ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Report I

Learning Objectives for Medical Student Education

Guidelines for Medical Schools

Medical School Objectives Project

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> "The AAMC should stimulate changes in medical education to create a better alignment of educational content and goals with evolving societal needs, practice patterns, and scientific developments."

Taking Charge of the Future
(AAMC Strategic Plan)

In recent years, many observers of medicine have expressed concerns that new doctors are not as well prepared as they should be to meet society's expectations of them. This view is held also by some within the medical profession and, more specifically, the medical education community. To address these concerns, medical educators must understand how changes in society's views of health and disease and changes in the organization, financing, and delivery of health care shape expectations of physicians. They must then use this understanding to inform the design, content, and conduct of medical education programs.

In January 1996 the Association of American Medical Colleges (AAMC) embarked on a major new initiative - the Medical School Objectives Project (MSOP) - to assist medical schools in their efforts to respond to these concerns. The goal for the first phase of the project was to develop a consensus within the medical education community on the attributes that medical students should possess at the time of graduation, and to set forth learning objectives for the medical school curriculum derived from those attributes.

Background

Establishing learning objectives to guide the design, content, and conduct of an educational program is an important principle supported by educational theory and practice. Since publication of the Final Report of the Commission on Medical Education (the Rappeleye Commission) in 1932, the AAMC has periodically called on medical schools to develop learning objectives for their curricula. Indeed, in the early 1950s the Association itself developed a set of objectives to assist medical schools in changing their curricula in response to the changes in medical practice occurring after World War II. Over the next two decades, however, the purpose of medical student education changed; medical school was no longer intended primarily to prepare physicians for the independent practice of medicine. As a result, the objectives developed in the early 1950s became outdated and new objectives were needed.

In 1981, the AAMC created a panel on the General Professional Education of the Physician and College Preparation for Medicine (GPEP Panel) to develop strategies for improving the general professional education of the physician. The Association hoped that the GPEP Panel would lead not only to agreement on the knowledge and skills that all physicians should possess to practice medicine in the 21st century, but also would promote debate on the personal qualities, values, and attitudes that those pursuing careers in medicine should possess. In its final report in 1984, the panel asserted that all physicians regardless of specialty should possess a common foundation of knowledge, skills, attitudes, and values, and recommended that each medical school faculty specify the attributes appropriate for students graduating from its school and adopt learning objectives for the curriculum consistent with those attributes. In keeping with this recommendation, in 1985 the Liaison Committee on Medical Education (LCME) added to the accreditation standards for the medical student education program a requirement that "a medical school must define its objectives and make them known to faculty and students."

In the early 1990s the AAMC sought to learn how schools had responded to the recommendations of the GPEP Panel and other blue ribbon panels that had been established in the 1980s to review the state of medical education. This initiative - Assessing Change in Medical Education: The Road to Implementation (ACME-TRI) - revealed that few medical schools had delineated a coherent and comprehensive set of learning objectives for the medical student education program. To remedy this situation, the ACME-TRI recommended that the AAMC establish a task force to

develop a set of goals and objectives that could guide individual schools in establishing objectives for their own programs. The MSOP fulfills this recommendation.

This report marks the conclusion of the *initial* phase of the MSOP. Subsequent reports will be issued during the second, or implementation, phase of the project. In issuing this report, the Association reaffirms its longstanding commitment to the principle that the faculty of each medical school, working with the school's dean, is responsible for determining the learning objectives and specifying the curriculum for the school's educational program. The Association believes that the objectives set forth in this report can guide medical schools in developing their own objectives that reflect an understanding of the implications for medical practice and medical education of "evolving societal needs, practice patterns, and scientific developments." We hope that medical schools, during the second phase of the project, will develop their own learning objectives and use them to review and, if necessary, reform their curricula to ensure that their students have opportunities to achieve those objectives.

The Goals and Objectives of Medical Student Education

The goal of medical education is to produce physicians who are prepared to serve the fundamental purposes of medicine. To this end, physicians must possess the attributes that are necessary to meet their individual and collective responsibilities to society. If medical education is to serve the goal of medicine, medical educators must develop learning objectives for medical education programs that reflect an understanding of those attributes.

To gain insight into society's expectations of physicians reports issued by the Hastings Center and by a group of medical educators in Canada were reviewed carefully, and individual interviews were conducted with a group of scholars* of contemporary medicine in the United States. The Hastings Center report summarized the consensus views on society's expectations reached by the representatives of 14 countries that participated in the project. In the Canadian project, many citizen groups participated directly in the process that led to the definition of that society's expectations of physicians. Finally, each of the scholars who were interviewed contributed important perspectives on this issue based on their understanding of contemporary U.S. medicine.

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These activities revealed that society's expectations of medicine have changed over time to reflect contemporary values. For more that a quarter of a century the medical profession and the society at large have perceived the goal of medicine to be largely the cure of disease; to a great extent, all other aspects of medicine have been subordinated to this purpose. This view has had a major impact on the way doctors have been educated and on the culture of the institutions responsible for their education. Our society now recognizes the need for a broader view and wants doctors who can and will attend equally well to all aspects of health care.

