REPORT ON SYMPOSIUM PROCEEDINGS

FRIENDS OF CANADIAN INSTITUTES OF HEALTH RESEARCH

ADDRESSING THE ACUTE SHORTAGE OF CLINICIAN SCIENTISTS IN CANADA 2006

In collaboration with the CIHR National Research Forum for Young Investigators in Circulatory and Respiratory Health.

Amis des instituts de recherche en santé du Canada
FCIHR/AIRSC
Friends of Canadian Institutes of Health Research

www.fcihr.ca

Winnipeg Convention Centre
Winnipeg, Manitoba
1-3 pm Thursday, May 4, 2006

Friends of Canadian Institutes of Health Research and Public Dialogue

Friends of Canadian Institutes of Health Research (FCIHR), a national organization, was established in 1997, and is comprised of individuals and corporate members dedicated to supporting the goals and ideals of the Canadian Institutes of Health Research (CIHR).

The principle activity of Friends of CIHR is promoting the understanding of science in the community through annual symposia, educational forums and other opportunities to engage in public dialogue. This facilitates the transfer of new knowledge that is rooted in high quality, evidence-based research. The ultimate expectation is to help improve the health of Canadians by strengthening health care research in Canada.

A number of public forums and symposia have taken place in collaboration with both Partners in Research and the National Research Forum for Young Investigators in Circulatory and Respiratory Health. Published proceedings of these events have appeared over the past five years and their titles are:

1) Addressing the Acute Shortage of Clinician Scientists in Canada – Winnipeg, May 2006.
2) Overcoming Barriers to Canada's Global Competitiveness in Health Research – Ottawa, May 2005.
3) The Scientist and the Media: Quality information for Health and Safety – Winnipeg, April 2005.
4) The Economic and Socio-Economic Impact of Investments in Health Research – Winnipeg, May 2004
5) The Translation of Genomic Science to Social Well-Being and Human Health – Ottawa, May 2003
6) Academic Freedom: Paradigms in Conflict – Calgary, April 2002
7) Interdisciplinary Research in the Health Sciences – Toronto April 2001. (Inaugural symposium of FCIHR).

Printed copies of these proceedings are available by contacting FCIHR at fcihr@fcihr.ca.

SPONSORS

Amis des instituts de recherche en santé du Canada
FCIHR/AIRSC
Friends of Canadian Institutes of Health Research

CIHR IRSC
Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

University of Manitoba
Faculty of Medicine, Department of Internal Medicine

Centre for the Advancement of Medicine, University of Manitoba

Amis des instituts de recherche en santé du Canada
FCIHR/AIRSC
Friends of Canadian Institutes of Health Research

FOREWORD

Much has been written about the vanishing species of clinician scientists, more specifically, physician scientists. Many conferences and symposia have attempted to address the failure of our educational institutions to support, encourage and sustain this vital cadre in the health care system. It would appear that graduates in the biological, health and medical sciences are dissuaded from careers in clinical research because of insecurity, under-funding, and competition that is absolutely Darwinian. Furthermore, personal priorities have evolved over the past twenty years giving the amenities of quality living a higher value than the prestige and stature of academic life. Shared family responsibilities win out (and for good reason) over a career that provides little reassurance of success or support during challenging times. Women in science have a particularly difficult time, because family obligations and maternity leaves create subtle barriers to promotion and success. A research career that is internationally competitive is more challenging now than in the past. This problem is not unique to Canada, but our ability to furnish solutions has lagged behind our American colleagues, and there are consequences.

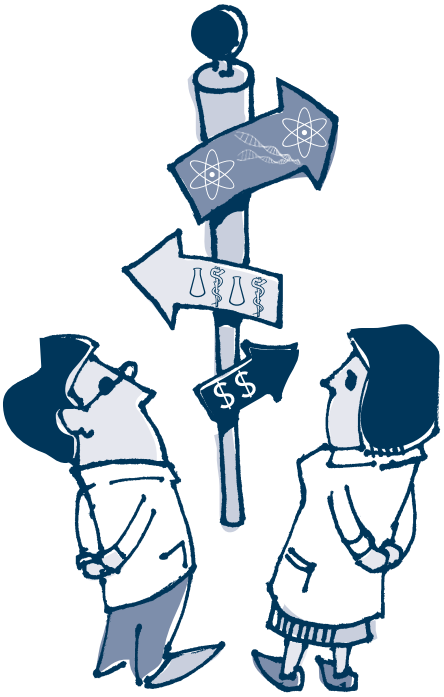
The joy of medical discovery is no longer sufficient to convince young researchers to become clinician scientists. The number of people exploring careers in the health sciences is shrinking despite the explosion of knowledge in the fundamental biological sciences. Translation of new knowledge for the benefit of human kind is delayed because the required number of practitioners who might apply this research to important clinical questions is nowhere to be found. Demand is further increased by the emergence of exciting new areas of enquiry that did not exist twenty years ago: genomics, proteomics, structural biology, nanotechnology, pharmacogenetics, and the evaluative sciences. The implied promise of publicly funded biomedical research cannot be fulfilled because the human resources pipeline is drying up. Because demand far outstrips supply, classic economic theory would predict rich rewards and inducement for the clinician scientist: the brightest and the best should be flocking to health science disciplines for the opportunities that abound. Instead, young people are dissuaded from this pathway and are choosing more predictable career options that are within reach and sustain a satisfying lifestyle.

