

DAVID S. GREER, M.D.
Associate Editor

International Medical Education Network of Community-Oriented Educational Institutions for the Health Sciences

HENK G. SCHMIDT, Ph.D., VICTOR R. NEUFELD, M.D.,
ZOHAI M. NOOMAN, M.D., and TOYE OGUNBODE, M.D.

In Ilorin, Nigeria, a first-year medical student of the University of Ilorin is preparing for her first six-week rural posting. She will work in a Shao village in Moro, a district of 300,000 residents where care is provided by just one physician. Her assignment is to act as an assistant to the physician and the other health care workers in the area and to provide simple health care under supervision. In addition, she will undertake a survey investigating the prevalence and causes of summer diarrhea in newborn infants. Her medical school hopes that through this experience she will acquire a deep understanding of the real health problems of her community and of her possible role in alleviating the burden of illness.

Within the medical education community, there is an increasing interest in providing students with experiences like the one just described. For instance, the Edinburgh Declaration,¹ adopted by the World Federation of Medical Education and by many governments and regional medical education bodies, calls for a worldwide change in health professions education such that the actions of graduates will contribute to the improved health status of the population:

"1. Enlarge the range of settings in which educational programmes are conducted, to include all health resources of the community, not hospitals alone. 2. Ensure that curriculum content reflects national health priorities and the availability of affordable resources. 3. Ensure continuity of learning throughout life, shifting emphasis from the passive methods so widespread now to more active learning, including self-directed and independent study as well as tutorial methods. . . ."

These statements reflect the ideas in the 1987 AAMC report "Physicians for Twenty-First Century."²

The Network of Community-Oriented Educational Institutions for Health Sciences represents a group of schools that have pioneered in this area for more than ten years. In doing so, they have gained

experience that may be of use to others who are planning to take a similar direction.

Network Goals

Nineteen like-minded medical schools established the network in 1979, at the instigation of the World Health Organization (WHO). By that time, it was felt that medical education was no longer responsive to the health needs of large segments of the population, both in the industrialized and in the developing world. Two different but related problems were observed.

The first problem was felt most deeply in rural areas in Africa and Southeast Asia but was also felt in medically underserved areas such as rural New Mexico and northern Canada, and in the inner-city slums of large metropolitan centers. It is the problem of unequal access to health care. About 60% of the world's population cannot consult a physician when needed. Graduates of medical schools tend to practice where opportunities for private practice exist. They want to work in places that have adequate technical resources and educational facilities for their children and in places where they themselves came from originally, the middle-class neighborhoods of big cities or medium-sized towns. The problem is particularly dramatic in the developing world because its graduates tend to leave for overseas studies and not return. Many of the nurses and other health care personnel decide to remain in the United States and in the Arabian peninsula; in the Philippines close to 70% of each graduating class of medical students and nurses do not return from overseas studies.³

The second problem has to do with the nature of medical education itself in that students are typically trained within a hospital context. Their clinical training takes place in tertiary care hospitals that have facilities not available elsewhere in the country and certainly not available in the places where students are supposed to

work after graduation. Hence, students generally have serious trouble adapting to environments alien to those in which they were trained. In addition, the population of patients seen in an academic tertiary care setting by no means resembles the populations normally seen by physicians. People who are referred to an academic center tend to be more seriously ill, suffer from more uncommon diseases, and show more atypical symptoms as compared with the "normal" population of patients. White and colleagues demonstrated that in the course of their training students see only 1% of the spectrum of patients normally seen by physicians in the community.⁴

In the late 1950s and in response to these problems, WHO and other organizations began to encourage the establishment of departments of community medicine in medical schools. This approach, however, did not seem to work as intended. Although these departments accomplished many good things, their status within an academic environment forced them to consider the community as a laboratory and to use students as data gatherers rather than involve them in the community to learn and gain the necessary experience to function as a physician in later professional life. In addition, exposure to community problems was so limited in time and so peripheral to the objectives of most schools that these experiments were bound to fail. However, some programs, such as those of the departments of community medicine at Aga Khan University in Karachi, Pakistan, and at Christian Medical College in Vellore, India succeeded.

