

Curriculum development of 6for6

Longitudinal research skills program for rural and remote family physicians

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Abstract

Problem addressed To address barriers challenging the engagement of rural and remote family physicians (RRFPs) in research, Memorial University of Newfoundland in St John's has developed a longitudinal faculty development program (FDP) called *6for6*.

Objective of program To establish and evaluate a longitudinal FDP that promotes a foundation of research activity.

Program description Informed by a needs assessment in phase 1, phase 2 saw the *6for6* curriculum designed, developed, and implemented to reflect the unique needs of RRFPs. Preliminary evaluations have been conducted and results will be presented after year 1 of the program.

Conclusion The *6for6* FDP has been positively received by participants, and it is evident that they will serve as champions of rural research capacity building. It is anticipated that by April 2017, 18 RRFPs will be equipped with the research and leadership skills required to foster research networks within and outside their communities.

EDITOR'S KEY POINTS

- Few faculty development programs (FDPs) support research skill development among rural and remote family physicians (RRFPs), in spite of their having greater barriers to research engagement, including geographic and professional isolation. Memorial University of Newfoundland (MUN) in St John's created an FDP to address this need for RRFPs.
- The *6for6* curriculum, developed after a needs assessment, comprises 6 structured, face-to-face sessions at the main MUN campus and e-learning activities before and after sessions. Each year the 6 RRFP participants identify a research question that is relevant to their individual practices or communities, and *6for6* connects them with mentors and other resources through MUN.
- Preliminary evaluations of the program have been positive. Formal evaluation is under way.

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Élaboration du cursus de 6for6

Programme longitudinal de formation en recherche
à l'intention des médecins de famille en régions rurales et éloignées

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Résumé

Problème à l'étude Pour éliminer les obstacles à l'engagement des médecins de famille ruraux et éloignés (MFRE) dans des projets de recherche, l'Université Memorial de Terre-Neuve à St. John's a élaboré un programme longitudinal de perfectionnement professoral appelé *6for6*.

Objectif du programme Instaurer et évaluer un programme de perfectionnement professoral longitudinal, propice à l'établissement d'un fondement aux activités de recherche.

Description du programme Éclairée par les résultats d'une évaluation des besoins à la première étape, la deuxième étape s'est poursuivie par la conception, l'élaboration et l'implantation du cursus de *6for6* qui reflète les besoins uniques des MFRE. Des évaluations préliminaires ont été effectuées et les résultats seront présentés un an après le début du programme.

Conclusion Les participants au programme de perfectionnement professoral *6for6* l'ont accueilli favorablement, et il est évident qu'ils serviront de champions du renforcement des capacités en recherche rurale. On s'attend à ce que d'ici avril 2017, 18 MFRE auront les compétences et le leadership en recherche nécessaires pour favoriser des réseaux de recherche à l'intérieur et à l'extérieur de leurs communautés.

POINTS DE REPÈRE DE RÉDACTEUR

- Rares sont les programmes de perfectionnement professoral à l'appui du développement des compétences en recherche à l'intention des médecins de famille ruraux et éloignés (MFRE), même s'ils sont aux prises avec les plus importants obstacles à leur participation à la recherche, y compris l'isolement géographique et professionnel. L'Université Memorial de Terre-Neuve à St. John's a élaboré un programme de perfectionnement professoral pour répondre aux besoins des MFRE.
- Le cursus *6for6*, élaboré à la suite d'une évaluation des besoins, comporte 6 séances structurées auxquelles on assiste en personne au campus principal de l'Université, de même que des activités d'apprentissage électronique avant et après les séances. Chaque année, les 6 MFRE participants proposent une question de recherche pertinente à leur pratique ou à leur communauté, et le personnel de *6for6* leur assigne des mentors et d'autres ressources par l'intermédiaire de l'Université.
- Les résultats des évaluations préliminaires du programme se sont révélés positifs. L'évaluation formelle est en cours de réalisation.