The purpose of the Third Annual FCIHR Symposium at the YI Forum is to draw attention to the fact that there are recent research training models that introduce novel methods that could succeed in nurturing the development of clinician scientists. The CIHR Institute of Circulatory and Respiratory Health has been innovative in this regard by developing several prototypic initiatives (TORCH, IMPACT and FUTURE) to support trainees as they gain laboratory experience. Thus, necessity has fostered the creation of unique, Institute-based strategies and programs that provide structured educational experiences and mentoring systems to assist young trainees. Will they work? Can they be generalized?

Four leading Canadian experts hereby provide some contemporary insights to the problem and possible solutions to the challenge of rectifying the Shortage of Clinician Scientists in Canada.

Aubie Angel, MD
President FCIHR / AIRSC
Massey College
University of Toronto

ADDRESSING THE ACUTE SHORTAGE OF CLINICIAN SCIENTISTS IN CANADA 2006



PROGRAM HIGHLIGHTS:

Welcome:
Dr. Aubie Angel, Co-Chair, President FCIHR / AIRSC

Opening Remarks:
Dr. Henry G. Friesen, Co-Chair, Distinguished Professor Emeritus, University of Manitoba

Greetings from CIHR:
Ms Nancy MacLellan, Head, Program Delivery Division, Research Capacity Development, CIHR

Speakers:
Dr. Melvin Silverman, Professor of Medicine, Director of MDPHD and Royal College Clinical Investigator Programs, University of Toronto: "Clinician Scientists in Training: Successful Models"

Dr. Janice Richman-Eisenstat, Assistant Professor, Departments of Medicine, Pharmacology & Therapeutics, and Obstetrics, Gynecology & Reproductive Sciences, University of Manitoba: "The Challenges and Opportunities for Women in Health Research"

Dr. John Cairns, Professor of Medicine, University of British Columbia; Past Dean of Medicine, University of British Columbia; Leader of Clinical Research Initiative, CIHR: "The Clinician Scientist Pipeline: Increasing the Flow

Dr. Peter Liu, Heart & Stroke / Polo Professor, University of Toronto; Scientific Director, Institute of Circulatory and Respiratory Health, CIHR: Fostering Clinician Scientists: Looking Forward

OPENING REMARKS

Dr. Aubie Angel, Symposium Co-Chair, opened the afternoon by briefly introducing the host organization – Friends of CIHR – and it's roles in promoting the value of health research, encouraging community partnerships, and supporting the endeavors of Canadian Institutes of Health Research. He went on to offer some rationale for the choice of topic, noting it was an issue dear to "…all concerned with the future of clinical research and the need to ensure timely transfer of scientific advances to the community".

In acknowledging the shortage of clinician scientists, he emphasized the need to train and retain investigators and explore novel approaches to the problem.

Dr. Angel thanked the Symposium sponsors: the University of Manitoba Faculty of Medicine (Department of Internal Medicine) and the Centre for the Advancement of Medicine, CIHR, and Medicure. He then introduced Dr. Friesen, highlighting his history and experience.

WELCOMING COMMENTS:

For his part, **Dr. Henry Friesen** feels that funding is one of the keys to resolving any shortage in research personnel. He noted that this is a chronic condition, perhaps first identified by Jim Wyngaarden in a 1979 paper, describing physician-scientists as an endangered species. Unfortunately, those concerns, voiced almost three decades ago, remain with us today. At the same time, Friesen wonders who is measuring this issue: "Who is keeping score? Where are the metrics? What definitions are being used?" were the questions he posed.

Friesen offered his encouragement to the young researchers in the audience. He shared his belief that the clinician-researcher is not on a lower tier; rather, they should be at the forefront of science – by asking the right questions. In Friesen's view, young investigators should be reaching for the very highest achievements, including the Nobel Prize.

ADDRESSING THE ACUTE
SHORTAGE OF CLINICIAN SCIENTISTS
IN CANADA
2006

WELCOME ON BEHALF OF CIHR

For the past three years, the Symposium has been the launch event for the National Research Forum for Young Investigators, presented under the auspices of the Institute of Cardiovascular and Respiratory Health of CIHR. This year, **Nancy MacLellan,** Head of the Program Delivery Division in Research Capacity Development, brought a message from CIHR. MacLellan noted that in her six years with the CHIR, the program that had impressed her the most was the Clinical Research Initiative (CRI). She described the three program strategies, touched on her role in implementation and spoke to the success achieved.