The group of representatives of 19 medical schools that was brought together by WHO in Kingston, Jamaica in 1979 had decided independently not to make the same mistakes and pioneered a radically different approach. Rather than having a single department oriented towards the community, these institutions had adopted an approach in which the problems of communities played a major role in determining the curriculum. In addi-

tion, these schools emphasized problem-based learning, mainly because of its emphasis on actual health problems as a stimulus for learning and the promotion of student independence in learning.⁵ These two characteristics were considered important for preparing a health professional who is able to creatively and independently solve health problems. Third, the schools recognized that an active involvement with the regional health care system was mandatory if the strategy for change, as stated in its academic objectives, were to succeed. At the Jamaica meeting, these representatives concluded that they would be unable to accomplish these goals without each others' help. In this respect, the establishment of the network can be considered an attempt at enabling schools to strengthen each other's efforts in this domain.

At the meeting in Kingston, the schools established the aim and objectives of the network. The general aim of the network is to provide mutual support to member institutions that wish to adapt their curricula to the health needs of the communities they serve. There are five primary goals:

- Helping membership institutions realize the importance of community-oriented learning and appropriate instructional methods
- Strengthening of faculty capacities related to community-based education
- Developing technologies, approaches, methodologies, and tools appropriate to a community-oriented curriculum, such as problem-based learning
- Promoting population concepts in the health services system and the curriculum
- Assisting institutions in countries that have a political intention to introduce innovations in the training of health personnel, with the ultimate goal to improve health care and to contribute to the achievement of "Health for All"

Community-oriented Education

A community-oriented medical curriculum is a program whose content takes into account the major health problems afflicting the population served by the program graduates.⁶ This definition implies several things. First, curriculum content is no longer defined by the internal structures of the disciplines contributing to it. Rather, these disciplines are relevant to the curriculum to the extent that they

contribute to a deeper understanding of the problems that define the curriculum.

Second, the programs differ from each other depending on the specific natures of the priority health problems in particular populations. Why should the University of Khartoum medical school in The Sudan have the same core curriculum as the University of Cambridge, England, when these countries have few health problems in common?

Third, these curricula are highly adaptive to changes in the environment, because today's problems may not be tomorrow's. An example of this adaptability is provided by a curriculum reform at McMaster University Faculty of Health Sciences a few years ago. The original McMaster curriculum was designed in the late 1960s. By the beginning of the 1980s it became apparent that the changes in the delivery of Canadian health care were not reflected in all aspects of the program. An empirical and theoretical analysis of the prevalent priority health problems and those to be expected in the next three decades led to a major curriculum reform.⁷

Quite naturally, these programs tend to be thematically arranged, that is, subject matter from various disciplines provided to students is selected such that it fits the theme at hand. These themes may vary. Some curricula are made up using the priority health problems as organizers, others use the natural histories of diseases or organ systems as organizing principles. The medical curriculum at the University of Limburg in The Netherlands, for example, is partly based upon an epidemiologic analysis of the symptoms and complaints most often encountered by family physicians in that country. Hence, students work in units with titles such as "Blood Loss," "Fatigue," and "Pain in the Chest." In each of these units, they acquire not only clinical but also biomedical and behavioral knowledge.⁸

But the representation of major health problems of a population in itself is not considered sufficient. As argued before, clinical training in tertiary care hospitals provides medical students with a distorted perspective on the nature of the problems encountered later in professional life and on the facilities available for diagnosis and treatment. The technological outlook of medicine, even in Third World academic hospitals, is not what is to be found in regional hospitals, nor will the technology be available to the same extent in primary care. In the front line of medicine, in particular in the preindustrialized world, physicians predominantly have to use the tools of their heads and their

hands to provide care. In addition, health promotion and prevention are far more important to the health status of a certain community than is the application of scarce technological resources. Therefore, it was argued that students should be exposed to the realities of health care in the community as soon as they enter medical school. These postings in the community should not be brief, transient experiences but an important and integral part of the curriculum. A medical curriculum should be *community-based*.⁹⁻¹⁰ It is important to note here that community-based education is useful only if it is a regular and frequently used part of the curriculum. In addition, the use of a variety of health care facilities, not only hospitals, is essential for medical training.⁶

A final issue is that the students' activities in the community should not be limited to clinical training. Their activities should also cover issues in prevention, health education and promotion, and health research and should involve the community in improving its own health status. Experiences of students of Suez Canal University in Egypt provide an example of such involvement.

