quality and safety advocate, and the leader in complex health environment driving for better and safer health services.

15. A lot of learning in medicine still occurs through role modeling, and professionalism is certainly one of those. Professionalism, or good doctoring, is an important competency for any doctor, and the feature that differentiates a good doctor from a not-so-good doctor. Much of the ethics, attitudes and behaviour of good doctoring are better shown than taught. In the end, this tradition will pass on from generation to generation.

Curriculum planning

16. Curriculum planning starts from defining what the “Hong Kong’s Specialist” should be like at the end of their training, such as defining objectives, achievements and competencies at the end of training. This is about putting the relevant materials into the competencies framework deliberated above. Because of the changing healthcare scene, this new generation of specialist doctors may require a set of skills that is constantly evolving, emphasizing the importance of defining and reviewing the requirements for “Hong Kong’s Specialist” regularly to meet our needs. These requirements can be organized into training

modules linked to specific objectives at different stages of their training. Grouping these modules together becomes the curriculum for “Hong Kong’s Specialist”.

17. The basket of qualities, abilities, knowledge, skills, and attitudinal behaviors that our “Hong Kong’s Specialist” should possess has to be realistic and pragmatic. Ideally they should be definable, measurable and assessable. However, the limitations in measurement sometimes render these characteristics unachievable.

18. The traditional boundaries between different specialties such as medicine and surgery are getting blurred and the scope of practice is getting wider such that there is much more to learn. Yet there is the time constraint in squeezing a lot of materials into the six-year programme. The “general specialist” concept should not create new boundaries in those specialties used to be regarded as a single specialty, such as between Obstetrics and Gynaecology.

Recommendation 4: Colleges should define the outcome and objectives of the training at different stages in preferably definable, measurable and assessable terms, such as competencies; and organize them into modules for training.

Competency based training or time based training

19. The debate for or against competency-based training is constantly evolving. There is the argument that competency-based training would give doctors the necessary skills but not the clinical experience that can be offered through a time-based training. Integration of all those skills would be important to bring in full understanding about the professional practice, and about excellence in performance (*Talbot, 2004*). Competency-based training should not be interpreted as just focusing on acquiring the technical skills such as basic simulation or skill training. During the process of acquiring the skills, the trainee would have been exposed to the clinical materials, be well versed with differential diagnosis and be conversant in managing the complications. While competency-based training is not a panacea for everything and a competent person does not mean he is an expert, it certainly would ensure all the necessary skills have been possessed, and forms a good foundation for the specialist doctor to acquire further experience through clinical practice and life long learning.

20. While it is easy to define and assess competencies for skill-based specialties, for example, the College of Surgeons of Hong Kong is moving in the direction of defining competencies in the area of Laparoscopic Surgery, it might be more difficult to define, if not to assess, for some other specialties such as medicine or paediatrics. Competency should not be limited to manual or technical skills only, and certainly not limited to those that can be easily measured and missing the important elements in clinical practice. Communication by itself is considered a competency. Therefore although they are not as well defined, some basic technical and non-technical skills can be still dissected out for structured learning.

21. Although there is a belief that heterogeneity in the learning ability of trainees exists with some being fast learners and others slow, it does not necessarily support competency-based training rather than time-based. Fast learners may require less time to acquire the skills with a steep learning curve than others. Passing in the final qualifying examination does not equate to medical expertise. Doctors still need to get more clinical experience to practise their acquired skills. While passing a certain examination can be achieved in a shorter time, the acquisition of clinical experience needs more time.

22. Attitude learning, professional enculturation, learning the subtle skills of good doctoring, ethics of practice are important even in skill-based specialties. While it is not difficult to state the principles, learning is often acquired through role modeling and repeated exposure over a period of time. The wisdom of conventional time-based training and apprenticeship cannot be disregarded, especially in giving a broad based exposure for a good foundation.

Recommendation 5: Training of specialist doctors should be a combination of competency-based and timed-based training.

Simulation

23. Recently medical education has seen a rise in using simulation technology for teaching. Simulation provides safe and effective opportunities for learners at all levels to acquire practical skills that are required for quality and safe patient care (*McGaghie et al., 2009*). Simulation ranges in sophistication, from simple gadgets, hi-fidelity simulators to virtual reality ones. It sometimes involves the use of fresh cadavers for simulation. It should serve as an adjunct to real clinical experiential learning. The virtues of simulation lie in training of skills and getting it acquainted, or refreshed before doing it on a real patient which goes along with the current emphasis on patient safety. Because of its reproducibility, it can cater for rare situations, and training for team work, as well as being used as a common and standard task in the assessment for multiple examinees.

24. There is ample scientific evidence that simulation works to expedite the learning curve, and to refresh the skills as in aviation industry. Issenberg (*2005*) reviewed the simulation literature on hi-fidelity simulators, and concluded they are educationally effective. Repetitive practice on a simulator is also associated with improved learner outcomes (*McGaghie, 2006*). Simulation-based education complements but cannot replace conventional medical education in patient care settings (*MaGaghie et al., 2009*). There is also ample research work in employing simulators for assessment of competencies, and Hatala et al. (*2005*) found that combining a standard patient with a simulator seems to be ideal for assessment.