During the initial phase of the MSOP, a consensus was reached among leaders of the medical education community on the attributes that physicians need to meet society's expectations of them in the practice of medicine. Those attributes are set forth below. Each attribute is followed by a set of learning objectives that reflect consensus on the contribution that the medical school experience should make toward achievement of those attributes. The learning objectives are purposefully broad in scope and general in nature since they are intended to provide a frame of reference for guiding medical schools in developing their own objectives.

Physicians must be altruistic.

Physicians must be compassionate and empathetic in caring for patients, and must be trustworthy and truthful in all of their professional dealings. They must bring to the study and practice of medicine those character traits, attitudes, and values that underpin ethical and beneficent medical care. They must understand the history of medicine, the nature of medicine's social compact, the ethical precepts of the medical profession, and their obligations under law. At all times they must act with integrity, honesty, respect for patients' privacy, and respect for the dignity of patients as persons. In all of their interactions with patients they must seek to understand the meaning of the patients' stories in the context of the patients' beliefs, and family and cultural values. They must avoid being judgmental when the patients' beliefs and values conflict with their own. They must continue to care for dying patients even when disease-specific therapy is no longer available or desired.

For its part the medical school must ensure that before graduation a student will have demonstrated, to the satisfaction of the faculty, the following:

- Knowledge of the theories and principles that govern ethical decision making, and of the major ethical dilemmas in medicine, particularly those that arise at

the beginning and end of life and those that arise from the rapid expansion of knowledge of genetics

- Compassionate treatment of patients, and respect for their privacy and dignity
- Honesty and integrity in all interactions with patients' families, colleagues, and others with whom physicians must interact in their professional lives
- An understanding of, and respect for, the roles of other health care professionals, and of the need to collaborate with others in caring for individual patients and in promoting the health of defined populations
- A commitment to advocate at all times the interests of one's patients over one's own interests
- An understanding of the threats to medical professionalism posed by the conflicts of interest inherent in various financial and organizational arrangements for the practice of medicine.
- The capacity to recognize and accept limitations in one's knowledge and clinical skills, and a commitment to continuously improve one's knowledge and ability

Physicians must be knowledgeable.

Physicians must understand the scientific basis of medicine and be able to apply that understanding to the practice of medicine. They must have sufficient knowledge of the structure and function of the body (as an intact organism) and its major organ systems and of the molecular, cellular, and biochemical mechanisms that maintain the body's homeostasis in order to comprehend disease and to incorporate wisely modern diagnostic and therapeutic modalities in their practice. They must engage in lifelong learning to remain current in their understanding of the scientific basis of medicine.

For its part the medical school must ensure that before graduation a student will have demonstrated, to the satisfaction of the faculty, the following:

- Knowledge of the normal structure and function of the body (as an intact organism) and of each of its major organ systems

- Knowledge of the molecular, biochemical, and cellular mechanisms that are important in maintaining the body's homeostasis
- Knowledge of the various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative, and traumatic) of maladies and the ways in which they operate on the body (pathogenesis)
- Knowledge of the altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions
- An understanding of the power of the scientific method in establishing the causation of disease and efficacy of traditional and non-traditional therapies
- An understanding of the need to engage in lifelong learning to stay abreast of relevant scientific advances, especially in the disciplines of genetics and molecular biology

Physicians must be skillful.

Physicians must be highly skilled in providing care to individual patients. They must be able to obtain from their patients an accurate medical history that contains all relevant information; to perform in a highly skilled manner a complete and a limited, organ system specific, physical examination; to perform skillfully those diagnostic procedures warranted by their patients' conditions and for which they have been trained; to obtain, interpret properly, and manage information from laboratory and radiology studies that relate to the patients' conditions; and seek consultation from other physicians and other health professionals when indicated. They must understand the etiology; the pathogenesis; and the clinical, laboratory, roentgenologic, and pathologic manifestations of the diseases or conditions they are likely to confront in the practice of their specialty. They also must understand the scientific basis and evidence of effectiveness for each of the therapeutic options that are available for patients at different times in the course of the patients' conditions, and be prepared to discuss those options with patients in an honest and objective fashion. Physicians must be able to communicate with patients and patients' families about all of their concerns regarding the patients' health and

well being. They must be sufficiently knowledgeable about both traditional and non-traditional modes of care to provide intelligent guidance to their patients.

