# Editorials

# The environment of medicine in the 21st century: implications for preventive and community approaches

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It was William Osler who made it clear to subsequent generations that all medicine when practised well is ultimately preventive: "To wrest from nature the secrets which have perplexed philosophers in all ages, to track to their sources the causes of disease, to correlate the vast stores of knowledge that they may be quickly available for the prevention and cure of disease — these are our ambitions."[1]

Primary prevention has been defined as the promotion of health by personal and community efforts, secondary prevention refers to early detection, with prompt and effective intervention to correct departures from good health, and tertiary prevention consists of the measures available to reduce impairments and disabilities, thus extending the philosophy of prevention into the field of rehabilitation.[2]

In some ways the formation of departments of preventive medicine in many medical schools was counterproductive to this philosophy. It placed prevention conveniently on a shelf, as someone else's responsibility, while "real medicine" could get on with the important jobs of diagnosis and treatment. Ironically, much prevention is done in various clinical departments but with little recognition that the activity is preventive in purpose. The move by a number of departments of preventive medicine to divest themselves of this ridiculous expectation — that prevention can be made the prime responsibility of only one type of doctor — has been helpful in challenging all medical disciplines to give higher priority and greater visibility to the practice and philosophy of prevention. In Canada several of these departments have evolved toward the areas of community health and epidemiology, which implies a commitment to a broad but not comprehensive range of prevention applications, and toward the science of epidemiology, as a necessary foundation for much of modern medicine and public health.

The disbanding of schools of public health in Canada and their amalgamation into medical schools (i.e., in Toronto and Montreal) has not served well the interests of public health disciplines, although medicine has benefited through the development of training programs in community medicine and clinical epidemiology. What we really need is strength for community health sciences both within and outside the medical school context, as in the United States. Some of the possible options are intriguing, such as locating medical education within the public health context, not the other way around.

The present aim of Canadian departments of preventive medicine in undergraduate medical education is to impart knowledge relating to the distribution and determinants of health and disease,[3] the organization and function of the health services involved in promoting health and preventing and treating disease,[3] the response of the individual and the community to health and disease,[3] the principles and methods of health promotion and disease prevention,[3] and, most recently,

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the development of lifetime learning skills through an epidemiologic approach to critical review of the literature. In operational terms it has been stated that this aim should be achieved by the study of epidemiology and biostatistics, the organization of health services, with special emphasis on the Canadian system, behavioural science, occupational and environmental health, and clinical preventive medicine.[3]

It is in the last area in particular that modern medical education cannot afford to rely exclusively on one department. Preventive medicine is properly the responsibility of virtually all clinical departments.

## The environment of medicine: past, present and future

A prerequisite for planning educational developments in preventive medicine is the ability to forecast the environment of medicine. For this, one must have an epidemiologic sense of history.

Until the middle of this century, advances in the health status of the general population were largely the result of improvements in socioeconomic conditions such as education, nutrition, housing and sanitation.[4] Major declines in rates of illness and death occurred, especially in childhood, but otherwise there was little change in the patterns of disease. Aside from public health measures, the effect of medical science during this period was minimal. Since then there have been major changes in disease patterns, largely related to behavioural and environmental factors. While the effectiveness of medicine has increased, its overall influence on the pattern of illness and death is still quite modest.

The volatility of contemporary disease patterns makes projections difficult. Even demographic projections can be misleading, although current trends do suggest the following picture: low birth rates, small, fragmented families, aging populations and continuing migration from developing countries.[5] The effects of an aging population are already being felt. There are pressures on medical and other health care professionals to give more attention to the needs of the elderly. While the problems of the elderly are not new, they are becoming more common and have greater political and social cogency.[6]

It is well recognized that most of the increase in life expectancy in developed countries has resulted from major reductions in death rates in infancy and childhood. In addition, a large decline in fertility rates has guaranteed an aging population that is bigger than ever before. Although continued reduction of disease-specific death rates can be expected, relatively more potential for enhancing the health of populations now lies in reducing rates of illness, including disabilities and handicaps, at all ages through actions such as promoting healthy behaviour, modifying risk factors, developing programs for independent living (e.g., home care and occupational therapy services), reducing barriers to the disabled and promoting the quality of life (in sickness and in health).