MacLellan identified the **first** strategy as development and sustaining of the next generation of clinician- researchers and she asserted that the response to this strategy is a clear indicator of success. She noted that funds made available through the Clinical Research Initiative in the fall of 2005 almost doubled the overall success rates for the health professionals who competed for Doctoral Research Awards, Fellowship Awards and New Investigator Awards. She noted that not all funding decisions have been made so there is a high probability the success rate will climb even higher. In addition, targeted support for mid-career professionals will be introduced, broadening the spectrum of opportunity for those "who define our national capacity for interdisciplinary research". Other steps will be aimed at increasing the range of eligible clinical disciplines.

The **second** strategy addresses the need infrastructure improvements. Efforts here include development of effective frameworks for ethics and regulation, networking clinical research centres, and increasing public support and participation. MacLellan identified two functional models developed in collaboration with the Canada Foundation for Innovation. The first is for networked clinical research centres offering the tools and technical personnel to conduct innovative research, with funding to support mentors and trainees. The second offers regional and national services through networked platforms for statistical cores, data repositories, and other research technology methods. MacLellan admitted that this initiative is currently stalled but expressed hope that the still new Federal government will resolve the issues hampering progress.

An increased investment in research grants is the **third** and final strategy. Echoing Dr. Friesen's earlier thoughts regarding the importance of funding to the field of clinical-research, MacLellan noted an increase in operating funds was necessary if the potential national benefits are to be realized. "Opportunities must be created for investigators to conduct large scale, long-term studies of national and international impact", she stated.

In closing, MacLellan noted that the investment in clinical research has increased by 240% since the creation of CIHR in 2000, through funding of the thirteen CIHR Institutes and various competitions. "Nevertheless, it remains a major challenge to provide the level of support needed for clinical research and clinician-researchers to fulfill the promise of translational research".

SPEAKERS

The first speaker of the day, **Dr. Melvin Silverman,** agreed with Dr. Friesen's introductory remarks that this is not a new topic. He too, admitted there is little hard data available to clearly indicate where the perceived shortage may be. In his opinion, this may be a chronic rather than acute condition.

Entitled *"Lessons My Mother Never Taught Me: How Structure Informs Function in Developing the Health Scientist/Scholar"* Silverman's presentation centred around the accepted formula that advances in scientific knowledge lead directly to clinical research which ultimately benefits society. According to Silverman, health leadership is critical to success and generally occurs within the academic institutional setting of the university/hospital or through the clinician scientist, directly involved in patient care, teaching and research. He pointed out that the perspectives of these two are polar opposites: one is intent upon treating the patient, not the disease while the other is focussed upon treating the disease, not the patient. A truly integrated program encourages both to good advantage.

It was Silverman's view that the strongest motivator for undertaking Clinician Scientist Training is the sheer joy of biomedical science. He also felt that, in terms of their ultimate value, basic sciences programs in medical schools, such as human biology, are grossly underrated components of clinician-scientist training. Silverman used the whimsical experiences of Dr. Suess characters like Horton the elephant who, through commitment and persistence, hatches his unlikely egg and demonstrates the purest role of a mentor. While these are engaging children's stories they illustrate the importance of experiential training, the role of the mentor, and the importance of finding ways to keep creativity flowing in the quest for new solutions to challenges.

Silverman then weighed the pros and cons of Clinician-Investigator training programs. Among the advantages he suggested is the opportunity to build on the strong undergraduate backgrounds of a highly enthusiastic pool of students, through rigorous graduate training, at a relatively low cost. The integration of graduate and medical training provides a "bench to bedside" experience. One distinct disadvantage is the interruption in research during the postgraduate clinical training phase. He showed that about 100 trainees were currently participating in the MD/PhD programs offered by nine institutions across the country; only five had enrollments of a dozen or more. He also noted that on average it takes 8 years to complete a combined MD/PhD program.

