

Fostering excellence

Roles, responsibilities, and expectations of new family physician clinician investigators

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Abstract

Problem addressed A key priority in primary health care research is determining how to ensure the advancement of new family physician clinician investigators (FP-CIs). However, there is little consensus on what expectations should be implemented for new investigators to ensure the successful and timely acquisition of independent salary support.

Objective of program Support new FP-CIs to maximize early career research success.

Program description This program description aims to summarize the administrative and financial support provided by the C.T. Lamont Primary Health Care Research Centre in Ottawa, Ont, to early career FP-CIs; delineate career expectations; and describe the results in terms of research productivity on the part of new FP-CIs.

Conclusion Family physician CI's achieved a high level of research productivity during their first 5 years, but most did not secure external salary support. It might be unrealistic to expect new FP-CIs to be self-financing by the end of 5 years. This is a career-development program, and supporting new career FP-CIs requires a long-term investment. This understanding is critical to fostering and strengthening sustainable primary care research programs.

EDITOR'S KEY POINTS

- Administrative and financial supports along with a culture that supports early career development can lead to considerable research productivity for early career family physician clinician investigators.
- High levels of research productivity do not guarantee external salary support.
- Financial investment in early career family physician clinician investigators by departments of family medicine can be offset by revenue sharing agreements when there are adequate numbers of more senior researchers.

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Favoriser l'excellence

Rôles, responsabilités et attentes des médecins de famille qui sont de nouveaux chercheurs cliniciens

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Résumé

Problème à l'étude L'une des principales priorités de la recherche en soins de santé primaire est de déterminer comment assurer l'avancement des médecins de famille qui sont de nouveaux chercheurs cliniciens (MF-CC). Il n'existe toutefois pas beaucoup de consensus sur les mesures à adopter pour s'assurer que les nouveaux chercheurs réussissent à obtenir un soutien à la rémunération indépendant, en temps opportun.

Objectif du programme Aider les nouveaux MF-CC à obtenir le maximum de succès dans leur carrière de chercheur.

Description du programme La description de ce programme a pour but de présenter un aperçu du soutien administratif et financier offert aux nouveaux MF-CC par le C. T. Lamont Primary Health Care Research Centre d'Ottawa, Ont.; de préciser les attentes concernant ce type de carrière; et de décrire les résultats en termes de productivité en recherche pour ces nouveaux MF-CC.

Conclusion Les médecins de famille qui font de la recherche clinique sont très productifs durant les 5 premières années, mais la plupart ne réussissent pas à obtenir un soutien salarial externe. Il serait peu réaliste d'espérer qu'un nouveau MF-CC assure lui-même son financement après ces 5 années. Le présent programme est susceptible de favoriser le développement d'une telle carrière; ajoutons que pour aider les nouveaux MF-CC, il faut un investissement à long terme. Il est crucial de comprendre cela si on veut favoriser et renforcer des programmes de recherche en soins primaires à long terme.

POINTS DE REPÈRE DU RÉDACTEUR

- Une aide administrative et financière ainsi que des politiques favorisant le développement des carrières débutantes peuvent engendrer une importante productivité en recherche pour les médecins de famille qui sont de nouveaux chercheurs cliniciens.
- Un haut niveau de productivité en recherche ne garantit pas un soutien salarial externe.
- Le soutien financier que les départements de médecine familiale procurent aux médecins de famille qui se lancent en recherche clinique pourrait être compensé par des ententes de partage des revenus lorsqu'il y a un nombre suffisant de chercheurs plus anciens.

Cet article a fait l'objet d'une révision par des pairs.
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The story

Lisa, a hypothetical clinician teacher in the Department of Family Medicine (DFM) at the University of Ottawa, has completed a master's degree in epidemiology while on sabbatical. She is interested in becoming more involved in research, but is hesitant to make the pronounced career change of becoming an academic clinician investigator (CI). She worries if she will be able to continue providing high-quality comprehensive and continuing care for her patients, and wonders if she has what it takes to succeed in the increasingly competitive research world. She is curious to know what would be expected of her in this role.

