Special Article

Practice-Based Research Networks: The View from the Office

Linda Niebauer and Paul A. Nutting, MD, MSPH
Denver, Colorado

Practice-based research networks have developed rapidly in the United States during the past decade in response to the pressing need for research into the clinical issues faced daily in family practice and primary care. To be responsive to the needs of practice, most networks are organized to maximize the wisdom of the practicing clinician in identifying and framing research questions. This assures that the results will be directly applicable to practice. Reuniting practice and research is an important benefit of practice-based research, and it is essential that the views of practicing clinicians be incorporated into the development of this form of research.

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We asked practicing primary care clinicians who are actively involved in network research to comment about their commitment to and involvement in practice-based research. This paper organizes some of their comments into several sections, including personal and professional rewards of practice-based research, the impact of research participation on their practice staff and patients, the role of the practicing clinician in research conducted by their network, the effect research has had on their own practice styles, the importance of practice-based research to the development of primary care for the nation, and perceptions of the importance of practice-based research networks on reuniting practice and research, as well as practicing and academic clinicians.

Why Participate in Practice-Based Research? What Are the Personal and Professional Rewards?

CATHERINE KROLL, DO: I practice medicine in a small town in the Upper Peninsula of Michigan. My patients know me well. They see me at the Friday night football games, the fish fry at the VFW, and at church, and they often ask for medical advice on the spot. With the nearest hospital being 25 miles away, life is often interesting and hectic. It is hard to be on time for scheduled appointments most days, and the thought of doing research in this environment was overwhelming. My overworked staff, I felt, would surely mutiny.

Fortunately this wasn't the case, and we now agree that research gives us an opportunity to be part of the bigger picture. Life is not just about seeing sick kids, old people with many medical problems in nursing homes, and patients set on a path of self-destruction. It is being able to ask a question about a medical problem and arriving at a conclusion by doing a study with our peers. It is not being isolated in one's practice, but rather working together and being involved in advancing primary care in an interesting way. It's avoiding "burnout" while expanding our horizons and helping patients.

JOHN W. KIRK, MD: I have been a member of both the Dartmouth COOP [the Dartmouth Primary Care Cooperative Information Project] and ASPN [Ambulatory Sentinel Practice Network] for most of my 16 years as a solo general internist in a rural New Hampshire community. The opportunity for involvement in these research networks resolved the potential conflict in career choice,

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From the Ambulatory Sentinel Practice Network, Denver, Colorado. Requests for reprints should be addressed to Linda Niebauer, Director of Network Communications, ASPN, 1180 Clermont St, Denver, CO 80220.

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allowing me to pursue my rural practice desire without having to give up academic and research interests. The intellectual challenges, collegial support, and shared sense of accomplishment have provided a source of great satisfaction, while maintaining academic credibility and opportunity through increasingly responsible roles in research development and network governance. Clearly, for me, network research participation has provided the professional balance that has kept me in my rural practice.

L.J. FAGNAN, MD: As a community-based family physician in a rural Oregon coastal community, I was overwhelmed by the need to see patients in the office, care for an inpatient service, share in the obstetrical load, and take emergency department call every sixth night. In addition, I served on the hospital medical staff, worked as the team physician for the local school, and shouldered various ad hoc community responsibilities. I had an interest in looking at my practice in an analytic manner but lacked the time and expertise to do so.

ASPN presented me with the opportunity to network with other practices and look at how we handle common problems that present to us in our communities. Eighty percent to 90% of health problems first present themselves to those of us in the primary care trenches. We are physicians of first contact, and with our emphasis on continuity and coordination, we observe the natural courses of our patients' concerns and illnesses.

TILLMAN FARLEY, MD: My association with ASPN has been quite satisfying, both professionally and personally. The decision to leave my comfortable middle-class practice in upstate New York to start a rural health clinic in west Texas, 120 miles from the next doctor, was partly dependent on being able to continue as a member of ASPN. ASPN has kept me involved with academic medicine, and has allowed me to meet and work with practicing family doctors and academicians from all over North America. As a full-time practitioner with only a marginal university affiliation, I often feel a bit out of place at many of the academic meetings I attend. At ASPN meetings, I feel completely at home in a community of research-minded physicians, most of whom are in the full-time practice of family medicine working together to answer questions of importance to all of us. There is a sense in ASPN that we are doing not only what is right but also what is particularly important in these times of turmoil in medicine. As we try to solve our health care problems, it is becoming increasingly apparent that the answers lie in primary care and cost-effective medicine, the understanding of which depends on practice-based research.