Schistosomiasis is the major endemic disease in Egypt. Half of the population is exposed to this infection through daily contacts with the canals of the Nile River, which are infested with the intermediate host, a snail. Several years ago, as part of national development plans for the Bedouin-inhabited Sinai Desert, water for irrigation was channeled from the Nile Valley to canals constructed in Sinai to feed new agricultural projects. What is the public health impact of bringing the Sinai Bedouins in contact with the snail-infested Nile water to which they have never been exposed before? Have prophylactic measures been taken and, if so, how efficiently? Such were the questions that a group of six fourth-year students of the faculty of medicine at Suez Canal University, bordering Sinai, decided to answer during their six-week elective by designing and implementing a field study. They defined the demographic features of the community, examined the canals for infected snails, interviewed the population at risk, and examined the residents' excreta for parasite eggs. They found that in spite of prophylactic measures, the canals harbored infected snails and that the Bedouins were infected. The students reported their findings to the regional health authorities, with whom they discussed the recommended prophylactic measure. This example shows a learning experience that incorporated identifying a

priority health question and approaching it as a problem by a community-based study.

The Organization

Presently, the network consists of 54 full-member institutions and 80 associate members. Associate members are institutions that have demonstrated a commitment to innovation in medical education and probably have already carried out some small-scale experiments but have not yet fully implemented a community-oriented approach, as the full members have done. Member institutions are scattered around the globe:

• Africa	22
• Americas	45
• Eastern Mediterranean	21
• Europe	39
• Southeast Asia	20
• Western Pacific	20

In 1979, the network had approximately 20 member institutions. In 1985, the membership had increased to 50, and in 1990 it had risen to 167.

The network is led by an executive committee consisting of members from all continents. The present committee consists of representatives of schools from Egypt, the Sudan, the Philippines, Uruguay, the United States, Canada, The Netherlands, and Nigeria.

The network's Secretariat, located at the University of Limburg in The Netherlands, supports the organization of various meetings and is responsible for communication among the member institutions and with the outside world. Every six months, the office issues a newsletter that is distributed to all medical schools throughout the world and contains brief information about individual member institutions, important events, and relevant literature. The *Annals of Community-Oriented Education* is a journal that publishes scholarly articles on issues of interest, selected by an international editorial board. In addition, the Secretariat renders various services, such as serving as a clearinghouse for publications on community-oriented education and related topics and maintaining an elective "bank" through which members offer opportunities for students to follow elective programs in other institutions.

Since its establishment, the network has organized seven large conferences on various topics for wider audiences and numerous smaller meetings. The latter include workshops introducing the concepts

of community-oriented and community-based education to selected groups of schools. Examples of successful conferences are the Symposium on Problem-Based Learning (Maastricht, The Netherlands, 1983), the Conference on Evaluation of Innovative Programs (Ismailia, Egypt, 1985), and the conference on Progress and Challenges for Health Professions Education (Pattaya, Thailand, 1987). An example of a workshop intended to introduce key concepts in a certain region has been the workshop on innovative undergraduate curricula that took place in Harare, Zimbabwe, in 1987. The purpose of that workshop was to assist the staff of the University of Harare to start community-based postings in rural areas. Because of its perceived relevance, however, it was attended by more than 60 participants from 12 other medical schools in southern Africa.

Over the years, much has been published about the network schools' endeavors.¹¹⁻¹⁸ Special mention should be made of the 1990 book by Nooman and colleagues,¹⁹ which contains a large number of studies comparing the effects of community-oriented, problem-based schools with those of other schools. A review of 16 studies on this topic was published by Schmidt and colleagues in 1987.²⁰ The latter authors concluded that problem-based schools provide a student-centered learning environment, encouraging an inquisitive style of learning in their students, as opposed to the learning strategies induced by conventional medical education. In addition, they suggested that community-oriented schools appear to influence the students' career preferences, since the data available showed that significantly larger proportions of graduates from these schools had sought careers in primary care. Some of the studies reviewed suggested that the students in conventional programs perform somewhat better on traditional measures of academic achievement as compared with students in problem-based curricula. However, these differences, if any, tended to be very small.

A Review of Achievement

In its ten years, the network has had several key achievements.

1. Perhaps the main contribution to health professions education has been that the network has provided a forum and a focus for bringing together "like-minded" institutions that share the goal of producing graduates whose motivation

and competencies are more attuned to community health needs. Network membership has shown a definite increase in the last five years, even though the schools are required to meet certain prerequisites in terms of institutional goals and the nature of their curricula before they can join.

2. The network is a "laboratory" for testing new educational strategies and models of community-oriented and community-based education of health professionals. An example is the use of an "innovative-track" strategy for introducing and testing educational methods in a separate segment of the curriculum.¹¹

3. With a growing number of institutions testing these new approaches, the network has become recognized by other agencies as a source of ideas and experience. This recognition has come from WHO, of which the network is now an officially recognized non-government organization affiliate. Several member institutions are designated as WHO Collaborating Centers. At the 1988 World Conference on Medical Education, the network was specifically identified as a group of institutions having experience in community-oriented medical education. It is also developing links with other international initiatives such as the International Clinical Epidemiology Network (INCLIN) and the Commission on Health Research for Development.

