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Opinion

Future use of skills laboratories at Medical Schools in Japan: how to transform these into effective educational departments?

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Abstract

- 1) Leaders of skillslabs at Japanese medical schools are concerned about the future of skillslabs.
- 2) The way skillslabs are presently used in Japan is not in accordance with current evidence on teaching skills.
- 3) We present a stepwise process to bring Japanese skillslabs in line with the standards of 2009.

Key words: Skillslabs, Skills Teaching

Introduction

Undergraduate medical students in Japan spend six years at medical school, at the end of which they need to take the national licensing examination testing the competencies required for a medical doctor¹⁾. This implies being competent as a professional, communicator, manager, scholar, cooperater and as a health advocate²⁾. Since 1991, partly as a result of a governmental initiated reform process in 1991, clinical clerkship and problem-based-learning has gradually been introduced into Japanese medical education³⁾.

One of the outcomes of this reform was the

introduction of a 'Common Achievement Test' (CAT) which consists of a performance based assessment (OSCE) and computer based MCQ testing (CBT) at all medical schools in Japan in 2005. Another reason for CAT's introduction was to promote clinical clerkship and to standardize Japanese medical school curricula. CAT was introduced to assure students' capability of clinical skills and medical knowledge before entering clinical years. The CAT-OSCE part consists of at least six stations: medical interview (10 minutes) and five others: head and neck, chest and/or vital signs, abdomen, neurology and on surgical skills or cardiopulmonary resuscitation (all five minutes)^{4,1)}.

Currently there is a debate in Japan about the introduction of an 'Advanced OSCE' at the end of graduation, with the same twofold objectives mentioned earlier. To help students to pass the CAT-OSCE, a number of medical schools organize teaching activities where students are trained in skills in order to master the competences tested. Internationally it has been argued that course organizers who teach

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students to only perform according to extensive checklists, make 'monkeys out of men'⁵⁾. Although this may sound 'harsh', the underlying reasoning is that by teaching students only 'tricks' one tends to forget that clinical reasoning is more important. As a result of the implementation of CAT-OSCE, many medical schools started skills laboratories ('skillslab') : designated spaces with medical equipment (part-task trainers, simulators) where learners can go to learn skills.

There is evidence that medical skills laboratories do lead to improvement of skills targeted for compared with standard or no training at all⁶⁾. In a recent best evidence-based medical education (BEME) review features and uses of high-fidelity medical simulations that lead to effective learning have been described⁷⁾. Amongst these features are providing feedback, repetitive practice and curriculum integration. In a recent survey at all medical schools in Japan (response rate 95%), 51 schools reported having a clinical skills lab⁸⁾. Of these, 23 had only one room and 14 schools had more than six rooms. These facilities were used for preclinical and clinical phases of medical school as well as for immediate postgraduate education. Most of them were small and poorly staffed.

The first author of this paper recently (2008) visited a number of skillslabs in Japan, where he confirmed these findings. He also noticed that there is a tendency to install high-tech audiovisual materials such as digital recording facilities, including web-based recording and multi-rooms observational possibilities and high numbers of expensive simulators. When talking to the responsible directors, they mentioned common problems: no staff, underused rooms during long periods of a year, no organized strategy to use the lab and no opportunity to build up expertise in teaching. It is obvious that buying simulators is easier than hiring teaching

staff for skillslabs, especially in Japanese public sector, where there is a shortage of workforce in clinical fields. Yet, it looks as if the current skillslabs within medical schools in Japan have been started with a limited vision on education. In addition, when asking individual Japanese doctors about how they learned to perform physical skills during their own education, they admit, sometimes after careful questioning, that they only mimicked their superiors. Basically they were never taught skills in performing a physical examination in a systematic way. Although learning objectives have been described in detail and importance to construct student-centered learning strategies spending enough time has been stressed, still most skillslabs seem to be primarily used to train students to pass the CAT^{9, 8)}. However skills laboratories have much more potential when properly used!

This paper seeks to give directions for a future effective use of skillslabs at medical schools in Japan. We will do so by firstly focusing on the most important educational methods that have been shown to be effective in teaching skills. Secondly these methods will be applied to the current state-of-the-art of Japanese skillslabs. Finally we will present a stepwise management process for establishing skillslabs, which have a future for both undergraduate and postgraduate learners and teachers.

The content of this paper is experience and evidence based: the first author is a member of the board of the Skillslab of the Medical School of Maastricht University. This skillslab started in 1975 as one of the first skillslabs in the world, has an undergraduate curriculum of 250 skills and serves all six years of medical school with 340 students per class. Both other authors, holding responsible positions in medical education in Japan, discussed about this theme

with the first author.

Educational methods

Current evidence shows that teaching methods for skills, including communication skills, are experiential learning, 'just-in-time' learning and contextual learning¹⁰. In addition to these methods, feedback, repetitive practice and curriculum integration are core issues¹¹.

