Medical Education: **Issues, Trends, Challenges & Opportunities**

By Prof Matthew C.E. Gwee

SUMMARY

Recent trends in medical education reflect major shifts in educational paradigms arising from reappraisals of the relevance and the effectiveness of traditional medical education in the context of fast changing, complex and ever increasing demands on the healthcare delivery system, including the changing patterns of disease. This article will briefly review the issues and current trends in medical education, and the challenges and opportunities posed to medical teachers in their quest to provide quality medical education to today's medical students to become the competent and caring doctors of tomorrow.

INTRODUCTION: CENTRAL MISSION OF MEDICAL EDUCATION

*"The **central mission** of **medical education** is to **improve the quality of health care** delivered by doctors and we must never fail to remember the central role played by patients as the ultimate recipients of our skills – what doctors do, and how and when they do it, depends on the **quality of medical education**. We need to get it right.*

(Bligh and Parsell, 2000)

Patients are the "ultimate recipients of [doctors'] skills"; so, "...what doctors do, and how and when they do it" will impact strongly on the quality of life of patients, including whether they live or die, when seeking the professional care and comfort of their doctors. An inappropriate medical intervention, for example inadvertently prescribing an overdose of a highly potent drug, can cause more harm to or even the death of a patient. Inappropriate spoken words can be disheartening and cause more discomfort and mental agony ("dis-ease") to the patient than was intended by the doctor.

Thus, medical teachers need to ensure that what medical students learn, how they learn and when they learn (what they need to learn) will prepare the students well for their future medical practice. In this context then, the quality of medical education that medical students receive will impact strongly on how well they will be equipped with the desired knowledge, skills and attitudes to subsequently function as competent and caring doctors who can "improve the quality of health care delivered" to their patients. In the educational preparation of medical students, therefore, medical teachers "need to get it right" to ensure the desired high quality of the end-products of medical education.

TRADITIONAL MEDICAL EDUCATION: THE UNHOLY TRINITY AND THE NEED FOR CHANGE

"Over the last 60 years, most medical schools have done little to correct the major shortcomings in the ways they educate their students, even though these deficiencies have been documented repeatedly."

(Association of American Medical Colleges, 1992)

"Medical education, with its intensive pattern of basic science lectures followed by an equally exhausting clinical teaching programme, was rapidly becoming an ineffective and inhumane way to prepare students, given the explosion in medical information and new technology, and the rapidly changing demands of future practice."

(Boud and Feletti, 1997)

Increasing concern over the shortcomings of traditional medical education has been a common theme expressed by medical educators over many decades. Compelling reasons well documented in the reports of the General Medical Council, UK (1993), World Federation for Medical Education (Walton, 1993) and the Association of American Medical Colleges (1994, 1998; Anderson and Swanson, 1993) have provided the main impetus and imperatives for the significant changing trends in medical education. Some insights into the pitfalls of traditional medical education will enhance understanding of the need for change and the global ongoing curriculum reforms in medical education. Three major issues (the *"unholy trinity"*) of concern have been identified:

- Highly Lecture-based Instruction

*"The scarcely tolerable burden of information that is imposed **taxes the memory** but **not the intellect**. The **emphasis** is on the **passive acquisition of knowledge**, much of it to become outdated or forgotten, rather than on its discovery through curiosity and experiment."*

(Education Committee, General Medical Council, UK, 1993)

*"...a steady diet of lecturing leads to **intellectual anaemia**."*

(Meyers and Jones, 1993)

Major concerns over a highly lecture based instruction include: students often become passive recipients (note-takers) of abundant information transmitted by teachers, and are seldom or never actively involved in the learning process itself; information overload with students resorting to rote-learning ('memorise, recall, regurgitate') as a 'survival mechanism' to pass highly content based examinations, testing more of skills in rote-learning rather than of principles, concepts and application of knowledge. Consequently, medical education is then focused on content knowledge acquisition as the main

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About the Author:

Matthew C.E. Gwee is a Professorial Fellow in the Department of Pharmacology, Faculty of Medicine, NUS. He is also currently the Interim Director, Medical Education Unit (MEU), FoM, as well as the Chairman of the faculty's Problem-Based Learning (PBL) Committee. He also serves as a Member of the faculty's Special Studies Module (SSM) Committee and the NUS University Committee on Educational Policy (UCEP). He has also served as Vice-Dean of the faculty (1980-1992) and as Head of the Department of Pharmacology (1987-1997). Professor Gwee has a Master of Education degree for Health Personnel and has a major interest in medical education.

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educational outcome, and this has a negative steering effect on student learning.

