From clinical observation to clinical discovery

The challenge for family medicine research

Nicholas Pimlott MD CCFP **Ross E.G. Upshur** MD MSc CCFP FRCPC

> *We are continually faced with a series of great opportunities brilliantly disguised as insoluble problems.*
>
> John W. Gardner

Family medicine research has undergone a vast transformation during the past 2 decades. We can attest to this as family physicians whose careers in research span this current golden age.

Academic family medicine departments in Canada have developed strong core groups of funded family physician and allied health researchers with stable financial infrastructures and administrative supports.[1,2] These well-supported researchers are successfully competing for important research grants and are publishing their research in reputable, high-impact-factor journals dedicated to publishing excellent research in the discipline.

Dr William Hogg has documented the increasing recognition of and opportunities for research in family medicine through the Canadian Primary Health Care Research Network in the pages of this journal.[3]

Formerly, Canada lagged behind many other industrialized countries in creating primary care, practice-based research networks, so the Canadian Primary Care Sentinel Surveillance Network, developed in collaboration with the Public Health Agency of Canada and described as "a developing resource for family medicine and public health," is an important development in the family medicine research landscape.[4] In spite of these advancements, we wonder if family medicine research is in danger of missing something core to its mission and vision. That is, has the hard-won success come at the expense of being too much like other successful research traditions in medicine and neglecting our essence?

This year marks the 60th anniversary of the College of Family Physicians of Canada and, therefore, the 60th anniversary of family medicine as we have come to understand it as a discipline. What better time to look back at the work of one of its founders, Dr Ian McWhinney, to see what he has to tell us about where family medicine research has been, and more importantly, where it might go in the future? Dr McWhinney was involved in pioneering research in family medicine throughout his career, but he began his research while still in England and working as a general practitioner. There he published several clinical observational studies on the early signs of illness, which became the subject and title of his first book.

Lament for the death of clinical discovery

In the last decade of his life, much of what Dr McWhinney wrote about research in family medicine was a lament that we were no longer engaged in what he called *clinical discovery*.[5] By this he meant the discovery of new diseases, new or unusual presentations of diseases whose natural history was already thought to be well known or well understood, and, one can argue, the discovery of unique ways in which diseases (and their treatments) might interact in complex patients with multiple chronic diseases.[6,7]

Here is how he described the problem:

> A few years ago I suggested that the neglect of clinical research in family practice was due to three things: the devaluation of taxonomic research, our lack of awareness of the limitations of randomized controlled trials, and a lack of confidence in our ability to add to medical knowledge. Using Ryle's definition of clinical research (observing, recording, classifying, and analyzing), I described how it could be part and parcel of our daily practice, a source of great interest, and a field of research that can be explored only by clinicians who are participant observers. Clinical practice is the heart of our discipline, and if it is not at the centre of our research, how can our discipline survive?[8]

In present-day practice there is a pervasive sense that we are at the "end of history," that there are no new diseases to be discovered and that most of our research focus in family medicine should be aimed at putting the things we know to greater effect in our practices and in the health care system as a whole. But this is certainly not the case—within the past generation we have seen the discovery of AIDS and HIV as well as the severe acute respiratory syndrome coronavirus, diseases which were first encountered and described in primary care settings. New and original clinical discoveries like these are waiting to be made.

A neo-McWhinnean revolution is needed

One of us (R.E.G.U.) has argued in the pages of this journal that the rise of concurrent chronic conditions in an aging population is an opportunity for family physicians to use their continuing care for this patient population

Cet article se trouve aussi en français à la **page 27.**

to better describe and classify the novel ways in which these chronic conditions manifest. It might require a neo-McWhinnean revolution to foster and promote family physicians' attention to close observation in clinical care in this population.[9]

How then can we bridge the gap between the family physician primarily engaged in clinical practice and best placed to make such discoveries, and the developing infrastructure of family medicine research and knowledge dissemination?