25. There is the debate about whether simulation experience is equivalent to real clinical experience, and whether the assessment could reflect the true performance of the candidate in times of crisis, e.g. the issue of simulatoritis, hyper-vigilance and cavalier attitudes. More research would be needed in those directions. As long as simulators are serving as complementary role, the Academy and Colleges should reap the full benefit of simulator technology to enhance training and refreshing of competencies for quality and safe medical practice.

26. Some of the Academy Colleges are already utilizing the simulators and skill laboratories for training. This is the opportune time to revisit, invest and broaden the use of medical simulation technology for postgraduate medical training. A more in-depth position paper on simulation in medical education may be required in due course.

Recommendation 6: Colleges should be encouraged to build more skill / simulation laboratories and develop simulation-based training. Doctors-in-training should have adequate exposure to simulators. In the longer term, some parts of simulator training should be mandatory and be made widely available so that it can precede practicing on the patient.

Simulators should also be developed for assessment purposes. We should start as soon as possible with areas in which the technology is more mature and ready.

Managing the trainee exposure

27. Although more work hours does not necessarily mean more clinical exposure for the doctors-in-training, a limitation in work hours can bring about a reduction in clinical exposure. Proficiency is a result of deliberate practice and practice. Training in the era of “limited work hours” has to be more focused and structured. The clinical materials available for training need to be maximized for training purposes. On the other hand, we should aim at optimization of exposure to gain clinical experience in the limited working hours available for trainees.

28. Provision of a systematic and structured training requires a lot of organization as the occurrence of these clinical materials of training value is not regular or predictable. While organization of sub-specialization training blocks may help to concentrate the training exposure to the trainee, the difficulty lies in the exposure to emergency clinical materials. If the doctors-in-training are not working hands, it would be easier to organize as they would be free to move around. On the other hand, training cannot be totally dissociated from clinical responsibility. Assuming the clinical responsibility is part of the acculturation process, and facilitates the building up of clinical experience.

29. In order to maximize the exposure of doctors-in-training to relevant clinical materials, Colleges must define what constitutes the basic exposure to achieve competency, for example, the number of appendectomies to be performed to reach a minimal competency level.

Recommendation 7: Maintaining the standard of training is one of the key functions of the Academy. Training opportunities for doctors-in-training must be maximized, and part of the working time should be protected for training purposes. The training programme should be standardized and systematic.

Assessment

30. Assessment is the means, not an end, and therefore has to be linked with objectives of training, and what is needed to be assessed. In addition, the issues of reliability (inter-rater, inter-stations, intra-rater consistency), validity (construct, concurrent) and comparability of standards (equating) across generations have to be considered. A quality assurance process on each examination (and its constituent tasks) and on each individual examiner should be in place.

31. There are many areas to be assessed with many assessment tools available. Conventional assessment focuses on knowledge, while attitudes and skills cannot be easily evaluated through summative assessment methods. Even though attitude cannot be easily defined, there is the need for an all-rounded assessment in addition to testing skills and evaluating technical competencies. With any new assessment, validity has to be considered. Sometimes lay persons can be involved in the assessment or evaluation of attitudes. Regarding standard setting, the assessment for a safe level of competency is different from the assessment for excellence.

32. Most Colleges have introduced in-training assessment as part of the formative assessment. The frequency of such in-training assessment varies from 3 months to 12 months. Such in-training assessment is important as it can evaluate the doctors-in-training in the workplace in a non-threatening manner. Softer skills, competencies, and qualities such as attitudes, communication, team-working skills and other aspects of professionalism can be readily assessed. While the optimal frequency still needs to be debated as some advocates daily assessment, the important point is to have the assessment done properly and conscientiously to reflect the performance of the doctors-in-training and provide input for them to improve.

33. Competency-based training requires a good assessment tool. There is not a lack of assessment tools, but a lack in using them with rigour and quality. The Academy and Colleges need to think about how best to do technical skill assessment. The Objective Structured Assessment of Technical Skills (OSATS) is a good example that we might consider. This OSCE like examination has shown good reliability and validity, works between institutions organization, and be able to plot the progress of the trainee over the years.

34. With the numerous assessment tools available, the Academy and Colleges would need to find out which tool is best suited to evaluate knowledge, skills or technical competencies, attitudes or other behavioral competencies. Competency is context bound. It may not be generic or transferable to other situations. The reliability of competency testing, or in fact the whole assessment, lies in the sampling of tests being performed. A matrix of competencies and assessment methods including objective, subjective or qualitative tools would have to be worked out.

Recommendation 8: Assessment should be all rounded, including skills and attitudes as much as possible. There should be a quality assurance process on examinations. The formative assessment is important and resources need to be injected to allow it to be done properly. A matrix of assessment tools to match the competencies should be developed.

