

Miller WL, Phillips WR, Acheson LS, et al. New knowledge for and about primary care: a view through the looking glass of the *Annals of Family Medicine*. *Ann Fam Med*. 2005;3:197.

<http://www.annfammed.org/cgi/content/full/3/3/197/DC1>

SPECIAL ARTICLE

## New Knowledge for and About Primary Care: A View Through the Looking Glass of the *Annals of Family Medicine*

William L. Miller, MD, MA

William R. Phillips, MD, MPH

Louise S. Acheson, MD, MS

Benjamin F. Crabtree, PhD

Stephen J. Zyzanski, PhD

Paul S. Nutting, MD, MSPH

Robin S. Gotler, MA

Laura A. McLellan, MLS

Kurt C. Stange, MD, PhD

### ABSTRACT

**PURPOSE** At this second anniversary of the *Annals of Family Medicine*, we sought to characterize primary care research and to identify opportunities for new directions by analyzing the content of the first and second volumes of the *Annals*.

**METHODS** Using an a priori classification scheme, 2 editors independently categorized each research article and essay published in 2003 and 2004, excluding supplements. We categorized the domain of knowledge, methods, topical content, and whether articles represented core values of primary care, and we looked for articles that studied health/illness/symptoms from a uniquely primary care experience. We reconciled differences by discussion.

**RESULTS** Among 110 articles, knowledge domains reflected the 4 quadrants of clinician (n = 6); patient, family, or community (10); health care system (32); and disease (22); or the interface (39) of these quadrants. The most frequent methods were cross-sectional studies (23), cohorts (15), randomized clinical trials (13), qualitative interviews (11), analyses of secondary data (11), systematic reviews (11), methods/theory development (10), self-reflections (8), and mixed methods (5). The most common topical areas were chronic disease and prevention. Core primary care values were represented in 75% of articles. Only 2 articles represented an integrative illness/healing perspective

**CONCLUSIONS** Despite contemporary forces driving a reductionistic approach, primary care research, as reflected by articles published in the *Annals of Family Medicine*, addresses the domains of knowledge that contribute to comprehensive, relationship-centered health care. More work is needed to understand the nature of health and illness in whole people and ways to integrate diverse knowledge, methods, and fragmented health care.

### CORRESPONDING AUTHOR

Kurt C. Stange, MD, PhD  
Department of Family Medicine  
Case Western Reserve University  
11001 Cedar Ave, Suite 306  
Cleveland, OH 44106  
[annfammed@cwru.edu](mailto:annfammed@cwru.edu)

*Ann Fam Med* 2005;3:197. DOI: 10.1370/afm.330.

**INTRODUCTION**

The *Annals of Family Medicine* began publication 2 years ago to provide a forum for new kinds of knowledge, new ways of generating knowledge, and new ways of sharing information across the traditional boundaries of profession, role, or geography.<sup>1</sup> In this special article, the editors analyze the content of the first 2 volumes. We recognize the small slice of the primary care research pie that is represented by the *Annals*. Nevertheless, this analysis attempts to identify how diverse authors and readers have used this forum to transmit and interact with new knowledge about health and primary care. From this analysis, we attempt to draw some larger lessons about the current state and future directions for primary care research.

sponsor the *Annals*. We also excluded articles published in supplements. The consulting editor, (WLM) developed the 5 taxonomies described below and classified each article. Independently, the editor who coordinated the peer-review process for each article classified his or her articles according to the same taxonomy. Differences were resolved by discussion. Individually, and in discussions, all editors interpreted the meaning of the resulting frequencies and the implications for primary care research.