Literature

There is a dearth of literature describing the best means to attract and support family physician clinician investigators (FP-CIs), and there are no explicit expectations to guide success in a competitive research environment. Cited barriers to pursuing a CI track in any medical discipline include limited availability of career opportunities, economic disincentives to devoting clinical time to research, lack of research training, unclear contractual arrangements, and the challenge of juggling many responsibilities, especially those of medical practitioner and researcher.¹⁻³ Unlike many other disciplines that can provide episodic patient care, family physicians offer continuous care to defined populations of patients—this can lead to tension in both the research and clinical teams as FP-CIs attempt to balance these roles simultaneously. Furthermore, family medicine has a more recent research tradition and there are fewer academic and funding opportunities for research.^{4,5} This might explain why Canadian medical students choosing family medicine are less interested in research than their peers in other disciplines are.⁶

The literature describes a few ingredients that contribute to the success of new FP-CIs. A commitment to and financial investment in research by the host department, with at least 50% to 75% protected time for research endeavours, is key.^{4,7} Family physician CIs should be provided with early engagement in existing research programs to apply and solidify skills and enhance opportunities for publication.^{4,7} Advanced research degrees and research fellowships are associated with greater productivity as a CI.^{8,9} Finally, mentorship is vital to navigating the academic research system and achieving successful career progression.^{1,10}

While this literature identifies some structural requirements for success in research programs, there is no consensus about the specific career expectations for FP-CIs in terms of publications, research grants, and timelines to achieve independent salary support. As research takes on a larger role in family medicine departments across the country, this is the ideal time to learn from

one another's experiences in training and supporting FP-CIs. We have previously described the organizational strategies and supports that can facilitate progress in primary health care research.⁷ In this report, we add to this literature by describing the specific elements of our research program at the DFM, including what is expected of new career FP-CIs. We also describe the experience and output of our first cohort of FP-CIs in this program.

The C.T. Lamont Primary Health Care Research Centre

Founded in 2000, the C.T. Lamont Primary Health Care Research Centre (CTLRC) is the research arm of the DFM and is part of the Bruyère Research Institute. The CTLRC is located in a complex continuing care hospital on the same floor as the administration for the DFM. While most of the investigators have offices on site, it is a virtual centre for several FP-CIs who are physically located at other facilities in the university. The research team is predominantly composed of practising family physicians, and also includes a psychologist, a pharmacist, and an epidemiologist. Currently, 9 FP-CIs and 3 non-FP investigators are collaborating on 23 active grants worth \$8 million. The main thematic area of the CTLRC is health services research in primary care, and new FP-CIs are hired with the expectation that their research programs will align with this theme.

Remuneration, protected time, and relationship with the DFM. Most full-time academic faculty members in the DFM, including all full-time FP-CIs, participate in a financial partnership in which all members draw similar, prorated financial incomes, based on a combination of pooled clinical earnings and contributions from the DFM. It is important to note that in Canada, CIs cannot draw income from project funding. All contributions to the financial partnership by FP-CIs come from sources such as clinical work, career scientist awards, honoraria, consulting fees, etc. All FP-CIs are provided 50% to 70% of their hours as protected academic time for research and scholarly activities, whereas other clinical career paths are provided 20% to 30% protected academic time. For new FP-CIs, the DFM initially offsets some of their reduced clinical earnings by transferring funds to the financial partnership. The expectation by the DFM has been that within 5 years FP-CIs will acquire independent financial support, usually through career scientist awards, to cover their protected time. Similar to other members of the partnership, FP-CIs are eligible for a 6-month sabbatical after 3.5 years of service.

Orientation. Upon hiring, each new investigator is oriented by the research director, the FP-CI's research interests are clarified, and opportunities to collaborate

with existing projects are identified. Each new FP-CI is initially invited to collaborate with another CTLC investigator on active research in order to promptly benefit from participating in a funded research project, with the intention that this will contribute to early co-authorship and possible future research grants.

Infrastructure. Family physician CIs are each provided office space located within the CTLC to facilitate collaboration with the broader research team. An electronic project-tracking system helps to document research productivity and coordinate activities.

Research and administrative supports. The CTLC has a full-time operations manager who contributes to administrative support. In addition, each full-time FP-CI is provided with a half-time research assistant to support their research and administrative activities. Research assistants are involved in projects at all stages, including identifying grant opportunities, organizing and contributing to grant submissions, conducting literature searches, and writing and submitting manuscripts. Administrative duties can also include project coordination support, organization of meetings, acting as a resource for protocols and procedures of the CTLC, and acting as a liaison to the operations manager.

Mentorship. Mentorship is a core part of the research program at the CTLC. New FP-CIs are mentored by senior investigators through a semiformal mentorship program. The mentor and mentee meet on a regular basis and focus on a range of objectives including assistance with short- and long-term career goals; development of specific research skills and knowledge; and strengthening relationships and collaborations internal and external to the CTLC. To further encourage collaboration and networking between new FP-CIs and senior investigators, we host monthly research-in-progress rounds and a monthly assembly of the CTLC investigators.

What is expected of FP-CIs?

