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Metropolitan areas face a health care crisis that demands attention to providing greater health care access, particularly for the poor. At the same time, medical schools that serve this clientele remain frozen in a post-World War II academic model of specialization and high technology with virtually no component of training devoted to primary care services or community-based education. Since the United States currently lacks alternatives for addressing this problem, the purpose of this article is to examine selected medical schools in developing countries as possible models for addressing the educational dilemma facing United States metropolitan medical schools.

Community-Based Medical Education: Models From Developing Countries

In part due to academic medical centers' inattention to community health needs, health care in the United States is now in a state of crisis. Metropolitan academic medical centers have remained virtually isolated from the health needs of the communities where they are located and which they supposedly serve. We will examine this problem first by focusing on metropolitan Chicago, and next by looking at the national situation. We will then describe how, for more than a decade a number of developing nations have reformulated their health resource policies so that greater numbers of their people have access to health care. Since that time many medical schools in these countries have abandoned their largely westernized, hospital-based approach to training physicians in favor of one that is community-based. We propose that certain community-based medical schools in developing countries can serve as potential models for addressing educational issues now facing United States metropolitan medical schools. We conclude with a series of recommendations as to how this can occur.

The U.S. Health Care Crisis

In the late 1970s, United States health concerns centered largely on the development of such advanced

medical technology as cardiac surgery, organ transplants, and specialty care that extended the lives of a select minority, and the United States dominated the international medical scene by exporting this health care technology. Today the story is quite different. With thirty-seven million Americans who are uninsured, the general lack of access to health care is an increasing and embarrassing problem for the country with the world's most technologically advanced and expensive health care system.

Access to care is worst for the poor. Eighty percent of minority children between one and four years of age have not received a full series of vaccinations. A 118 percent increase in reported cases of measles dramatizes the fact that decreased rates of immunization have begun to take their toll. Much of the illness among minorities and the poor is due to medically preventable and treatable conditions; yet in 1986, forty-three million Americans could not identify a regular source of health care, an increase of 65 percent over 1982. Finally, and most importantly, the United States infant mortality rate ranks seventeenth among all nations. These examples illustrate the ever-increasing inequities and deficiencies of our health care system.

There has been growing sentiment during the past two decades to transform our overly specialized health care delivery system by expanding the corps of primary care professionals who can provide care in ambulatory or outpatient settings throughout the nation's communities. Currently, simple access to outpatient care has become incredibly difficult for those who have no health insurance. Meanwhile, misallocation of resources and alarming increases in health care costs trouble governments at the national, state, and local levels.

One factor that has contributed to our serious health care problem is that academic medical centers have done virtually nothing to adapt their predominantly hospital-based mode of practice and medical education. In metropolitan areas where the poor and medically indigent are concentrated, medical schools remain frozen in a post-World War II academic model of specialization and high technology that has virtually no component of training dedicated to primary care health services or education. To document the pervasiveness of this problem, we examined the undergraduate curricula of the six medical schools serving metropolitan Chicago.

Six Schools, Many Communities, One Curriculum

We analyzed the most recent brochures and catalogs sent to prospective students by these six schools. Our interest was to determine the number and level of primary care experiences offered in the respective curricula; for example, family practice options available to students, the clinical opportunities in metropolitan outpatient settings, and the general emphasis on outpatient education.

None of the six medical schools require any primary care or outpatient experiences during the first two years, which almost exclusively are devoted to the study of basic science material. In one school 3 percent of the content in the preclinical years is dedicated to preventive medicine, biostatistics, and community health, representing the greatest emphasis on such content in any of the schools. One school did provide an optional experience for students in the first two years to select an ambulatory experience at the school's affiliated family health centers. In the second year students also could elect to do volunteer work at inner city schools as part of a community outreach program. This elective experience was unique among the curricula under review.

An analysis of the clinical years was even more disturbing. Three schools do not even have departments of family practice, a specialty that focuses on primary care. Among the remaining schools, only one currently requires a rotation in family practice, while another requires a one-month primary care rotation in the senior year. Most schools offered students electives in outpatient settings during the senior year and three had such electives available in urban settings with preceptors. However, the great preponderance of students' educational experiences in the first two years occur in lecture halls and, in the remaining years, in hospitals.

