

Practice-Based Research Networks Answer Primary Care Questions

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DOES EVERY WOMAN WHO HAS A miscarriage require a dilation and curettage (D&C)? Does every patient with new-onset headache require a computed tomographic (CT) scan? Does every child with otitis media need a 10-day course of antibiotics? Does every woman with pelvic inflammatory disease (PID) require hospitalization?

These are popular and appropriate questions to ask and investigate in 1999 but challenged conventional medical wisdom in the early to mid 1980s, when a group of practicing family physicians in the Ambulatory Sentinel Practice Network (ASPN; <http://www.aspn.denver.co.us>) began a series of descriptive studies of current practices for common clinical dilemmas they faced in everyday practice. Their early work suggested that the then-current National Institutes of Health Consensus Guidelines for use of CT scanning in new-onset headache were not being followed and that the gap between practice and the guidelines led to no measurable harm to patients¹⁻³ and to a considerable reduction in health care costs.⁴ Subsequent studies further questioned the appropriateness of routine D&C after uncomplicated miscarriage,⁵ hospitalization of every woman with PID,⁶ and the routine use of a 10-day course of antibiotics for children with uncomplicated otitis media.⁷ In conducting these early studies, ASPN pioneered methods for low-cost, low-burden studies that collect high-quality data in busy primary care practice settings⁴ and laid the groundwork for studying the common

phenomena of primary care. Future work will advance understanding of appropriate care for these and other clinical questions faced by primary care physicians in their daily work.

Developing Laboratories for Primary Care Research

These studies signaled the beginning of an important movement that has been quietly changing the way the primary care knowledge base expands. The success of biomedical research in the United States in the last 50 years is attributable in large part to the network of tertiary care hospitals where the specialized care of highly selected patients supports broad programs of teaching and research. No comparable laboratories exist, however, for research on the important content areas of primary care. The emergence and success of practice-based research networks (PBRNs) over the past decade provide an important infrastructure for careful study of the health care phenomena that comprise primary care, and PBRNs have begun to contribute important information to the knowledge base of primary care.

The PBRNs are based on the principle that the experience, wisdom, and insight of the practicing physician are powerful tools for identifying and framing research questions that are relevant to practice and will improve the practice of primary care medicine. The PBRNs link the relevant research questions of the practicing physician with rigorous research methods to produce research results that are in theory more easily assimilated into everyday practice. Research conceived and conducted in practice can follow a short feedback loop back into practice and thus shorten the usually laborious translation process to apply the results of biomedical research to the practice of medicine.

Although specific design features vary, the central characteristics of PBRNs are remarkably constant and include 4 features:

1. Networks capture health care events that reflect the selection and observer bias that characterize primary care in community-based patient populations.
2. The PBRNs provide access to the practice experience and care provided by full-time primary care clinicians.
3. The PBRNs focus their activities on practice-relevant research questions, apply appropriate, multimethod research design, and generally avoid the tendency to permit research methods to define the question.
4. Networks strive for the systematic involvement of network clinicians in defining the research questions, participating in the study design, and interpreting study results.

A Varied Agenda of Research

Research conducted in PBRNs addresses the broad agenda appropriate to the scope of primary care.⁸ In their research, the networks are using a multimethod approach⁹ that starts with careful definition of the research question and matches the research methods to the question, drawing on techniques from many health and behavioral science disciplines.

Opening the Black Box of Primary Care Practice. The Research Association of Practicing Physicians (RAPP) has inte-

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grated qualitative and quantitative methods in an observational study of clinical preventive service delivery in family practice. The Direct Observation of Primary Care Study systematically observed 4454 patient visits to 138 family physicians in 84 practice sites.¹⁰ The results of this study are beginning to open the black box of the primary care visit, examine the interactions among the patient and members of the practice team, and demonstrate both the complexity and the intrinsic value of primary care. For example, Stange et al¹¹ have found that family physicians target preventive services toward patients most in need of them and use illness visits as opportunities for prevention. They also showed that 18% of visits to family physicians include care of a family member other than the patient. In addition, the study showed that 24% of patients with managed care insurance had been forced to change their family physicians in the past 2 years. This forced discontinuity of care resulted in lower-quality primary care as judged by the patient.¹²

Improving Office Function and Structure for Clinical Preventive Services.

Work by Dietrich et al¹³ in the Dartmouth Cooperative Information Project (<http://dartmouth.edu/~coopproj>) has demonstrated the effectiveness of a range of simple tools and methods—flowsheets, reminder systems, chart stickers, and the like—to improve preventive service delivery when these tools are provided to motivated physicians and tailored to the structure and function of the individual primary care office.¹³ Current work in progress at the Nebraska Research and Education Network is designed to expand understanding of the complexities of the primary care office by conducting in-depth case studies of practices using participant-observation methods. Although this work focuses on delivery of clinical preventive services (like the work of Stange et al^{10,11} with RAPP) by having nurse researchers spend 6 weeks or more at each practice, the study will provide broad insights into the dynamics of primary care practice, the diversity of practice organization, and variations in the process of care.

