

## DISCUSSION PAPER

# A New Generation Of "Cross-Disciplinary" Physicians For The Millennium

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### Summary

*Medicine, and health care in general, are undergoing dramatic changes as the millennium approaches. One such change involves the development of new disciplines to ensure an efficient and holistic approach to health care. For example, medical informatics, ethics and jurisprudence, health policy and management, health economics, evidence-based medicine, patient-centred care, and alternative medicine all come under the umbrella of health care in the twenty-first century. There is, however, a lag in the training and recognition of physicians who are "cross-certified" in these fields. To meet the challenges of the health care system in the next millennium, there should be a truly innovative approach that transcends the arbitrary barriers of discrete disciplines. The medical community should involve not only clinical and basic science, but also the multiplicity of perspectives from the various non-medical disciplines to lead this change in the health care paradigm by embracing a broader vision. (HK Pract 1998;20:440-446)*

### 摘要

隨著社會發展，醫學及保健方式有著戲劇性的改變，其中一項改變是為了提高效率及整體性應運而生的訓練方法。比方說醫學資訊學、醫學倫理學、醫學法律哲學、保健政策與管理、保健經濟學、證據性治療，病者為中心的醫護療法及另類醫療法等，均在21世紀孕育出來，不幸的是對有關的訓練及確認往往比較落後。要滿足未來新紀元保健所須我們要有一個能凌駕於現時專橫制度的創新方法。醫療組織須要加入傳統科學及臨床科學外的多樣化非醫學訓練，好讓眼光更廣闊。

Consider the following scenario in the year 2010:-

Dr Judy Chan, a community family doctor, starts her Monday with a weekly 0730hr meeting of Integrated Health Services, Inc. (IHS). A brief scroll through the agenda on her computer screen reveals such familiar items as monthly financial narratives, cost-efficiency analyses of family

physicians in her practice network, minutes of the local patient-consumer control board, and so on. Along with her colleagues in ten other districts, she discusses issues online with teleconferencing in her own home office.

After the meeting, she drives her son, Chi-lam, to the Wanchai MTR station for school. After dropping Chi-lam off, she is on her way to the

local hospital, a secondary care centre of IHS, for rounds of her in-patients. There are usually only one or two such patients. Most of the others are cared for by outreach nurse practitioners and professional caregivers at home. Every morning, the nurses e-mail progress reports to Dr Chan, who reviews them together with the patients' laboratory and radiologic results downloaded from

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IHS's central computer. She then connects live with these patients using IHS's video communication software, *Virtual Rounds*. Soon thereafter, she sends her orders electronically to the caregivers at home as well as prescriptions to local pharmacies to be delivered to these patients.

By 1030, Dr Chan reaches her office for a meeting with IHS's ethics and medical jurisprudence committees. The topic of discussion today surrounds genetic engineering of certain "pathologic" personality traits as defined by the DSM-XI classification, the exact genetic mutations of which have been identified recently. Although genetic engineering has been commonplace in the last decade for various cancers and serious childhood conditions, their application to non-life-threatening problems is much more controversial. At the conclusion of their debate, they decide to solicit the help of IHS's in-house bioethicist and lawyer, who are also cross-trained in medicine.

After lunch, Dr Chan begins her regular Monday afternoon clinic. Her secretary has already downloaded medical records of the afternoon's patients onto her handheld computer, into which she inputs clinic visit notes. Her first patient is Kwok Wai-hong, a 39-year-old male presenting with a history and physical examination compatible with bacterial conjunctivitis. She refers to her palmtop computer to review the most recent literature on the subject using the Cochrane abstracts and other evidence-based medicine databases.<sup>1,2</sup> She decides to

treat this gentleman with antibiotic eye drops and correspondingly inputs the prescription into her computer. Dr Chan then proceeds to explore ongoing holistic patient-centred issues with Wai-hong. This part of the interview proves to be fruitful. Wai-Hong has been battling low back pain for months after an occupational injury last Autumn. His pain has eluded Dr Chan's conservative treatment as well as the expertise of numerous specialists in orthopaedics, neurosurgery and pain management thus far. His frustration with the problem has led to feelings of depression and marital tensions lately. Dr Chan recognises the importance of further intervention lest this continues to affect his psychological well-being as well as his marital relationship. On her handheld computer, she quickly checks for the availability of a reflexologist and Chinese herbalist in IHS's Department of Complementary Medicine and schedules him an appointment.

Dr Chan finishes her clinic at 1730hr. Before leaving the office, she forwards her patient database via e-mail to Dr Tsang Kin-kwok, one of her colleagues in the on-call group, who can then refer to the records should any of her patients request help afterhours. At day's end, Dr Chan picks Chi-lam up from his after-school programme, then drives home to prepare supper for the family.