- Highly Discipline-specific Curriculum

  "…each department is responsible for some part of the education of a medical student, but no department should forget that it is no more than a part of the whole school which is responsible for the education of a whole student and the fulfillment of the overall objectives."

  (Miller, 1961)

  "…the ***pre-clinical/clinical divide****, … has been perpetuated to this day in many places, each part of the course proliferating without the moderating influence of the other and without a co-ordinated examination of the overall aims of the course."*

  (General Medical Council, UK, 1993)

  Traditionally, it was common practice for disciplines to vie for curriculum time and discipline dominance, with consequent imbalance of and bloated course contents more appropriate for the education of multidisciplinary "mini-specialists'! Such territorial mentality is not conducive to cross-disciplinary teaching. Thus, immersed in such an educational environment, medical students were involved mainly in compartmentalised discipline-specific learning and, consequently, often lacked the ability to integrate, evaluate and apply knowledge across disciplines to solve common medical problems. Such problems associated with the design and delivery of the medical curriculum have already been well documented by Abrahamson (1996) in his authoritative publication "Diseases of the Curriculum".

- Highly Teacher-centred Education

  "As teachers, we often fool ourselves in thinking that what we do is necessarily more important for student learning than other activities in which they engage. Our role is vital. However, if we place ourselves in the position of mediating all that students need to know, we not only create unrealistic expectations, but we ***potentially deskill students*** *by preventing them from developing the vital skills of effectively learning from each other needed in life and work. The skill of obtaining accurate information is not learned by being given accurate information by a teacher but through practice in discerning how to judge the accuracy of the information we receive."*

  (Boud, 2001)

  The role of the teacher in traditional medical education has been mainly that of the "sage-in-centre stage" with unquestionable wisdom and authority, and as the fountain of knowledge, i.e. teacher knows best and teacher knows most! Education then becomes highly centred on the teacher with little involvement of the students in the learning process itself. Thus, the main concern expressed about teacher-centred education is that it creates an authority dependency state in which teachers decide for students what to learn, how to learn and when to learn. Self-directed learning skills are, therefore, never nurtured and developed in students and, consequently, the critical need for lifelong continuing self-education, so essential to medical practice, is not inculcated within the student mindsets and in their attitudes to learning.

CURRENT TRENDS IN MEDICAL EDUCATION: SHIFTING THE EDUCATIONAL PARADIGMS

"Given the pace at which the horizons of medical science and technology expand, we can be certain that the doctors of tomorrow will be applying knowledge and deploying skills which are at present unforeseen. …But some of the present day art and science of medicine is fundamental to its practice and will certainly endure. ...For the rest, we can at best strive to educate doctors capable of adaptation to change, with minds that can encompass new ideas and developments and with attitudes to learning that inspire the continuation of the educational process throughout professional life."

(General Medical Council, UK, 1993)

"Concern is being expressed that substantial change in the orientation of medical education towards greater relevance to the needs of society is necessary, unavoidable, and urgent."

(Towle, 1998)

Current worldwide trends in medical education reflect major shifts in educational paradigms with retention of *"…some of the present day art and science of medicine [that] is fundamental to its practice and will certainly endure"*. In general terms, global reforms in medical education involve *shifting the educational paradigms*:

- to problem-based (or task-based) educational strategies that promote active-interactive learning in small groups;
- to integrated inter-disciplinary curriculum (aimed at maximising horizontal and vertical integration of the medical course); and
- to more student-centred (learner-centred) and self-directed learning.

In addition to the paradigm shift to a Student-centred, Problem-based and Integrated curriculum, the ***SPICES*** model for curriculum planning (Harden, Sowden and Dunn, 1984) also includes a shift from hospital *to* ***C****ommunity-based*, from a uniform (one-size fits all) course programme to *offerings of* ***E****lectives to further encourage self-directed learning*, and from a rigid *to a more* ***S****ystematic approach* in designing and planning the curriculum.

CURRENT TRENDS IN MEDICAL EDUCATION: LEARNING BEYOND JUST COURSE CONTENT AND KNOWLEDGE ACQUISITION

"…through years at an authoritarian medical school idealistic young doctors are moulded into rigid doctors who

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have lost much of their original ability to sympathise with patients and listen to their problem [and] ... when the fledgling doctor emerges to confront the world of his patients, the very process of becoming a physician will have rendered him incapable of dealing with the majority of problems that will face him."

(Melville and Johnston, 1992)

The end-product of traditional medical education has often been observed to be a graduate who has passively acquired abundant content knowledge *("...much of it to become outdated or forgotten")*, but finds difficulty in applying the knowledge to solve common medical problems. Moreover, the graduate also often lacks skills (communication, interpersonal, teamwork) required for the professional management of patients. In order to address these issues, current trends in medical education now emphasise the need for a medical curriculum in which student learning must go beyond simply course content and knowledge acquisition.