TERRY HANKEY, MD: Participation in research-based networks puts me in contact with people who have similar interests and mindsets. For the most part, these colleagues have a more academic interest, making them a unique breed. Being involved with two networks, I find the annual meetings held by these two groups to be the most stimulating meetings I attend. On a day-to-day basis, I feel like more than a conduit for drugs: I feel like a true scientist involved in the bigger picture. I also enjoy the recognition from patients and the community. Their belief about me as an involved clinician is that I try to do my best to give them what's best, and this is a very positive stroke. Having my name attached to important and interesting publications is an added thrill.

KEVIN COSTIN, PA: I think the most exciting aspect of being involved in practice-based research (ASPN and The COOP) is working with a group of highly dedicated and knowledgeable physicians and researchers who are truly committed to furthering the discipline. On a personal note, I found that as a physician assistant, I was treated equally, always having my suggestions and ideas appropriately considered.

LINDA STEWART, MD: It's such an exciting thing for me to be able to answer questions that come up in my practice. I like being a part of a group of folks out there documenting that medicine is not all like it was taught in medical school.

I've most enjoyed collecting some data that verifies what I already know and extends our knowledge further regarding the problems that I face in my practice every day. I had grown tired of standing alone in the wilderness, wondering if I really had to culture everything that comes in the office. Until network research began, there was no place I could go to get credible data on issues like this. Now I can contribute to it.

In ASPN I can bring my ideas to a group of people, all of whom approach our common work with the wide-eyed wonder of a 4-year-old asking "Why?" Through our research we can get feedback that we can actually use in practice.

GORDON B. GLADE, MD: I participate in PROS [Pediatric Research in Office Settings] because I like to look at my day-to-day work critically. When I try to do research projects on my own, I frequently become distracted by the overwhelming volume of work in private practice. By participating in PROS, I can have input regarding both research ideas and research design. PROS helps me be more analytical of what I do in daily patient care. I feel that a lot of times, pediatric practices are based on aca-

demic research that does not apply directly in private pediatric practice.

JOSEPH A. CINCOTTA, MD: Participation in one of the various community or regional networks helps to nurture the physician as scientist, and to maintain an inquiring attitude in daily practice and patient encounters. Discovery occurs in settings where there is an alert, observant, and creative mind at work. These are the qualities supported in a practice-based research network.

How Do Your Patients and Your Practice Staff React to Participation in Research?

L.J. FAGNAN, MD: My practice staff is positive about ASPN and the studies we participate in. They feel they are a part of something bigger, describing and promoting what we do in our practice. Our patients are made aware of what studies we participate in through our practice newsletter. I feel my reputation with my patients as a thoughtful and respected family physician is enhanced by my involvement with ASPN.

TERRY HANKEY, MD: There is the downside to participation in that research activities create a greater workload for physicians and their office staffs, but this is overridden by the fact that they all take pride in making a difference in the profession. It actually helps morale, and, so far, no one has quit.

There is an ASPN plaque in my waiting room, and sometimes my involvement in research activities has been mentioned in the local newspapers from which I receive positive comments from patients. I believe this information has increased the level of confidence my patients have in me because I try harder to "keep up," and so far, no one has refused to participate in any study. They have all been very cooperative.

TILLMAN FARLEY, MD: Most of the projects in which I have been involved require participation to some degree from the office staff, giving them a sense of contribution and participation. My experience has been that both patients and staff are interested in the projects and quite willing to participate. A practice that is engaged in research has added prestige in the community at large and in the community it serves directly.

THOMAS MCINERNY, MD: Participation in PROS research enhances our status when patients realize we are involved in such a venture. Participation keeps the practice in the forefront, at the edge of the state of the art, and gives us a sense that we are contributing to the advancement of medicine. Practice-based research can slow down the office pace and interfere with the rhythm of a busy practice, but the rewards are worth the time and effort, especially if clinicians are careful to share study results with their office staff who, in the end, make participation in the research possible.