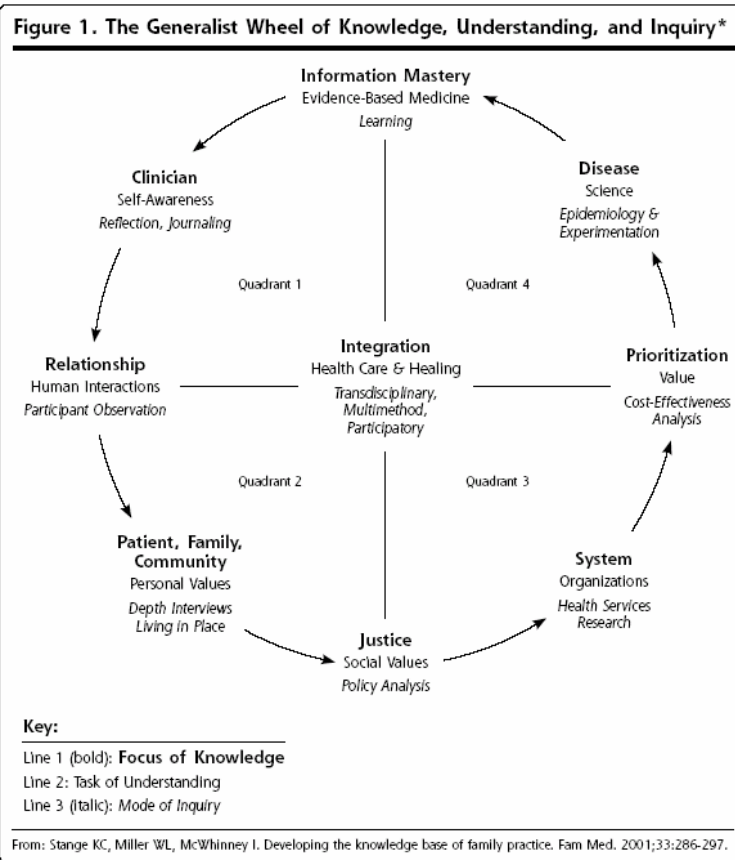
We chose the 5 taxonomies to provide different viewpoints on where primary care research is currently, and what holes might need to be filled so that it can meet the needs of an advancing field and of the people and societies it serves.

The first domain is based on an application of

the different ways of knowing made explicit by Wilber<sup>3-5</sup> and applied to primary care research by Stange, Miller, and McWhinney.<sup>6</sup> As shown in Figure 1, this Generalist Wheel of Knowledge represents health and health care knowledge in 4 quadrants that inform primary care research and practice. These represent the perspectives of the clinician, the patient/ family/community, the health care system, and disease. Additional ways of knowing are represented by the border regions between these 4 quadrants, and the integrative function of primary care is represented at the center. (See the Appendix at the end of the article for an additional depiction.) We classified each article into the primary quadrant or border category to which its knowledge was most relevant.

Next, we categorized each article as to its primary research method, using the categories depicted in Table 1.

Additionally, we classified the major content of each article into one of several topical categories: prevention, chronic illness, acute illness; women’s health, child health, elderly health; family/community context of health or health care; POEMS, if we judged the article to represent patient-oriented evidence that matters<sup>7</sup>; TRIP, if the article was an example of translating research into practice<sup>8-10</sup>; practice management, if an article shed light on business



**METHODS**

We reviewed the 110 peer-reviewed articles published in the first 2 volumes of the *Annals*, which include 10 issues spanning the last half of 2003 and all of 2004. We excluded editorials, the On TRACK synthesis of the *Annals* online discussion,<sup>2</sup> and updates from the organizations that

**Table 1. Methods Used (n = 110 articles)**

Method	Number
Cross-sectional	23
Cohort study	15
Randomized clinical trial	13
Analysis of secondary data	
Cross-sectional data	11
Longitudinal data	1
Qualitative interviews	11
Systematic review	11
Reflective	8
Methods' development	7
Mixed method	5
Economic analysis	4
Theory development	3
Case control study	2
Diary, logs	1
Transdisciplinary	0
Ethnography, participant observation	0
Participatory action research	0

and operational aspects of practice; or research development, if an article focused on building research capacity in primary care.

Further, we coded whether articles addressed one of the core values of primary care<sup>11,12</sup> and family medicine<sup>13</sup>: continuity, coordination, comprehensiveness, accessibility, personalizing care, compassionate care, or contextualizing health care.

