Taking the first steps

Research career program in family medicine

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abstract

PROBLEM BEING ADDRESSED Research is not new to family medicine, yet it is pursued less than in other clinical disciplines. We need to establish a critical mass of family medicine researchers.

OBJECTIVE OF PROGRAM To establish a departmental research organization using a strategy implemented in 1995 by the Department of Family and Community Medicine at the University of Toronto.

MAIN COMPONENTS OF PROGRAM We set out to establish a critical mass of researchers. Applicants were required to complete credible and feasible 3- to 5-year research plans and to have formal support from their clinical chiefs. Once selected, researchers were supported for 40% of their time. Support was provided for 3 years and was renewable according to progress on their research plans. Researchers were expected to publish on average two papers yearly and be involved as principal investigator or co–principal investigator on at least one successful grant after the first 3 years. Since implementation in 1996, funded researchers have become principal investigators in 80% of the grants in which they are involved compared with 20% before the support program. Nine of 15 Medical Research Council grants held by family physicians in Canada have department members as principal investigators. Faculty-supported researchers contributed more than 200 peer-reviewed publications to the literature between 1996 and 2000.

CONCLUSION Four years of experience allows for early assessment of the first step taken to build a thriving family medicine research organization using limited departmental resources.

résumé

PROBLÈME À RÉGLER La recherche n'est pas une nouveauté en médecine familiale mais, par rapport aux autres disciplines cliniques, elle se fait dans une moindre mesure. Il faut établir une masse critique de chercheurs en médecine familiale.

OBJECTIF DU PROGRAMME Établir une organisation de recherche départementale en s'inspirant d'une stratégie mise en œuvre en 1995 par le Département de médecine familiale et communautaire de l'University of Toronto.

PRINCIPALES COMPOSANTES DU PROGRAMME Nous nous sommes fixé pour objectif d'établir une masse critique de chercheurs. Les requérants étaient appelés à produire des plans de recherche d'une durée de trois à cinq ans qui soient complets et crédibles. Ils devaient avoir l'aval de leur directeur clinique. Le temps des candidats choisis était financé dans une proportion de 40%. Le soutien était offert sur trois ans et renouvelable en fonction des progrès réalisés dans leur projet de recherche. Les chercheurs devaient publier en moyenne deux communications par année et être reconnus comme principaux chercheurs, à titre individuel ou conjoint, dans le contexte de l'obtention d'au moins une subvention après les trois premières années. Depuis son implantation, en 1996, les chercheurs subventionnés sont devenus les principaux investigateurs dans 80% des subventions de projets auxquels ils participaient par rapport à 20% avant l'instauration du programme. Des 15 subventions du Conseil de recherches médicales accordées à des médecins de famille au Canada, neuf comptent comme principaux chercheurs des membres du Département. Les recherches financées par la Faculté se sont traduites par plus de 200 articles évalués par des pairs publiés dans des ouvrages scientifiques entre 1996 et 2000.

CONCLUSION Après quatre ans de fonctionnement, il est possible de procéder à une première évaluation de l'étape initiale prise pour bâtir une organisation productive de recherche en médecine familiale à même les ressources limitées du Département.

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Cet article a fait l'objet d'une évaluation externe.
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"In Canada, medical students do not perceive family medicine as a discipline in which to plan a research or academic career."[1]

Research in the context of general practice and family medicine has a documented history of more than 100 years in the United Kingdom.[2] The North American Primary Care Research Group (NAPCRG) was founded in 1973, and Australian, Dutch, Canadian, New Zealand, and Scandinavian general practitioners have been producing high-quality family medicine research for the past 30 years.

Yet our research enterprise remains small and struggling when compared with other clinical disciplines in Canada and the United States and retains the description of a "road less traveled."[3] In Canada, medical students do not perceive family medicine as a discipline in which to develop an academic or research career.[1] Reasons often mentioned to explain why our enterprise is less vigorous than in other disciplines include the following.

- A focus of activities and energies on residency training as a new discipline is needed to meet the needs of Canadians.
- Family medicine's initial leadership came mainly from clinical practice.
- Demands of clinical family practice (continuity, obstetrics, accessibility) interfere with clinician scientists' focusing on research.
- Medical students encounter disparaging attitudes toward family medicine.[4]
- The nature of our research is not well understood by other departments and funding agencies.