With experiential learning is meant that learners, faced with actual (simulated or not) problems to be solved, learn by 'just' experiencing this problem. While solving the problem, students realize which strategies are or are not helpful to solve the problem faced. For example, when confronted with a patient who does not respond easily to questions posed, they realize (at that moment or afterward when getting feedback) that they need to change their strategy in the consultation (e.g. use more 'open questions'). 'Just-in-time' learning refers to the evidence that learning is more effective, when it takes place shortly before the actual situation, where one is preparing for, happens. For example, rehearsal training for medical undergraduate students for urethral catheterization is best placed just before they are doing their clerkship in urology.

With contextual learning is meant that learning is more effective if students can see a clear link between the topic what needs to be studied and the related domains of that topic. For example, students, studying a paper case on a patient with cardiac problems, learn more effectively the anatomy of the heart if they at the same time are able to learn where to place a stethoscope in cardiac physical examination.

Feedback (both asking for and receiving) is a core attribute of all education. Repetitive practice, or deliberate practice, refers to the fact that one needs to purposefully practice to get expertise in a skill. For example, if one wishes to

be a top professional player in golf, one needs to practice again and again, everyday for several hours.

For effective acquisition and mastering of skills curriculum integration is necessary. Skills sessions need to be built within an existing curriculum of a medical school since this enables contextual learning¹¹.

Educational method and current state-of-the-art of skillslabs in Japan

If we apply these educational methods to the current state of the arts of skillslabs in Japan, it appears that only 'just-in-time' learning and feedback are used in a systematic way. Most medical schools have organized their skills sessions in 4-6 weeks just before the start of the CAT in year 4. In these short periods of high-pressure teaching, the teaching is mainly focused at training student how to pass the upcoming CAT-OSCE with its short stations. Main teaching goal is to make sure students do remember the checklists needed rather than teaching them clinical reasoning with regard to skills and to let them practice. Is that the way we want to teach our future doctors?

Of course, occasionally experiential learning and other methods are used as well, but not in a systematic way. This apparent lack of educational vision on teaching skills is reflected in the words of directors of skillslabs in Japan who complain about no staff, underused rooms and no opportunity to build up teaching expertise. In addition, in many cases, the directors of skillslabs is the only faculty of that department. From the perspective of quality assurance it is obvious that these findings in the long run will lead to a negative outcome.

Is there a way out ? We think there is, particularly since there seems not be a lack of materials as equipment and or space. By revising skillslabs in Japan with a systematic

approach, based on sound educational principles, skillslabs can be turned into the centers of expertise of skills teaching where both students and staff would like to work.

A stepwise approach to future use of skillslab

Table 1 shows the steps needed to reform skillslabs into expert places of skills teaching.

First of all, there is a need for a leader; not only as a managerial person, but also as an academic leader with a vision on skills teaching. This person needs to have expertise, or at least knows where to get expertise, in educational principles as we referred to before. A director of a skillslab needs back-up from 'above'; i.e. from the dean of a decisive board for educational affairs on a medical school. It is necessary to work in a team for brainstorming how to build a skillslab within the curriculum of a medical school (contextual learning, just-in-time learning). Members of this team do not need to actually work at a skillslab. They can have positions at a medical school at other departments but a common feature should be personal commitment to teaching. At all medical schools there are such people, however sometimes difficult to find. First task of the leader and his team is to write a short white-paper with the goals and strategies needed to establish a skillslab.

Secondly, careful thinking should be done about the place of a skillslab program in relation to the curriculum of a medical school. Preferably, skills should be taught to medical students already from the start of their study in a longitudinal format: skills for physical examination, for procedural skills as well as for communication skills. In addition, skills training sessions should best be built within a curriculum. In this way a curriculum of skills can be built up in close collaboration with the courses of the medical school. It enables contextual learning,

Table 1 Steps towards skillslab as expert places of skills teaching

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1. Supportive leadership with a vision
 2. Skillslab program built within the curriculum
 3. A defined and worked-out teaching strategy
 4. Teachers (preferably physicians)
 5. Proper space and equipment
 6. Students
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just-in-time learning and repetitive practice, the methods shown to be effective. **Box 1** gives an example of how skills sessions are built into the second course (lasting 6 weeks) of the first year of the curriculum of the Maastricht Medical School. Personal contact between the skillslab staffs and coordinators of curriculum courses is essential.

In the next step, a defined teaching strategy needs to be worked out. Teaching should be student-centered instead of OSCE-centered. Decisions have to be taken about the length of training sessions, the goal of the sessions involved and the format/content of preparatory advices for the students. Finally, each training session needs to have a protocol which facilitates the teacher to be a role model for students.