Key competencies of FP-CIs. In addition to a medical degree and an active licence to practise family medicine, each FP-CI must hold or be pursuing a health care research-relevant master's or doctoral degree. Although a doctorate is not a requirement of the position, FP-CIs are supported to pursue this level of education to enhance their research skills and increase their experience. Moreover, the CTLC identified several key competencies drawn from the University of Ottawa Clinical Investigator Program and adapted them to the primary care setting (**Box 1**).^{11,12}

Research expectations. The expectation has been that all FP-CIs establish sustainable, independently funded

research programs aligned with the thematic research priorities of the CTLC within 5 years of launching their research careers. For a full-time equivalent FP-CI with 50% protected time for research, this means securing external salary support for 2.5 days per week, typically in the form of a career scientist award. For the new FP-CI, an early emphasis is placed on grant writing and publications, as in Canada researchers are eligible for most early career awards only in the first 5 years after earning their last advanced degrees, so early productivity is important. The inability to secure independent funding might result in a career track review for the FP-CI.

Detailed research expectations for FP-CIs are outlined in **Table 1**. These expectations were developed iteratively during a period of several years with input from all FP-CIs, including those in the early stages of their careers, and are regularly reviewed to ensure that they remain current. These are believed to be the minimum requirements of FP-CIs, as achievement of career scientist awards likely requires at least this degree of success.

Clinical and teaching expectations. To maximize success as researchers, FP-CIs are encouraged to limit their clinical time and redirect their teaching duties to have sufficient protected time for research. Family physician CIs provide care for an approximate panel size of 115 patients per half-day of clinical time. The 3 to 5 clinical half-days are spread throughout the week to maximize continuity of care and lessen the burden on clinical colleagues. In general, FP-CIs do not perform obstetric deliveries, provide emergency department care, or provide in-hospital service. While the FP-CIs participate in after-hours community calls, they do so less frequently than their clinically focused colleagues, as this obligation is proportionate to the amount of clinical service provided. Flexibility is built into the clinical schedule to allow FP-CIs to make up clinic hours that might be cancelled owing to research activities.

Although most FP-CIs do their clinical work in academic teaching units, they are not responsible for the supervision of family medicine residents and do not generally participate in formal postgraduate or undergraduate teaching. However, FP-CIs are expected to support the research efforts of non-CI faculty, supervise resident scholarly projects, and provide clinical teaching related to their research expertise. These efforts help ensure that FP-CIs are valued as integral members of their clinical teams. In addition, FP-CIs might be expected to supervise graduate students in the health sciences, and some FP-CIs have additional teaching responsibilities in affiliated departments at the University of Ottawa.

Research productivity of new FP-CIs at the CTLC

A total of 5 early career FP-CIs have worked at the CTLC for at least 5 years (**Table 2**). Their research performance during their first 5 years was assessed based

Box 1. The C.T. Lamont Primary Health Care Research Centre key competencies for recruiting CIs: *Based on the CanMEDS essential competencies of a physician developed by the Royal College of Physicians and Surgeons of Canada.¹² These competencies are grouped into 7 roles: medical expert, communicator, collaborator, manager, advocate, scholar, and professional.*

Medical research expert

- Function effectively as a CI, integrating all of the CanMEDS competencies
- Understand roles to function as a clinician and to conduct ethical research
- Recognize the limits of his or her own clinical research expertise and seek appropriate consultation from others as required
- Demonstrate a genuine passion for primary care research

Research communicator

- Develop rapport, trust, and ethical relationships with research subjects, peers, and other professionals
- Demonstrate strong oral and written communication skills

Research collaborator

- Participate effectively and appropriately in interprofessional research teams
- Connect individuals and organizations to create meaningful partnerships
- Effectively work with others in research teams to prevent, negotiate, and resolve interprofessional conflicts

Research manager

- Manage activities for research skill and career development effectively
- Manage research project and resources appropriately, effectively, and efficiently
- Manage experimental data recording and result interpretation appropriately in research endeavours

Health advocate

- Participate in ethical research, with appreciation for the importance of research to the social, economic, and biological factors that affect health
- Participate in activities that demonstrate advocacy for subjects, patients, communities, and populations to further health and the research enterprise
- Promote dissemination of research knowledge to patients, communities, and populations through knowledge translation initiatives