We conjecture that our findings regarding the curricula of the six Chicago medical schools are not unique, and reflect training in metropolitan medical colleges throughout the United States. Clearly these medical colleges will need to change their existing curricula radically in order to educate students in primary care in community-based settings. University teaching hospitals, affiliated metropolitan hospitals, and multiple neighborhood health clinics in all metropolitan areas provide abundant training sites for such education. There are networks of community-based comprehensive care centers in underserved areas, including clinics and not-for-profit community health centers funded by federal and charitable sources. A great many of these centers are located near medical schools and could be linked to them and other health sciences schools. However, as is the case in Chicago, most required primary care experiences in metropolitan medical schools consist of the standard four-week rotation in the clinics in a student's senior year with little, if any, attention given to community-based training. When such attention is given, it occurs long after the great majority of medical students have selected a residency specialty.

It appears to us, for the present at least, that leadership for redesigning medical school programs is not emanating from prestigious metropolitan academic health centers—once medical icons for the United States public and the rest of the world. Ironically, the community now appears to be the driving force in demanding changes that will make medical education re-

sponsive to the health care needs of the majority of the public. Here again, we look to Chicago for a case study in community pressure on health care institutions.

A Community Takes the Initiative

The Chicago metropolitan area is a microcosm of the national health care crisis, particularly in terms of access to health care. The rate of infant mortality is a case in point. Illinois' infant mortality rate is the sixth worst in the nation. In the Grand Boulevard neighborhood on Chicago's south side, the infant mortality risk stands at 255 per thousand, worse than that of Romania and Panama.

The battle against infant mortality demands attention to all stages of pregnancy, including family planning and counseling services, nutritional education, post-natal followup, and well baby care that provides routine immunizations and regularly available checkups. The reality, however, is that a great many women in metropolitan Chicago are reluctant to enter the existing public clinic system because they must then deliver their babies at Cook County, the only public hospital, which can mean for some a 50-mile trip, one-way.

In response to this and numerous other health care inequities, the Chicago and Cook County Health Care Summit was convened in 1989 by the governor of Illinois, the mayor of Chicago, and the Cook County Board president. The purpose of the summit was to examine and make recommendations on public health care coordination and delivery, access to services, and the preparation of regional manpower. The summit constituted an unprecedented meeting of leaders from three levels of government finally trying to address problems decades in the making. Public meetings were held and hundreds of community representatives described critical health care problems which garnered front page headlines and national attention.

The College of Medicine at the University of Illinois, the only publicly funded medical college in metropolitan Chicago, responded to the resulting public outcry that it re-evaluate its commitment to the community. Principles that emerged from the summit were debated and endorsed by the college and the university's Board of Trustees. Those related to medical education include:

- The College of Medicine is committed to taking a leadership role in the design and implementation of the public health care system of Chicago and Cook County.
- The College of Medicine supports the integration of academic programs with community-based, primary health care services in the public health system.
- The College of Medicine supports the development of primary health care

training programs for medical students and residents and health service research programs in community-based sites.
- Special efforts will be made to attract qualified minority graduates to primary care residencies and to faculty positions within the university.

The principles agreed on by all parties in the Chicago Summit place an emphasis on primary health care training in community-based sites, increasing the number of primary care faculty, and providing institutional leadership for improving access to health care, and developing health personnel. Such an institutional transformation is a new and challenging concept for a metropolitan college of medicine, and it is a rare event in any United States medical college. At this time, when models would be useful for planning and development, the experience of the industrialized world is limited with regard to institutional reform for primary care. We must look elsewhere for experience and knowledge, principally to developing countries where medical institutions have taken the lead in health care reform.

Providing Leadership for Health Care In Developing Countries

By the 1970s, it had become evident that disease constellations and factors which affected access to health care in developing nations were different from those in the United States, Great Britain, Europe, and Canada. Physicians from the developing world who had studied overseas returned to their homelands with little knowledge of the problems of their own people, and found the cost of medical care had become prohibitive. Western concepts of medical practice had failed the developing world. Health care methods and technology needed to become universally available, accessible, and less costly.

In 1978, the USSR invited the World Health Organization (WHO) and United Nations Children's Fund to hold jointly the International Conference on Primary Care in Alma-Ata, capital of the Kazakh Soviet Republic. This conference was an international event in which countries agreed to policy reforms that would no longer channel the bulk of their resources into building and staffing hospitals. Governments, which previously had modeled health care systems on those of the West, would now promote the concept of primary health care as a major focus of economic and social development. Using primary care as the major mechanism for universal health care, emphasis would now be placed on the prevalent diseases of the community and on the health of children and mothers. This comprised the Alma-Ata statement and was summed up by the slogan "Health for All by the Year 2000." The United States was represented at this meeting and hosted numerous receptions, but apparently did not believe that this new doctrine was worth heeding.