Cet article a fait l'objet d'une révision par des pairs.
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Skill development beyond traditional clinical and teaching domains is important for faculty development in family medicine.^{1,2} Today physicians must adapt to novel competencies outlined in the CanMEDS physician competency framework, including a scholar role that requires that they exhibit competency in research and demonstrate a lifelong commitment to learning in the form of creation, dissemination, application, and translation of medical knowledge.³ Perhaps because of the broad acceptance of the CanMEDS roles² and the importance of research to the improvement of family medicine,¹ most Canadian medical schools now have faculty development programs (FDPs) targeting research skill development.² However, few initiatives support research skill development among rural and remote family physicians (RRFPs), in spite of their having greater barriers to research engagement.^{4,5} The ability for RRFPs to participate in initiatives like faculty development is often limited by their lack of time, as they are juggling long work hours, teaching commitments, and extended on-call arrangements,^{4,6} and dealing with geographic and professional isolation.^{7,8}

Memorial University of Newfoundland (MUN) in St John's has responded to these issues by developing an evidence-informed longitudinal FDP for RRFPs called *6for6*. The *6for6* program is a research skills development opportunity for RRFPs developed in 3 phases. Phase 1 was a mixed-method, targeted assessment of the needs of RRFPs (page e80)⁹ to inform phase 2 (curriculum design, development, and implementation), which is detailed in this report. Phase 3, program evaluation, will be reported in a future article.

Program objectives

Short-, medium-, and long-term objectives were identified.

- Short term: To identify and prioritize skills and services that RRFPs need to engage in research.
- Medium term: To establish and evaluate a longitudinal FDP that promotes a foundation of research activity.
- Medium term: To facilitate a process for knowledge translation and social capital¹⁰ building among RRFPs to build and support strong rural family medicine research capacity.
- Long term: To demonstrate improved rural patient outcomes through relevant research.

Program description

Curriculum design, development, and implementation. Kern and colleagues' 6-step curriculum development approach for medical education (Figure 1) was used to ground the design and development of the *6for6* framework and identify program goals, learning objectives, curriculum content, and instructional strategies.¹¹ Information from phase 1 was integrated to build an engaging, feasible, and sustainable curriculum

framework that met the needs of RRFPs. A curriculum blueprint was developed to define learner outcomes and expected competencies at the end of *6for6*, then this information was mapped onto the most effective instructional and assessment strategies. Throughout this process, principles and theories of adult learning were integrated to emphasize the value in the learning process, such as fostering self-directed learning, internal motivation, and relevant, practical experiences given participants' goals after *6for6*.¹²