Scholar

- Establish and maintain knowledge, skills, and attitudes appropriate to his or her research practice, with a thorough understanding and appreciation of the components of proper scientific inquiry
- Elicit information, evaluate it and its sources critically, and apply this appropriately to research practices and decisions
- Demonstrate proficient and appropriate use of primary care research methods
- Perform complete and appropriate assessments of research questions and problems, using effective experimental methodologies to address questions
- Convey relevant information and explanations accurately to research subjects, peers, and other professionals in research activities including scientific presentations, grant proposals, publications, and other communications using appropriate scientific writing skills
- Consult appropriately for feedback on knowledge and performance
- Maintain and enhance professional activities through ongoing learning
- Facilitate the learning of others about research, including patients, families, students, residents, other health and research professionals, the public, and others, as appropriate
- Contribute to the creation, dissemination, application, and translation of new knowledge and practices
- Demonstrate the ability to work independently

Professional

- Demonstrate a commitment to the profession, society, the subjects, and the patients through ethical and honest research practices
- Demonstrate commitment, honesty, integrity, and compassion in research activities, including participation in profession-led regulation, peer-review activities, and the prevention of academic fraud
- Demonstrate a commitment to clinician researcher health and sustainable practice

CI—clinician investigator.

Adapted from the University of Ottawa Faculty of Medicine.¹¹

on information contained in annual reports from the DFM and their curricula vitae. Upon joining the CTLC, 3 out of 5 FP-CIs had advanced research degrees in health-related fields. During the first 5 years, 2 FP-CIs completed additional advanced degrees, so that at the end of this period, 4 of the 5 FP-CIs had advanced research degrees—either master's or doctoral degrees. Also during this time, 2 FP-CIs took maternity leave.

These new FP-CIs were involved in securing 66 grants totaling \$10.7 million. It should be noted that some of the FP-CIs started their careers during a time of unprecedented provincial investment in primary care

research through the Primary Health Care Transition Fund. Three of the grants, totaling \$3.2 million, were part of this funding program. As it often takes many years to measure the effect of research findings, we report the number of conference presentations and peer-reviewed publications as a proxy for the effect that our FP-CIs have had on the field of primary care research. Family physician CIs supervised an average of 5 resident scholarly projects during this period. Only 1 of the 5 FP-CIs was able to secure external salary support in the form of a career scientist award during the first 5 years.

Table 1. Progressive research expectations of FP-CIs: All timings are by the end of the year. Expectations increase with higher academic training. All actions must fit with the strategic plan. Ongoing core expectations include attending Assembly of Scientists meetings and research-in-progress rounds.

DIMENSION	ACTIVITY	YEAR 1	YEAR 2	YEAR 3	YEAR 4 AND BEYOND
Research infrastructure	Career salary support	Preparation commences for career support	Application submitted for support	Application obtained for career support or second application	Ongoing
	Mentor	Mentor in place—meet regularly with mentor	Ongoing	Ongoing	Ongoing
	Focused independent research program	Draft research program	Documented research program (with deliverables)	Direct supervision of research staff aligned to research program	Ongoing
	Cross-appointment to graduate study organization	NA	Application submitted for cross-appointment	Cross-appointment obtained	Supervision of postgraduate student
	Relationships with decision makers	Relationships between senior CIs and decision makers on established projects observed	Contacts made with relevant stakeholders	Ongoing	Knowledge of decision makers and stakeholders used to inform research program
Research funding (competitive*)	PI grants	Under preparation	Submitted	Obtained	Administered at least 1 PI grant in a year
	Co-investigator grants	Obtained	On 3 funded projects	Ongoing	Submission for program funding (team or network grant) On 4 funded projects Year 5: PI or co-investigator on an important grant
	Liaison with outside academic institutions	NA	Either co-authorship of a submitted article or co-investigatorship of a submitted grant	1 peer-reviewed grant successfully obtained as solo investigator, PI, or co-investigator Second application submitted and funds received	Ongoing
	Liaison with outside policy makers	Evidence of progress toward liaison		Formalized liaison with outside body (sitting on a committee, project administration, consultancy)	Ongoing
	Research output	Opinion papers, editorials, reviews, reports	1 accepted	1 publication in a peer-reviewed journal (first authorship is encouraged)	2 publications in peer-reviewed journals per year
	Research papers (including systematic reviews)	Progress toward completion of a research paper	Research paper accepted	2 research papers accepted in the year	
	Conference presentations	1 abstract accepted	2 abstracts accepted (national) 1 abstract accepted (international)	2 abstracts accepted (national) 2 abstract accepted (international)	Ongoing active involvement in conferences or meetings in the discipline At least 4 presentations per year at national conferences At least 3 presentations per year at international conferences Keynotes and workshops preferred
Assisting the DFM	Teaching	Teaching residents or undergraduates	Ongoing	Research projects to undergraduates or residents	Support at least 1 DFM clinician educator or administrator (GFT or CFT) on a research initiative
	Support for residents	Assistance with resident research project		A publication from a resident research project	Ongoing
	Liaison with other members of DFM	Co-authorship of conference presentation or paper (under preparation)	Co-authorship of conference presentation or paper (submitted)	Co-authorship of conference presentation or paper (accepted)	Ongoing
	Departmental committees	Member of unit committee	Ongoing	Member of DFM committee	Ongoing
	Active involvement in clinical teaching unit	Active involvement by membership in committees, small groups	Regular resident supervision	Translation of research activities to clinical unit	Ongoing

