

# Recommendations for Medical Education in Taiwan

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## Background

Biomedical research performed in Taiwan is published in top medical journals, and the latest therapeutic innovations, such as biopharmaceuticals, cardiac electrophysiology and robotic surgery are available in Taiwan. However, primary medical care in Taiwan currently is inadequate, and as the population of Taiwan ages, the need for primary care will increase. Good primary care is necessary to ensure that diseases such as hypertension, diabetes and cancer are detected and treated early, to identify people who might benefit from the latest therapeutic innovations, and to identify rapidly and respond effectively to emerging health threats such as multidrug-resistant pathogens.

Here, we report briefly a pathway of accelerated medical education that reduces the time spent in the classroom and increases the time spent learning clinical fundamentals. We propose widespread adoption of similar educational pathways and reform of other aspects of medical education in Taiwan, to facilitate the training of doctors who can provide the primary care needed by the people of Taiwan.

Six aspects of medical education in Taiwan contribute to the poor preparation of doctors to provide primary care. (1) Insufficient training

in clinical fundamentals including humanism, history taking, physical examination and the biopsychosocial model of medical care. (2) Insufficient training in quality improvement, including how to recognize improvement opportunities, how to motivate change, and how to improve quality by making systemic changes. (3) No formal training in teamwork. Teamwork is essential for quality medical care, but medical students are graded on individual performance. Similarly, teamwork is disregarded at more advanced levels of medical training. Consequently, teamwork is neglected in medical practice, which results in poor coordination among health professionals and therefore poor medical care.<sup>1</sup> (4) Insufficient outpatient primary care training. Current medical training primarily is hospital-based. Doctors have the knowledge and skills to provide high-intensity, high-technology, high-cost and acute medical interventions, but not to provide primary care. (5) Early specialization. When trainees specialize early, they truncate their education in fundamental clinical skills and focus on acquiring the knowledge and techniques of a narrow field of practice. As a consequence, they never gain the knowledge or the skills needed to provide primary care, or to teach it. (6) Finally, faculty physicians depend on fee-for-service National Health Insurance for their income, but this

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reimbursement system does not compensate them for teaching or developing their teaching skills. Consequently, the teaching practices and skills of faculty physicians are poor,<sup>1,2</sup> and a system of compensating them for teaching is needed.

Six structural aspects of medical training in Taiwan have contributed to a health system that provides high-technology acute care, but not comprehensive primary care. We must reform medical training to improve primary medical care in Taiwan. One aspect of reforming medical training is to reduce the time that students spend in classroom-based learning and thereby allow more time for learning clinical fundamentals, quality improvement, teamwork and outpatient care.

### **The National Taiwan University College of Medicine Experience**

In 1998, the National Taiwan University College of Medicine (NTUCM) initiated an ongoing two-step program to accelerate undergraduate medical education and to teach students in general clinical care before they commit to specialist training. In the first step, selected students entering their fifth year of medical school undergo 1 month of clinical skills preparation, and then undertake the clinical rotations usually done in the sixth and seventh years. In addition, more than half of these clinical rotations are designed to teach fundamental clinical skills, quality improvement and teamwork. At the end of the sixth year (instead of the usual seventh year) students graduate and are qualified to sit for the National Medical Certifying Examination. The second step of the program is a compulsory year of postgraduate training in general clinical skills in one of three specialties: internal medicine, surgery or pediatrics. Broad training continues during the year, for example, residents in surgery spend 1 month as internal medicine residents and 1 month as community medicine residents. Compared with students who receive traditional instruction, those selected for the two-step program are more likely to pass national board examinations

(100% vs. 80–97%), and have been rated as more proficient by their teachers for nine different parameters of clinical performance ( $p < 0.001$ ).<sup>3</sup> Although the outcomes of the NTUCM two-step program have not been analyzed to assess the impact on primary care, there is evidence that the classroom portion of undergraduate medical education can be shortened by 1 year, which allows an extra year for students to develop practical clinical knowledge and skills.

## **Recommendations**

### ***Implement the Postgraduate Year Residency (PGY) program nationwide by 2011***

From August 2003, the Department of Health in Taiwan promulgated a program of 3 months of broad education in the first postgraduate year, which consisted of at least 36 hours of basic training, and 1 month of training in general surgery, internal medicine and community medicine. From August 2006, residents began participating in the formal PGY program. The program is divided into two halves of 6 months each. The first half consists of 1 month of general clinical training, 1 month of basic community medicine, 1 month of community-related medicine, and 3 months of specialty training in internal medicine, surgery or pediatrics. To date, two-thirds have chosen internal medicine.<sup>2</sup> This half of the PGY program is organized and overseen by the Taiwan Joint Commission on Hospital Accreditation (TJCHA). The second half of the PGY program consists of 6 months of medical training in the resident's chosen specialty, and is organized and overseen by individual hospitals with reference to official guidelines.

