

What Does It Mean to Build Research Capacity?

North American Primary Care Research Group Committee
on Building Research Capacity and the Academic Family
Medicine Organizations Research Subcommittee

The family of family medicine organizations has identified clinical and practice-based research as a high priority for our specialty. This is based on the vision that all family physicians have a role in the generation and application of new knowledge to improve the health of individuals, families, and communities. This goal can only be achieved by increasing the number of trained and experienced family medicine researchers and enhancing the value of research to practicing family physicians, their patients, and the public. To meet this goal, the Committee on Building Research Capacity of the North American Primary Care Research Group and representatives from all of the Academic Family Medicine Organizations groups developed a strategic plan. The plan focuses on the training, funding, infrastructure, and linkages required to develop new family physician researchers and to change the culture of family medicine to accept research as integral to our specialty. In addition, the plan acknowledges the need to enhance the reputation of family medicine research and increase family medicine research publications by assuring that we ask the right questions.

(Fam Med 2002;34(9):678-84.)

As the specialty of family practice has developed and matured,¹ family medicine researchers began to address gaps in the science base of our discipline, recognizing that information borrowed or adapted from the condition-based or disease-based research of other specialties is insufficient.² Policy analysts and family medicine futurists have identified research and clinical practice data as “cultural trends”³ on which to base the future of our discipline. Yet, as a young, clinically based specialty, the number of family medicine researchers has lagged behind that of other specialties.⁴ Developing a research capacity in family medicine thus became a high priority.⁵

The Academic Family Medicine Organizations (AFMO) Steering Committee (Appendix A) asked the North American Primary Care Research Group (NAPCRG) to implement a plan to increase the research capacity of the discipline of family medicine. NAPCRG is devoted exclusively to fostering research in family medicine and related primary care disciplines, and NAPCRG members represent the spectrum of family medicine researchers, including physicians, epidemiologists, sociologists, and anthropologists working in clinical practice and academic settings.

Other important parallel efforts were occurring simultaneously. In 1997, the American Academy of Family Physicians (AAFP) launched an initiative to increase research capacity and enhance the value and image of family medicine research.⁵ The Residency Review Committee for Family Practice added a requirement that all family practice residents receive research training,⁶ and a number of family medicine organizations sponsored Keystone III.¹

This document reflects the efforts of the research capacity-building subcommittee of the NAPCRG Committee on Building Research Capacity that occurred during this unique period of concentrated focus on family medicine research. The document is intended to serve as a position paper that can guide the development of a strategic planning process.⁷

Methods

The development of this document was an iterative process.⁷⁻⁹ The process began at the 1998 and 1999 national committee meetings attended by representatives of all of the organizations that belong to AFMO, plus other representatives of organizations that either support, train, or include family medicine researchers (Appendix B). During these committee meetings, the group

was asked to address the question “What does it mean to build research capacity?”

Affinity Diagram Process

The group used an affinity diagram process^{10,11} to propose answers to this single question. Each member of the committee who attended the meeting was given three small pieces of paper on which they wrote answers to the capacity-building question. All notes were then attached to a large bulletin board. After all notes were completed and posted, the group was asked to move the small notes around, grouping together notes containing similar concepts. This process of grouping and regrouping continued until the group as a whole agreed that no further regrouping was needed.

The strength of the affinity diagram process was that it allowed brainstorming in an egalitarian way.^{10,11} Each person contributed three ideas. Collapsing the ideas into themes then became the work of the entire group, allowing rapid and varied interactions and discussions to occur while still having the overview of the multiple themes clearly visible. The discussion that occurred during the meeting included reference to the work of many other individuals and groups.^{2,6,12-31}

Generation of Report

One member of the group (Mark Ebell, MD, MS) took the groups of identified themes and wrote a draft of the capacity-building document that was shared with the committee at a subsequent national meeting. Revisions were recommended. A small working group (Appendix B) was then charged with making these revisions. The final document contained the identified themes as developed and revised by the committee members.