For the medical profession, the Alma-Ata Conference served as a springboard for international scholarly exchange on the subject of community-based medical education. In 1979, scholars and educators from nineteen universities throughout the world established the international Network of Community-Oriented Educational Institutions for Health Sciences, now a consortium of approximately fifty medical schools. The major goal of the consortium is to strengthen member schools, to encourage and support the development of community-oriented medical schools throughout the world, particularly in developing countries.

Results of innovations from several of these schools are useful as models of how institutions have met the challenge of primary care education for heath personnel. For this discussion, we have selected several examples of institutional reform emanating from the network. Each institution is characterized by a significant method used for changing the emphasis of medical training from Western-style, medical specializations to community-based, primary care.

Models of community-based, primary care: medical education programs

Hands-on experience for students. At the University of Ilorin, Nigeria, medical students are sensitized to community health needs from the beginning of their student careers. Previously, faculty felt isolated and students were frustrated about the discrepancy between the accumulation of theoretical knowledge and lack of practicality in the curriculum. Faculty developed a curriculum for experiential learning with real patients and problems showing the effects on health of culture, politics, environment, and behavior. Groups of students are assigned to communities and jointly investigate community health issues, studying for example, the nutritional status of children in poor areas through such simple methods as measuring upper-arm circumference because even basic items such as weighing scales are unavailable. Students also learn first-hand about the Guinea-worm by interviewing, examining, and treating members of the community. Students conclude that the benefits of community experiences are that learning can be greatly facilitated by direct confrontation with concrete health problems; that the community approach allows them to observe health and disease in relation to the environment and people's habits; and that education which prompts students to engage actively in their studies is highly motivating. A statement from a student report is revealing: "We have had the opportunity to do creative work, tackling problems as they arise, formulating possible hypotheses from observations. And the problems and challenges we saw open to a medical doctor stimulated our interest more toward the study of medicine."

Problem-solving for teaching and learning. Situated between the Blue and White Niles, Gezira is the most densely populated area in the Sudan. The faculty of medicine, one of four faculties of the newly established University of Gezira in Wad Medani, has introduced a community-oriented curriculum that focuses on problem-solving as the mechanism for teaching and learning. The aim is to produce community-minded doctors who will be lifelong learners. Although problem-based learning is not a new concept in medical education, the application of the method to an entire medical school is unusual. The study problems selected are based on the nation's health priorities and real life problems in Gezira rather than imitating the curricula of Western schools of medicine. Students work in groups, thereby refining both their diagnostic and social skills while developing an attitude of teamwork. A problem-based method of teaching with an emphasis on social learning enhances the community perspective. Students pay attention to the *community* whether expressed through epidemiological studies, group work, or the focus given to the psychosocial aspects of disease.

From the start, students in the Gezira curriculum study basic sciences along with clinical sciences, an approach that differs from most Western medical education in which two to three years of basic science precedes any clinical experience. In the Gezira curriculum, for example, the study of anatomy occurs in surgery in relation to some relevant patient problem. Students interview, examine, and discuss problems with these patients, an approach remarkably different from laboratory dissections of dead bodies. Evaluation studies show that the Gezira approach has had great impact on the community in initiating and increasing services and has stimulated national discussion about the strengths of community-based medical education.

Applied epidemiology. No discussion of community-based medical education is complete without reference to the medical school of Ben Gurion University at Beer Sheva in Israel. While Israel is not a developing nation, this experimental school addressed the same problem—that of meeting the health care needs of an underserved population in the Negev, the southern region of the country. Much has been written about Beer Sheva during its sixteen-year history. Now famous as an international center for training health personnel, Beer Sheva initially set forth three objectives: to merge medical education and medical care; to produce primary care-oriented doctors; and to improve the health and health care of the population of the Negev region. For this discussion, we will focus on *improvement of the community's health*, an explicit public health objective which is a logical and imaginative educational extension of the concept of community-oriented, primary care.