The NAPCRG Task Force on research capacity building is attempting to address these problems. Our Section of Researchers has proposed an institute focused on family medicine in the new Canadian Institutes for Health Research (CIHR).

The Department of Family and Community Medicine (DFCM) at the University of Toronto is the largest academic department of family medicine in North America, if not the world. Faculty leadership felt obligated to use our government-provided resources to strengthen our discipline. We also felt a responsibility to share our experience with others to further strengthen the discipline and overcome perceptions of academic weakness. We first had to convince clinical leaders in the DFCM of the importance of a research program. To be successful required a clear and responsible plan, stringent methods of accountability, and assured outcomes.

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Need for research in family medicine

Family physicians consistently underestimate the importance of family medicine in promoting health. Family physicians and the medical scientific community also fail to understand that most current medical research has limited application to family practice. Recognizing these two facts acknowledges the need for the discipline to develop its own knowledge base with the ultimate purpose of improving Canadians' health.

Kerr White, a Canadian who has spent most of his career at Johns Hopkins University in the United States, described in the 1960s how populations interact with their health care systems.[5] He pointed out that less than 0.1% of patients experiencing illness and disease over the course of a month require care in a tertiary care teaching hospital, where almost all medical research and teaching still take place. Universal application of results from research carried out on highly selected populations has led to mass screening for prostate cancer or screening healthy women for cholesterol levels. These practices carry the potential for incorrect or even harmful outcomes for patients.[6,7] The assumption that research results emanating from highly specialized hospitals or practices can be generalized to family practice populations is flawed.[8] Generalized application of results from studies on selected populations reduces family physicians' ability to understand the origin and early presentation of illness, limits their understanding of early presentation and diagnosis of common problems, and thus reduces optimum management.

As the importance of health promotion and disease prevention grows, the gap in understanding between highly specialized research in the laboratory and application of this work in family practices widens. Poor understanding of this gap has created areas of disagreement and controversy over who should be screened for high cholesterol levels, prostate cancer, breast cancer, and colon cancer. This controversy both misleads and confuses the public and family physicians. The confusion limits provision of optimum care.[9]

Use of statistical sleight of hand, such as odds ratios to explain relatively modest benefits, magnifies

the benefits from some interventions, leading to much wider use of interventions than the research justifies. Questions meaningful to family practice populations are usually best answered in the community.[10] Application of new knowledge in the community requires research and evaluation of both optimum care and effective dissemination to practitioners who can best apply the knowledge.

The strength of the primary care system in a country is seen as an economic asset affecting the overall health status of the population.[11] Not only does the gap in understanding between specialist researchers and family physicians need to be narrowed, but so does the gap in understanding between urban and rural practitioners.[12,13] If family medicine is truly the cornerstone of our health care system, studies of new health strategies must be conducted in a family medicine context.

First steps

In 1995, the DFCM held a retreat for all faculty interested in research to determine how researchers could be best supported in using and developing their skills. Unsurprisingly, we found they needed protected time and infrastructure support. A substantial reduction in medical school class size (255 to 176), without a reduction in the DFCM's base funding, offered an opportunity to liberate funding previously committed to education. Observation of researchers in other clinical departments and other universities (both nationally and internationally) and faculty in our own department revealed that protecting 2 days weekly for research with the remaining time for clinical work and teaching was the best strategy for clinician investigators.

One of the 10 teaching hospitals in the DFCM had supported three to four researchers for 40% of their time over 10 years with good results. A publication of the Department of Internal Medicine at the University of Toronto further affirmed that appropriate funding for research supported about half of physicians' time. This department found that the most productive researchers (measured by producing at least two papers yearly and receiving sustained funding from peer-reviewed research agencies) spent a maximum of 50% of their time in research, the remainder in clinical work.[14] We aimed for a level of funding (2 full days weekly) equivalent to the funding offered for leadership positions in the DFCM (program directors). Discussions with researchers and external advisers who had managed successful research programs in family medicine helped us establish a framework of initial objectives for the program:

- creating a critical mass of family medicine researchers (minimum of five or six);
- providing investigators with a minimum of 40% uninterrupted time for research;
- stimulating development of research excellence and productivity;
- forming links with other programs and departments; and
- providing infrastructure support: secretarial services, grant-writing capacity, statistical consultation, and so forth.