The major topics identified in the document are summarized below in the statement developed by the writing committee and approved by the NAPCRG Committee on Building Research Capacity and finally by each member organization of AFMO. Appendix C is a list of the original topics proposed by the participants, presented under the major themes as finalized according to the affinity diagram process.

Results: What Does It Mean to Build Research Capacity?

Vision

All family physicians have a role in the generation and application of new knowledge to improve the health of individuals, families, and communities. This goal can only be achieved by increasing the number of trained and experienced family medicine researchers and enhancing the value of research to practicing family physicians, their patients, and the public.

Themes

A. Linkage. Because family medicine researchers are widely distributed around the world, often without a critical mass at a single center, building research capacity across the discipline will involve building linkages. Examples include linkages between novice and expert researchers, linkages between researchers interested in a common topic, linkages across practices to form research networks, linkages with researchers from other medical and nonmedical disciplines, and linkages among research networks, research centers, and academic institutions. The Internet and national meetings could be used to facilitate these linkages.

B. Infrastructure. Without adequate research infrastructure, it is impossible to build research capacity. Building this infrastructure begins with ensuring that family medicine leaders, such as academic department chairs, have a better understanding of the research process and of the types of infrastructure services and skills required to support a successful independent investigator. Infrastructure needs include research centers with a critical mass of experienced investigators willing to support each other and to mentor others, adequate amounts of protected time for academic faculty and practicing physicians to pursue research, academic tenure track research positions (or equivalent positions in large medical groups), positions and support for the nonclinical faculty so important to family medicine research, and grant administration and management support. In the presence of this infrastructure, experienced, funded, senior researchers will serve as role models, mentors, and collaborators for less-senior researchers, faculty, and students, a process that will ultimately increase the cadre of family medicine researchers.

C. Training. To effectively build research capacity, it will be necessary to enhance the training of family medicine researchers at all levels. Training tasks should include clarification of paths for students to enter family medicine research careers, the identification and support of mentors for novice researchers, support to obtain advanced research degrees, presentation of workshops for basic and advanced research skills dissemination, expansion and financial subsidy of research-oriented family medicine fellowships, and encouragement for family physician participation in multidisciplinary research fellowships. The goal is to build a critical mass of skilled, energetic, independent investigators in the discipline.

However, a period of formal training or fellowship is seldom sufficient. An additional 2–3 year period of mentored and financially supported work is usually necessary to move from trainee to fellow to funded researcher. Most individuals will require at least 50% to 80% protected time during this period to become inde-

pendently funded investigators. Family medicine researchers should also be encouraged to take advantage of career development awards from the National Institutes of Health, Robert Wood Johnson Foundation, and other agencies that provide 3 to 5 years of support to establish junior investigators as independent researchers.

D. Reputation. The ultimate measure of research capacity in family medicine is the extent to which practicing family physicians feel supported by and pride in the research output of their discipline and the extent to which practitioners' work with patients is guided by this knowledge. A secondary measure of research capacity is the extent to which family medicine researchers are recognized for their work by researchers in other disciplines and by funding agencies. This latter measure can include receiving grant funding, serving on key national or state advisory committees, participating in study sections and round tables, and receiving invitations to present research results. More broadly, it will be measured by the extent to which the family medicine research agenda influences the national research agenda. Specific goals should include having family medicine researchers on at least 5 to 10 of the National Institutes of Health (NIH) study sections, having family medicine researchers on every Agency for Healthcare Research and Quality (AHRQ) study section, and having family medicine research representation at all federal research agenda-setting conferences.

E. Publishing. An important aspect of building research capacity involves publication and dissemination of research results. This requires adequate space for publication of original research in family medicine journals supported by the entire family medicine community. Overall, the number of family medicine research manuscripts submitted and accepted for publication must increase. The results of original research should also be presented and disseminated in other creative ways to increase the impact on medical practice.