4. The network has continued to recognize the importance of student-centered learning and the power of providing access to "real-life" experience for students. This is exemplified in the widespread use of problem-based learning as a key method of learning and by having students learn by living and working in various community settings.

Lessons Learned

One important lesson learned is that, contrary to common belief, innovation is not necessarily restricted to the establishment of new schools. Certainly, the new schools had the opportunity to reconsider old values and take a fresh look at issues in education and health care delivery. However, quite a number of initiatives in established schools show that a shift toward new goals is possible even there. Provided that conditions are ripe and a determined leadership is in place, existing schools can change directions in nontrivial ways. The most publicized example is probably the medical school of the University of Sherbrooke in Québec, Canada,²¹ but there are others. A particularly

successful program is the "alternative-track" strategy pioneered at the University of New Mexico.¹² An advantage of this approach is that attempts at renewal do not disrupt the school as a whole. New ideas can be assimilated gradually into the existing curriculum. The alternative-track approach has found much resonance in other countries, among the China and Thailand.

Second, we have recognized that simply implementing innovative, community-oriented curricula is not enough to produce the desired goal of producing physicians who will contribute to the health of individuals and communities. We have learned this lesson the hard way by discovering that our graduates have, at least in the short term, less impact on the health of the communities than was hoped and expected. We see now that a more precise analysis of the political and socio-economic environments within which the schools operate is necessary. In many countries, the existing realities of the health care delivery system significantly influence the ultimate performances of our graduates, probably more than the types or qualities of the education they receive in our schools. By performance we mean not only technical competence but also their career choices, the positions they occupy, and their chances to exercise the full ranges of competencies they have. The problem is that in many countries a system of health care delivery is either largely nonexistent or in such a state that it is highly unattractive or even impossible for our graduates to become part of it, let alone play a constructive role in it. Generally, the locally available resources are scarce, and there is no appropriate social and cultural context that enables the young physician to survive. The net result may be that graduates from network schools will choose the same careers as their counterparts from conventional schools, although we are not yet certain of the extent to which this is the case. This analysis leads to a number of questions:

- Are network schools' graduates actually entering the regional health care systems for which they were trained?
- Are there examples of the schools or their graduates being able to influence health care delivery systems?
- Which kinds of positions are taken by these graduates and what are the reasons for their choices? Which conditions are crucial?
- How can we encourage these graduates to take positions where they are

needed most in order to have an impact on the health status of the people?

- Which competencies are we trying to instill in our graduates? For which tasks in the health care system are we actually preparing them? The answer to this question is not at all self-evident.

Many within and outside the network share the romantic view that we are preparing our students to become what could be called "an expensive barefoot doctor." If that is not our goal (and will not be in the foreseeable future), what kind of doctor is trained at our institutions? The central issue here is that the primary goal of medical education is to prepare graduates who will function effectively in alleviating the burdens of illness and improving the qualities of life in their communities. What exactly is the range of competencies implied by this broad goal of medical education that our graduates should be prepared to acquire? What functions should these competencies qualify our future doctors to perform? Is it enough to send the student to the "field" and consequently claim that we are "community-based"? What about the broad range of analytical, managerial, problem-solving, and other competencies that the "trainee should master to provide relevant care in the community? How far do we agree that such competencies should be represented in our curricula?

Perhaps the most important lesson learned is that attempts to improve health care in a given region may turn out to be quite futile if this activity is not embedded in an integrated approach to rural development that encompasses economic, social, agricultural, and educational needs. Consequently, the isolated efforts of medical schools may be fruitless unless the schools seek like-minded partners within the universities or outside to undertake an integrated approach.

Dr. Schmidt is a professor of educational psychology, University of Limburg, The Netherlands, Dr. Neufeld is director of the Centre for International Health, McMaster University, Canada. Dr. Nooman is dean of the Faculty of Medicine, Suez Canal University, Egypt. Dr. Ogunbode is former dean of the Faculty of Health Sciences, University of Ilorin, Nigeria. All authors are members of the network's executive committee. Requests for reprints should be addressed to Dr. Schmidt, Department of Educational Development and Research, Faculty of Health Sciences, University of Limburg, Peter Debijelein 1, 6229 HA Maastricht, The Netherlands.

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