We recommend the following: (1) Fully implement the PGY program in 2011. (2) Do not allow specialty training programs to offer trainees positions, and do not allow trainees to commit to specialty training programs, until after they have completed the PGY program. (3) Grade trainees in the PGY program (A, B, C and D, where A is "excellent" and D is "failing"). Explicitly

define grading criteria and apply them consistently across programs. (4) Encourage teaching hospitals to submit proposals for participation in the PGY program to the Department of Health or another suitable authority for official review and oversight. (5) Provide half of the salary of a trainee in the PGY program through the Department of Health. (6) Include the PGY program in the residency matching process. (7) Administer the PGY program through departments of medical education at teaching hospitals.

### ***Reform teaching, certification and training program accreditation***

Traditionally, medical students in Taiwan have been taught by lectures and graded by written examinations. These methods of teaching and grading devalue curiosity, creativity, humanism and teamwork, which are all critical aspects of providing good healthcare.

Supervising doctors, clinical teachers and program directors report that many trainees do not take an active role in learning, and encouraging trainees to do this will require changing the learning environment. The TJCHA has established a nationwide system for development of medical teachers, which includes a core curriculum and materials designed to help medical educators develop their skills in student assessment and providing feedback. Based on data collected by the TJCHA, when medical educators use these materials, trainees feel that their clinical experience is enhanced and their learning environment is improved.<sup>2</sup>

To enhance the clinical experience and improve the learning environment, there must be substantial changes in examination, certification and accreditation. Trainees must be held to specific, high standards to progress to the next level of training. Teaching hospitals also must be held to specific, high standards to maintain certification of their residency programs.

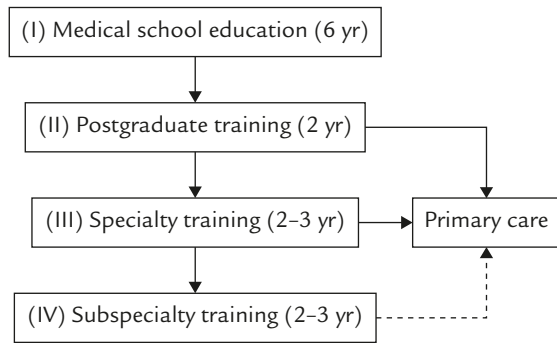
Medical education reform must start with undergraduate education. The recently published Medical School Objectives Project, a series of reports from the Association of American Medical

Colleges, could be a useful reference in this process.<sup>4</sup> Also, in the same way that certification should be used to enforce specific standards on postgraduate teaching programs, medical school accreditation should be used to enforce specific curriculum and teaching reforms. Medical schools in Taiwan should replace the traditional curriculum and lecture-style teaching with integrated, problem-solving, active learning and learner-centered programs, to improve undergraduate medical education and teach students life-long learning habits. Research has demonstrated that such programs can increase self-directed learning and improve educational outcomes.

The current national medical licensure examination in Taiwan focuses on pathophysiological medical knowledge, without addressing medical ethics or the doctor-patient relationship, and no requirement for demonstration of clinical skills. For certification, the Department of Health should require trainees to pass a core clinical skills examination similar to step 3 of the United States Medical Licensing Examination. This examination should be administered at the end of the PGY program and passing it should be a requirement, both for certification and entering specialty training. The core clinical skills examination should use standardized patients and objective measures of clinical performance, such as those in an objective structured clinical examination (OSCE). The Taiwan Association of Medical Education has established an OSCE task force, and is promoting actively OSCEs nationwide. A core clinical skills examination currently is required in the United States, Canada and Japan, and it is time for Taiwan to adopt modern methods of assessing qualifications for medical licensure.<sup>5,6</sup>

### ***Shorten medical school education to 6 years***

Six years of medical school followed by 2 years of general clinical training is standard in many countries including the United Kingdom and Japan.<sup>6</sup> Adopting a similar system in Taiwan has the potential to improve the quality of medical education and the medical care that is provided to the people of Taiwan (Figure).



**Figure.** Proposal for a new clinical training system. (I) Shorten medical school education to 6 years, with general education and humanities in the 1<sup>st</sup> and 2<sup>nd</sup> years; integrated basic medical sciences in the 3<sup>rd</sup> and 4<sup>th</sup> years; and clinical teaching in the 5<sup>th</sup> and 6<sup>th</sup> years. Internship will be provided after graduation. (II) A 2-year compulsory postgraduate training. The first year will be general clinical training comparable to the current intern year, but with higher standards. The second year will be clinical training in community medicine and general internal medicine, general surgery, or general pediatrics. (III) Successful completion of the 2-year program will be required for a doctor to enter general medical practice or to start specialty training. (IV) Determine the number of positions available for subspecialty training based on national needs.

### Reform reimbursement

Specific barriers to providing medical education are that there are too many patients seen per clinic in a teaching setting, and that long work hours do not allow time for learning or teaching, or for teachers to develop their teaching skills. The fundamental reason for this work overload is that reimbursement for clinical care provided in teaching settings is insufficient. Therefore, to improve medical education, the National Health

Insurance system will need reform, including that specific to the special needs of clinical care provided in a teaching setting. The Department of Health could subsidize the cost of clinical teaching.<sup>2</sup>

Of course, medical education is not responsible exclusively for poor primary care in Taiwan, and changes in medical education will not by themselves improve primary care in Taiwan. However, we think that the above changes in medical education are necessary to reach the goal of providing the primary care that the people of Taiwan deserve.

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