F. Culture. Building research capacity will inevitably involve changing the culture of family medicine. This begins by creating an environment within the specialty in which research is a valued, expected, and enjoyable activity. The expectation should be for all family physicians and all family medicine faculty members to be involved in some way in the generation of new knowledge. For family physicians who are primarily clinicians, this means taking a more critical, evidence-based approach to patient care, placing more value on the results of original research, and, when possible, participating in a practice-based research network. Family medicine organizations and academic family medicine departments can facilitate this culture change by explicitly valuing scholarship and research, by instilling

an appreciation and understanding of research among students and residents, by developing centers of research excellence, and by supporting the development of independent investigators who will develop a coherent line of family medicine research.

An atmosphere of mutual respect and appreciation for the unique contribution of all members of the family medicine research family will be required. Family medicine should build on its unique integrative role in health care to advance the science of research to include multidisciplinary and multi-method approaches to medical research.

G. Asking the Right Questions in the Right Setting. A research agenda that will change practice and the delivery of health care and foster increased demand for family medicine researchers must begin by asking the right questions—questions that lead to knowledge that helps to enhance the health or health care of patients. A good research question should address common practice or policy problems, integrate a practice-based/relationship-centered perspective, and respond to the needs of clinicians, policy makers, and funding agencies' agendas. These questions should be answered in the appropriate primary care setting, including academic medical settings, large group practices, and practice-based research networks using multiple methods. One goal of asking and answering the right questions will be to create physicians who are informed consumers of research.

H. Funding. Sustaining and increasing family medicine research capacity will require an increase in funding for family medicine researchers. In addition to significantly increased, targeted family medicine research, funding from the AHRQ and increased funding from the NIH (a larger percent of the total NIH budget) and foundations will be necessary. Increasing funding awards will require increased numbers of grant submissions, both investigator-initiated grants as well as those submitted in response to specific requests for proposals. Alternative sources for sustainable investigator-initiated grants, such as the pharmaceutical industry (with appropriate guidelines for publication) must also be explored.

Next Steps

This document provides an overview but has few immediately actionable items. Currently, it is being used as the basis for the development of a strategic plan for research capacity building in family medicine. The main goal of the strategic plan is to identify specific steps that can be taken by individual or collective groups of the members of AFMO. An initial draft of some of those specific steps has been prepared and sent to AFMO for further action.

Implementation of any action plan will require the identification of accountable organizations to design, implement, and maintain each of the action steps. How organizations can be identified or to whom they would be accountable remains unclear. The family of family medicine has agreed to participate and invest resources in a new Future of Family Medicine Project. This work should be used as a resource to guide that project and perhaps to develop a structure to implement this and other future initiatives of the specialty.

Corresponding Author: Address correspondence to Barbara Yawn, MD, MSc, Olmsted Medical Center, 210 Ninth Street SE, Rochester, MN 55904. 507-287-2758. Fax: 507-287-2722. yawnX002@tc.umn.edu.