Trends in the structure of populations and in rates of death, illness and disability thus imply that greater attention should be given to risk factors, disease sequelae, quality of care and the promotion of wellness. Relatively less emphasis should be placed on diseases themselves. This is generally applicable for all ages but is particularly true for the elderly.

### *Trends in disease*

Emerging disease patterns will still have an important influence on our actions and, one hopes, our plans. In my view some disease trends can be predicted with a reasonable degree of probability.

- Infectious diseases of various sorts will continue to exist as new diseases, such as the acquired immune deficiency syndrome (AIDS), emerge to replace those in decline. The crude incidence of some common infections (e.g., pneumonia) will likely increase as the population ages.
- The total number of cancer cases will rise as the population ages, although age-standardized rates of overall incidence will remain relatively stable.
- The number of cases of chronic respiratory disease will continue to increase as a result of aging of the population and the devastation of tobacco-addicted generations.
- Rates of illness and death from heart disease will likely continue to decline. The potential for technologic advances in this area makes implications for requirements in health care resources more difficult to predict.
- Safety measures will continue to reduce the number of motor-vehicle-related deaths and injuries.
- Rates of injury and death from violence may increase, reflecting social pressures that contribute to suicide, abuse of children and the elderly, and misuse of alcohol and drugs. In part, changing social perceptions are leading to greater awareness and redefinition of the effects of family violence.
- The effects of dementia will almost certainly increase, given the demographic trends in conditions such as Alzheimer's disease.
- Awareness of and concern about environmental and occupational health issues will grow. Degradation of the environment through pollution may also contribute to other chronic ailments. On the other hand, pressure for environmental control and rehabilitation will also grow, especially if economic recovery continues.
- The incidence of iatrogenic disease may increase, either inadvertently or through trends in medical practice such as polypharmacy and the use

of unnecessary procedures to protect against malpractice suits.

- A heightened debate on ethical issues involved in the treatment and care of patients (e.g., withdrawal of treatment, patients' rights and deinstitutionalization of psychiatric care) can be expected.

Many disease trends will have a direct effect on the requirement for particular medical disciplines and other health care professions: some will need to be expanded and others reduced. However, given the sociopolitical character of current manpower planning efforts, this will be a challenge. In the report of the Project Panel on the General Professional Education of the Physician and College Preparation for Medicine (the GPEP report)[7] the following recommendation was made (page 6): "Medical faculties should adapt the general professional education of students to changing demographics and the modifications occurring in the health care system. Future practice will be shaped more by these changes and modifications than by the traditional medical care system of the past three decades."

*Trends in health care*

The past five decades have been a period of revolution in Canadian health care. The development of publicly financed hospitals and medical care has attracted most of the attention and has displaced attention away from an essential question: Why do people become ill in the first place? Yet we are on the verge of a renaissance in the broader arena of public health that holds greater promise for a healthy population as we approach the 21st century. After all, the development of medical care had its origins in the care of the sick, while the origins of health or the human condition lie within the realm of the total environment.

The concept of health has matured beyond one of simple idealism, as embodied in the constitution of the World Health Organization (WHO). According to the director-general of the WHO,[8] "public health is reinstating itself as a collective effort, drawing together a wide range of actors, institutions and sectors within society towards a goal of 'socially and economically productive life'. This social goal . . . moves health from being the outcome measure of social development to being one of its major resources."

The notion of health as a resource of nations and communities alike has merit because it increases our awareness that health is something we should promote, protect and conserve. But full development of human potential requires more than this ethic of conservation. It requires vision and an answer to the question How do we get from the way things are to the way we would like things to be?