Definitive statements in the principal recommendations of the Education Committee of the General Medical Council of U.K (1993) clearly highlight the educational reforms that need to be implemented in the current approach to medical education, namely:

- substantially reducing the "burden of factual information imposed on students";
- enhancing "learning through curiosity, the exploration of knowledge, and the critical evaluation of evidence", as well as to "ensure a capacity for self-education... that extends throughout professional life";
- inculcating "Attitudes of mind and of behaviour that befit a doctor... with attributes appropriate to his/her future responsibilities to patients, colleagues and society in general";
- emphasising "communication skills and the other essentials of basic clinical method" throughout the course;
- giving prominence in the curriculum to "public health medicine... encompassing health promotion and illness prevention, assessment and targeting of population needs, and awareness of environmental and social factors in disease"; and
- adapting clinical teaching "to changing patterns in health care and ... provide experience of primary care and of community medical services as well as of hospital based services".

CURRICULUM REFORMS IN THE FAULTY OF MEDICINE, NUS

"...the NUS Faculty of Medicine needs to respond decisively and appropriately to the rapid changes in medicine and medical education, to ensure that the graduates are well equipped to meet the challenges of medical practice in the years ahead."

(Tan, 1999).

In the academic year 1999/2000, our Faculty of Medicine implemented a new undergraduate medical curriculum beginning with Year 1 of the medical course. The essential organisational components of our new curriculum include and embody most of the recommendations of the GMC, UK (1993). The main pedagogical underpinnings in the overall design and delivery of our new curriculum include student-centred, discipline-integrated, process-oriented and problem-based learning strategies.

CURRENT TRENDS IN MEDICAL EDUCATION: CHALLENGES AND OPPORTUNITIES

"Teaching requires an understanding of how students learn and the ability to craft instructional activities in the classroom and the clinic to optimize learning."

(Wilkerson and Irby, 1998)

"Critical to the success of our curriculum reforms are, of course, the teaching skills of our medical teachers. ... We need, therefore, to ensure that the teaching skills of our teachers are continually enhanced and upgraded, so that they can apply best teaching practices that will optimize the educational outcomes of student learning."

(Lee, 2002)

Implementation of the curriculum reforms in medical education will impact strongly on the design and delivery of the curriculum, student learning, assessment, teaching practices and the educational outcomes of student learning. As teachers are accountable to all stakeholders, it is imperative for medical teachers to reappraise their role to ensure that the quality of medical education that they provide can meet the greater challenges and ever changing demands of medical practice in this new millennium.

"An academic who only presents facts is not a teacher; a teacher is one who nurtures the learning process and thereby modifies behavior and patterns of thinking for a lifetime."

(Woosley, 1997)

Medical teachers need to challenge their own beliefs, behaviour, perceptions and assumptions about teaching and learning and, therefore, to enhance their own understanding of learning principles and the educational process. Discipline (content) expertise alone can no longer be assumed to ensure the competency and effectiveness of a teacher. Teachers need to seriously reflect on their own readiness to change their mindsets and attitudes to one that will be more consistent with the shift in educational paradigms. Thus, from the "sage-in-centre stage" role, teachers need to become the "guide-by-the side" who facilitate and nurture the intellectual and learning process. Teachers need to develop with their students partnerships and bonding in learning, and to encourage and empower their students to take greater initiative and responsibility to direct and to manage their own learning, and their own educational and personal development.

Learning in this digital age will also require teachers to explore how best to exploit technology to further enhance the educational environment for students. In this context, the traditional role of the teacher as the "know-all" and the "fountain of

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knowledge" needs to be viewed in perspective, and this has been clearly expressed by Bohuijs (1998): *"Today's imaging techniques, colour reproduction, computer simulations, videotaping, computer databases, and Internet facilities provide students with excellent opportunities to learn without requiring a teacher to transmit the available information. Students may no longer rely on a teacher's knowledge as the main source of information."*

The challenges that now confront medical teachers, as a consequence of the shift in educational paradigms, also present opportunities for self-reflection and self-enhancement, and for the personal and professional development of the teacher. It has already been pointed out that *"Learning to teach from experience alone can be a slow and painful process. Faculty development programs were begun to reduce the time required to learn to teach and to provide guidance for teaching improvement."* (Wilkerson and Irby, 1998) When medical teachers can combine their discipline expertise with sound pedagogical principles in their teaching, their medical students and, ultimately, patients and the community will be the beneficiaries of the education they provide.

Thus, in the educational preparation of today's medical students to become the competent and caring doctors of tomorrow, teachers need to get it right. ■