Finally, we looked for articles that represented research on the pathophysiology or cause of disease defined by the biomedical model. We contrasted these articles with articles that represented primary care illness or healing research, defined as articles that directly explored the natural history and/or understanding of health, illness, or symptoms from within the experience of primary care. Our a priori examples included exploring "emotional distress" rather than DSM IV diagnoses such as depression, or "colds" instead of assuming the categories of pharyngitis, bronchitis, otitis, etc. A further a priori example was studies of "frequent undifferentiated symptoms" rather than assuming categories of somatoform disorder, etc. This classification scheme was an attempt to determine whether a unique research perspective and voice was emerging based on the way that patients seek care to primary care, and the integrative perspective that primary care clinicians use to diagnose and manage health and illness in the primary care setting.

We also listed the themes that became apparent to us during the course of editing issues of the journal. These themes had allowed us to create topical issues of the *Annals* emergently from our review of submitted manuscripts, not in response to a call for papers from the editors.

One editor (KCS) wrote an initial draft of this analysis, and the entire editorial team provided content input and editing of revisions. Subsequently, we asked members of the *Annals* Editorial Board to critique a draft of this manuscript, and their criticisms were used to make further revisions. The Editorial Board members who provided comments are listed in the acknowledgments; their listing does not imply endorsement of the content of this article, but rather recognizes their role in providing useful critique.

To help the reader interpret possible biases in the analysis, the editors conducted a self-reflective exercise to make explicit our preconceptions. Two of us (WLM and KCS) were highly committed to the major theoretical framework used for this analysis.<sup>6</sup> One was a member of the Project Leadership Committee for the Future of Family Medicine Project (KCS).<sup>14</sup> All shared a belief in the potential benefits of mixed methods and transdisciplinary research, although 2 were primarily identified with qualitative methods (BFC and WLM) and one with statistical methods (SJZ). All editors believed in the essential nature of primary care for meeting the needs of individuals, families, and communities. In our editorial policies and decision-making, we excluded educational research and tried to give extra editorial assistance and encouragement to those submitting clinically relevant and mixed methods research. This effort may have affected not only the content of our analysis but also the type of manuscripts accepted and thus included in the analysis.

## RESULTS

Among 110 articles analyzed, we attained at least 72% initial agreement between the 2 editors classifying each article for 4 of the 5 taxonomies. The differences were easily reconciled by discussion. The same was not true for the domain of primary care values, however. Whereas the editors had 93% initial agreement on which articles represented core primary care values, our agreement on which primary care value(s) were represented within each article was low (8%). Consequently, we do not present the results of

the frequency with which specific primary care values were embodied in the articles studied.

The number of articles represented in each domain of the Generalist Wheel of Knowledge is depicted in Figure 2. Content domains reflect the perspectives of the clinician (6 articles); the patient, family, or community (10); the health care system (32); and disease-related issues (22). There was a slight dominance of health services research, with disease-oriented research being the next most common. Thirty-two articles

Core primary care values were represented in 75% of articles. Four articles were classified as conducting research on pathophysiology or the cause of disease using mainstream disease classifications, and only 2 articles represented illness research from a uniquely primary care integrative framework.

## DISCUSSION

We were struck by the diverse ways of knowing in these first 2 volumes, representing all domains of knowledge in the Generalist Wheel of Knowledge. Since diversity of perspectives is vital to innovation and to the emergence of sustainable systems,<sup>15</sup> we take this as a great source of encouragement about the potential of the primary care research enterprise.