According to Silverman, the three most critical factors for the success of these programs are: a supportive supervisor, appropriate

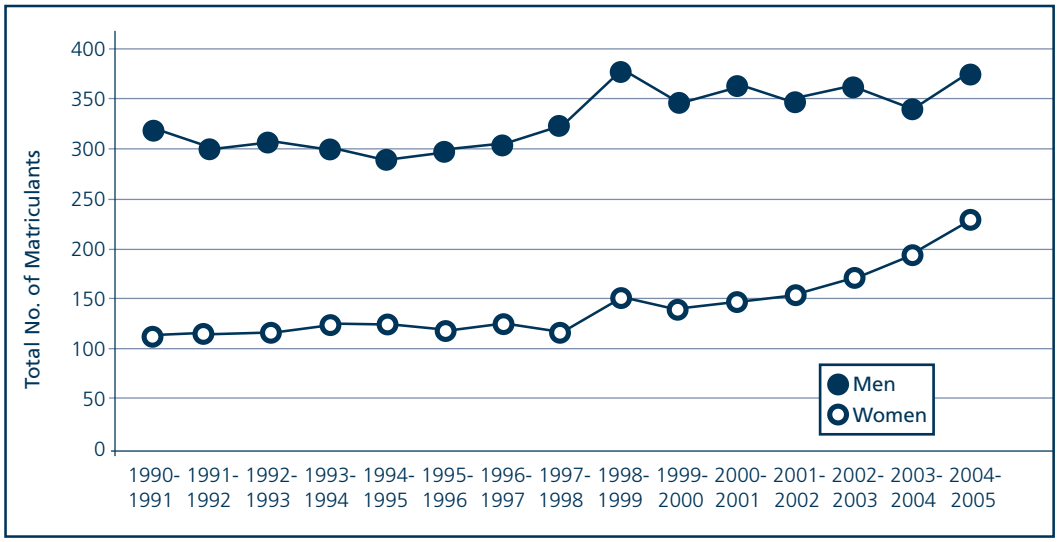
funding, and an effective, coordinating office for the program. With tongue in cheek, he then rattled off half a dozen major "turn-offs" that deter the MD/PhD student. These underscored the competing views inherent in any integrated program and highlighted the personal pressure from family, friends and colleagues, which students often encounter.

Our attention was then turned to examining how successful the NIH funded Medical Science Training Program (MSTP) graduates are in establishing careers in research. Silverman asserted that graduates of these US MD/PhD programs were more likely to: hold academic appointments, conduct research, receive research and research training support, be successful grant recipients, and produce more publications. These, Silverman said, were direct outcomes of programs specifically designed to prepare individuals for careers combining medical practice with research. Silverman also discussed the Royal College Clinician Investigator Program (CIP). This is a clinician scientist training pathway that is embedded in the postgraduate clinical training period. Candidates for the CIP register in a graduate program (minimum 2 year Masters). Certification by the Royal College requires completion of both the graduate component and clinical requirements of the Royal College specialty and/or subspecialty. There are currently 171 CIP trainees across the country, with over one half of those registered at the University of Toronto and the remaining 48% scattered among 7 other universities from coast to coast. Tracking the employment of 125 trainees who finished the research component of CIP, Silverman found that 57 had received academic appointments and another 37 were in clinical residency. He believes further evaluation is needed to measure the long-term results of these programs.

In summary, Silverman stated that clinician scientist training programs were developing satisfactorily and producing skilled graduates, prepared to assume leadership roles in Canadian health care. He recommended that to further improve the programs block funding should be made available to ensure long-term stability. He also wants to see a new clinical investigator stream established and approved by the Royal College. In his view these steps would provide long-term program stability and ensure adequate support was available throughout the transitions between the stages.

As a medical professor, researcher and mother of four children, married to a clinician-scientist, **Dr. Janice Richman-Eisenstat**'s understanding of her topic, the "Opportunities and Challenges for Women in Health Research", is crystal clear. She began with an overview of the many hurdles that woman in medicine and science have overcome, noting how these hurdles continually and sometimes subtly change with each passing decade. Gender parity is certainly an issue that continues to evolve. Not too many years ago, entry into scientific or medical careers was considered too challenging for women or was discouraged outright. Today, the tables have turned and it is often young male candidates who are also suffering the family stressors felt by women.

Gone are the days, thankfully, when women were required to endorse a guarantee that they would not marry or bear children, yet family management matters remain major determinants along the career path for many women. The childbearing years fall within a critical early mid-career period. Maternity leave and childcare issues may result in periods of decreased activity due to absence, resulting in exclusion from professional networks. Working relationships can suffer, opportunities for promotion missed, and the flow of current information stemmed. Little support is available to ensure the retention of clinical skills, to maintain a current level of knowledge, or to assist in the balancing of family life and career.



Academic Year

Despite these challenges, Richman-Eisenstat cited some positive changes in perspectives on a variety of levels: from the enrollment of women in specialty and subspecialty fields, to their promotion and appointment to leadership roles. However, it may not be enough. She asserted that gender discrepancy remains prevalent in academic promotion, assignment of senior positions, and in

compensation as medical school faculty members. Influential committees responsible for the selection and promotion of personnel and the distribution of grants often still exhibit a predisposition to gender bias. She noted that in 2003, 25% of the academic pool was female, yet only 15% of the Canada Research Chairs were women. Better data is available from US sources, but that, too, offers disappointing statistics: in 2000, merely 8 of 125 Deans were women. Other data reveals that while female enrollment and participation in academic medicine and the sciences has catapulted upward, their presence in senior positions has grown only marginally.

