

Global minimum essential requirements in medical education

CORE COMMITTEE, INSTITUTE FOR INTERNATIONAL MEDICAL EDUCATION*

Institute for International Medical Education, White Plains, New York, USA

SUMMARY *The process of globalization is increasingly evident in medical education and makes the task of defining global essential competences required by 'global physicians' an urgent matter. This issue was addressed by the newly established Institute for International Medical Education (IIME). The IIME Core Committee developed the concept of 'global minimum essential requirements' ('GMER') and defined a set of global minimum learning outcomes that medical school students must demonstrate at graduation. The 'Essentials' are grouped under seven broad educational domains with a set of 60 learning objectives. Besides these 'global competences', medical schools should add national and local requirements. The focus on student competences as outcomes of medical education should have deep implications for curricular content as well as the educational processes of medical schools.*

Introduction

The Board of Trustees of the China Medical Board of New York, Inc. approved a grant to establish the Institute for International Medical Education (IIME) on 9 June 1999. The Institute's task is to provide the leadership in defining the 'global minimum essential requirements' ('essentials') of undergraduate medical programs. These 'essentials' were to consist of the medical knowledge, clinical skills, professional attitudes, behavior and ethics that all physicians must have regardless of where they are trained.

The task of defining the 'global minimum essential requirements' was given to the Core Committee, which comprised international medical education experts from different parts of the world. The IIME Steering Committee, consisting of eight senior education and health policy experts with broad national and international experience, advises the leadership of the Institute and helps guide the Core Committee. Further advice is provided by the IIME Advisory Committee composed of Presidents or senior representatives of 14 major international organizations active in medical education. The Committee provides a forum for information exchange and advice, and helps ensure that other efforts are complementary and not contradictory to the IIME process.

It was understood from the beginning that defining such competences or outcomes of the medical education process would have significant implications for medical school curricula. Medical school graduates should demonstrate professional competences which will ensure that high-quality care could be provided with empathy and respect for patients' well-being.

Graduates should be able to integrate management of illness and injury with health promotion and disease

prevention, and be able to work in multi-professional teams. In addition, they should be able to teach, advise and counsel patients, families and the public about health, illness, risk factors and healthy lifestyles. They should be able to adapt to changing pattern of diseases, conditions and requirements of medical practice, medical information technology, scientific advances, and changing organization of healthcare delivery while upholding the highest standards of professional values and ethics.

The IIME Project consists of three phases:

- **The first phase** (Phase I) '**Defining Essentials**', began with the establishment of the Institute for International Medical Education. Its task was to develop a set of 'global minimum essential requirements' ('GMER') drawn in part from standards that currently exist. These standards were to include the sciences basic to medicine, clinical experiences, knowledge, skills, professional values, behavior and ethical values. These 'essentials' were to represent only the core of a medical curriculum since each country, region and medical school also has unique requirements that its individual curricula must address. Hence, each school's educational program will be different but all will possess the same core.
- **In the second phase** (Phase II), the '**Experimental Implementation**' of the 'GMER' will be used to evaluate graduates of the leading medical schools in China. The schools will use the evaluation methods that are consistent with their experience, and have to cover all seven domains and 60 learning outcomes, in order to identify the strengths and deficiencies eventually found in the schools participating in this experiment. Efforts then will be made to improve all areas of weakness before a second evaluation is made. If a school meets all of the 'Essentials', it will be certified accordingly.
- **In the third** (Phase III) or '**Dissemination Phase**', the lessons learned and the processes used will be modified and offered to the global medical education community for their use. Hopefully, the 'essentials' will serve as a tool for improving the quality of medical education and establish a foundation for the international assessment of medical education programs.