What, then, is health promotion? In my view this is best answered by reference to the first principle enunciated in a recent WHO discussion paper: "Health promotion involves the population as a whole in the context of their everyday life, rather than focussing on people at risk for specific diseases."[9] Health promotion and disease prevention are complementary, not competing concepts. This accommodation is critical as we work toward the type of health care effort, including medical education, that will be most appropriate for the 21st century. This truth is also recognized in the GPEP report (page 2): "There will be an increasing recognition that many factors determining health and illness are not directly influenced by interventions of the health care system but are the consequences of life-style, environmental factors, and poverty."[7]

One should also recognize that the focus on the population as a whole is simply a renaissance and not a revolution in thinking. Acceptance of this orientation therefore requires no apocalyptic leap of faith. The "old public health" was and still is effective largely because it was population based: clean water, sanitation, adequate food supply and shelter are no less important now than they were.

How, then, does this new concept of health promotion differ? The challenge now is that there is a new pattern of disease, one that necessitates new population strategies. We are being asked to place greater emphasis on involving people in their own health decisions "in the context of their everyday life".[9] This is difficult, because it requires a new way of thinking for many of us. It is hard for health care professionals to step back and be advisers or counsellors rather than controllers of the process. How should physicians relate to this development in their training and career planning? And, equally important, what is the role of the teaching hospital?

## The role of the medical profession

A leading thinker and practitioner in Canadian public health recently identified four diverse arenas of prevention: the political/social arena, the lifestyle arena, the traditional public health arena and the traditional medical office arena.[10] Of these, he argued that the fourth is really the least important: "The medical office can reinforce healthy practices but medical office congestion does not permit a proper concentration on healthy lifestyles." He also quoted from an address by the dean of medicine at McGill University, Montreal, in 1983: "Is it any wonder that physicians fail to recognize and support much of prevention? They are functioning outside the most productive arenas of prevention and so much of the relevant literature and information is not in the medical journals."

However, even though the potential for health promotion through public policy, the fitness and lifestyle movement and the communication capa-

bilities of public health care professionals is great, the potential contributions to health promotion in the medical office are also substantial and worth while. The collective effect of 40 000 physicians devoting a little more of their time to the promotion of healthy living cannot be inconsequential. According to the WHO,[9] "while health promotion is basically an activity in the health and social fields, and not a medical service, health professionals — particularly in primary health care — have an important role in nurturing and enabling health promotion. Health professionals should work towards developing their special contributions in education and health advocacy."

Within the more specific context of disease prevention, physicians play a key role at many levels, such as assessing Rh blood group incompatibility, performing tuberculin skin tests, providing genetic counselling services and malaria prophylaxis, and screening for hypertension. The reports of the Canadian Task Force on the Periodic Health Examination[11] have set new standards for prevention in clinical practice. However, more creative use of incentives is needed to encourage greater commitment to prevention. This obligation sits squarely with the medical associations and provincial medical insurance commissions.

The advocacy role of the medical profession should be continually stressed in the medical education program. One of the recommendations in the GPEP report (page 6) is that "medical students' general professional education should include an emphasis on the physician's responsibility to work with individual patients and communities to promote health and prevent disease".[7]

Faculties of medicine have an obligation to promote positive developments and to oppose negative ones. The advocacy principle should apply in all contexts, from local to international, and should include such concerns as abuse of children and the elderly and the high prevalence of smoking. Seat-belt legislation in most Canadian provinces testifies to the success of advocacy efforts of the medical profession in concert with other groups. Efforts in support of African famine relief and the recent Nobel Peace Prize award to International Physicians for the Prevention of Nuclear War are other, global examples.

## The role of the teaching hospital

The traditional cosmos of the teaching hospital runs the risk of becoming an anachronism in the area of medical education. Teaching hospitals have for too long dominated the clinical training of medical students and residents. There has been a lack of balanced exposure to other levels of health care: the chronic care institution, the home care program, the public health unit, the social service agency and the clinical office setting. There is a need to move toward a broader consortium of health services that would include the teaching health unit and other types of noninstitutional clinical teaching environments.