Having identified adequate funding to support four researchers for 40% of their time, we then decided to leverage those funds to eight positions asking for 50:50 shared funding with other agencies. We then planned to add two new researcher positions each year until we reached our goal of 20.

A Selection Committee, chaired by the DFCM's Research Director, was struck. Representation included the DFCM Chair, a representative of the hospital-based Family Physicians-in-Chief, two senior researchers from outside the department, and one senior researcher from inside the DFCM. The Selection Committee asked the DFCM's Executive Committee to approve their selection criteria (**Table 1**). The Selection Committee held one meeting annually to select candidates ready to enter the program at the beginning of the next academic year (July 1) and to review the progress of researchers already in the program. Each applicant for a departmental research position was required to submit the information outlined in **Table 1**.

Each research centre provided individual researchers with physical work space, space for support staff, and conference facilities for research rounds and discussion groups. Administrative assistance, grant-writing support, and access to biostatistical services were subsequently included.

Six-month review

The Research Director uses researchers' 3-year plans for review sessions every 6 months. Reviews are meant to support researchers in achieving their stated goals and objectives. For the reviews, researchers prepare brief reports that are linked to their initial 3-year plans. Deviation from an original plan is reviewed in a constructive and supportive way, identifying difficulties and attempting to address problems. The most common problem we have found, especially among new researchers, is finding time for writing papers arising from a study. Some researchers have saved a half-day weekly for

Table 1. Application requirements

State research objectives

- Outline the research plan for the next 5 to 7 years; specifically describe expected activity and output level within the first 3 years
- Describe how time and all responsibilities would be organized to meet research objectives. Supply a detailed weekly schedule demonstrating the specific four half-days for research
- List area(s) of research and specific question(s) to be addressed
- List proposed collaborators
- Identify a senior mentor if candidates are junior or midcareer researchers. Mentors can be from outside the Department of Family and Community Medicine (ie, from nursing, epidemiology, or other agencies)
- Plan when and to what agencies research grant applications will be submitted. By the end of the 3-year period, researchers are expected to be principal investigators or co–principal investigators on a major research grant
- Describe expected publications over 2 years (average of two yearly)
- Propose activities to increase research skills

Outline postgraduate research training

Form an affiliation with a family practice research group

- Researchers are expected to get involved with one of the two major research centres in the department (Primary Care Research Unit, Family Health Research Unit); involvement includes participation in committee meetings and discussion groups and in teaching
- Arrange for a proportion of each new research grant, equivalent to departmental salary support, to be administered through one of the two units

Supply curriculum vitae emphasizing research activities for the last 5 years

Supply a letter of support from the hospital unit chief

- Confirm full support of timetable proposed by the candidate outlining distribution of responsibilities in the areas of research, clinical practice, and administration
- Describe clerical and research associate support
- Confirm commitment for matched funding for 3 years (renewable)

10 or 12 weeks and then have taken an entire week away from all other activities to focus on writing.

Program evaluation

The first competition attracted 16 applicants, almost all of whom came from a pool of practice-eligible researchers who had gained skills from experience rather than formal research training. After the first 2 years of competition, candidates were required to have formal research training at the masters or doctoral level. The five competitions held since 1995 have attracted between three and five candidates who meet these criteria. **Table 2** indicates the number of active researchers in the program since 1995.

The research program currently supports 17 researchers. Five have moved to other provinces, accepted leadership positions, or retired. Researchers receive their support from either their home hospital division or another research group in Toronto (eg, Institute for Clinical Evaluative Sciences, Addiction Research Foundation, Hospital Research Institutes). These links outside the department have proved crucial in increasing financial support, developing collaborative projects, and providing mentors essential to researchers.

