Guidelines

Real-world evidence

How

Why

Protocols

Physicians

Study

Patients

Clinics

Proof

Tools

Practicing physicians test new guidelines and protocols in the settings where they’ll be used.

By Howard Bell
REAL-WORLD RESEARCH always translate well to community clinics because the big centers have different patient populations, deeper pockets and larger staffs for implementing change, he explains. Furthermore, he says, “most patients get most of their care most of the time at small community clinics, not tertiary centers. If we want evidence-based practice, we need practice-based evidence.”

To help get that evidence, MAFP’s PBRN formed in 1979. It is one of the oldest practice-based research networks in the United States. Its 248 members work in 107 clinics statewide. Most are family physicians, but that’s not a requirement. Nor do they have to be a member of MAFP. The network, with offices in St. Louis Park, is affiliated with the University of Minnesota Medical School’s Department of Family Medicine and Community Health and the Center of Excellence in Primary Care, for which Peterson is research director.

He and his staff of seven spend considerable time and energy recruiting physicians to participate in studies and finding ways to pay for those projects. Funding is different for each one and includes grants when my patients can help improve things for a population of patients.”

Primary care physicians do practice-based research in their clinics while they care for patients full-time. By taking part in studies, they help create, test and sometimes incorporate into their practice such things as patient questionnaires and decision-making tools that can improve outcomes, boost clinic efficiency, reduce unnecessary patient visits, and maybe even cut costs for treating concerns such as diabetes, COPD, asthma, kidney disease, congestive heart failure, depression, memory loss and obesity.

Such grassroots studies are usually done by networks of physicians, such as those who participate in the Minnesota Academy of Family Physicians’ (MAFP) Practice-Based Research Network (PBRN), the largest network of its kind in the state. Practice-based research is crucial, says network director Kevin Peterson, M.D., M.P.H., because new guidelines won’t achieve much unless they’re developed and tested where they’ll be used. Most quality-improvement research is done at tertiary academic centers and doesn’t always translate well to community clinics because the big centers have different patient populations, deeper pockets and larger staffs for implementing change, he explains. Furthermore, he says, “most patients get most of their care most of the time at small community clinics, not tertiary centers. If we want evidence-based practice, we need practice-based evidence.”

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from the NIH and other federal agencies, philanthropic foundations such as the Robert Wood Johnson Foundation, health plans, health system foundations, the MAFP Foundation and the Agency for Healthcare Research and Quality (AHRQ), which provides grants to PBRNs around the country.

Mayo Clinic Health System has the only other primary care PBRN that’s based in Minnesota. Created in 2007, the network is made up of primary care practices in the Rochester area as well as those from Mayo Clinic Health System. Physicians in the network have completed more than 100 projects and are currently working on six studies, according to Lisa Schrader, research operations coordinator and administrative lead.

A mix of studies
Historically, Minnesota’s two primary care PBRNs did mostly homegrown projects, in which a clinician comes up with an idea for a study and the network finds funding for it and physicians to participate in it. For example, a rural family physician in northern Minnesota has noticed that his Native American patients have a much lower incidence of Lyme disease than his other patients. He wants to find out if they have resistance to the infection that could prove useful in a vaccine or treatment. Peterson says that study isn’t funded yet. “But it’s a good example of how novel areas of investigation arise from a clever and observant doctor working in primary care.”

Sometimes the research addresses a problem physicians see in their practice or a desire to improve workflow. Peterson says one of the first practice-based projects done in Minnesota in the early 1980s was on how to better handle after-hours phone calls. The study was published in the Journal of Family Practice in 1984.

These days, only 20 percent of the MAFP network’s projects are initiated by practicing physicians. The other 80 percent are national or regional studies. In one such study, Minnesota physicians helped test the APGAR asthma tool. In another, 100 clinicians in 24 Minnesota clinics took part in the Kidney Disease Outcomes Quality Initiative that determined the best method for teaching clinicians how to use treatment guidelines from the National Kidney Foundation. “The evidence for effectiveness we helped build encouraged others to adopt these national guidelines,” Peterson says.

The shift from studies that are small-scale and homegrown to ones that are large-scale and national happened partly because researchers discovered the value of using PBRNs, Peterson says. But no matter how well-funded a national practice-based research project might be, “We only take on the projects that have practical relevance to our members,” he says of the MAFP network.

Mayo Clinic Health System’s network has stayed more local in its focus, according to Schrader. “Anyone with an observation that might improve care can propose a study,” she says. That includes patients, one of whom proposed testing a program in which patients with diabetes can mentor each other to supplement the education and support already being offered. The project is now being piloted in Mayo Clinic Health System practices.

Kathy MacLaughlin, M.D., a Mayo family physician in Rochester, led a team that designed a study to improve the timing and process for Group Strep B screening in pregnant women. “We made changes in how and when the test is ordered to decrease the need for repeat testing, while maintaining consistency with CDC guidelines,” she says. They have since incorpo-rated the new screening protocol into the electronic health record (EHR).

Another Mayo physician in Rochester responded to a request from the community to improve chronic disease management outcomes for Somali immigrants by using community health workers to help the immigrants overcome barriers to getting health care such as language, lack of transportation and no health insurance coverage. “Among other improvements, we saw improved diabetes management outcomes and increased rates of preventive services such as immunizations [among immigrants],” Schrader says.