One unique component of the Beer Sheva primary care curriculum is the

development of students' community-oriented skills for data collection and problem identification through family and community projects. The underlying concept is that physicians must treat the patient within the context of the family and be committed to analyzing and solving the problems of the community. For the family component, students gather data not only on a patient's history and physical condition, but also on a three-generation family tree, major problems of family members, intrafamily relationships, household family data, and family support systems. From these data they derive a family problem list, management plan, and prognosis. For their community involvement, students take on a community project that might involve studying anemia in children, cholesterol levels in kibbutz members, or common medical problems in a neighborhood clinic. Students work on these projects with an epidemiologist in order to develop attitudes about health and health care for the community. The curriculum also is performance-based, and students are expected to show the results of their work through family and community project presentations, on which their evaluations are based.

Social Medicine. Since the 1950s Latin American countries have been developing and practicing *Medicina Social*, a concept that focuses on social processes as the matrix for disease. The *Medicina Social* perspective views the practice of medicine as transforming the health conditions of the country rather than curing people of disease. This change in the conventional medical paradigm came about because of a worker's movement which provided the social roots, and a university movement which legitimated social medicine as a discipline or field of inquiry. In the 1960s, researchers began to rethink health and disease, specific types of problems usually studied, traditional conceptualization of disease vectors, researchers' choice of analytic concepts for studying problems, and the relationship between the researcher and the problem studied. In the 1970s, with the blending of Marxist theory into the social sciences, emphasis was placed on social class and the worker. What this has done for medical education is to shift government spending to address the needs of the middle class and the poor and to introduce more economics, anthropology, and sociology into the conceptualization and practice of medicine in the universities.

Two institutional strategies for training health personnel have resulted from *Medicina Social.* With technical assistance from the Pan American Health Organization, health professions schools have introduced the concept of "la integracion docente-asistencial" (IDA). Loosely summarized, IDA attempts to weave together the educational efforts of students, teachers, and health personnel with the health needs of the community. The conceptual bases are epidemiology, the community as having not only a geographical but also a particular social dimension, and a curriculum based on the

health care needs of the community. For several decades, medical schools in Latin America have been developing new educational models based on IDA in collaboration with local health services where teaching occurs with families, and in communities in outpatient clinics, health centers, rural posts, and workplaces.

Reform at the institutional level. The preceding examples demonstrate how medical schools have introduced primary care, community-based concepts into their programs. Other schools have initiated reforms stressing ideology and changes in attitude that begin with the teaching faculty or the institution itself. The following discussion highlights reform strategies that have not only turned two schools in a new direction, but influenced policies and practices of governments and ministries of health, beyond even their national boundaries.

Developing a critical mass of community-based medical faculty. A few years ago, the faculty of medicine at Suez Canal University (FOMSCU), Ismailia, Egypt, hosted a national conference that lamented the state of medical education. Curriculum had not been changed in fifty years despite vast societal changes, and students were stuffed with heaps of theory and little practice. In response to this situation, FOMSCU designed in the early 1980s a completely problem-based and community-based medical school that was radically different and unique in Egypt. FOMSCU leaders were concerned about maintaining this innovation and selected a strategy for institutional development. They established a critical mass of their faculty who would become knowledgeable about their own curricular innovations, as well as medical education and leadership. This was accomplished by providing for thirteen physicians from FOMSCU a master's degree program in medical education leadership from the University of Illinois at Chicago. These faculty all were graduated within three years and now form the core of a new center for research and development in Ismailia which functions as a catalyst and advocate for community-based and problem-based medical education nationally. Within the last few years two other medical schools in Egypt have begun to adopt very comparable curricula.

Institutions as leaders. At the 1987 national conference on the status of medical education held at the All India Institute for Medical Science (AIIMS) in New Delhi, key questions were raised about the social relevance of universities and their role in health. Government and health care leaders underlined the importance of attending to the needs of the community and set forth plans for national reform. The strategy consisted of forming a consortium of four leading institutions (AIIMS) in New Delhi, the Christian Medical College at Vellore, the Jawahalal Institute of Post-Graduate Medical Education and Research at Varanasi, and Benaras, Hindu University, Institute of Medical Sciences at Pondicherry as lead institutions which began reform in their own schools. Later, each of these institutions joined

with four others to assist with evaluation studies as a preliminary step for reform. After this is accomplished, ten other schools in the north and south will begin the process of educational change to resemble an established program such as that of the Christian Medical College.