Table 2. Active researchers in program since 1995

ACADEMIC YEAR	NUMBER OF RESEARCHERS	ADDITIONS AND CHANGES
1995-1996	8	
1996-1997	10	2 new researchers
1997-1998	13	3 new researchers
1998-1999	12	3 researchers left (moved), 2 new researchers
1999-2000	14	2 researchers left (moved), 4 new researchers
2000-2001	15	2 researchers withdrew from program
2001-2002	17	2 researchers left; 3 new researchers

Funding

Although total funding received has increased slowly, we have seen an increase in the number of researchers

named as principal investigators and co–principal investigators (**Figure 1**). Sources of funding for DFCM investigators are expanding to include such organizations as the National Health Research and Development Program (NHRDP), the Ontario Ministry of Health, and the Medical Research Council of Canada. The Ontario Ministry of Health and NHRDP funds four of these; of the nine grants funded by the NHRDP, our researchers are principal investigators on seven. In 1999, nine Medical Research Council of Canada grants were held by DFCM researchers out of a total of 15 awarded across the country. Between 1996 and 1999, researchers produced more than 100 papers in peer-reviewed journals: six in care of the elderly, 14 in mother and child care, 12 in clinical problems in the community, five in addiction, three in mental health, five in education, 14 in cancer screening, and 35 in critical review.

An external review, focusing entirely on the DFCM's research activities, was conducted in the third year of the program. Reviewers in their closing paragraphs stated:

> [T]he University of Toronto's Department of Family and Community Medicine is making excellent progress in the development of its research program. We know of no place better positioned to advance family practice through the methods of science [personal communication from Green L, Labrecque M. External review of Department of Family and Community Medicine's research program. Toronto, Ont: University of Toronto; 1999].

Literature reviews conducted by Bland[15] and Bland and June[16] in various disciplines identify key individual and environmental characteristics of effective researchers and research environments. A more recent search of the literature, using the same search terms, reviewed medical literature since added. **Table 3**[15,16,20-47] shows our first steps toward developing these characteristics.

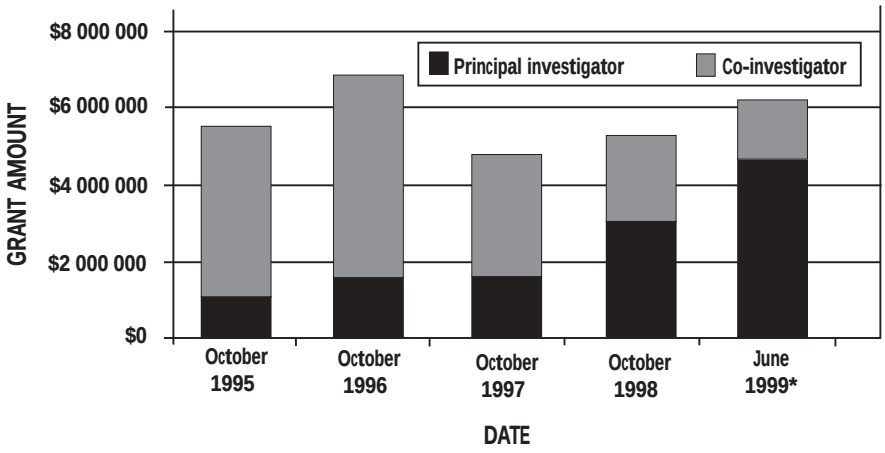
Challenges to development

All unit directors have had to realign staffing and coverage for both clinical and teaching duties. They have also required the support of their staff. This does not happen overnight. Many discussions and creative solutions were required to allow reallocation of teaching and administrative responsibilities so that 40% of researchers' time was adequately protected. It was much simpler to resolve those issues in larger units (on average, more than seven full-time physicians or a complement of part-time teachers) than in smaller units. Recruitment of chairs and unit directors with research experience or a clear mandate to develop research by providing support was crucial.

Pressures of excessive clinical demand require collegial relationships and support from colleagues who cover researchers' patients. Researchers have to communicate and explain their work to unit colleagues, allowing all to share in the glory of publication.

Relocation of researchers to a common space demands good infrastructure support as well as comfort with absence from clinical environments. Such remarks as, "Oh, you were gone another day doing

Figure 1. Total value of active research grants in the Department of Family and Community Medicine from October 1995 to June 1999



*Includes only half of the accounting period (ie, November 1998 to June 1999).