Correspondence: Dr Andrzej Wojtczak, Institute for International Medical Education, 106 Corporate Park Drive, Suite 100, White Plains, NY 10604-3817, USA. Tel: +1 914-253-6633; fax: +1 914-253-6644; email: wojtczak@iime.org

*Core Committee members: Elizabeth G. Armstrong, Raja C. Bandaranayake, Alberto Oriol i Bosch, Alejandro Cravioto, Charles Dohner, Marvin R. Dunn, Joseph S. Gonnella, John D. Hamilton, Ronald M. Harden, David Hawkins, José Felix Patiño, M. Roy Schwarz, David T. Stern, Prasong Tuchinda, J.P. de V. van Niekerk, Andrzej Wojtczak, Zhou Tongfu

Background

Globalization forces are becoming increasingly evident in medical education. This is quite natural as medicine is a global profession and medical knowledge and research have traditionally crossed national boundaries. Physicians have also studied medicine and provided services in various countries of the world. Furthermore, human creativity demands that globalization includes activities in intellectual and cultural domains. Various multilateral agreements and conventions are opening doors to global mobility and encouraging the development of common educational standards, mutual recognition of qualifications, and certification processes by which professionals are allowed to practice their vocation.

Presently, there are about six million physicians worldwide, serving over six billion inhabitants. They receive their education and training in over 1800 medical schools throughout the world. Although, at first glance, global medical curricula appear similar, their content varies greatly. While there have been a number of near-successful efforts to evaluate the process leading to the MD or its equivalent degree, few of these have focused on the outcomes of their educational effort. However, there has never been an attempt to define the core or minimal competences that all physicians should possess at the completion of their medical school training and before they enter their specialty or postgraduate training. Finally, in some countries, there has been a proliferation of new medical schools without proper assurance of educational quality.

At the same time, health services and medical practice are undergoing profound changes forced by economic difficulties in financing healthcare systems. The increasing cost of health interventions and related cost-containment policies could threaten physicians' humanism and values. As a result, there is a need to preserve the goals of social benefit and equity in the face of these increasing economic pressure and constraints.

Rapid advances are occurring in biomedical sciences, information technology and biotechnology. These advances present new ethical, social and legal challenges for the profession of medicine and call for the preservation of a balance between science and the art of medicine. An important task of medical education is to prepare future doctors to be able to adapt to the conditions of medical practice in a rapidly changing healthcare environment. The challenge before the medical education community is to use globalization as an instrument of opportunity to improve the quality of medical education and medical practice.

In defining the essential competences that all physicians must have, an increasing emphasis needs to be placed on professionalism, social sciences, health economics and the management of information and the healthcare system. This must be done in the context of social and cultural characteristics of the different regions of the world. The exact methods and format for teaching may vary from school to school but the competences required must be the same. Thus, the concept of 'essentials' does not imply a global uniformity of medical curricula and educational processes. Furthermore, the global essential requirements are not a threat to the fundamental principle that medical

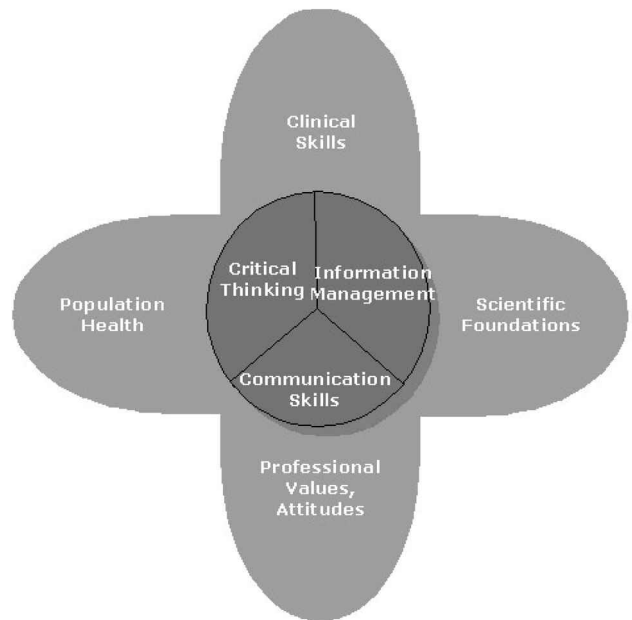


Figure 1. Domains of global essential requirements.

education has to identify and address the specific needs in a social and cultural context where the physician is educated and will practice. Finally, in pursuing the 'global minimum essential requirements', medical schools will adopt their own particular curriculum design, but in doing so, they must ensure that their graduates possess the core competences envisioned in the minimum essentials. They must in short 'think globally and act locally'.