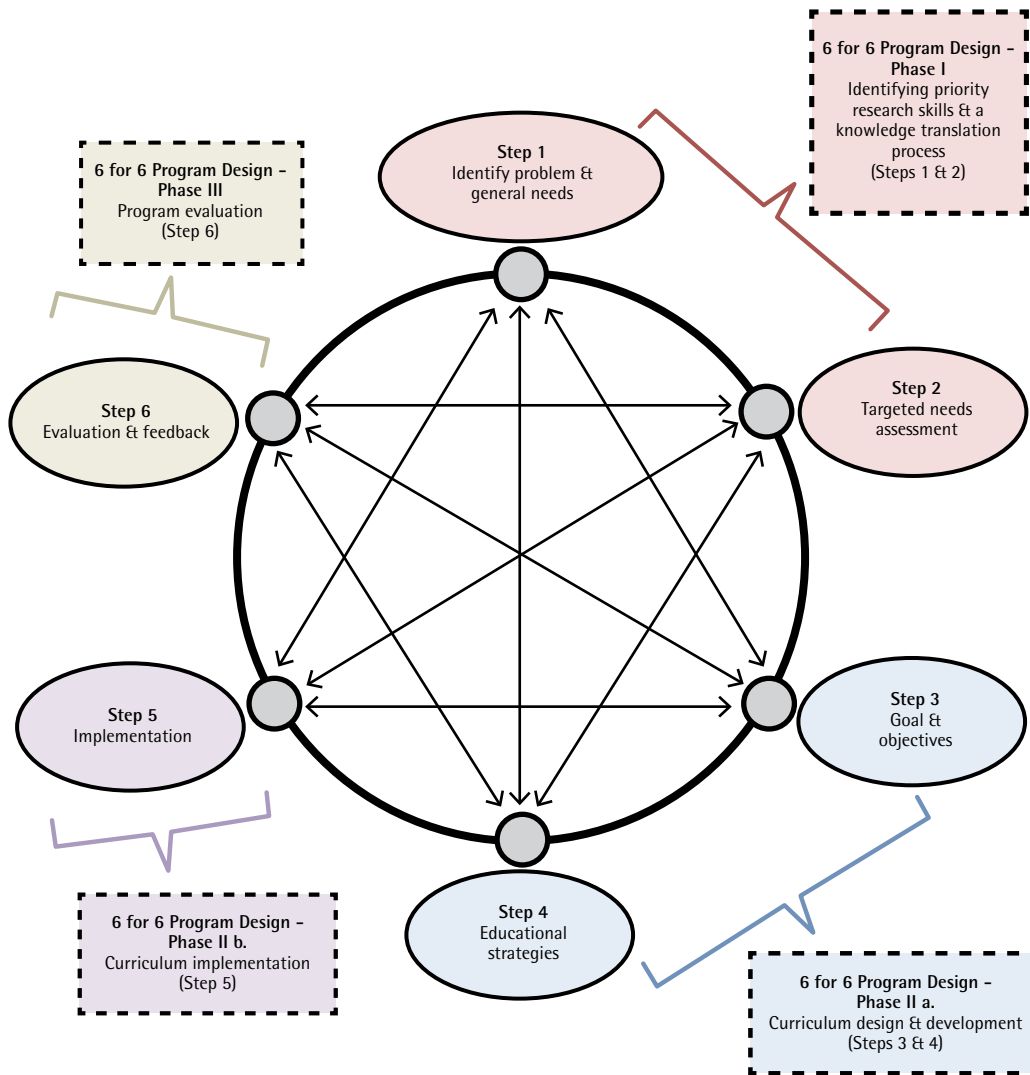
Curriculum. The *6for6* curriculum comprises 6 structured, face-to-face sessions at the main campus in St John's and e-learning activities at a distance. Session content (Table 1) focuses on the priority research topics identified in phase 1.

Experts and presenters are invited by the research team to teach the topics and develop teaching materials that are reviewed and approved by the core planning committee and the Health Research Ethics Authority. To prepare participants for each upcoming session, consolidate participant learning after each face-to-face session, and maintain participants' skills, pre-session and post-session curriculum and activities are provided. Individual work is required between the face-to-face sessions and includes e-learning modules, readings, online discussion questions, e-learning assignments (case-based or problem-based activities), and audio- or video-based activities. Participants also fill out evaluation forms electronically before and after completion of any pre-session or post-session work.

Each session follows a similar agenda (Box 1) with minor edits based on participant feedback. Mealtimes double as social time, allowing participants to form relationships that could extend academically into a research network. Overall, participants appreciate this format, particularly the highly interactive curriculum delivery, the balance between formal curriculum delivery and time to "learn by doing" through dedicated time to work on research proposals, and meeting with the research assistant (RA), librarians, and mentors. The agenda also provides substantial time for participants to work on their proposals and projects, helping to address the self-reported lack of research skills and challenges associated with limited time to do research.