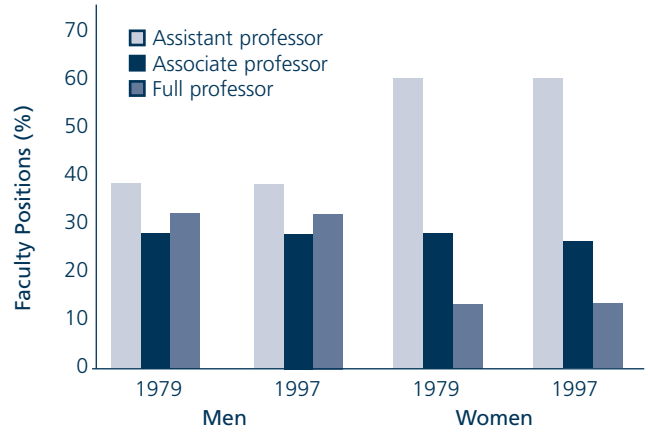


Figure 1. Distribution of Men and Women in Full-Time Faculty Positions in 1979 and 1997, According to Rank.

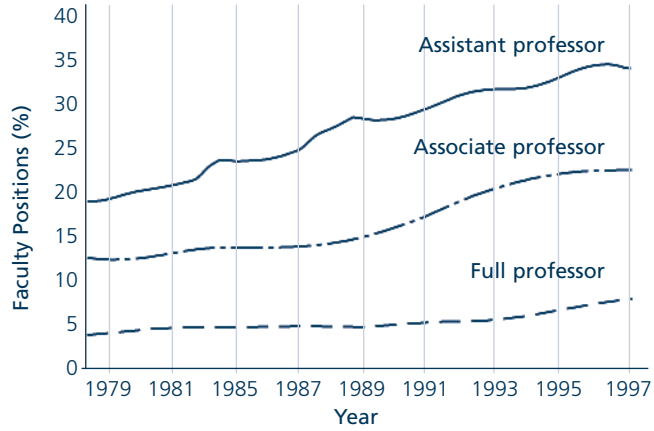


Figure 2. Proportion of full-Time Faculty Appointments Held by Women from 1979 through 1997, According to Rank.

In the US in 2005, fewer than 6% of medical department chairs were women. Similar experiences have been reported overseas. For example, in the European Union, 50% of science graduates are women, yet they hold only 10% of the top positions.

So biases remain, sometimes as unconscious holdovers from previous eras, but more often than not, Richman-Eisenstat suggested, covert discrimination results from a social structure in our culture still dominated by men. This creates barriers for women: sometimes subtle or even hidden but nonetheless prevalent – the fact remains that few women achieve senior status. In addition to the male-oriented organizational environment of science, the inequality in domestic responsibilities still plays a significant challenge to the success of women in science.

Richman-Eisenstat indicated that continuing change in priorities within the cultural environment of medicine and our society is required. The under-representation of women clinician-scientists among faculty as mentors and role models must be addressed. She also purported that the timing of success may be different for women and the myth dispelled that young scientists make all great discoveries. It may well be that women in their 40'and 50's, whose family responsibilities are largely behind them, may be better poised for focussing attention on their research, resulting in scientific success and a greater potential for career advancement. Positives steps are required to increase the numbers of women: elected to national academies; in senior academic positions; winning prizes and receiving lucrative grant awards. Organizations for women in science must be supported.

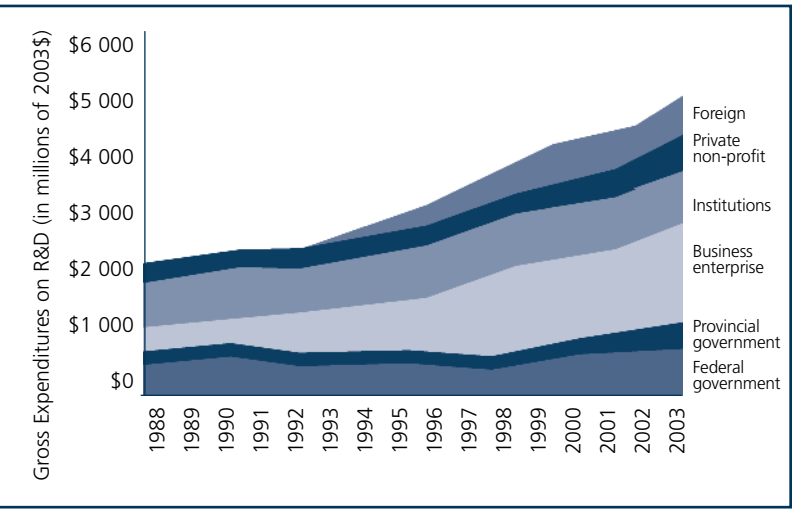
As well, Richman-Eisenstat noted that more must be done to encourage women to pursue careers as clinician-scientists. Programs and support systems must reflect the need, and desire, to keep women in medicine: work re-entry assistance, flexible work practices, women mentors in senior positions, and fair gender representation in appointments and committees are a few of the ideals she listed. She noted that many women tend to express "success" in terms that relate to both home and work. She expressed the need for a "paradigm shift" in cultural attitudes to reduce the conflicts between professional and personal life that will help reduce this creativity-inhibiting stressor. The ultimate goal, she concluded, is to encourage the next generation of women to pursue careers as clinician-scientists and provide the infrastructure that ensures their success.