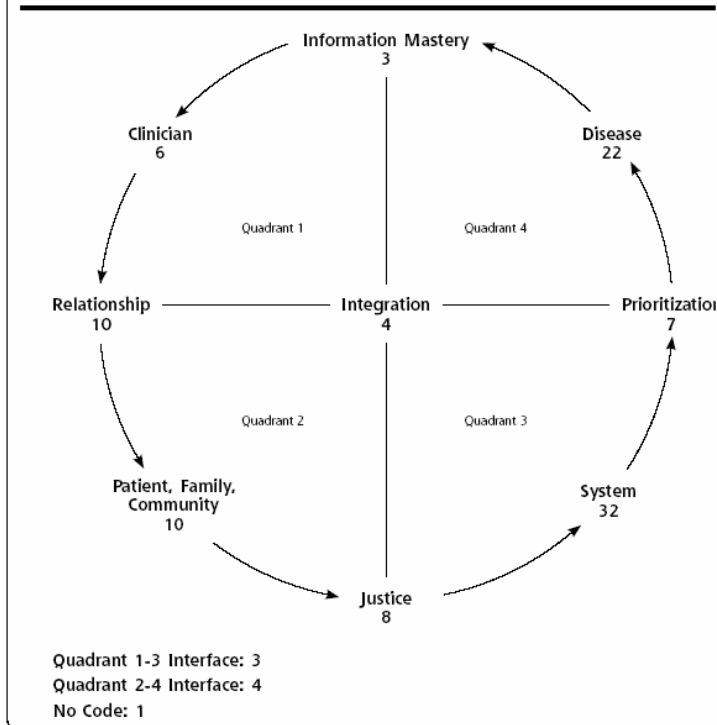
The low agreement of which primary care value was represented in each article suggests to us that these values form a cluster of interdependent domains that are difficult to separate rigidly. Integration may be the most fundamental value of primary care.

Despite the diversity of ways of knowing represented, the small percentage of studies that represent clinical topics from a unique primary care perspective suggests an overly tight connection to the dominant reductionist paradigm of a health care system that is widely seen to be failing by virtue of its high costs, fragmentation, depersonalization,

and poor outcomes.<sup>16</sup> This tight connection with a failing paradigm decreases the resilience<sup>15</sup> of the primary care disciplines just at a moment of potentially transformative change.

As Ian McWhinney and Kerr White have exhorted,<sup>17-19</sup> primary care researchers are uniquely positioned to ask questions from the perspective of the way health and illness actually manifest in relatively unselected individuals, families, and communities. We rarely see primary care research take advantage of this unique opportunity. More studies are needed of the natural history of illness, how health is lost or gained with time, and how care can be integrated across different diseases.

Figure 2. Number of Annals Articles Representing Domains of the Generalist Wheel of Knowledge, Understanding, and Inquiry



represent the interface between these domains, most commonly the interface between the clinician and the patient, family, and community perspective (10); the interface between quadrants 2 and 3, which represents the actualization of social values through the systems of health care and society (8); and the interface between quadrants 3 and 4, which represents using a systems perspective to prioritize the application of disease knowledge (7).

The frequency of the methods used is shown in Table 1. Table 2 depicts the frequency with which our a priori topical categories were represented. Table 3 portrays the recurrent topics that were apparent in accepted manuscripts that resulted in theme issues.

Category	Number
Prevention	17
Chronic illness	30
Acute illness	5
Women's health	11
Child health	7
Elderly health	7
Family, community	7
POEM or TRIP	4
Practice management	8
Research development	8

POEMS = patient-oriented evidence that matters; TRIP = translating research into practice.

Volume and Issue	Emerging Topics
<b>Volume 1</b>	
Issue 1	Comorbidity
Issue 2	Health care disparities
Issue 3	Continuity of care
Issue 4	Cervical cancer screening
<b>Volume 2</b>	
Issue 1	Multimethod research
Issue 2	Clinical and community research
Issue 3	Nested data
Issue 4	Office systems change, quality improvement, patient safety
Issue 5	Patient-clinician relationship
Issue 6	The patient perspective

The relative dearth of research on these topics may show the limited degree to which actual practice and clinician and patient experience are driving the primary care research agenda. Even with the growing numbers of practice-based research networks<sup>20</sup> and generalist researchers, a reductionist zeitgeist and categorical funding are limiting the emergence of a truly integrative voice in research. Similar reductionistic tendencies are driving the evidence-based medicine and quality improvement movements. The idea that improving the parts will necessarily improve the whole is dangerous.<sup>21</sup> Whole systems<sup>22-26</sup> and participatory<sup>27</sup> approaches need to be supported if we are to overcome the problem of translating research into practice by translating into research the wisdom of practice and the perspectives of the people who are served by health care.