The Core Committee grouped the 'essentials' under the seven, broad educational outcome-competence domains shown in Figure 1.

Professional values, attitudes, behavior and ethics

Professionalism and ethical behavior are essential to the practice of medicine. Professionalism includes not only medical knowledge and skills, but also the commitment to a set of shared values, the autonomy to set and enforce these values, and responsibilities to uphold them. The medical graduate must demonstrate:

- recognition of the essential elements of the medical profession, including moral and ethical principles and legal responsibilities underlying the profession;
- professional values which include excellence, altruism, responsibility, compassion, empathy, accountability, honesty and integrity, and a commitment to scientific methods;
- an understanding that each physician has an obligation to promote, protect, and enhance these elements for the benefit of patients, the profession and society at large;
- recognition that good medical practice depends on mutual understanding and relationship between the doctor, the patient and the family with respect for patient's welfare, cultural diversity, beliefs and autonomy;
- an ability to apply the principles of moral reasoning and decision making to conflicts within and between ethical, legal and professional issues including those raised by

economic constraints, commercialization of healthcare, and scientific advances;

- self-regulation and a recognition of the need for continuous self-improvement with an awareness of personal limitations including limitations of one's medical knowledge;
- respect for colleagues and other healthcare professionals and the ability to foster a positive collaborative relationship with them;
- recognition of the moral obligation to provide end-of-life care, including palliation of symptoms;
- recognition of ethical and medical issues in patient documentation, plagiarism, confidentiality and ownership of intellectual property;
- ability to plan effectively and manage efficiently one's own time and activities to cope with uncertainty, and the ability to adapt to change;
- personal responsibility for the care of individual patients.

Scientific foundation of medicine

The graduate must possess the knowledge required for the solid scientific foundation of medicine and be able to apply this knowledge to solve medical problems. The graduate must understand the principles underlying medical decisions and actions, and be able to adapt to change with time and in the context of his/her practice. In order to achieve these outcomes, the graduate must demonstrate a knowledge and understanding of:

- the normal structure and function of the body as a complex adaptive biological system;
- abnormalities in body structure and function which occur in diseases;
- normal and abnormal human behavior;
- important determinants and risk factors of health and illnesses, and of the interaction between man and his physical and social environment;
- the molecular, cellular, biochemical and physiological mechanisms that maintain the body's homeostasis;
- the human life cycle and effects of growth, development and aging upon the individual, family and community;
- the etiology and natural history of acute illnesses and chronic diseases;
- epidemiology, health economics and health management;
- the principles of drug action and its use, and the efficacy of various therapies;
- relevant biochemical, pharmacological, surgical, psychological, social and other interventions in acute and chronic illness, in rehabilitation, and end-of-life care.

Communication skills

The physician should create an environment in which mutual learning occurs with and among patients, their relatives, members of the healthcare team and colleagues, and the public through effective communication. To increase the likelihood of more appropriate medical decision making and patient satisfaction, the graduate must be able to:

- listen attentively to elicit and synthesize relevant information about all problems and understanding of their content;

- apply communication skills to facilitate understanding with patients and their families and to enable them to undertake decisions as equal partners;
- communicate effectively with colleagues, faculty, the community, other sectors and the media;
- interact with other professionals involved in patient care through effective teamwork;
- demonstrate basic skills and positive attitudes towards teaching others;
- demonstrate sensitivity to cultural and personal factors that improve interactions with patients and the community;
- communicate effectively both orally and in writing;
- create and maintain good medical records;
- synthesize and present information appropriate to the needs of the audience, and discuss achievable and acceptable plans of action that address issues of priority to the individual and community.