My patients are aware that I am involved in medical research and they are happy to participate. Rarely do I hear objections. This activity allows them to vicariously share in our contribution to science. They like our involvement because it gives them the sense that their doctor is linked with state-of-the-art academic findings.

JOHN W. KIRK, MD: Our patients have also enjoyed their contacts with our research. With rare exceptions, they respect the practice for its research involvement; and they appreciate the opportunity for personal involvement in specific research projects. Similarly, our office staff is proud of the practice's participation in what they consider important professional work, and consider themselves active participants in this work.

CATHERINE KROLL, DO: My patients have responded favorably to being asked to fill out a questionnaire, and many have asked what the final results of the study were. I did not expect this. One of my fears was that patients would not want to take the time or would feel we were invading their privacy. I think they are pleased that their physician has an interest in research, and it gives me another dimension that I believe has only enhanced my practice.

My staff has learned that we are a good research team. We can effectively carry out a project. We have not found that it slows down the day unfavorably. In fact, it makes the day more enjoyable, and there is always the competitive spirit among practices to see who gets their patient slots filled and their reports in first.

JOHN PONCHER, MD: The PPRG [Pediatric Practice Research Group] has worked hard to minimize the negative effects on practice. The major concern of the study task force is "How is this going to not disrupt the practice?" After several years of participation, the work has developed a rhythm, and each new study is not so much of a shock. I think the staff gets as much satisfaction out of participation as do we clinicians. In some of the studies we've done, PPRG staff people came into the office and did a lot of the footwork, so all aspects of the project are not always left up to our staff.

We have a bulletin board in our waiting room where we frequently post findings from our published studies. We post the article and say something like: "These are your kids. Your kids have shown that cholesterol . . ." so that they have access to the finished project and see what

they participated in and that it actually had some impact. The patients as well as the staff share the end product.

What Is the Role of the Practicing Clinician in Network Research?

TILLMAN FARLEY, MD: Through research networks and sometimes simply through their own practices, community physicians can contribute important data to the body of medical knowledge, maintaining a link to the academic world while continuing to serve in direct patient care. Practice-based research is "learner-centered learning." Practicing physicians seeing patients on a daily basis are the ones asking and answering the questions that are raised through the course of that patient care.

ASPN is run by the participating physicians. The data are collected individually by each physician and sent to ASPN weekly. There are yearly plenary meetings to discuss results of finished projects, preliminary data in ongoing projects, and ideas for upcoming projects. The research projects in ASPN are generated and approved by the practicing physicians who make up the group, with attention paid to the value of the research to primary care and to whether the project will disrupt the daily operation of the office.

TERRY HANKEY, MD: A clinician champions an idea and puts in the effort to move it along. He or she then becomes a scientist and conducts the literature search, plans the study design, and works as a member on the task force. Ideas are easy to come by. It is the commitment that is critical. As a practicing physician, I see the biggest roles in studies to be to assist with planning and collect data.

THOMAS MCINERNY, MD: The notion of a clinician coming up with the idea, developing the protocol, and doing research alone is uncommon. Usually, it is a collaborative effort when an "academician" has an idea and works with a clinician to best conduct the study in practice settings, realizing that constraints exist. In this role, the clinician can point out to the primary researcher what is likely to work and not work.

CATHERINE KROLL, DO: Our group plans its next research study carefully. We are 14 practices spread across quite a distance. Any one of the group can give an idea for the next study, a question he or she may have had for a long time. This question is communicated to the rest of the group via the electronic bulletin board or at one of the conferences. The steering committee makes the final decision on the study question. Our steering committee for UPRnet [Upper Peninsula Research Network] is made up of practitioners, including both physicians and nurse coordinators from the practices, and medical school staff. Our questionnaires are piloted to determine problems. If the data collection method doesn't fit well into the physician office setting, there are big potential problems, number one being that the physician may want out if it is too disruptive or complicated. After the pilot, the fun begins.