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One obvious question springs to mind: is the above vignette realistic in 15 to 20 years' time? Or is this

medical fiction, much like American television dramas *ER* and *Chicago Hope*, as is currently in vogue? I think not. The technologic and scientific revolution has changed most aspects of our everyday lives and will continue to do so in the foreseeable future. Why should Medicine and Health Care be immune? The more appropriate questions should be: who is going to bring about the changes necessary to realise the above vignette? Are we training adequate numbers of physicians qualified in such diverse fields as medical informatics, ethics and jurisprudence, health care policy and management, health economics, evidence-based medicine, patient-centred care, and alternative medicine to fulfill the needs of the twenty-first century? Some say why not leave these jobs to computer programmers, lawyers, accountants, economists, statisticians, psychologists and so forth, who are specifically trained to deal with their respective areas. After all, this is the business practice of most industries. Coca-Cola does not hire programme analysts cross-trained in food chemistry to look after their computer systems; Sony's corporate counsels are usually not sound engineers by training; even the secretaries/ministers of health of most developed nations are not physicians. Once again, the uniqueness of medicine demands something extraordinary. In general, physicians who are "cross-certified" in these various fields have a deeper understanding of how health care works, are better at effecting change, and are more credible in the medical community than their lay counterparts. Take health care management,

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for example. Clinicians who are also well-trained in administration are distinctly positioned to excel in the business of taking care of patients on both a micro and macro level. They put patient-orientated care and evidence-based clinical outcomes ahead of financial imperatives. Only doctor managers, who have an intimate knowledge of both cardiovascular pathology as well as the exponential spirals of operating room expenses, can claim that they understand the impact of cutbacks on cardiac bypass patients. Granted that this may not always make a difference in the eventual outcome, their views are accepted and respected more readily than a business executive's, who may have never spent more than a few minutes in the coronary care unit. Physicians in management see and feel the results of their decisions every day in their patients, whereas the only time non-medical executives see a patient is on accounting spreadsheets in the cozy confines of a boardroom.

One further advantage of having clinicians straddle between different disciplines is that they can introduce the rigors of the scientific method to other disciplines and focus the research efforts of non-medical experts on patient-orientated outcomes applicable in the clinical setting. This is not a new concept. The symbiotic association between clinical medicine and basic science has been extremely productive for decades. When a clinician-scientist identifies a new problem at the bedside, she formulates a hypothesis and poses a clinical question. The question is translated into basic science research terminology.

Experiments are conducted in the laboratory to answer the research question at hand. She then tries to map out the pathologic process and applies the findings to treat her patient. This interchange of ideas between the clinical setting and other non-clinical disciplines (in this case, basic science) has been the fundamental driving force behind progress in medicine. As the millennium approaches, the formula for restoring and maintaining health will mean much more than just understanding and treating disease. Only by extending this interchange of expertise in research between clinical medicine and these seemingly unorthodox disciplines will we be able to keep our patients healthy. The maturity of this concept is signaled by various recent developments in the medical community. For instance, the much-lauded problem-based learning (PBL) method originated from the case study concept in business schools. The philosophy underlying the patient-centred method is arguably an extension of every businessman's motto, "The customer must come first and is always right!" Of course, there is the recent launch of several quality, peer-reviewed journals in areas such as evidence-based medicine and health care management,<sup>3,4</sup> the establishment of the first full-time degree course in Traditional Chinese Medicine at the Hong Kong Baptist University, as well as the inauguration of the Tzu Chi Research Institute in Vancouver, Canada's first centre for evaluating alternative and complementary medicine.

The fundamental question still remains: is the medical community

producing enough graduates cross-trained in medicine and business administration, informatics, patient-centred methodologies, law and ethics, and complementary therapy to fulfill the requirements of a changing health care system? First, educational institutions must take a leadership role in recognising the importance of this concept and to implement the necessary changes to facilitate its growth. Universities are to be commended on their efforts in recruiting top students with non-scientific backgrounds into medicine in the last decade. However, much work needs to be done with the undergraduate curriculum. It is high time to incorporate these inevitable changes in health care into undergraduate courses. As curriculum renewal is currently spreading across medical schools to accommodate the shifting paradigm of medical education from a disease-oriented, didactic approach to a patient-centred, problem-based focus, educators should ride the tide of change to introduce these various disciplines into the classroom. There are already signs of emerging interests from some North American schools of medicine who are spearheading this initiative. For instance, the University of Western Ontario has restructured their new curriculum to reflect the patient-centred method pioneered by its own faculty.<sup>5</sup> Harvard Medical School has teamed up with the Massachusetts Institute of Technology to develop the "Health Services and Technology" undergraduate programme to encourage cross-disciplinary research for its medical students in fields like engineering, informatics, molecular biology, and

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### Key messages

1. The world's largest service industry, health care, is undergoing a transformation of seismic proportions.
2. New disciplines such as medical informatics, ethics and jurisprudence, health policy and management, health economics, evidence-based medicine, patient-centred care, and alternative medicine complement the traditional fields of clinical medicine and basic science to create an efficient and holistic health care system for the twenty-first century.
3. There is a lag in the training and recognition of physicians who are "cross-certified" in these fields.
4. Medical schools, licensing authorities, and the medical community at large must seize the opportunity to lead this change in the health care paradigm by embracing a broader vision.

medical biophysics. Stanford and Boston Universities are now offering a combined MD/MBA degree programme, thereby fostering the training of medical managers. More similar hybrid degree programmes and collaboration between traditionally isolated professional schools of medicine, engineering, law, education and business administration are welcomed. Licensing bodies, for their part, should be proactive in the recognition and development of these hybrid specialties to allow for formal certification of graduates upon completion of their training.

The world's largest service industry, health care, is undergoing a transformation of seismic proportions. We need a truly innovative approach, transcending the arbitrary barriers of discrete disciplines, to meet the challenges of the health care system in the next millennium. We must involve not only clinical and basic science, but also the multiplicity of perspectives from the various non-medical disciplines. We must seize the opportunity to lead this change in the health care paradigm by embracing a broader vision and draw on all the available resources in our armamentarium. For in the end, this is not about improv-

ing a system. It is about the patients who are entrusting their care in our hands every day. Theirs is a trust we shall honour. ■

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