The first step is to re-evaluate the way we train family medicine residents to engage with research. For more than 20 years training programs have focused their efforts on having residents carry out original research projects under the supervision of preceptors, preferably those with research credentials. The yield from this approach in terms of developing critical appraisal skills, attracting family medicine trainees to research careers, and yielding publications in research journals has been very low indeed. Some would argue that by the end of such an exercise we have permanently inoculated our residents against the importance of research in their clinical practices.[10]

This failure has been recognized in many academic departments, resulting in a shift in emphasis toward replacing the resident research project requirement with a continuous quality improvement project in the hope that we will at least be providing them with practice-relevant skills that they can repeatedly use when they graduate. It is too early to say whether such an approach will succeed.

Embracing clinical discovery

We believe that a more relevant and useful approach is to train residents to become more acute clinical observers and to recognize the phenomena in practice that McWhinney labeled *clinical discovery*. From a practical point of view, this would involve having residents write case reports describing such phenomena observed in their own practices, engage with other clinicians in their group practices to gather additional cases, and write these observations up for publication.[11] A perfect example of just such an approach is a case, published by Shepherd and Lyon while Shepherd was a family practice resident, of gingival bleeding that was the initial presenting symptom of prostate cancer in a 72-year-old family practice patient.[12] There are now many vehicles for publishing rigorous, well-structured, peer-reviewed clinical cases (eg, *BMJ Case Reports*, *Journal of Medical Case Reports*). Encouraging both trainees and preceptors to look for meaningful opportunities to document and publish cases could facilitate legitimating clinical observation and disseminating the results.

The second step is to systematically develop processes that would allow clinicians working at the "coal face" to engage with the developing cadre of professional family medicine researchers and infrastructures when they make discoveries in clinical practice that warrant further description and characterization. For example, there is a particular opportunity for family physicians who make important and new clinical observations and who are practising as part of larger practice-based research networks to leverage the expertise of both their research colleagues and the larger collective clinical data available through the network. In developing such processes it is crucial that the clinician who makes the discovery is a key part of the research that unfolds as a result, rather than the one-time provider of raw material for the professional researcher. Using evolving information technology to create virtual observatories where clinical observations can be shared and approaches to patient management compared might be an innovation whose time has come. "Crowdsourcing" could extend to research in family medicine.

A third and final step is to remove the structural barriers to publishing and disseminating original clinical discoveries. Original clinical discoveries often emerge with the observation of a particular case. While there are now journals specifically dedicated to the publication of case reports, most case reports still emerge from the specialist setting. Most such cases are rarely seen in family practice and mainly add to specialist knowledge of a particular rare condition. Similarly, when family physicians do conduct clinical research in their own practices and in keeping with Ryle's definition of clinical research, it is very difficult to get the work published, even in family medicine research journals. There are several reasons for this, but a key one is that peer reviewers are unused to evaluating such discoveries properly. The work is usually rejected on the grounds that the sample size is too small or that the work was conducted in only one practice. Family medicine journals must take risks and provide places for family physicians to publish and share individual clinical observations in the form of case reports, as well as clinical observational studies grounded in practice.

The personal experiences of both authors attest to the challenges described above. One of us (R.E.G.U.) has developed the IMPACT (Interprofessional Model of Practice for Aging and Complex Treatments) clinical program in collaboration with family medicine colleagues.[13] The IMPACT model was inspired by the clinical despair that came from self-reflection and experience. Older complex patients were getting short shrift in routine care. Fifteen-minute visits left heavy moral residue. The problem was measured and the IMPACT team realized that patients in practices were getting older and more complex. They wrote a conceptual piece outlining the

issues. A pilot project was designed and funded (nominally to help teaching). The IMPACT model was created, refined and evaluated, and then funded as a pragmatic randomized controlled trial that had qualitative research nested within its design. The IMPACT team published case studies from it[14] and have developed and published clinical measurement tools, and they continue to follow the original vision with more research, much of it published in *Canadian Family Physician*. There is clearly a path of discovery available for all family physicians to pursue, and the first step on this path is rooted in clinical observation.

As Dr McWhinney wrote:

> General [family] practice has four advantages as an environment for clinical research. First, for any disease, we see the whole range, from the mildest cases to the most severe, so we are in a position to give a fuller description than a referral clinic. Some diseases with low referral rates can be studied only in general practice. Second, because of our long-term relationships with patients, we can follow them for long periods and can obtain very complete follow up by using tracing strategies. Third, we are in a position to add important contextual detail. Fourth, because we see the earliest stages of illness, we can describe its whole natural history, including all the circumstances surrounding its onset. Even for such a common condition as chronic daily headache, there are no descriptions of its natural history from its onset onward. As John Ryle wrote, "There is no disease of which a fuller or additional description does not remain to be written; there is no symptom as yet adequately explored."[7]

On the brink of the 60th anniversary of the College and of family medicine in Canada it is time to ask the following: Is family medicine research at risk of losing something at its very heart—the power of clinical observation and discovery? Is it time for a transplant?