Clinical skills

The graduate must diagnose and manage the care of patients in an effective and efficient way. In order to do so, he/she must be able to:

- take an appropriate history including social issues such as occupational health;
- perform a physical and mental status examination;
- apply basic diagnostic and technical procedures, to analyze and interpret findings, and to define the nature of a problem;
- perform appropriate diagnostic and therapeutic strategies with the focus on life-saving procedures and applying principles of best evidence medicine;
- exercise clinical judgment to establish diagnoses and therapies;
- recognize immediate life-threatening conditions;
- manage common medical emergencies;
- manage patients in an effective, efficient and ethical manner including health promotion and disease prevention;
- evaluate health problems and advise patients taking into account physical, psychological, social and cultural factors;
- understand the appropriate utilization of human resources, diagnostic interventions, therapeutic modalities and healthcare facilities.

Population health and health systems

Medical graduates should understand their role in protecting and promoting the health of a whole population and be able to take appropriate action. They should understand the principles of health systems organization and their economic and legislative foundations. They should also have a basic understanding of the efficient and effective management of healthcare systems. The graduate should be able to demonstrate:

- knowledge of important lifestyle, genetic, demographic, environmental, social, economic, psychological, and cultural determinants of health and illness of a population as a whole;

- knowledge of their role and ability to take appropriate action in disease, injury and accident prevention and protection, and maintain and promote the health of individuals, families and community;
- knowledge of international health status, global trends in morbidity and mortality of chronic diseases of social significance, the impact of migration, trade, and environmental factors on health, and the role of international health organizations;
- acceptance of the roles and responsibilities of other health and health-related personnel in providing healthcare to individuals, populations and communities;
- an understanding of the need for collective responsibility for health-promoting interventions which require partnerships with the population served, and a multidisciplinary approach including healthcare professions as well as intersectoral collaborations;
- an understanding of the basics of health systems including policies, organization, financing, cost-containment measures of rising healthcare costs, and principles of effective management of healthcare delivery;
- an understanding of the mechanisms that determine equity in access to healthcare, effectiveness, and quality of care;
- use of national, regional and local surveillance data, as well as demography and epidemiology in health decisions;
- a willingness to accept leadership when needed and as appropriate in health issues.

Management of information

The practice of medicine and management of a health system depends on the effective flow of knowledge and information. Advances in computing and communication technology have resulted in powerful tools for education and information analysis and management. Therefore, graduates have to understand the capabilities and limitations of information technology and the management of knowledge, and be able to use it for medical problem solving and decision making. The graduate should be able to:

- search, collect, organize and interpret health and biomedical information from different databases and sources;
- retrieve patient-specific information from a clinical data system;
- use information and communication technology to assist in diagnostic, therapeutic and preventive measures, and for surveillance and monitoring health status;
- understand the application and limitations of information technology;
- maintain records of his/her practice for analysis and improvement.

Critical thinking and research

The ability to critically evaluate existing knowledge, technology and information is necessary for solving problems, since physicians must continually acquire new scientific information and new skills if they are to remain competent. Good medical practice requires the ability to think scientific

and use scientific methods. The medical graduate should therefore be able to:

- demonstrate a critical approach, constructive skepticism, creativity and research-oriented attitude in professional activities;
- understand the power and limitations of scientific thinking based on information obtained from different sources in establishing the causation, treatment and prevention of disease;
- use personal judgments for analytical and critical problem-solving and seek out information rather than to wait for it to be given;
- identify, formulate and solve patients' problems using scientific thinking based on obtained and correlated information from different sources;
- understand the roles of complexity, uncertainty and probability in decisions in medical practice;
- formulate hypotheses, collect and critically evaluate data, for the solution of problems.