Educational strategies. The *6for6* program is designed around learner-centred principles including active, social, and contextual learning. Participants conduct their own independent research projects on real-world issues in their practices or communities, are taught to conceptualize the project in the context of a framework, and are connected with MUN faculty with similar research interests. Given the personal relevance of these projects, participants are also intrinsically motivated and take ownership of their

Figure 1. Curriculum development plan



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learning. Further, the curriculum and scheduling are founded on a needs assessment, and a participatory action approach is used for “reflection in action.”¹³ Participants occasionally request agenda changes during sessions, which are accommodated if possible. Changes are also made based on postsession and postprogram feedback. Adjustments are also made to accommodate participants’ “life issues” that challenge full participation (eg, becoming a new parent, children’s illnesses) using flexible program delivery (eg, connecting participants to face-to-face sessions via teleconference), making 6for6 inclusive and respectful of participants’ personal situations.

The 6for6 program uses a blended learning model with synchronous (instructor-led) and asynchronous (self-paced)

learning approaches, and didactic and e-learning instructional strategies including podcasts, mobile learning, case- and problem-based learning, group discussion, and in-class activities to consolidate and confirm learning. An Internet portal (www.6for6.ca) was created to house curriculum content, resources (eg, evaluation tools, handouts, and schedules), discussion boards (for group and individual discussion with mentors), and personal reflection or note-taking journals. Each participant has access to their own portal, and committee members have administrative access to discussion boards and to upload resources. Curriculum content in the portal is organized chronologically according to the timing of the face-to-face sessions. All curriculum content from before and

Table 1. Research topics included in the 6for6 curriculum

SESSION	RESEARCH TOPICS
Session 1	<ul style="list-style-type: none"> Defining the concept of research in the medical field (clinical and medical education) and a research road map (overview of how research typically rolls out, what participants can expect, key concepts and processes) Overview of library support services (including how to use reference managers)
Session 2	<ul style="list-style-type: none"> Conceptualizing research and formulating your research question How to perform a literature search and review Building a research team (this topic is threaded throughout the program after this is formally introduced, both through e-learning and during face-to-face open group discussions)
Session 3	<ul style="list-style-type: none"> Quantitative research methods Qualitative research methods
Session 4	<ul style="list-style-type: none"> Research ethics
Session 5	<ul style="list-style-type: none"> Mixed-methods research Applying for research funding Dissemination Writing Project timelines and management
Session 6	<ul style="list-style-type: none"> 6for6 project presentations Lessons learned Next steps Current 6for6 participants meet incoming 6for6 participants

after the face-to-face sessions is expected to be completed 1 week before and 3 to 4 weeks following the face-to-face sessions, respectively.

Program infrastructure. The infrastructure of 6for6 is based on findings from phase 1. Participants are provided dedicated time and space to work on research activities and to collaborate with their peers. Partnerships with on-site departments and services (including library services, professional development conferencing services, and

ethics) help participants build and formalize research networks and research communities of practice⁴ both within and outside of their respective communities. Librarians and ethics officers not only provide support to our participants, but also teach relevant topics during our face-to-face sessions and develop online learning modules as part of the pre-session and post-session curriculum, making them critical to the success of 6for6.

Research assistant. The RA assists with activities relevant to participants' research projects, helps participants between face-to-face sessions, reminds participants of pre-session and post-session curricular work, and connects participants with on-site research services (eg, librarians, ethics officers, and mentors). The RA also aids with research activities (eg, literature searches, annotated bibliographies, proposal writing, and data collection and analysis), coordinates face-to-face sessions and uploading curricular content to the portal, and tracks participant progress. The RA's role will also be vital to the ongoing research success of 6for6 alumni.