Reference for first graph:
- The Physician-Scientist Career Pipeline in 2005: Build It, and They Will Come, Ley & Rosenberg JAMA 2005;294:1343-1351
Reference for second graph:
Women physicians in academic medicine: new insights from cohort studies. L Nonnemaker. NEJM 2000; 342:399-405

Visionary Federal Actions 2000-2004

- CFI created $9.5B (including match)
- Research Hospital Fund $1.25B
- CIHR created, budget increased >2-fold over MRC
- Genome Canada created
- Canada Research Chairs
- Canada Graduate Scholarships
- Indirect Costs of Research

The Clinician-Scientist Pipeline: Increasing the Flow was the title of Dr. John Cairns' presentation. He began by defining the clinician-scientist (-investigator, -researcher) as a licensed health care professional with appropriate research training and active in both patient care and research. He pointed out that most are physicians, but that there are increasing numbers from all health professions. He briefly discussed the results of actions taken in the USA and the UK to strengthen health research overall, but particularly recent initiatives in both those countries to identify problems with clinical research (patient-oriented research, including translational research, studies of mechanisms of disease, and clinical trials and observational studies). Major steps have since been taken to strengthen clinical research in both the US and the UK. Cairns stated that in 1997 Canada ranked last among G-7 countries in per capita health research funding. He outlined the huge steps that have been taken in Canada to strengthen health research overall, but stressed that while concerns about the status of clinical research in Canada have been identified and some new initiatives had been taken, noting those of CIHR in particular, further action was needed. Quoting Claude C. Roy, he expressed concern about an apparent reluctance of MDs to pursue careers in research, as evidenced by decreased applications for fellowships and scholarships in the late 1990's. He referenced a number of reports and articles issued since 2002 related specifically to identifying the situation in Canada. It was interesting to note that presenters at this Symposium had prepared the majority of those reports.



Next, Cairns provided an overview of what he considered "visionary" actions at the federal level. These included the multi-billion dollar investment in the creation of organizations such as CFI, Genome Canada and CIHR (which alone saw a two-fold increase in available funds over those available through the former MRC). He also highlighted the funding made available through graduate scholarships, the Canada Research Chairs and payments to universities for indirect costs of research.

Cairns then went on to examine trends in research funding by business, governments, institutions, private non-profit and foreign sources. He illustrated that health research funding has more than doubled over the past 15 years with the greatest increase evident in the area of business enterprise. Through a series of graphs he also showed where shifts had occurred in fellowship and salary funding through CIHR. For example, expenditures on training awards have doubled in the past decade. Expenditures on career support have increased 5-fold, much of the increase accounted for by the Canada Research Chairs. Since the program's introduction in 2000, awards have increased to just over $60M, with the number of awards skyrocketing to over 400.