Dr Pimlott is Scientific Editor at *Canadian Family Physician* and Associate Professor in the Department of Family and Community Medicine at the University of Toronto in Ontario. **Dr Upshur** is Professor in the Department of Family and Community Medicine and Dalla Lana School of Public Health at the University of Toronto, and Medical Director of Clinical Research at Bridgepoint Health.

Competing interests
None declared

Correspondence
Dr Nicholas Pimlott, Women's College Hospital, 60 Grosvenor St, Toronto, ON M5S 1B6; telephone 416 323-6400, extension 4581; fax 416 323-6351; e-mail **nick.pimlott@utoronto.ca**

References

1. Talbot YR, Rosser WW. Taking the first steps. Research career program in family medicine. *Can Fam Physician* 2001;47:1254-60.
2. Hogg W, Donskov M, Russell G, Pottie K, Liddy C, Johnston S, et al. Riding the wave of primary care research. Development of a primary health care research centre. *Can Fam Physician* 2009;55:e35-40. Available from: **www.cfp.ca/content/55/10/e35.full.pdf+html**. Accessed 2013 Dec 3.
3. Hogg W. Rebuilding the primary care infrastructure one research project at a time. *Can Fam Physician* 2011;57:1121-2 (Eng), e354-5 (Fr).
4. Birtwhistle RV. Canadian Primary Care Sentinel Surveillance Network. A developing resource for family medicine and public health. *Can Fam Physician* 2011;57:1219-20 (Eng), e401-2 (Fr).
5. McWhinney IR. Assessing clinical discoveries. *Ann Fam Med* 2008;6(1):3-5.
6. McWhinney IR. Why are we doing so little clinical research? Part 1: clinical descriptive research. *Can Fam Physician* 2001;47:1701-2 (Eng), 1713-5 (Fr).
7. McWhinney IR. Why are we doing so little clinical research? Part 2: why clinical research is neglected. *Can Fam Physician* 2001;47:1944-6 (Eng), 1952-5 (Fr).
8. McWhinney IR. Dr Olson's discovery and the meaning of "scientific." *Can Fam Physician* 2004;50:1192-3 (Eng), 1200-29 (Fr).
9. Upshur REG, Tracy S. Chronicity and complexity. Is what's good for the diseases always good for the patients? *Can Fam Physician* 2008;54:1655-8.
10. Leahy N, Sheps J, Tracy CS, Nie JX, Moineddin R, Upshur REG. Family physicians' attitudes toward education in research skills during residency. Findings from a national mailed survey. *Can Fam Physician* 2008;54:413-4.e1-5. Available from: **www.cfp.ca/content/54/3/413.full.pdf+html**. Accessed 2013 Dec 3.
11. Mahankali Sridhar AR, Willett LL, Castiglioni A, Heudebert G, Landry M, Centor RM, et al. Scholarship opportunities for trainees and clinician educators: learning outcomes from a case report writing workshop. *J Gen Intern Med* 2009;24(3):398-401. Epub 2008 Dec 18.
12. Shepherd SM, Lyon WK. Gingival bleeding: initial presentation of prostatic cancer. *J Fam Pract* 1990;30(1):98-100.
13. Tracy CS, Bell SJ, Nickell LA, Charles J, Upshur REG. The IMPACT clinic. Innovative model of interprofessional primary care for elderly patients with complex health care needs. *Can Fam Physician* 2013;59:e148-55. Available from: **www.cfp.ca/content/59/3/e148.full.pdf+html**. Accessed 2013 Dec 3.
14. Bell SH, Tracy CS, Upshur REG; IMPACT Team. The assessment and treatment of a complex geriatric patient by an interprofessional primary care team. *BMJ Case Rep* 2011;10.1136/bcr.07.2010.3154. Epub 2011 Mar 15.