Recruitment of participants. Over 3 years, 6for6 will accept 18 RRFPs (6 per year) to complete 12 months of a research curriculum. These physicians live and work in small communities throughout Newfoundland and Labrador (NL), New Brunswick, and Nunavut and have part-time appointments as clinical teachers with the Faculty of Medicine at MUN. Although participants vary in practice experience, none has previous advanced research training or experience. We have developed a 2-phase application process whereby individuals submit a

Box 1. Typical session agenda

Day 1

- Breakfast
- Formal curriculum delivery on session topic
- Dedicated time to meet with mentors and research assistant
- Dedicated time to meet with library services and work on research projects
- Lunch
- Reconvene to
 - discuss "take away messages," lessons learned, challenges faced, and strategies
 - review day 2 agenda

Day 2

- Breakfast
- Formal curriculum delivery on session topic
- Lunch
- Dedicated time to work on research projects
- Review of online course work and next face-to-face session agenda
- Evaluation

letter of intent describing their interest in 6for6 and their ideas for a research project. The committee reviews their applications and ranks the top 10 applicants based on the scientific merits of the letter of intent, the geographic representation, and 6for6 objectives. The top 10 ranked applicants are then invited to submit a formal application, which includes sign-off by their medical directors regarding time away from work to both participate in the face-to-face sessions and complete other program requirements. These applications are then ranked by the core planning committee until consensus is reached.

Program evaluation. Program evaluation is in progress and performed at all levels to include 6for6 participants, the core planning committee, and mentors using focus groups and surveys. Feedback is also sought informally from participants throughout the program, particularly during face-to-face sessions, and is integrated into future sessions. Quantitative and qualitative findings from the evaluation of the first 3 sessions have been extremely positive and suggest a high degree of participant satisfaction and self-perceived growth in research knowledge, skills, and application abilities. Evaluation data will be reported following the first iteration of the program and as a complete 3-year pilot.

Discussion

The 6for6 program is designed with the practice context of potential learners—busy RRFPs—in mind. Our approach of constructing 6for6 around a needs assessment is an improvement over similar FDPs that did not use an evaluation of participant needs to inform curriculum development.¹⁴⁻¹⁷ Although at the time of writing we had not completed the first iteration of 6for6, we had 6 engaged and productive RRFPs, each pursuing a research question highly relevant to the communities in which they practise (**Table 2**). Participants are enthusiastic and it is evident they will serve as champions of rural research capacity building. With the expansion of medical schools to more distributed teaching, 6for6 responds to the need for innovation by addressing the unique challenges to research for physicians in rural and remote communities. This adds to the capacity of the community at large.

Need for the program. Given our geography and participant distribution (40% of the NL population is rural with potential participants living up to 1000 km away from the Faculty of Medicine and in very remote northern settings), RRFPs are broadly distributed in NL. The 6for6 program is therefore a critical tool to alleviate barriers to research engagement by promoting a foundation of research activity among RRFPs and linking physicians with one another and with resources at MUN to enhance knowledge translation and social capital building, and, ultimately, to strengthen rural family medicine capacity in NL.

Essential components of a longitudinal FDP. At its core, 6for6 is an FDP developed specifically for RRFPs. Our strategy of constructing 6for6 around a targeted needs assessment is therefore crucial, ensuring that the needs of this population were central to development and thus directly addressed by the resulting program. Beyond the needs assessment, several other factors are also essential, such as the commitment of stakeholders including the Dean of Medicine and the Chair of Family Medicine, who together have supported 6for6 through funding and enthusiastic endorsement.

Often participants complete a program, return to busy practices, and continue to face the same challenges that impede rural research, resulting in delays or abandonment of research ideas. Thus another critical component of 6for6 is the postprogram support we aim to provide to alumni. Mentors will continue to offer a guiding hand of expert advice on participants' research projects, while the RA will connect participants with services on campus and continue assisting with research activities including paper editing, data coding and analysis, and interviews.

Effects to date. Participants will later formally reflect on the usefulness of, the effectiveness of, and their self-perceived changes throughout 6for6. From feedback to date, 6for6 has empowered them with the skills needed to do research, and by fostering their energy and creativity. The short-term outcomes include increased stakeholder awareness through dissemination of the project concept at national and international meetings, marketing initiatives that have increased awareness of the program, and participants' testimonials and information sharing with peers. Other short-term outcomes comprise the larger physician community being more aware of research resources available throughout the Faculty of Medicine, and our participants' enhanced knowledge, skills, and confidence in research. Our medium- and long-term outcomes are yet to be realized at this stage; however, previous research suggests that innovative, interactive, multisession, small group FDPs like 6for6 that are focused on educating a specific group (in this case, RRFPs) are likely to have an effect.¹⁸

Future goals. We anticipate the creation of an institute of rural and remote primary care research to provide dedicated resources, space, and support for 6for6 alumni to continue with their research projects and receive ongoing support, motivational contact, and networking.