To retain and advance competences acquired in medical school, graduates must be aware of their own limitations, the need for regularly repeated self-assessment, acceptance of peer evaluation and continuous undertaking of self-directed study. These personal development activities permit the continued acquisition and use of new knowledge and technologies throughout their professional careers.

The 'Essentials' alone are not likely to change graduates' competences unless they are linked to evaluation of students' competences. Therefore, assessment tools for the evaluation of educational outcomes are essential for the implementation of this document. This will ensure that graduates, wherever they are trained in the world, have similar core competences at the start of further graduate medical education (specialty training) or when they begin to practice medicine under the appropriate, nationally determined supervision. Such tools are under development by the specially established IIME Task Force for Assessment.

The presented 'global minimum essential requirements' are considered an instrument for improvement of the quality of medical education and, indirectly, of medical practice. It is hoped that the IIME project will have significant influence on medical school curricula and educational processes, thus paving the road to competence-oriented medical education.

Notes on contributors

ELIZABETH G. ARMSTRONG is Director of Medical Education at Harvard Medical School, Boston, MA, USA.

RAJA C. BANDARANAYAKE is Professor and Chairman of the Department of Anatomy, Arabian Gulf University College of Medicine & Medical Sciences, Manama, Bahrain.

ALBERTO ORIOL I BOSCH is Director of the Institute of Health, Department of Health and Social Security of the Catalan Government, Barcelona, Spain.

ALEJANDRO CRAVIOTO is Dean of the Faculty of Medicine of the National Autonomous University of Mexico, Mexico.

CHARLES DOHNER is Professor Emeritus of Medical Education at the University of Washington, Seattle, WA, USA.

MARVIN R. DUNN is Chairman of the Core Committee of the Institute for International Medical Education and Director of Residency Review Committee Activities for the Accreditation Council for Graduate Medical Education, Chicago, IL, USA.

JOSEPH S. GONNELLA is Director of the Center for Research in Medical Education and Health Care and Dean Emeritus of Jefferson Medical College in Philadelphia, PA, USA.

JOHN D. HAMILTON is Academic Director, Undergraduate Curriculum in Medicine at the University of Durham, Stockton Campus, Stockton-on-Tees, UK and formerly Professor of Medicine at the University of Newcastle, Australia.

RONALD M. HARDEN is Vice Dean for Medical Education and Director of the Center for Medical Education at the University of Dundee. He also holds the post of Secretary General of the Association for Medical Education in Europe, Dundee, Scotland, UK.

DAVID HAWKINS is Executive Director of the Association of Canadian Medical Colleges in Ottawa, Canada.

JOSÉ FELIX PATI O is President of the National Academy of Medicine, Bogotá, Colombia.

M. ROY SCHWARZ is President of the China Medical Board of New York, Inc. and Professor at the University of Washington and University of California at San Diego. He is also Chairman of the IIME Steering and Advisory Committees in New York, USA.

DAVID T. STERN is Chairman of the Task Force for Assessment for the Institute for International Medical Education. He also holds the positions of Assistant Professor of Medicine and Director of Standardized Patient Programs at the University of Michigan Medical Center in Ann Arbor, MI, USA.

PRASONG TUCHINDA is Dean of the Faculty of Medicine of Rangsit University and President of the General Practitioners/Family Physicians Associations Thailand, Bangkok, Thailand.

J.P. DE V. VAN NIEKERK is Dean Emeritus of University of Cape Town, Cape Town, South Africa.

ANDRZEJ WOJTCZAK is Director of the Institute for International Medical Education in New York and Professor in the School of Public Health and Social Medicine in Warsaw. Previously, he was Director of the WHO Research Centre for Health in Kobe, Japan and held the position of AMEE President.

ZHOU TONGFU is Vice Director of the Bureau of Education of Sichuan Province and Professor of Sichuan University Medical Center in Chengdu, People's Republic of China.

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