REFERENCES

- Green LA, Fryer ED, Graham R, Stephens GC, eds. *Keystone III*. Washington, DC: The Robert Graham Center, 2001.
- Stange KC, Miller WL, McWhinney I. Developing the knowledge base of family practice. *Fam Med* 2001;33(4):286-97.
- Stevens RA. The Americanization of family medicine: contradictions, challenges, and change, 1969-2000. In: Green LA, Fryer ED, Graham R, Stephens GC, eds. *Keystone III*. Washington, DC: The Robert Graham Center, 2001:19-25.
- Bateman H, Kinmonth AL. Journey and pathways: exploring the role of professional development, advice, and educational guidance for practitioners expressing interest in research. *Med Educ* 2001;35(1):49-55.
- Scherger JE, Young HF. The AAFP research initiative. *J Fam Pract* 1998;46(3):203-4.
- Taylor JS, Friedman RH, Speckman JL, Ash AS, Moskowitz MA, Carr PL. Fellowship training and career outcomes for primary care physician faculty. *Acad Med* 2001;76(4):366-72.
- Brender J, Nohr C, McNair P. Research needs and priorities in health informatics. *Int J Med Inf* 2000;58-59:257-89.
- Gallagher M, Hares T, Spencer J, Bradshaw C, Webb I. The nominal group technique: a research tool for general practice? *Fam Pract* 1993;10(1):76-81.
- Katemdahl DA. Factors chosen by department chairs as important to family medicine. *Fam Pract Res J* 1994;14(2):177-81.
- Dugosh KL, Paulus PB, Roland EJ, Yang HC. Cognitive stimulation in brainstorming. *J Pers Soc Psychol* 2000;79(5):722-35.
- Paulus PB. Developing consensus about groupthink after all these years. *Organ Behav Hum Decis Process* 1998;73(2/3):362-74.
- Mainous AG, Hueston WJ, Ye X, Bazell C. A comparison of family medicine research in research-intensive and less-intensive institutions. *Arch Fam Med* 2000;9(10):1100-4.
- Whitford DL, Jelley D, Gandy S, Southern A, Van Zwanenberg T. Making research relevant to the primary health care team. *Br J Gen Pract* 2000;50(456):573-6.
- Thomas P. The research needs of primary care. *BMJ* 2000;321(7252):2-3.
- Lester HE, Carter YH, Dassu D, Hobbs FD. Survey of research activity, training needs, departmental support, and career intentions of junior academic general practitioners. *Br J Gen Pract* 1998;48(431):1322-6.
- Talbot YR, Rosser WW. Taking the first steps. Research career program in family medicine. *Can Fam Physician* 2001;47:1254-60.
- Green LA. Putting practice into research: a 20-year perspective. *Fam Med* 2000;32(6):394-5.
- Miller JL, Smith M. Research training for residents. *Fam Med* 2000;32(5):305-6.
- Campos-Outcalt D, Senf J. Family medicine research funding. *Fam Med* 1999;31(10):709-12.
- Rodnick JE. Research fellowships: a road less traveled. [editorial] *Fam Med* 1999;31(6):438-9.
- Costa AJ, Gerson LW. Residents surveyed about the value of research [letter]. *Fam Med* 1998;30(9):618-9.
- DeHaven MJ, Wilson GR, O'Connor-Kettlestrings P. Creating a research culture: what we can learn from residencies that are successful in research. *Fam Med* 1998;30(7):501-7.
- Gonzales AO, Westfall J, Barley GE. Promoting medical student involvement in primary care research. *Fam Med* 1998;30(2):113-6.
- Curtis P, Shaffer VD, Goldstein AO, Seufert L. Counting the cost of an NRSA primary care research fellowship program. *Fam Med* 1998;30(1):19-23.
- Ewigman B. Reinventing family practice again. *J Fam Pract* 2001;50(7):586-7.
- Beasley JW, Hahn DL, Wiesen P, Plane MB, Manwell L. The cost of primary care research. *J Fam Pract* 2000;49(11):985-9.
- Bland CJ, Stritter FT. Characteristics of effective family medicine faculty development programs. *Fam Med* 1988;20(4):282-8.
- Parkerson GR, Barr DM, Bass M, et al. Meeting the challenge of research in family medicine: report of the Study Group on Family Medicine Research. *J Fam Pract* 1982;14(1):105-13.
- Froberg DG, Holloway RL, Bland CJ. A continuity model for research consultation in family medicine. *J Fam Pract* 1984;19(2):221-4.
- Holloway RL, Bland CJ, Schmitz CC, Withington AM. An advanced research seminar series for family medicine faculty members. *Fam Med* 1988;20(5):338-42.
- Navarro R, Casagran MD, Borrell A, Perez E, Santeugini CO. Needs assessment in the process of primary health care. *Annu Meet Int Soc Technol Assess Health Care* 1997;13:112.