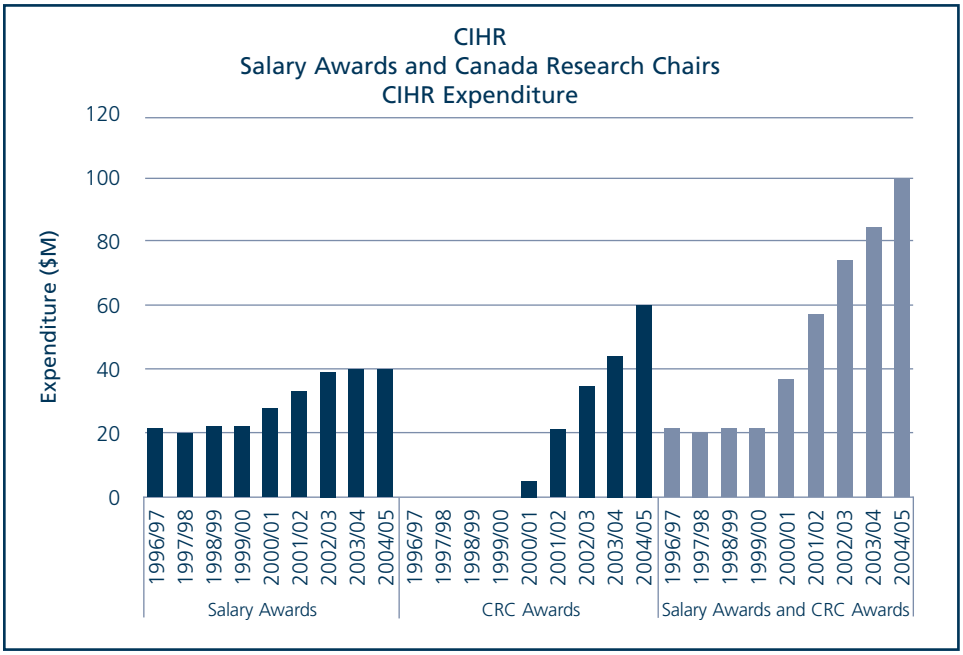
Earlier in his presentation, Cairns had stressed the importance of translational research at the interfaces between the worlds of biomedical science, clinical research, health services and policy research and population health research. Ultimately the benefits are realized by translation of the findings into applications in Canada's healthcare system. He now turned our attention to the strategies that he felt would ensure these improvements in the support for health research would be optimized and sustained in the future. He then proposed that to develop and sustain the next generation of clinician-researchers CIHR must expand, modify and create new personnel awards in support of their training and careers. He called for the development of initiatives that would encourage clinician-researcher career choices: competitive compensation; predictable and stable career paths; new, more flexible awards that recognize the challenges faced in pursuing concomitant research and patient care; and ensuring that opportunities are presented to the spectrum of health professionals.

Cairns observed that the dialogue between funding agencies and research institutions had not been optimum and stated that remedial action would bring positive results. He extolled the benefits of collaborative planning among CIHR and other funding agencies, research institutions and professional groups. He recommended a further doubling of available funding for personnel support by the year 2010.

He stressed the importance of improving the national infrastructure for clinical research, by the creation of networked clinical research centres, the establishment of networks of clinical researchers and the creation of national clinical research technology platforms. As he pointed out, public awareness and support has a significant place in all these strategies.

ADDRESSING THE ACUTE SHORTAGE OF CLINICIAN SCIENTISTS IN CANADA 2006

In closing, Cairns reiterated the tremendous steps forward in support of health research that has occurred in Canada since the late 1990's. However, he noted that more action is needed. He stressed the need for immediate attention to resolve the problems of overall funding in health research, especially at this time when some programs have been frozen and other initiatives have not been implemented as planned. He stated that the federal health research expenditure remains below the targeted 1% of total health spending and that focused efforts are required to meet that target. Funding at this level will allow Canada to develop and sustain the next generation of clinician-scientists, improve the national infrastructure for clinical research and to increase the operational funding for health research. The outcomes will be a better health care system, improved health of Canadians and economic growth.



.....

From the moment he sprang from his seat and bounded up to the podium, Dr. Peter Liu's energy and enthusiasm pulsed through the room. The final speaker of the day, he chose to challenge the audience with a positive stance, asserting this was their opportunity to "compete with the best." He began his presentation, entitled "Clinician-Scientists of Tomorrow – Looking Forward", by exploring the meaning of "clinician-scientist", and explaining that all qualified health care professionals from a variety of fields (Medicine, Nursing, Pharmacy, Language Pathology, Dentistry, etc.) who function as career scientists, committing blocks of time to clinical practice and education, fit the definition. He spoke of the important and unique interface clinician-scientists provide, translating emerging knowledge into improved health outcomes.

Liu acknowledged that training may be long and arduous, and if keeping up with current knowledge wasn't challenge enough, funding uncertainties, lower pay, and less time with family, generally complicated a clinician-scientist's career. However, the challenge of tackling this "three-in-one" professional path was one he clearly relished and wished to encourage others to follow. Key to success, he noted, were a variety of supports including: specialized funding programs; access to role models, mentors and a network of research collaborators; the opportunity to interact with young trainees; and an accessible high-level infrastructure.

Next, Liu turned our attention to the growth in investments made by CIHR over the past five years in the areas of health and health research, highlighting the $1.89M awarded through MD/PhD program grants in 2004/05. These fund were specifically targeted to allow individuals the opportunity to experience academic research and encourage them to continue in research. CIHR's investment is expected to double over the next three years and will provide enabling tools, to fund the best science and excite others to be involved. Best practices must be shared and he named the cancer research network as one notable model.

Through a number of programs CIHR offers funds to Clinician-Scientists intended to motivate the continuing pursuit of health research as a career. It was Liu opinion that these programs were severely undersubscribed. This may be partly due to a lack of awareness but the requirements for institutional commitment may also be a factor. He reminded us of the basic laws of supply and demand, warning that the available funding pool will only increase if the demand was seen to be growing through an increasing numbers of applications.