To consider setting up an education unit

35. The Academy is an independent statutory body involved in the postgraduate medical education; it should provide leadership and aim for academic excellence. To maintain this status and to excel, this educational role would be expected to be clearly visible and reflected in the formal structure in a sustainable manner. While the Education Committee, consisting of representatives of Colleges, is set up under the Hong Kong Academy of Medicine Ordinance (Cap. 419), Chairman and members of the Committee have defined terms of office and change over time. An Education Unit can enhance the role of Education Committee and serve as the executive arm to assist in implementing policies decided by the Education Committee and approved by Academy Council. The Educational Unit will collaborate with and complement the training activities of the Colleges. Staffed by professional educationalists, the Education Unit becomes the executive arm of the Education Committee, the function of which should be regarded as the core business of the Academy.

36. A large number of overseas academic colleges are having separate educational departments, and employing educationalists. The Royal College of Physicians and Surgeons of Canada, for example, employs their College Fellows with an educational background on a part-time or full-time basis as Director or Associate Director of Education. For the Academy taking care of over 5,600 specialists, the Education Unit should initially consist of a Director,

with one to two other staff working at executive officer level. The Director of Education should have thorough understanding in postgraduate medical education.

37. The Director of Education who heads the Education Unit will keep abreast of current developments in educational and assessment concepts such as transferability of learned knowledge; keep the specialist training system under periodic review and consider introducing new practices to specialist training at strategic time points. Apart from serving as the resource centre for Colleges on academic matters such as those in relation to training and assessment, the Education Unit will also look into professional development for trainers, teachers and assessors, as well as coordinate and conduct research projects in postgraduate medical education.

38. Stipulated in the HKAM Regulations, the Academy is bound to have a general governance role over the Colleges on postgraduate medical education, and this role is currently taken up by the Education Committee and Academy Council. The Education Unit is going to enhance this governance role and can assist in assessing the training programmes.

Conclusion

Postgraduate medical education is constantly evolving and has come to a stage where a review is necessary to keep pace with current scientific developments in education, training and assessments. The Academy should first define the generic core competencies of a specialist, followed by Colleges to define in details what would be expected of their graduating Fellows. The specialist training should be a combination of time-based and competencies-based ones. The training shall be structured and training opportunities maximized for the doctors-in-training. Simulation-based training and assessment should be explored, benefits maximized and introduced as appropriate into the Academy. Assessment should be all-rounded, and focus put on formative assessment to guide the doctors-in-training in their training process. It is the appropriate time for the Academy to consider whether there is a need to set up an Education Unit to assist the Academy and Colleges in such matters. Through such initiatives, the Academy can continuously produce specialists who can meet the demands of the profession and the society at large, as well as passing on the much valued traditional virtues of good doctors.

Postgraduate Medical Education Working Group (Dr. CT Hung, Prof. KT Hau, Prof. S Kumta, Prof. Linda Lam, Dr. Ares Leung, Dr. HT Luk, Prof. NG Patil)

June 2010

Approved by EC at 155th meeting, 13-7-2010
Endorsed by Council at 203rd meeting, 21-10-2010

References

1. Accreditation Council for Graduate Medical Education. (2007). *Common program requirements: general competencies*. Accessed at <http://www.acgme.org/outcome/comp/GeneralCompetenciesStandards21307.pdf> on 29th August 2009.
2. Australian Medical Council. (2009). *Assessing specialist medical education and training*. Accessed at <http://www.amc.org.au/index.php/ar/sme> on 29th August 2009
3. Hatala R, Kassen BO, Nishikawa J, Cole G, Issenberg SB. (2005) *Incorporating simulation technology in a canadian internal medicine specialty examination: a descriptive report*. *Acad Med.*, 80(6),554-6.
4. Hong Kong Academy of Medicine. (2007). *Principles and Guidelines on Continuing Medical Education (CME) and Continuous Professional Development (CPD)*.
5. Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. (2005) *Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review*. *Med Teach.*, 27(1),10-28.
6. Kirschner PA, Sweller J, Clark RE. (2006). *Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching*. *Educational Psychologist*, 41, 75-86.
7. McGaghie WC, Issenberg SB, Petrusa ER, Scalese RJ. (2006) *Effect of practice on standardised learning outcomes in simulation-based medical education*. *Med Educ.*, 40(8), 792-7.
8. McGaghie WC, Siddall VJ, Mazmanian PE, Myers J; American College of Chest Physicians Health and Science Policy Committee. (2009) *Lessons for continuing medical education from simulation research in undergraduate and graduate medical education: effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines*. *Chest*, 135(3 Suppl):62S-68S.
9. Medical Schools Council.(2008) *The consensus statement on the role of doctor*. Accessed at <http://www.medschools.ac.uk/AboutUs/Projects/Documents/Role%20of%20Doctor%20Consensus%20Statement.pdf> on 29th August 2009.
10. Peets AD, Coderre S, Wright B, Jenkins D, Burak K, Leskosky S, McLaughlin K. (2009). *Involvement in teaching improves learning in medical students: a randomized cross-over study*. *BMC Med Educ.* 25, 9:55.
11. Royal College of Physicians and Surgeons of Canada.(2005). *CanMEDS 2005 Framework*. Accessed at http://rcpsc.medical.org/canmeds/bestpractices/framework_e.pdf on 29th August 2009.
12. Talbot M. (2004) *Monkey see, monkey do: a critique of the competency model in graduate medical education*. *Med Educ*, 38, 587-92.