A related pattern emerges in the topical categories represented in Table 2. These show that much of primary care research is emphasizing chronic illness and preventive care, often in special populations, areas for which guidelines, expanded models of care<sup>28-30</sup> funding priorities, and population trends appropriately are calling for new knowledge. Most problems cared for in primary care represent acute illnesses, however.<sup>31</sup> In fact, as experienced by whole people and cared for in primary care practice, the distinction between acute and chronic illness often is artificial. Primary care provides longitudinality<sup>11</sup> and a relationship context<sup>13</sup> for care regardless of what problem the patient has. The use of primary care classification systems which represent the way patients commonly experience illness and health,<sup>32</sup> may help to bridge the artificial boundaries that fragment health research and

health care, but greater support of a true generalist perspective is needed.

The thematic nature of accepted manuscripts, depicted in Table 3, also are subject to contemporary forces driving research interests, but represent some quintessential primary care issues, such as the management of comorbidity, continuity of care, and the clinician-patient relationship. The themes also portray topics of systems and societal importance, such as health care disparities, patient safety, and quality improvement. The emergence of themes on methods development and practice-based and clinical research reflects that both the methodology and the laboratory of primary care research are expanding. Although not included in this analysis, topics of emerging importance are supported by supplements that address the international development of primary care research methods,<sup>33</sup> the transformation of primary care practice to meet emerging health care needs,<sup>14</sup> practice-based research methods,<sup>34</sup> and a forthcoming supplement on fostering health behavior change.

We see the diversity of methods found in this analysis as a sign of the growing sophistication of the primary care research community. The use of rigorous clinical trial and cohort methods seldom was seen in early analyses of family medicine research<sup>35,36</sup> but now is common. In addition, the emergence of rigorous qualitative methods provides richness to the primary research endeavor by adding a window into meaning and context that rarely is achieved by quantitative studies.<sup>37,38</sup> We look for growth in the sophistication of mixed methods studies that truly integrate quantitative and qualitative methods,<sup>38</sup> and we believe that the maturation

of the field will be marked by the emergence of truly transdisciplinary research that creates new ways of knowing by bringing together diverse voices.<sup>39</sup> The dearth of participatory action research may represent the challenges of conducting and writing this kind of investigation in ways that fit the current paradigm of research rigor. With the encouraging number of methods development articles seen in the first 2 volumes of the *Annals*, and new initiatives to support mixed methods and participatory research, we hope to see renewed attention focused on the development of strong methods for performing and portraying participatory and transdisciplinary research.

Clearly the field has advanced since a similar analysis of the content of *The Journal of Family Practice* concluded in 1999 that "it appears that the manuscript supply represented by original work in the field is still limited and that there is at present adequate or even surplus journal capacity for publication of work carried out in family practice settings."<sup>36</sup> In 2004, the *Annals* received an average of more than 1 manuscript each day, and is able to accept only 1 out of 5 submitted.

The opportunity to amplify the patient voice in health and health care also has been gratifying, but that voice remains small and underrepresented, even in the *Annals* online discussion. The diversity of voices represented in the online discussion has been remarkable; however, additional effort is required to engage the disadvantaged, the disabled, and the timid. In addition, we continue to endeavor to find better ways to represent the richness of this interaction in our synthesis of the online discussion.<sup>2</sup>

There are many ways to classify knowledge and research designed to generate new knowledge. Our analysis focused only on the articles accepted for publication in the *Annals* and is limited by the viewpoints and theoretical models we have chosen and by the focus on accepted rather than submitted manuscripts. A wider frame may have yielded different findings.