Table 3. Bland's criteria[15,16] for successful research careers and environments

BLAND'S CRITERIA	DEPARTMENT OF FAMILY AND COMMUNITY MEDICINE CRITERIA
Socialization to the academic profession	Require a research degree or training
Mentorship[20-26]	Require mentor as part of application process
Work habit	Require publication and protection from most administrative and teaching responsibilities
Professional communication (networks)[20,27-29]	Critical mass of researchers, physical common space, and regular scientific meetings
Local peer support[29-31]	Common space and shared support with other research organizations
Simultaneous projects	Most people become involved with two or three projects (as principal investigator or co–principal investigator) because of common research-oriented environments
Sufficient work time[32-34]	Two full days devoted to research away from clinical environment
Internal and external visibility[35]	Researchers are active in departmental clinical teaching as well as in the scientific community
Supportive environment[36-38]	Require commitment of hospital chief to support research activities
Clear research goals that serve a coordinating function	Clearly identify goals in the application
Research emphasis	Shift resources and infrastructure to support researchers
Group culture and climate[26,27,39-43]	Research award, research days, and regular meetings collaborating with clinical colleagues
Recruitment selection[44-46]	Recruit Chair and unit directors (chiefs) with research experience or clear mandate. Offer clear entry criteria for researchers and support from other research organizations
Leadership[32-35,47]	Leadership support from Dean, Chair, and hospital chiefs

your research," are often difficult to accept and even induce guilt.

Researchers are often action-oriented people and leaders looking to make a difference. The appeal of administrative responsibilities combined with higher salaries has been difficult for some researchers to resist.

Alliances with other research teams have the advantage of providing the research seniority and infrastructure that are scarce in family medicine. Some researchers worry, however, that they risk losing their identity as family physicians. In most cases, partnerships have strengthened the identity of our researchers and the quality of their work. Common rounds and a common space also help to support their identities.

Achieving a critical mass of researchers was slower than expected, as infrastructure funding was difficult to find. Very few trained family doctors have had research training. Very few medical students see career opportunities in family medicine. Over a 5-year period, we were able to recruit only one resident to undergo research training after residency. That resident has now joined the ranks of funded researchers. We hope that creation of a visible cadre of researchers will help to shift the negative attitude currently held by medical students.

Other clinical disciplines have recently made an important commitment to research and building research capacity.[17] A study of their trajectory from a mainly clinical educational department to a larger focus on research could provide us with some interesting insights on similarities and differences.[18,19]

Conclusion

Our program has exceeded our original objectives in its first 5 years: creation of a critical mass of clinician investigators, providing them with protected time, stimulating research productivity, linking with other departments and programs, and providing some infrastructure support.

If family medicine is to function as a discipline, it must develop and evaluate knowledge about unique family medicine problems on which to base educational programs. We must demonstrate to colleagues and others that our research is worthy of support from competitive funding agencies. Our experience suggests that new and effective research models can be created.

Bland and June summarized what they perceived to be the key elements in their review of the literature: To create research expertise in family medicine "will require more than research training but major refocusing of commitment and resources, restructuring of organizations, targeted recruiting and changes in leadership."[16]

Competing interests

None declared

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Editor's key points

- The Department of Family and Community Medicine at the University of Toronto describes how it built its research capacity.
- Key elements included careful selection of candidates, detailed research plans for 5 years, 40% protected time, and supportive reviews every 6 months.
- Early evaluation shows a marked increase in the number of principal investigators in the department and more than 200 peer-reviewed articles published from 1996 to 2000.

Points de repère du rédacteur

- Le Département de médecine familiale et communautaire de l'University of Toronto décrit comment il a accru ses capacités en recherche.
- Au nombre des principaux éléments figuraient une sélection rigoureuse des candidats, des plans quinquennaux détaillés, du temps protégé dans une proportion de 40% et des évaluations constructives à chaque semestre.
- L'évaluation préliminaire fait valoir une hausse notoire dans le nombre de chercheurs principaux au Département et plus de 200 articles évalués par des pairs, publiés de 1996 à 2000.

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