This viewpoint is not simply a product of ideology. The Canadian economy cannot support the status quo now or in the foreseeable future, especially given the rapidly increasing numbers of elderly people.[12] Medical and administrative education has not yet come to grips with this fact. Surely we must give our students more exposure to community-based health care services. This will help produce a better mix of health care for many of the elderly — a definite improvement on the current practice of "warehousing the elderly".[13]

The teaching hospital has a responsibility to address its role in a larger context and not simply plan for the needs of the institution itself. In some instances the hospital sector can and should lead the way in developing population-based programs, especially where there is an apparent vacuum in community leadership — often a sign of long-term political neglect. In other circumstances the hospital sector must willingly support initiatives of community-based agencies. In all instances there is a need for cooperative planning involving a wide spectrum of players and for innovation, a quality that should be encouraged throughout the health care system. The use of the hospital administrative structure as a model for the delivery of community programs, such as the Extra Mural Hospital concept in New Brunswick,[14] is a case in point.

There are some encouraging signs. According to a recent survey carried out by the Canadian Hospital Association, our hospitals are promoting health.[15] Examples include teaching patients about the risks associated with certain behaviours (e.g., smoking, inactivity and overeating) that may be related to their disease, providing rehabilitation services, referring patients to community agencies or support groups, providing information sessions on health-related issues for community groups, providing fitness, nutrition, smoking cessation and counselling programs for employees, offering occupational health and safety programs and even health advocacy. The UBC Health Sciences Centre in particular is leading the way in this area.[16] Many of these measures are simply good modern industrial management. However, Thompson, Davidson and le Touze note that in Canadian hospitals "most examples of health promotion would be classified as ad hoc activities" and that "the community is least often the target for hospital-based health promotion programs".[15]

The hospital and treatment sectors generally have dominated fiscal discussions, partly because they take the lion's share of the resources. This is an accountant's view of the world, a focus on costs. There is a need to develop more of a managerial approach to health care services, focusing more on issues of benefits and cost-effectiveness. This shift would inevitably lead to a better mix of health care, with more appropriate attention to prevention, ambulatory care and community-based programs.

## Implications for preventive medicine

This vision of the future environment of medicine has several implications for teaching preventive medicine in medical schools and teaching hospitals.

- As we move toward a society in which advanced age and disability become more prominent, there is an increasing need to view prevention in its broadest sense, from primary prevention to tertiary prevention, with its relevance to the adjustment of the patient and the community, to irremediable conditions.
- Every medical school must recognize that a philosophy of prevention and a commitment to its application and teaching is a responsibility of virtually all clinical departments. Every dean should make this a policy of undergraduate education.
- There is a need to promote a concept of medicine that is broad enough to include reference to public policies and that recognizes research related to health care services and policy to be just as fundamental to the future of physicians and medical care as traditional biomedical research.
- There is a need for ongoing assessment of current and potential future trends in health, disease and demographics to keep our teaching, staffing and physician manpower requirements in tune with evolving needs.
- Medical schools, students and future physicians cannot afford to diminish their roles as advocates not only for individual patients but also for their communities and society at large.
- No longer can physicians view themselves as being at the apex of the health care hierarchy. Beyond the recognition that other professionals are better qualified in certain areas of health care, physicians must play a more supportive role when initiatives come from other professional groups.
- Teaching hospitals need to raise the profile of prevention in the areas of quality assurance, infection control, drug surveillance and employee health and to expose students to these activities. More broadly, teaching hospitals must widen their consortium to include, on an equal footing, players from noninstitutional, community-based agencies. Physicians of the future as well as those of the present need to have this perspective and practical experience in community settings.

In my view there is adequate time in our curricula for teaching prevention, but it is not being used as well as it could be in all clinical departments. Simple questions such as Why did this patient get this disease at this time? would help make the connection to preventive and community aspects of clinical medicine.

In most of our schools the curriculum structure is inadequate for all but the most cursory orientation to community experience. The issue is not only one of enhancing cultural values or attitudes among physicians but also one of developing skills in working at the community level. Traditional clinical blocks and teaching hospitals need to move over a bit and give some priority to community medicine.

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