We welcome others to apply different classifications and to provide other interpretations by joining the *Annals* online discussion at <http://www.annfammed.org/cgi/content/full/3/3/197>. We particularly invite readers with different disciplinary and cultural perspectives to add other interpretations about the current or future direction and needs for new knowledge relevant to health and primary health care.

Primary care research, as reflected by articles published in the *Annals of Family Medicine*,

addresses a broad range of methods and domains that constitute comprehensive, relationship-centered health care. The quality and quantity of scholarship has been high. We encourage all those who care about health and relationship-centered, high-quality, integrated, and sustainable health care to expand their efforts to bring together complementary and grounded methods and perspectives. We challenge our community to find a voice that reflects the true nature of health and illness in whole people, and the value and challenges of an integrative approach. We pledge to continue to try to adjudicate fairly a peer-review process and postpublication interactive process that benefits so greatly from the commitment of so many, and thank you for the opportunity to serve in this way.

To read or post commentaries in response to this article, see it online at <http://www.annfammed.org/cgi/content/full/3/3/197>

**Key words:** *Annals of Family Medicine*, knowledge; research

**Acknowledgments:** The editors are grateful to the following members of the Editorial Advisory Board who made helpful comments on an earlier draft of this manuscript: Frank V. deGruy, III, MD, MSFM; Mark J. DeHaven, PhD; Carlos R. Jaen, MD, PhD; Eva Kahana, PhD; Ann Louise Kinmonth, MD, MSc; Arch Mainous, III, PhD; Lewis G. Sandy, MD, MBA; Barbara Starfield, MD; Paul Thomas, MD; Richard C. "Mort" Wasserman, MD, MPH.

## References

1. Stange KC, Phillips WR, Acheson LS, et al. Welcome to the *Annals of Family Medicine*. *Ann Fam Med*. 2003;1:2-4.
2. Stange KC. On TRACK: How to use the *Annals* online discussion. *Ann Fam Med*. 2004;2:611-612.
3. Wachtel TJ, O'Sullivan P. Practice guidelines to reduce testing in the hospital. *J Gen Intern Med*. 1990;5:335-341.
4. Wilber K. *Sex, Ecology, Spirituality: The Spirit of Evolution*. Boston: Shambhala Publications, Inc; 1995.
5. Wilber K. *A Brief History of Everything*. Boston: Shambhala Publications, Inc; 1996.
6. Stange KC, Miller WL, McWhinney IR. Developing the knowledge base of family practice. *Fam Med*. 2001;33:286-297.
7. Slawson DC, Shaughnessy AF. Becoming an information master: using POEMs to change practice with confidence. Patient-oriented Evidence that Matters. *J Fam Pract*. 2000;49:63-67.
8. Feifer C, Fifield J, Ornstein S, et al. From research to daily clinical practice: what are the challenges in "translation"? *Jt Comm J Qual Saf*. 2004;30:235-245.
9. Genel M, Dobbs A. Translating clinical research into practice: practice-based research networks--a promising solution. *J Invest Med*. 2003;51:64-71.
10. Farquhar CM, Stryer D, Slutsky J. Translating research into practice: the future ahead. *Int J Qual Health Care*. 2002;14:233-249.
11. Starfield B. *Primary Care: Balancing Health Needs, Services, and Technology*. New York: Oxford University Press; 1998.
12. Donaldson MS, Yordy KD, Lohr KN, Vanselow NA, eds. *Primary Care: America's Health in a New Era*. Washington DC: National Academy Press; 1996.