For its part the medical school must ensure that before graduation a student will have demonstrated, to the satisfaction of the faculty, the following:

- The ability to obtain an accurate medical history that covers all essential aspects of the history, including issues related to age, gender, and socio-economic status
- The ability to perform both a complete and an organ system specific examination, including a mental status examination
- The ability to perform routine technical procedures including at a minimum venipuncture, inserting an intravenous catheter, arterial puncture, thoracentesis, lumbar puncture, inserting a nasogastric tube, inserting a foley catheter, and suturing lacerations
- The ability to interpret the results of commonly used diagnostic procedures
- Knowledge of the most frequent clinical, laboratory, roentgenologic, and pathologic manifestations of common maladies
- The ability to reason deductively in solving clinical problems
- The ability to construct appropriate management strategies (both diagnostic and therapeutic) for patients with common conditions, both acute and chronic, including medical, psychiatric, and surgical conditions, and those requiring short- and long-term rehabilitation
- The ability to recognize patients with immediately life threatening cardiac, pulmonary, or neurological conditions regardless of etiology, and to institute appropriate initial therapy
- The ability to recognize and outline an initial course of management for patients with serious conditions requiring critical care
- Knowledge about relieving pain and ameliorating the suffering of patients
- The ability to communicate effectively, both orally and in writing, with patients, patients' families, colleagues, and others with whom physicians must exchange information in carrying out their responsibilities

Physicians must be dutiful.

Physicians must feel obliged to collaborate with other health professionals and to use systematic approaches for promoting, maintaining, and improving the health of individuals and populations. They must be knowledgeable about the risk factors for disease and injury, must understand how to utilize disease and injury prevention practices in the care of individual patients, must promote healthy behaviors through counseling individual patients and their families and public education and action, must actively support traditional public health practices in their communities, and must be advocates for improving access to care for everyone, especially those who are members of traditionally underserved populations. They must understand the economic, psychological, occupational, social, and cultural factors that contribute to the development and/or perpetuation of conditions that impair health. In caring for individual patients, they must apply the principles of evidence-based medicine and cost effectiveness in making decisions about the utilization of limited medical resources. They must be committed to working collaboratively with other physicians; other health care professionals (including administrators of hospitals, health care organizations, and systems of care); and individuals representing a wide variety of community agencies. As members of a team addressing individual or population-based health care issues, they must be willing both to provide leadership when appropriate and to defer to the leadership of others when indicated. They must acknowledge and respect the roles of other health professionals in providing needed services to individual patients, populations, or communities.

For its part the medical school must ensure that before graduation a student will have demonstrated, to the satisfaction of the faculty, the following:

- Knowledge of the important non-biological determinants of poor health and of the economic, psychological, social, and cultural factors that contribute to the development and/or continuation of maladies
- Knowledge of the epidemiology of common maladies within a defined population, and the systematic approaches useful in reducing the incidence and prevalence of those maladies
- The ability to identify factors that place individuals at risk for disease or injury, to select appropriate tests for detecting patients at risk for specific diseases or

in the early stage of disease, and to determine strategies for responding appropriately

- The ability to retrieve (from electronic databases and other resources), manage, and utilize biomedical information for solving problems and making decisions that are relevant to the care of individuals and populations
- Knowledge of various approaches to the organization, financing, and delivery of health care
- A commitment to provide care to patients who are unable to pay and to advocate for access to health care for members of traditionally underserved populations

Conclusion

Improving the quality of medical education through curriculum renewal is a continuous process. Medicine must always be responsive to "evolving societal needs, practice patterns, and scientific developments." As circumstances change, medical educators must understand the meaning that these changes have for medical practice and medical education, and must renew the medical student education program accordingly.

The statement of necessary attributes presented in this report and the learning objectives derived from them provide medical school deans and faculties with a frame of reference for reviewing their school's curriculum. The Association is confident that if the design, content, and conduct of a school's curriculum are guided by the set of learning objectives presented in this report, the school's graduates will be well prepared to assume the limited patient care responsibilities expected of new resident physicians and also will have begun to achieve the attributes that fully trained physicians should possess to practice contemporary medicine.

The Association recognizes that medical schools are having to respond to unprecedented changes in the ways that medical care is organized, financed, and delivered. Over time these changes could undermine the integrity, financial stability, and traditional roles of these institutions and, thereby, impede the efforts of deans and faculties to improve their education programs. We hope, therefore, that medical schools will respond to the intent of this report with some sense of urgency. Schools should consider establishing a formal process for developing their own objectives

and for using those objectives to guide a review of their curricula. If curriculum changes are indicated, schools should consider whether their administrative structures and budgeting policies will support substantive curriculum renewal and, if necessary, make changes designed to serve that purpose.

The Association also recognizes that the learning objectives of an educational program are most valuable when the desired outcomes can be measured. That is, can one actually determine whether a student has achieved the objectives? At present, universally agreed upon outcome measures do not exist for all of the objectives set forth in this report. Although greater attention is now being paid to developing and implementing appropriate assessment methods, the paucity of suitable outcome measures presents a major challenge to the medical education community. Of particular importance, desired outcomes related to attitudes and values are difficult to measure. The Association hopes that the MSOP report will stimulate faculties to undertake efforts to develop assessment methods for each of the objectives set forth in this report. The AAMC will assist deans and faculties in this effort.

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