The Christian Medical College at Vellore is a good example of a training institute for doctors, nurses, and paramedical personnel who are prepared to function both in highly technological settings as well as in a situation with limited resources. Training in community health consists of sending students in groups of two to three to live with members of the community and to conduct household studies on particular problems such as the nutritional status of children, prevalence of filariasis and scabies, the role of traditional practitioners, and social problems of old age. Students also do field surveys of morbidity and mortality in relation to health services, and plan programs for specific populations. Finally, a one-year internship as "basic doctor" provides students with elementary knowledge and skills for community practice. Schools with less experience in community-based medical education can apply components of this program within their own institutions. As one of the leading medical schools, the Christian Medical College offers consultation, exchange of faculty, and technical advice for the reform of medical education throughout India.

Recommendations to United States Metropolitan University Medical Schools

The preceding cases remind once again that scholarly exchange stimulates new approaches to problems. In the past, United States metropolitan universities exported intellectual traditions and technological skills. For the problem of educating future physicians with a true community orientation, however, it seems that medical educators need to become importers by asking the question: What can metropolitan universities learn from the work of colleagues in other countries? Clearly many of the strategies utilized in the medical colleges just described could be adapted, or even adopted, within United States metropolitan academic medical centers.

The following recommendations may bring about such changes. First, it seems essential that one United States metropolitan academic medical center take the lead in inviting key health professions leaders (such as deans and associate deans) from other metropolitan universities to address the medical education problems discussed in this article. Such a conference would resemble the efforts of the All India Institute and could identify several schools that might work collaboratively toward developing community-based, primary care training programs in metropolitan settings. A Metropolitan Medical School Conference on Primary Health Care is likely to be supported by such foundations as W.K. Kellogg and Robert Wood Johnson,

both of which are keenly interested in funding primary health care and community-based education initiatives. A series of conferences would assist in the formulation of research problems or educational issues unique to metropolitan medical schools. Such conferences could also trigger the creation of an informal network of metropolitan medical and related health sciences schools. Such a network would allow an ongoing exchange of experiences and ideas. Leaders from developing countries who are implementing community-based medical education programs would be useful consultants and collaborators for comparative educational research.

Second, those metropolitan medical schools that are interested in making substantive changes in their educational programs would be provided with a source of support by linking with the International Network of Community-based Educational Institutions for Health Sciences, now headquartered in Maastricht, the Netherlands. Such a move would initiate and define an international subgroup of medical schools having special interests in the problems of metropolitan universities with regard to community-based medical education. The network would benefit, and United States metropolitan universities would find an invaluable source of information, an international pool of consultants, access to international health organizations such as the WHO and its regional offices, and opportunities for learning about medical education worldwide.

Following the example of the medical school at Gezira, an exchange of faculty and students for short-term or extended periods of study would enhance programs of United States metropolitan universities. Visiting scholars and students from within the United States or from abroad would provide new insights into research or educational programs having an emphasis on the community. Furthermore, scholars from a variety of disciplines—public health, medicine, associated health sciences, education, and the social and behavioral sciences—could contribute to defining elements of the medical school curriculum and research that would enhance the national and international dialogue on medical care that emphasizes the needs of the community.

Suggested Readings

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Erratum

[Editor's Note: Due to editing errors at the beginning of Daniel H. Perlman's article on "Diverse Communities" in our inaugural issue (p.89, Vol. 1, no. 1), the following text should be substituted for the first page of the article.]

One characteristic of a metropolitan university that distinguishes it from other institutions of higher learning is its extensive involvement with and its impact on the metropolitan community it serves. A metropolitan university may be located amongst other tall buildings without an identifiable campus, as is Roosevelt University in Chicago, or it may be slightly outside the business district on its own separate campus, as are the University of Massachusetts at Boston and the University of Illinois at Chicago. It may be bordered by an affluent residential community, such as Beacon Hill in Boston or Georgetown in Washington, or an impoverished one; it may be proximate to commercial or industrial neighbors. Metropolitan universities are either independent or public. But in whatever setting and whatever sponsorship, they are intimately connected with the larger metropolitan community.

Much of this extensive involvement with the community is initiated by the metropolitan university itself. Some is initiated by others who seek to have it serve a specific purpose with which they are involved, such as improved schools, neighborhood stabilization, or economic growth; some by people who may feel threatened or aggrieved by the university's presence or its plans for future growth. Most community involvement is cordial, cooperative, and collaborative as the university and the community work together to advance parallel and mutually beneficial interests. Community interaction can involve negotiated agreements or litigation when competing interests are at stake. Far from being an ivory tower removed or detached from the surrounding world, the metropolitan university is an enterprise embedded in the community and linked to its environment by a complex web of relationships, expectations, mutual needs, and opportunities for benefits. The extent and intensity of these involvements distinguish