Fourth, no good teaching without good teachers and no good teachers without an effective faculty program. Earlier we mentioned that back-up for the skillslab from a superior educational board of person with the authority to take managerial decision is necessary. A skillslab needs a budget to attract staff. Although we realize that at present in Japan there is a lack of health care professionals which jeopardize the opportunity to attract clinicians as teachers, we would like to point at the number of (female) physicians who are at home taking care of their children. Also there are always physicians in the final phase of their career who are willing to start teaching. Deans of medical schools should decide to provide incentives to attract these physicians. Also at

Box 1 The content of skills training sessions in the second course ('Accidents') of Maastricht Medical School

The content of the curricular course is threefold:

- Blunt abdominal trauma (2 weeks course)
- Wound healing (2 weeks course)
- Distorsion/fracture of the ankle (2 weeks course)

The content of the skills training sessions are:

- Related to blunt abdominal trauma:
 - introduction to the physical examination of the abdomen.
- Related to wound healing
 - 2 training sessions in bandaging of wounds
 - one session with simulation of burns
- Related to distorsion/fracture of ankle
 - First introduction in how to perform a basic examination of the locomotor system, including testing of pain sense
 - A contact with a simulated patient with a ankle sprain
- Related to general theme of the course
 - Procedural skills: subcutaneous and intramuscular injection on another student

each medical school there are always physicians who are interested in teaching, but who never were offered to do so.

If all foregoing steps are successfully followed, the next points, space, equipment and students will follow. It is positive that currently there seems to be no real problem in finding and financing space and materials. Also it is not necessary to start with expensive part-task trainers (phantoms etc). A number of stethoscopes, reflex-hammers or blood pressure devices will suffice as a start. A good strategy is to start small with a number of self-selected students and conduct some pilot training sessions which should be carefully evaluated. Students should react very positively on skills training sessions and definitively will ask for more. If that has been achieved, the road for successful and effective teaching is open.

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文献紹介

大学病院臨床教員のプロフェッショナルリズム観

Joseph M Garfield, Frances B Garfield, Nathanael D Hevelone, Neil Bhattacharyya, Daniel F Dedrick, Stanley W Ashley, Eric S Nadel, Joel T Katz, Christine Kim & Aya A Mitani. Doctors in acute and longitudinal care specialties emphasise different professional attributes: implication for training programmes. *Med Educ* 2009; **43**: 749-56.

本論文の著者は全て米国ボストンの Brigham and Women's Hospital の所属である。論文中には、研究対象になった病院名は書かれていないが、大きな教育病院とあるので、多分、著者らの病院で行った研究であろうと考えられる。この論文は、大きな教育病院の医師を急性期疾患医（麻酔科、救急部、外科）と慢性疾患医（内科と精神科）の2郡に分け、それぞれのグループが医師のプロフェッショナルリズムに対し、どのような考えを持っているかを Web-based のアンケートで調査したものである。プロフェッショナルリズムのアンケート項目は ACGME (Accreditation Council for Graduate Medical Education) の Outcome Project から 25 項目を抽出した。アンケートに答えたのは、急性期疾患医 252 名、慢性期疾患医 184 名の合計 436 名である。内訳は男性 259 名と女性 167 名、指導医 (fellow または attending staff) 246 名、レジデント (卒後1年から4年目) 188 名である。アンケート項目 25 から、まずは自分が重要と思うものを 10 個選ばせ、さらにその中で最も重要なもの 3 つを強制的に選ばせた。回答者達が選んだ項目を 6 つのカテゴリーに分けた: ① Relationships with patients, ② Moral and ethical, ③ Clinical competence, ④ Communication skills, ⑤ Accountability, ⑥ relationship with colleagues.

この中で、慢性期疾患医は有意に「Relationships with patients」(慢性期疾患医 76% に対し急性期疾患医 58%) と「Communication skills」(28% 対 18%)

を選んでいった。一方、急性期疾患医は有意に「Clinical competence」を選んだ (44% 対 29%)。この傾向には男女差も、経験年数による差もなかった。僅かに有意差があった項目は、経験年数での比較で「Relationships with patients」を選んだのが指導医 61% に対してレジデント 71% (P 値 0.04) であった。この結果から学生・研修医が学ぶ教育病院では専門分野によって医師としてのプロフェッショナルリズムに対する感覚が異なっていることが明らかとなった。著者らは教育プログラムを考える時にこの差を考慮し、麻酔・救急・外科の教育プログラムには「患者との関係性」を重視する内容を、内科・精神科プログラムでは「診療技能」を重視する内容を加えるべきであると結んでいる。

この研究は大教育研究病院で行われたものであり、ここでいう「慢性期疾患医」は日本でいう大学附属病院の内科医と精神科医に当たる。著者らも論文中で研究の限界点として地域医師を対象に調査しなかったことをあげている。地域医師のプロフェッショナル観がどのようなものかとても興味を湧くところである。医師が持つプロフェッショナル観は自分が置かれている医療環境により異なる。この価値観はその「場」が決めるものと考えられる。学生・研修医は臨床というその「場」の中で学び、その「場」が作り出す価値観をも学ぶ。そう考えると学生・研修医にさまざまな「場」を学習環境として提供していくことの重要性が見えてくるのではないだろうか。(福島 統)