CI—clinician investigator, CFT—community full time, DFM—Department of Family Medicine at the University of Ottawa, FP-CI—family physician CI, GFT—geographic full time, NA—no action, PI—principal investigator.

*Research funding that is non-competitive, from industry, or commissioned can count in this section, but the expectations for this are moved 1 year earlier in the cycle and only apply in the first 3 years.

Table 2. Summary of research performance during the first 5 y as an FP-CI: $N=5$ FP-CIs in the sample.

PERFORMANCE INDICATOR	VALUE	NOTES
Grants		
• Average time to first grant as PI, y	1.4	<ul style="list-style-type: none"> All grant information refers to grants on which an FP-CI was named as either the PI or co-investigator. This does not include any external salary supports awarded Averages refer to grants received per FP-CI during their first 5 y. As more than 1 FP-CI can be involved in a grant, averages are not mutually exclusive and might include grants that are counted for more than 1 investigator Totals refer to the total number of grants secured by all FP-CIs combined
• Average no. of peer-reviewed grants	14	
• Average no. of non-peer-reviewed grants	3	
• Average amount, \$	2.8 million	
• Total no. of grants	66	
• Total amount, \$	10.7 million	
Publications		
• Average no. of original research articles	6	<ul style="list-style-type: none"> All publication information refers to peer-reviewed publications on which an FP-CI is named as an author. Publications are divided into original research contributions (articles reporting the results of research activities) and other publications in peer-reviewed journals (eg, commentaries, editorials) Averages refer to publications per FP-CI during their first 5 y. As more than 1 FP-CI can be an author on a publication, averages are not mutually exclusive and might include publications that are counted for more than 1 investigator Totals refer to the total number of articles published by all FP-CIs combined
• Average no. of other peer-reviewed articles	8	
• Total no. of original research articles	36	
• Total no. of other peer-reviewed articles	28	
Presentations		
• Average no. of international presentations	13	<ul style="list-style-type: none"> All information on presentations refers to oral and poster presentations given at research conferences, at meetings, and to decision makers, in which an FP-CI was listed as a presenter or co-author Averages refer to presentations per FP-CI during their first 5 y. As more than 1 FP-CI can be listed on a single presentation, averages are not mutually exclusive and might include presentations that are counted for more than 1 investigator Totals refer to the total number of presentations by all FP-CIs combined
• Average no. of national presentations	22	
• Total no. of international presentations	61	
• Total no. of national presentations	95	

FP-CI—family physician clinician investigator, PI—principal investigator.

Conclusion

This article summarizes the key factors required for the CTLC's administrative support and outlines what is expected of individual FP-CIs in order to maximize the opportunity for early career success. Comprehensive supports have led to considerable success in terms of research productivity on the part of new FP-CIs; however, external salary support has been elusive. We conclude that it is unrealistic to expect new FP-CIs to be self-financing by the end of their first 5 years. It is important that FP-CIs work effectively with their clinically focused colleagues, particularly during this period when they are not self-financing. However, this is a career development program; the contributions of more senior members can offset the salary payments made to new FP-CIs. As a group, the FP-CIs at the CTLC, including senior, midcareer, and new investigators, have contributed more to the financial partnership in the DFM than they have drawn out most years. This means that while each FP-CI is not self-financing, the overall program is sustainable, so long as the number of new FP-CIs is balanced by more senior investigators. Supporting

new career FP-CIs requires a long-term investment. Maintaining an adequate balance between senior and new FP-CIs will allow for sustainable growth in research capacity.

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Contributors

Dr Hogg conceived the idea, critically reviewed the manuscript, and approved the final version. **Drs Kendall** and **Muggah** contributed to the conceptual development, critically revised the manuscript, and approved the final version. **Ms Mayo-Bruinsma** collected and summarized the data, critically revised the manuscript, and approved the final version. **Ms Ziebell** drafted the manuscript, made critical revisions, and gave final approval for the version submitted for publication.

Competing interests

None declared

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