Liu also identified a variety of supports needed from host institutions. He recommended the use of alternate payment programs such as those found in Alberta and also suggested intramural salary support, the alignment of clinical practices with research opportunities, and establishment of mentorship or "buddy" systems. In addition, individuals must have the tools to succeed. Time management training, networking opportunities and encouragement were among the most important in his view. The goal must always be excellence and depth.

The closing messages of this invigorating presentation focussed on building enthusiasm and commitment. Liu challenged all present to "light the fire within", to inspire the best in others at the earliest stages of their education, even in high school, by inviting students into the laboratory and to follow on rounds. Showing enjoyment in the work sets an example that will make a difference to future clinician-scientists.

Liu fervently believes the future for clinician-scientists is both bright and exciting. As researchers, clinicians, and teachers, they play an increasingly critical and unique role in the future of health sciences and deserve to be nutured through the concerted efforts of the whole community.

Throughout his presentation, it was apparent that Dr. Liu, as the recently appointed Scientific Director of ICRH, had a clear vision of both opportunity and direction. Caught up in the vortex of Liu's positive energy it would be difficult to do anything but "Keep thinking excellence" as he encouraged all of us to do as he left the stage.

……

Addressing the Acute Shortage of Clinician Scientists in Canada symposium was hosted by Friends of Canadian Institutes of Health Research, May 4, 2006 at the Winnipeg Convention Centre, in conjunction with the 3rd Annual National Research Forum for Young Investigators in Circulatory and Respiratory Health.

The purpose of the Symposium was to examine the issues and challenges surrounding the need for physician scientists and other clinical health scientists in Canada with the underlying premise that if young professionals are to be encouraged to follow such a research career path, the various means available to make it happen must be explored. From that point of reference, each of the presenters approached the topic based on their own perspectives and experience.

Marilyn E.A. Williams

……

Summary and Perspective:

Dr. Bruce McManus
Past Scientific Director, CIHR Institute of Circulatory and Respiratory Health
Head, Department of Pathology and Professor of Pathology and Lab Medicine, University of British Columbia

Clinician scientists hold the keys to health care innovation, and especially to a future wherein the words humanity, efficiency and effectiveness are not deemed polar opposites to the terms genomics, technology development, and profitable enterprises. The 2006 FCIHR symposium on the status of clinician scientists and their pivotal role in the emergent future of health research and in bringing knowledge into practice has captured the central issues and opportunities. Just what must be done to achieve higher and sustainable leadership in Canada with regards to research that involves human patients? Framed by Drs. Angel and Friesen and Ms. MacLellan, and then probed by four distinguished and thoughtful leaders, the challenges and the paths to success were mapped.

A significant contribution to our approach in improving the environment and the capabilities of trainee or young investigator clinician scientists can arise from examination of models of success. The models of success in MD-PhD training and surgeon-scientist training at the University of Toronto certainly come to mind. The Clinician Investigator Program of the Royal College also is worthy of special attention and expansion. Local leadership has shown to be the key to such successful programs of combined scientific training and professional development in the health sciences. Emulation of these successes might be augmented by a national forum for clinician-scientist program directors wherein bet practices and anecdotes of success are shared, and from which new inspiration for role modeling is reinforced and actually implemented at other locations desirous of being leaders in the preparation and sustenance of clinician scientists.

Funding agencies and organizations with a commitment to clinician scientists and the best of clinical research have put a big foot forward through the creation of the Strategic Training in Health Research initiative in which many of the 88 inaugural programs have major elements focused on clinician scientists. The CIHR still offers the Clinician-Scientist track, one more oriented to scientists who will spend most of their time in some domain of health research. Many other clinician scholars with a significant contribution to make to health research, have found places on team grants, but have difficulty in extracting themselves from pressing clinical responsibilities in order to delve deeply into research questions. This issue needs more solutions. New infrastructure and new dollars for such in the name of centres and platforms will help clinical researchers, but efficiencies can also be gained through local cooperativity among health care organizations and through partnering between federal and provincial health research funding bodies, as well as with the charities.

Issues of lifestyle, family, and gender are substantial. Although progress has been made in understanding them, only continued innovation will teach us how to achieve career satisfaction, the right balance of life's activities, and the most powerful and beneficial advances in clinical and translational research where the tempo is high, the competition is fierce, and the desire for outputs and outcomes has never been stronger.

Thanks to the expertise of the participants in this symposium and to all professionals across the country who recognize the ripeness of our opportunities in clinical research. The strategies for achieving the essential amalgam of supportive clinicians, clinician scholars, clinician scientists, and scientists from many other disciplines now required for real progress are emerging. We must grasp the insights of those leading the way and apply them where the environments are most fertile and eager.