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Special Paper

**The funding of quality in medicine:
one country's challenge ***

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The issues and problems of drug development and regulation are matters in which the physician and surgeon can identify on a broad personal basis. As a cardiac surgeon I know better than most the fundamental role which drug research and development has played in recent years in the control and relief of heart disease. As a clinical scientist and professor at the University of Ottawa Medical School I am cognizant of the need for biological research and for the continuous relationship with the international pharmaceutical industry to develop, test and market the results of that research. As an administrator, I have dealt with the maintenance of standards using limited resources. As a member of the Senate of Canada I am sensitive to the social and political pressures which governments face in providing their nations with the latest drug treatments while, at the same time, ensuring that such treatments are not only effective but safe. The public looks to governments and to regulators to ensure that our cures are not sometimes worse than the disease which they seek to treat. They demand the avoidance of another thalidomide disaster.

In the present paper, I would like to discuss the future of academic medical science in Canada and why its preservation is essential. Recently an organization in Lausanne classified the 34 best industrialized countries for the World Economic Forum. Canada was classified first in 20 or so categories: one of these was the quality and accessibility of health care for employees and their families.

But its principal weaknesses are also clearly emphasized. Its lack of qualified manpower across Canada put it in that respect in 14th place. In manpower motivation it is placed only 16th and in quality of manufactured products 13th. In long term, if nothing moves, Canada risks losing out because of weaknesses such as these.

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The most common complaint heard among Canadian scientists is a lack of government investment in research. The knee jerk reaction to scientific or academic difficulties of any kind is to demand more money of government; but there is no more money. At least, there is no substantial new money on the horizon without at least a major redeployment of financial resources. In Ontario for example, a look at both our provincial and federal treasuries demonstrates clearly that massive amounts of new funding for research from the government will not be forthcoming. We must therefore look for alternatives; and government, industry, university, industry co-operative ventures will be required.

How then do we solve the dilemma of avoiding a national decline in academia? Let us look back a little and see what we can find.

It is said that we are lucky to have the health care system in Canada that we enjoy today. Stephen Leacock once said: "I am a great believer in luck and I find the harder I work, the more I have of it". Well, Canadians have worked hard to establish our health care system and are proud of it. Over the past century, the people of Canada have established a tradition of accessibility to health care and equitable welfare programs that are among the finest in the world. Today, more services are available than ever before, and more and more people are using them, much to the consternation of health care economists. In the primarily rural society of early Canada, Health and Welfare was very much the responsibility of individuals and their families, supported by charitable activities of churches and communities. Financial help for the poor in pre-confederation Canada was a function of parishes, municipalities, philanthropic organizations, friends and relatives. Federal and provincial governments did not intervene in relief initiatives for the poor on a large scale until the turn of the century or later.

As Canada developed, all levels of government – federal, provincial and municipal – introduced measures to ensure a good standard of living for everyone. In the 18th and 19th century, the major threats for health came from infectious diseases; these threats gave rise to public health measures such as quarantine and vaccinations. Hospitals were established by charitable and religious organizations. By the beginning of the 20th century, licensing standards for physicians had been set by self-regulating professional bodies, medical colleges established, nursing standards and hospital conditions improved, and institutions founded for the mentally ill, the tubercular, the blind and the deaf. Major voluntary organizations such as the Children's Aid Society and the Red Cross also came into being.

Between the two world wars, such important medical discoveries as the isolation of insulin by Frederick Banting and Charles Best took place and the first Canadian research institutions were established. Provinces and municipalities became increasingly involved in financing hospitals and providing medical care for those in need. Physicians sponsored a variety of medical insurance plans. World War II gave impetus to medical research and experimentation in Canada. Great strides were made in medical and surgical techniques and rehabilitative and physical medicine. The post-war period was also characterized by increasing health care costs and significant attempts by government to make medically necessary services available for everyone.

Although federal/provincial discussions on a nation-wide health insurance system took place early in this period, no agreement was reached. Consequently, the government of Saskatchewan proceeded independently and in 1946, introduced the first government sponsored province wide universal hospital insurance program. British Columbia and Alberta followed in 1949, and in 1957 Parliament passed legislation permitting the federal government to share in the cost of provincial hospital insurance plans that met minimum eligibility and coverage standards.

By 1961, all provinces had qualifying plans and were eligible for federal contributions. In 1962, Saskatchewan introduced the first universal medical care insurance program. Under the Medical Care Act of 1968, the federal government agreed to share the cost of such plans with the provinces and by 1972, all provinces and territories had medical insurance plans satisfying broad national standards.

Canadians would henceforth have universal access to public insurance against cost of all medically necessary hospital and medical services. The Canada Health Act of 1984 consolidated previous legislation on hospital and medical care insurance and clarified the broad national standards that provincial plans must meet to qualify for federal funding. The Act was structured so as to discourage doctors and hospitals from levying direct charges on patients. The Health Care System we have is the envy of many developed nations. At the core of Canada's health care system is the publicly funded and administered universal insurance system that provides full coverage for all necessary hospital and physician services. Access is not limited by ability to pay since the coverage is pre-paid through the public sector. The federal government contributes to the provincial health programs with a per capita funding formula consisting of both tax and cash transfers. They also provide the provinces a per capita grant for extended health care services. Health care expenditures in Canada in 1987 amounted to 9% of the gross domestic product or 48 billion dollars for health care. Throughout the 80s, health care expenditures increased by 4% per year. In 1991, the total amount spent annually translated to 63 billion dollars; of this, over 40% was contributed by the federal government.

All of this background information leads to two inescapable conclusions. The first is that we have a truly superb health care system in Canada; developed slowly, deliberately with careful planning – and held sacred – by both the population and all levels of government. The second is that it is becoming very expensive and the pundits are already examining the components we cannot afford. This, I believe, is where the real worry for academic medicine and medical science arises – when the crunch comes these sectors squeak the least, and get the least oil.