GORDON B. GLADE, MD: Study ideas are generated in PROS in a number of different ways. Practicing pediatricians have been polled for ideas for years, and generally they don't have too much to say. When they are given scenarios or general ideas, they seem to have more input, particularly when an idea strikes close to home. They may give that input through the research network's chapter coordinators or directly to PROS principal investigators. When I was starting the PROS referral study, I mailed a questionnaire to all practicing pediatricians in the network regarding gateways and barriers to referral. I also asked some open-ended questions regarding their attitude about doing a referral study and which research questions they wanted answered.

What Has Been the Effect of Your Research on the Way You Practice?

JOSEPH A. CINCOTTA, MD: HARNet [Harrisburg Area Research Network] has been involved in a study evaluating Papanicolaou (Pap) smears and the use of an acetic acid cervical wash at the time of the Pap smear to improve the detection of abnormalities. This has stimulated both local and national discussion about the method of routine cervical examinations and has changed my approach to obtaining Pap smears.

L.J. FAGNAN, MD: Several ASPN studies have reinforced and supported my practice patterns. For example, in my practice, it was unusual for me to do dilation and curettage (D&C) in first-trimester abortions even though there was little support for this in the literature. The ASPN study of spontaneous abortion revealed that family physicians, like me, rarely did D&Cs. Similarly, the study of carpal tunnel syndrome confirmed that we rarely order nerve conduction studies, that we treat patients predominately with night splints and nonsteroidal drugs, and that we achieve satisfactory outcomes.

RON GAGNE, MD: We have participated in many research projects, but the ones that have directly benefited my practice are a study on urinary tract infections that set the gold standard with office urinary culture, the development of the COOP charts for functional health status

measurement, and the ASPN studies about spontaneous abortion, computed tomography evaluation of headache, and low back pain. Publications of our work about these subjects are more applicable to the work that we do in the office than those from university centers.

KEVIN COSTIN, PA: One of my favorite studies was the ASPN study of headaches and intracranial lesions. This study reinforced my belief that a careful history and thorough physical examination is an adequate and appropriate guide to the diagnostic workup. It was a thrill to see this study recently referenced in my professional journal.

JOHN W. KIRK, MD: The greatest satisfaction I've had with an individual research project was with the development of a series of functional health status charts with The Dartmouth COOP. This was genuine grass-roots work, starting with clinical discussions of the need in our offices for a simple way to measure function, proceeding to pilot trials of different measurement systems, and culminating in validation studies of the graphic charts we had selected. The satisfying element here was the involvement of network practitioners in every phase of the project, from its inception to its completion. The greatest challenge for the networks is how to encourage and facilitate such involvement by the practitioners.

Why Is Practice-Based Research Important?

TILLMAN FARLEY, MD: Medical research is somewhat unusual in this country in that it does not involve people receiving medical care. The vast majority of funds for medical research ends up in large universities and medical centers. However, only a small fraction of people in the United States seek or receive medical care from such an institution. Moreover, most research is carried out by subspecialists, whose services are required by a similar small fraction of patients. Most medical care in this country is administered in ambulatory settings by generalist physicians far from university hospitals. While we would quickly reject the results of a political poll that queried only a select segment of the population, we have accepted an even greater bias in medical research. In fact, we know little about how medical care is provided in doctors' offices across the country, what types of problems are encountered, what treatments are offered, or the outcome of ambulatory interventions.

Practice-based research provides a means of correcting the bias and answering some of these questions. The data generated from practice-based research networks is based on a more representative group of patients than most of the previous research in this country. Most practice-based research addresses primary care issues that are poorly understood and have traditionally been ignored, and which, because of their frequency, cost the health care system billions of dollars yearly. Many of the current recommendations for treatment of primary illnesses come from subspecialists and are based on their experiences with tertiary illness in tertiary hospitals. By studying primary illnesses from a practice-based perspective, we will gain a better understanding of their natural history and how to treat them.

Practice-based research networks may also help in the recruitment and retention of doctors in rural and other underserved areas. Because most networks involve a community of physicians working together, they give otherwise isolated physicians a chance to share ideas. Rural doctors in particular are prone to personal and professional isolation, leading to burnout and eventual abandonment of the rural location. Through participation in practice-based research networks, this sense of isolation can be greatly reduced.