Limitations

The 6for6 program should be interpreted considering its limitations. Our situation might be unique in that our dean recognized the financial constraints that limit faculty development initiatives and gave us a dedicated bud-

Table 2. Participants' research questions from the first iteration of 6for6

RESEARCH QUESTIONS	METHOD
Are family medicine residents at MUN who spend more than 6 months training in a single rural area more likely to start practice in rural Newfoundland than those who do not?	Retrospective cohort study
What are the patient-oriented indicators of success for tuberculosis care in northern Labrador, as indicated by an evaluation of an established tuberculosis clinic?	Program evaluation
Is there a need for a rural-specific academic framework and, if so, what educational, social, and practical principles should underlie its creation?	Mixed methods
What are the common patient presentations requiring medical evacuation in rural and remote Labrador?	Descriptive time series
What are the characteristics of "high-risk" elderly patients who have been assessed through the Healthy Aging Clinic at Dr Charles L. LeGrow Health Centre in Port aux Basques, NL?	Case series
Can a team of rural general practitioners and clinical pharmacists with no infectious disease training successfully implement specific antibiotic stewardship interventions in hospitalist-led settings?	Quality improvement study

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get to cover infrastructure costs. We also have access to expert mentors to support participants, a resource potentially unavailable to other faculties of medicine. Our rural family physicians are engaged in the mission of the Faculty of Medicine more broadly, which has perhaps facilitated their enthusiastic involvement. We can report only on our short-term objectives, as we had not yet finished the first iteration of 6for6 at the time of writing.

Conclusion

In phase 2 of 6for6 we designed, developed, and implemented a curriculum around the needs of RRFPs,⁹ creating a longitudinal FDP that achieves our stated objectives. Our program promotes a foundation of research activity among RRFPs and links them with one another and with resources at MUN, in order to enhance knowledge translation and social capital, and, ultimately, to strengthen rural family medicine capacity in NL. By April 2017, 18 RRFPs will be equipped with the research and leadership skills needed to drive the province toward improved rural patient outcomes through relevant research.

Ms McCarthy is a member of the core planning team for 6for6 and a doctoral candidate with a focus on medical education at Memorial University of Newfoundland (MUN) in St John's. **Dr Bethune** is the primary investigator for the 6for6 project, former Director of Faculty Development in Family Medicine at MUN, and a family physician. **Ms Fitzgerald** is a student in social work at MUN and was a research assistant for 6for6. **Dr Graham** is a member of the core planning team for 6for6, a family physician practising in rural Newfoundland and Labrador, and Associate Professor at MUN. **Dr Asghari** is a member of the core planning team for 6for6, an epidemiologist, and Assistant Professor at MUN. **Mr Heeley** is the research assistant for the 6for6 program. **Dr Godwin** is Director of the Primary Healthcare Research Unit, Professor in the Discipline of Family Medicine at MUN, and a family physician.

Acknowledgment

The 6for6 program has been funded by the Dean of Medicine at Memorial University as a 3-year experimental project, with an annual budget of \$100 000. Participants are individually paired with expert researchers to help them throughout 6for6 with the curriculum content and with integrating the content into their research plans. All mentors are provided with mentorship support through expert-guided face-to-face discussions, resources like coaching strategies, and a sample timeline for meeting program outcomes.

Contributors

All authors contributed to the concept and design of the program, the needs assessment, and preparing the manuscript for submission.

Competing interests

None declared.

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