13. Stange KC, Jaén CR, Flocke SA, Miller WL, Crabtree BF, Zyzanski SJ. The value of a family physician. *J Fam Pract*. 1998;46:363-368.
14. Future of Family Medicine Project Leadership Committee. The future of family medicine: a collaborative project of the family medicine community. *Ann Fam Med*. 2004;2:S3-S32.
15. Gunderson LH, Holling CS, eds. *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington, DC: Island Press; 2002.
16. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001.
17. Pauli HG WK, McWhinney IR. Medical education, research, and scientific thinking in the 21st century (3 parts). *Educ Health (Abingdon)*. 2000;13:15-25, 165-172, 173-186.
18. White KL. Fundamental research at primary care level. *Lancet*. 2000;355:1904-1906.
19. McWhinney IR. Why are we doing so little clinical research? *Can Fam Physician*. 2001; 47:1701-1702, 1713-1715.
20. Nutting P, Beasley J, Werner J. Practice-based research networks answer primary care questions. *JAMA*. 1999;281:686-688.
21. Stange KC. The paradox of the parts and the whole in understanding and improving general practice. *Int J Quality Health Care*. 2002;14:267-268.
22. Thomas P, Griffiths F, Kai J, O'Dwyer A. Networks for research in primary health care. *BMJ*. 2001;322:588-590.
23. Thomas P. The research needs of primary care. *BMJ*. 2000;321:2-3.
24. Thomas P, While A. Increasing research capacity and changing the culture of primary care towards reflective inquiring practice: the experience of the West London Research Network (WeLRn). *J Interprofessional Care*. 2001;15:133-139.
25. Thomas P, McDonnell J, McCulloch J, Ferlie E. *Facilitating Learning and Innovation in Primary Care Organisations*. London: Imperial College; 2002.
26. Thomas P. *Whole System Learning and Change in Primary Health Care: The Role of Primary Care Research Networks [MD]*: Medicine, University of Liverpool; 2003.
27. Macaulay AC, Commanda LE, Freeman WL, et al. Participatory research maximises community and lay involvement. *BMJ*. 1999;319:774-778.
28. Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. *Milbank Quarterly*. 1996;74:511-544.
29. Wagner EH, Glasgow RE, Davis C, et al. Quality improvement in chronic illness care: a collaborative approach. *Jt Comm J Qual Improv*. 2001;27:63-80.
30. Glasgow RE, Orleans CT, Wagner EH, Curry SJ, Solberg LI. Does the chronic care model serve also as a template for improving prevention? *Milbank Quarterly*. 2001;79:579-612.
31. Stange KC, Zyzanski SJ, Jaén CR, et al. Illuminating the 'black box': a description of 4454 patient visits to 138 family physicians. *J Fam Pract*. 1998;46:377-389.3
32. Lamberts H, Wood M, eds. *International Classification of Primary Care (ICPC)*. Oxford: Oxford University Press; 1987.
33. van Weel C, Rosser WW. Improving health care globally: a critical review of the necessity of family medicine research and recommendations to build research capacity. *Ann Fam Med*. 2004;2(Suppl 2):S5-S16.
34. PBRN supplement to this issue. *Ann Fam Med*. 2005;3(2).
35. Geyman JP, Berg A. The Journal of Family Practice 1974-1983: analysis of an evolving literature base. *J Fam Pract*. 1984;12:47-51.
36. Geyman JP, Berg AO. The Journal of Family Practice 1974-1988. Window to an evolving academic discipline. *J Fam Pract*. 1989;28:301-304.
37. Borkan JM. Mixed methods studies: a foundation for primary care research. *Ann Fam Med*. 2004;2:4-6.
38. Stange KC. In this issue: multimethod research. *Ann Fam Med*. 2004;2:2-3.
39. Miller WL. Common space: Creating a collaborative research conversation. In: Crabtree BF, Miller WL, Addison RB, Gilchrist VJ, Kuzel A, eds. *Exploring Collaborative Research in Primary Care*. Thousand Oaks, Calif: Sage Publications; 1994:265-288.

**Appendix. Multiple Ways of Knowing**

Ways of Knowing		BORDERS Among Ways of Knowing
1 Clinician	4 Disease, treatment	1 – 2 Relationship 2 – 3 Justice 3 – 4 Prioritization 4 – 1 Information mastery 1 – 3 Collaboration 2 – 4 Illness
2 Patient, Family, Community	3 Systems, Organization	

**SYNTHESIS OF WAYS OF KNOWING:** The craft of general practice is the integration and application of knowledge of biomedicine, health care systems, individuals, families, communities, and self.