Appendix A

Members of the Academic Family Medicine Organizations

- American Academy of Family Physicians
 - Association of Family Practice Residency Directors
 - Association of Departments of Family Medicine
 - North American Primary Care Research Group
 - Society of Teachers of Family Medicine
-
-

Appendix B

Committee on Building Research Capacity

Bernard Ewigman, MD, MSPH, Chair University of Chicago, Pritzker	1998–2000	Carlos Jaen, MD, PhD University of Texas HSC, San Antonio	1998–2000
Carole Bland, PhD University of Minnesota	2000	David Katerndahl, MD University of Texas HSC, San Antonio	1998–2000
Sandra Burge, PhD University of Texas HSC, San Antonio	1998–2000	Daniel Longo, ScD University of Missouri-Columbia	1999–2000
Walter Calmbach, MD University of Texas HSC, San Antonio	1998–2000	David Moores, MD, CCFP, FCFP University of Alberta	1998–2000
Benjamin Crabtree, PhD* UMDNJ-Robert Wood Johnson Medical School	1998–2000	Donald Pathman, MD, MPH* University of North Carolina	1998–2000
Frank deGruy, III, MD* University of Colorado	1999–2000	William Phillips, MD, MPH University of Washington	1999–2000
Mark DeHaven, PhD University of Texas Southwestern Medical Center	1999–2000	Walter Rosser, MD, CCFP University of Toronto	1999–2000
Perry Dickinson, MD University of Colorado	1999–2000	Robert Saywell, PhD, MPH Indiana University	2000
Mark Ebell, MD, MS Michigan State University	1998–2000	Peter Selwyn, MD Albert Einstein College of Medicine	2000
James Galliher, PhD AAFP, Leawood, Kan	1999–2000	Kurt Stange, MD, PhD Case Western Reserve University	1999–2000
Lillian Gelberg, MD, MSPH* University of California, Los Angeles	2000	Yves Talbot, MD University of Toronto	2000
Valerie Gilchrist, MD Northeastern Ohio Universities College of Medicine	1999–2000	Barbara Yawn, MD, MSc* Olmsted Medical Center, Rochester, Minn	1998–2000
William Gillanders, MD Providence Milwaukie FPRP, Milwaukie, Ore	2000	Herbert Young, MD AAFP, Leawood, Kan	1998–2000
Lee Green, MD, MPH University of Michigan	1999–2000		

* Denotes members of the 2000 writing committee

Appendix C

Specific Items Identified by Committee Members

A. *Linkages*

1. Across all medical and nonmedical disciplines
2. Between investigators and practice-based research networks
3. Among practice-based research networks
4. Between novice researchers and experts (ie, Internet work links)
5. Among researchers with similar ongoing projects or common interests
6. Among groups of active researchers
7. Between researchers and support systems
8. To facilitate thinkers

B. *Infrastructure*

1. Develop and fund family medicine research centers of excellence.
2. Develop a critical mass of research expertise in key departments.
3. Protect faculty time for participation in research.
4. Create and fund positions for non-clinician scientists.
5. Educate department chairs and family medicine leaders regarding the research process.
6. Define and teach research administration skills.
7. Create tenure track research positions.
8. Clarify and develop family medicine research career paths.
9. Assist more-advanced researchers with funding application process.
10. Increase the number of researchers capable of leading well-funded, major research projects.
11. Identify sources of funding for time for research project development and grant writing.
12. Develop and fund research support services.
13. Develop research homes for family medicine researchers.
14. Increase the number of research mentors, nonacademic-based researchers, and role models.

C. *Training*

1. Develop mentors for researchers at all career stages.
2. Facilitate pipeline to guide students into research careers.
3. Produce strong, independent investigators.
4. Develop educational programs for trainees at different levels.
5. Expand the training opportunities for researchers at all levels.
6. Facilitate the ability of senior researchers to mentor new, less-experienced researchers.
7. Develop the expertise among family medicine researchers to educate their other colleagues in the discipline.
8. Increase family medicine researchers' technical knowledge.
9. Build research skills relevant to primary care.
10. Provide settings and programs to all young investigators for sufficient time and experience to develop research skills—50% x 2 years.
11. Develop and integrate the many basic research skills workshops.
12. Develop advanced educational opportunities.
13. Develop and facilitate attendance for advanced research degree programs.
14. Develop 5 to 10 research fellowships (2- to 3-year fellowships) that include 80% research.