Improving the Quality of Primary Care.

The PBRNs also make an important contribution in developing and testing strategies for improving the quality of primary care practice. McBride et al¹⁴ and the Wisconsin Research Network (WReN; e-mail: jbeasley@famned.wisc.edu) are conducting the Health Education and Research Trial, a study examining the baseline rates of heart disease prevention services in primary care practices and the effects of quality improvement and staff support interventions to improve prevention services in these practices. The results suggest these services can be improved with use of quality improvement methods.¹⁴

Work under way by Peterson and colleagues in the Minnesota Academy of Family Physicians Research Network (<http://www.mafp.org/mafprn>) joins primary care clinics across competing medical systems to improve the quality of care for patients with diabetes within a community. Particular physician- and patient-directed clinical interventions are selected by participating clinics to build intervention strategies specific to the unique configuration and resources at each clinic. Clinic-specific diabetes databases communicate through the University of Minnesota to create a distributed diabetes “registry” that allows targeting of patient interventions to high-risk populations within each clinic and standardization of quality reports between clinics. The initiative has received significant support from integrated health care systems as a strategy to improve the process and quality of care, making it attractive to health care purchasers.

Clinical Trials in Practice Settings.

Randomized clinical trials implemented in primary care practices provide valuable information that cannot be gathered in tertiary care centers. A recent study by Fleming et al,¹⁵ conducted with WReN, randomized patients in a traditional clinical trial to examine the effectiveness of brief office-based interventions for problem drinking. The study provided the first direct evidence that brief physician intervention was effective in reducing alcohol use and utilization of health care services.

In an ongoing trial, Rost et al,¹⁶ working with ASPN, randomized 24 physicians in 12 practices in a clinical trial to examine the effectiveness of the Agency for Health Care Policy and Research Depression Guidelines. This study screened more than 10 000 primary care patients to enroll 480 patients with major depressive disorder to be followed up for 24 months. Early results suggest that training office nurses to educate and monitor depressed patients early in the treatment course significantly improves depression outcomes at 6 months.¹⁷ The study also combines quantitative and qualitative methods to better understand the reasons when care deviated from the guideline.

As PBRNs accumulate experience with randomized controlled trials, they will become ideal settings for trials of the effectiveness of preventive services, where large numbers of well patients are required with varying levels of risk. The PBRNs have the potential to produce greater volumes of data with greater generalizability than network- or staff-model managed care organizations because the PBRNs provide care to patients covered by a range of health care plans.

Health Services Research. Much of the early work of the PBRNs provided important descriptions of the content and practice patterns of primary care. This kind of work continues to be important both to describe current practice and to lay the groundwork for intervention studies. For example, ASPN and Pediatric Research in Office Settings (PROS; <http://www.aap.org/pros>), a large national network of more than 1000 practicing pediatricians, have collaborated on a study of the management of behavioral problems of children. This study, under the direction of Kelleher, has enrolled more than 20 000 children from pediatric and family practices and will provide rich data to inform both policy and interventions to improve care.¹⁸

Both ASPN and PROS are also engaged in 2 large national studies of consultation and referral directed by Forrest. The studies will provide by far the largest and most detailed look at the

interface between primary and specialty care and the impact of a patient's health plan characteristics on the processes and outcomes of referral.¹⁹

Family Practice as a Learning Discipline

The PBRNs are feasible and functional laboratories for the study of important primary care problems in the context that people experience them and receive care. They provide an infrastructure for the research enterprise in primary care that unites practice and research in a unique partnership that provides access to the relevant phenomena of family practice to be rigorously investigated. They provide a climate of inquiry in which practicing family physicians can question the

evidence underlying practice and substantially contribute to improving that evidence. Just as being involved in clinical teaching promotes a scholarly environment, involvement by community physicians in practice-based research has the potential to change the culture of primary care in the community.

At present 16 PBRNs are active in family practice with a combined membership of approximately 4000 physicians, coordinated by ASPN and the newly organized Federation of Practice-Based Research Networks. This number approaches 10% of all practicing family physicians in the United States and creates an intriguing opportunity to ask and answer practice-relevant questions and to disseminate that information to the

opinion leaders in practice. With a research enterprise of this magnitude embedded in its community of practicing physicians, family practice could become an even more dynamic and continuously learning specialty.

Conclusion

High-quality primary care in our communities requires an understanding of common health problems and the challenges faced by primary care patients and their physicians. Continued success of PBRNs will contribute to development of the knowledge base to guide primary care clinicians in providing care for most problems most people experience most of the time.

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