CATHERINE KROLL, DO: Research done in a rural setting gives a picture of the real world. When the UPRnet group asks a research question, we are able to sample a group of people of diverse backgrounds from a large geographical area. I think that UPRnet's research has a place in the health care of the future and it is exciting to be a part of it.

JOSEPH A. CINCOTTA, MD: Practice-based research provides physicians with an opportunity to share their observations and ideas about patient management and disease processes in a laboratory that cannot be duplicated. That laboratory combines patients seeking care from the largest provider group in the country, physicians on the front lines of patient care who have the opportunity to view problems and diseases longitudinally in all stages of development, and a care setting that must balance the professed ideal components of care with the practical realities of managing a practice with limited resources and time. And, finally, there is no area of medical practice to which practice-based research groups cannot make a meaningful and valuable contribution.

What Role Do Practice-Based Networks Play in Bridging the Gap Between Practice and Academics?

TILLMAN FARLEY, MD: Since medical school, I have perceived an inappropriate schism between practicing physicians and academicians. In my opinion, one cannot be a truly credible academician without first being a credible practitioner. Neither, however, can one be a

truly credible practitioner without also being a researcher. Medicine is a field of discovery whose proper practice demands an inquisitive and critical mind. Practice-based research lends credibility to the "local medical doctor," the physician working every day in his or her own personal clinical laboratory. This is an important step toward healing the schism.

JOSEPH A. CINCOTTA, MD: In modern history, as medicine moved toward its high-tech bias, the importance of "high touch" faded and those in academia lost respect for the practicing community physician. A valuable research resource was thus lost. Similarly, research became more specialized and dominated by less clinically relevant issues. This resulted in journals filled with scientifically interesting material that was clinically irrelevant and useless. Local and regional community research networks provide an opportunity for the two forces of academia and community physicians to reunite their efforts to develop a more balanced research effort that can result in better ways to care for patients in an empathetic, supportive, and realistic environment.

LINDA STEWART, MD: ASPN provides an arena in which practitioners and academicians can join in a common purpose. We are working on topics that respond to practicing physicians' need for information. The network brings researchers and practitioners together and helps us help each other. In the network, we're all equal, and I feel valuable. In many ways, participating in ASPN makes me feel like both a practicing physician and an academician.

Contributing Clinicians

Joseph A. Cincotta, MD, a family physician in private practice in Mechanicsburg, Pennsylvania. He is a member of the Harrisburg Area Research Network (HARNet).

L.J. Fagnan, MD, a family physician who was for many years in private practice in Reedsport, Oregon. He recently left practice to join the faculty of the Oregon Health Sciences University. He has been an active participant in the Ambulatory Sentinel Practice Network (ASPN) for years.

Tillman Farley, MD, who recently left practice in upstate New York to establish a rural health clinic in Van Horn, Texas. When in New York, he was a member of the Rochester Area Primary Care Network (RAPCIN) and continues to participate in ASPN.

Ron Gagne, MD, a family physician, and *Kevin Costin, PA,* a physician assistant in practice in Manchester, New Hampshire. Their practice participates in both The Dartmouth Cooperative Information Project (The COOP) and ASPN.

Gordon B. Glade, MD, in pediatric practice in American Fork, Utah. He is an active participant and the Utah Chapter Coordinator for the Pediatric Research in Office Settings (PROS) network.

Terry Hankey, MD, a family physician from Waupaca, Wisconsin, who participates in both the Wisconsin Research Network (WReN) and ASPN.

John W. Kirk, MD, a general internist from New London, New Hampshire. He is in private practice and has been active in both The Dartmouth COOP and ASPN and has served on the Boards of Directors of both networks.

Catherine Kroll, DO, a family physician from Gwinn, Michigan, who participates in the Upper Peninsula Research Network (UPRNet).

Thomas McInerny, MD, who is in the private practice of general pediatrics in Rochester, New York. He has been involved in practice-based research for many years and is a member of Pediatric Research in Office Settings (PROS) network.

John Poncher, MD, a general pediatrician practicing in Valparaiso, Indiana. He participates in the Pediatric Practice Research Group (PPRG).

Linda Stewart, MD, a family physician in private practice in Baton Rouge, Louisiana. She is a long-time participant in ASPN.