In June of 1991, a report from Morris L. Barer and Greg L. Stoddart was prepared for the federal/provincial territorial conference of deputy ministers of Health. The title of the report read: "Towards Integrated Medical Resource Policies for Canada".

The report consists of a careful collection of information from various agencies and individuals, clearly compiled and laid out. The authors clearly state that it would be pretentious of them to suggest that in the short space of 10 months they had developed such a complete understanding of every nuance and every issue and

had become sufficiently well informed and insightful that they could now do what others before them had avoided doing – or had failed to do – that is, to provide a blueprint for national physician resource policy that will work. To use their own words: “So we will not, because we did not”.

The report, however, highlights the basic fact that we are all trying to grapple with, and that is that the rate at which physicians in Canada are entering the system is about four times that of the normal population growth. The inevitable conclusion is that we cannot continue M.D. output at this pace, because health care costs are ultimately tied to physician manpower and consequently physician output must be limited.

Now, we come to the real issue. What kind of physician output are we going to limit? Will it be an equal limitation of medical scientists and practitioners, will it be a skewed limitation of output of scientists, or will the academic community have the ability to preserve and improve the lengthy and expensive training programs for medical scientists, especially clinicians.

The Barer/Stoddart report does not pretend to address the problems of academic medicine. Nonetheless, indirectly it could have an enormous impact. For all of the forces in the career of a young M.D. act to push him out of academia and into service. One of the major human resource issues facing universities and medical colleges at the present time is faculty retention. The average salary of a young Ph.D. is the second lowest in all categories of employment. The opportunities for scientific training in Canada are limited compared to other countries. For example, Harvard University has 25% of its medical students enrolled in M.D./Ph.D. programs. In Canada, only a few medical schools can provide this opportunity and their numbers do not even begin to approach that level. With shrinking medical manpower, the young medical scientist will find himself with no time for science because of his service demands. He already is in a highly competitive field for personal funding and when family responsibilities surface, the tendency is to seek a clinical career for security reasons.

It has been said that many young medical scientists are suffering from a disease called “PAIDS”: Paralyzing Academic Investigator Disease Syndrome. What can we do about this? First, we must examine carefully the future of academic medicine in Canada. The government, industry, the university community, our research institutions and hospitals must come together to find a way of nurturing the young academics within the resources that are available. We must examine the role of the pharmaceutical industry in the process, the salary structure and promotion policies for young academics and devise ways to attract good young candidates into academic life. We must restructure our medical and basic science curricula to provide an opportunity to attract students into medical scientific programs, we must provide post-doctoral and post-graduate programs, such as the Clinician Scientist Program which the Medical Research Council and the Royal College have undertaken. We must restructure our clinical departments and institutions to provide accommodation for clinical scientists and basic scientists to work in harmony. We must find a way to be supportive of the evolution of science without being restrictive.

Let us look at some examples of scientific progress in recent years and examine why the progress occurred. In 1967, Dr. Christian Barnard performed the first heart transplant. The operation was a success, but the patient died. Now, our transplants are performed with 85% success rate, and with lower risks and greater benefits than many routine heart operations. Why did the surgical progress and immunological progress occur that made this incredible transition possible?

If we look back on the entire field of transplantation, most of the relevant scientific knowledge has developed over the past 50 to 60 years. By 1964, researchers in the field had enough in common for the New York Academy of Science to begin holding biennial meetings on homotransplantation. By 1967, the researchers in the field had organized international annual meetings of the international congress of the transplantation society. This allowed for communication and discussion between the 35 or 40 transplant groups from around the world which were in fact mostly from North America, Europe and Australia. Nonetheless, this was simply a spontaneous coming together of scientists with essentially no direction from above and in fact progress occurred through serendipity, openness, communication, honesty, excitement, hard work, failure and success. By contrast, I recall sitting in the Medical Research Council when the AIDS epidemic surfaced. There was enormous public pressure on our government to fund AIDS research and funding became available. Applications for the funds were invited, but to the disappointment of the reviewing bodies, the applications initially were not of good calibre and the reason was very simple. We simply did not have a body of scientists in Canada with expertise in retrovirus- and AIDS-related research. Nonetheless, the efforts continued, and today there are groups doing superb work at the University of Manitoba, McMaster, McGill, Ottawa and other Canadian universities. Needless to say, this would not have come about had the funding incentive not been there. Looking back, the devastating clinical problem of AIDS was the trigger that provided the funding; the problem was addressed, ideas were formulated, projects were rationalized, research was done, trials were instituted, validations occurred, knowledge was transferred on both the national and international scale. There is obviously a very long way to go in this field, but the progress has been truly remarkable. These contrasting examples illustrate the need to preserve our flexibility; to keep our options open; to allow for discovery through academic freedom; and to prevent good organization from developing into suffocating bureaucracy.

In summary, I have been trying to emphasize that should our health care and academic medical resources experience a period of non-growth or contracture, we must preserve our academic and research efforts. We must use every option at our disposal to attract and foster bright young academics, we must continue to provide the milieu for basic and clinical investigations, even at the risk of being criticized for compromising clinical programs and we must try to reinstall the atmosphere of intellectual excitement that permeated this entire area when many of us entered it some 25 or 30 years ago. One of the greatest gifts which our generation could bestow upon the next one is an abundant supply of bright young scientists – who can make the discoveries that will expedite and simplify the care of the sick. And

finally, we must continue to remind our young scientists, in the words of Theresa that no research ever fails. To quote her: "The failure does not really matter, the only reason to despair is when we give up the search. If dreams did not exist, there would be no future, a failure is: not searching for ever".