D. *Reputation*

1. Develop a family medicine research agenda.
2. Change the existing national research agenda.
3. Enhance family medicine researchers' national/international reputation.
4. Highlight areas of research focus needed for the field.
5. Define family medicine as relationship-based medicine.
6. Place family physicians on American Medical Association/Association of American Medical Colleges clinical research roundtable.
7. Ensure that family medicine researchers' accomplishments are recognized.
8. Increase the local, regional, national, and international influence of family medicine research.
9. Expand the biomedical paradigms that are the basis of medical research.
10. Place three to four family medicine researchers on 5 to 10 National Institutes of Health study sections.
11. Place three to four family medicine researchers on every Agency for Healthcare Policy and Research study section.

E. *Publishing*

1. Increase the level of scholarship in family medicine.
2. Enhance dissemination of family medicine research.
3. Inform practice behavior.
4. Increase peer-reviewed submissions and acceptances.
5. Provide and highlight relevant research results.
6. Increase the number of publications.

(Continued on next page)

Appendix C

(continued)

F. Culture

1. Encourage researchers who sustain a family practice-focused research trajectory beyond one to two studies.
2. Change clinical/teaching research environment to value family medicine research.
3. Develop "identity" for family medicine departments by creating a center of excellence (ie, women's health).
4. Break down walls among clinicians, teachers, and researchers.
5. Change national research culture to place more value on family medicine research.
6. Facilitate change within the discipline and within family medicine departments.
7. Recognize and facilitate coping with the edge of chaos.
8. Value scholarship within family medicine professional organizations.
9. Develop a normative culture in which all family physicians and family medicine faculty members are involved in some way in generation of new knowledge.
10. Facilitate intra-discipline and inter-discipline infrastructure and culture.
11. Encourage health services research related to family medicine.
12. Emphasize the ability of research to enhance the fun of family medicine.
13. Use family medicine-based research to discourage use of "marginal" technology.
14. Use family medicine research to eliminate unnecessary practice variation.
15. Bridge the town-gown schism.
16. Develop research agenda to enhance the evidence-based medicine culture.

G. Asking the Right Questions in the Right Setting

1. Enhance and facilitate synergy among researchers, clinicians, and patients.
2. Focus on facilitating better patient care.
3. Do work that makes meaningful differences.
4. Partner with patients and other professionals.
5. Investigate questions of importance to primary care/family medicine.
6. Encourage a diversity of methods, develop new methods, and enhance multi-method studies.
7. Develop departments' ability to respond to policy questions and requests for proposals from state governments.
8. Encourage a variety of projects and programs.
9. Encourage more research and less evaluation.
10. Encourage research from a family medicine perspective, completed in a family medicine setting.
11. Develop a "virtual" self-sustaining practice-based research network of > 20,000 members.
12. Involve practitioners and investigators.
13. Define priority questions.
14. Ask questions that matter for patients.
15. Make research integrated in and integral to practice.
16. Forge practice-based research networks.
17. Create solutions to everyday problems of practice.
18. Encourage research that is relevant for practice.
19. Create informed consumers of research.

H. Funding

1. Build effective alliances with the pharmaceutical industry.
 2. Encourage work with a variety of interested funding agencies.
 3. Identify and create sources of stable funding.
 4. Encourage research agendas with sustainable funding.
 5. Enhance the ability of researchers and research centers to be self-sustaining.
 6. Increase research funding for family medicine research.
 7. Set a goal of 1% of the National Institutes of Health budget for family medicine research and career development.
 8. Capture 50% of biomedical research dollars in primary care.
 9. Capture 20% of the Agency for Healthcare Research and Quality budget for family medicine research and training.
 10. Increase family medicine RO1 submissions and awards.
 11. Increase the number of funded family medicine research programs.
 12. Enhance family medicine's ability to compete successfully for external funding to support this research.
-
-