Because of his first-hand experience with “electronic health record fatigue and frustration,” another Mayo physician came up with a plan to work one-on-one with Mayo Clinic staff to improve specific EHR skills and increase physician job satisfaction.

Some Minnesota physicians like Jewett participate in national networks as well as local ones. He is a member of the Pediatric Research in Office Settings (PROS) Network. Through the PROS network, he has studied a protocol for treating febrile infants and is helping oversee evaluation of a decision-support tool embedded in EHRs. He explains that many studies involve delivering a prescribed practice method and at the same time keeping records of how that method affects a specific measurable health parameter. “As a participant in a study, your task is usually to record observations,” he says.
In all cases, a network’s members choose which studies they want to participate in and the extent to which they want to be involved. Some may only want to enroll patients and learn a new protocol. Others may want to take it a step further and analyze data or write up results for publication. Many practice-based research findings are published in peer-reviewed journals.

Building buy-in

Getting primary care physicians to do practice-based research is more crucial than ever, according to Peterson. “Primary care clinicians make up only 25 percent of the nation’s health care workforce,” he says, “but they provide more office visits than do all other specialists combined.” Thus, primary care practices are living laboratories for patient-centered care, medical homes, accountable care and other innovations in health care delivery. Any improvements are more likely to be adopted—and adopted more quickly—if they’re developed and tested in the primary care setting. But just when it’s so important for primary care doctors to participate in such studies, it’s also getting harder to recruit them, Peterson says.

Lack of time is the No. 1 culprit. “The primary care provider is working harder than ever,” he says. “Our doctors have less time to do this kind of research.” EHRs are also part of the problem. “They’re a blessing and a curse,” Peterson says. “They make data collection, analysis and dissemination easier, but physicians are so overwhelmed with what they’re expected to do with EHRs they don’t have time to participate in things that are a bit more fun—like using it for practice-based research.”

PBRNs are using social media, mobile devices and Internet technologies to make it easier for primary care physicians to participate in studies. Mayo Clinic Health System, for example, used Twitter to collect observations during a diabetes study.

Another issue is the fact that most community clinics are now owned by big health systems, which sometimes don’t allow their physicians to participate in outside research. “Participation can be difficult for physicians who work for

Electronic health records and patient-accessible web portals are already transforming medicine, but the Mill City Innovation and Collaboration Center (ICC) intends to take the electronic transformation of medicine to the next level.

Mill City is the nation’s first practice-based research lab where technology vendors and health care providers collaborate on ways to use apps, medical devices, wireless sensors, mobile devices, electronic health records and other technologies to reduce costs while improving outcomes and patient satisfaction, according to Kevin Peterson, M.D., M.P.H., the ICC’s research director. He is also research director for the University of Minnesota’s Center of Excellence for Primary Care.

Peterson says they “hope to use technology to reduce unnecessary face-to-face in-clinic visits by 40 percent, while improving patient care and satisfaction.” He adds that the focus of the ICC’s work will be on using new technology to manage chronic diseases, especially diabetes, congestive heart failure, COPD and memory loss. “We’re here to show that when these technologies are developed in collaboration with health care systems, physicians will want to use them because they have great value for them and their patients.”

For example, a physician might recommend that a patient with type 2 diabetes purchase a glucometer. A medical software company collaborating at the ICC would then develop an app for the glucometer that syncs its readings to the patient’s electronic health record. Peterson says this is an example of how an app could be used to inform and motivate patients, improve communication between the patient and the physician, reduce office visits and phone calls, and improve the quality and lower the cost of care.

The ICC is in the process of moving from what Peterson calls the “conceptualization stage” to the “demonstration stage.” It hopes to attract hardware, software and telecommunication companies, as well as health care systems and academic institutions that want to play a role in what he refers to as “the redesign of primary care.” The concept comes from Eric Topol’s book The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care, which asserts that the biggest improvements in health care are being driven by a convergence of technologies.

The 4,000 square-foot nonprofit ICC is in downtown Minneapolis next to University of Minnesota Physicians’ Mill City Clinic, which will serve as a testing ground for innovations. “Research is best conducted in settings where it will be used,” Peterson says. “And new technologies will be adopted much faster when the health care systems that will use the technology help develop it.”—H.B.
Practice-based research started in Minnesota in the mid-1970s. At that time, Milton Siefert, Jr., M.D., Barbara Yawn, M.D., Patricia Cole M.D., Thomas Mayer, M.D., Leif Solberg, M.D., and colleagues were conducting studies on their own about ways to improve care and efficiency in their clinics.

“You soon realize you don’t have enough patients to do a proper study and that your patient population isn’t diverse enough,” says Yawn, who is director of research at Olmsted Medical Center in Rochester. “You need to band together with other practices.”

So began the Minnesota Academy of Family Practice’s Practice-Based Research Panel in 1979. About that time, Solberg, Mayer, Siefert and Cole did a study on how to better handle after-hours phone calls, which was published in the Journal of Family Practice. “We didn’t call it a network,” says Solberg, “because we were just a group of like-minded docs sharing ideas on practice-based research.” The panel changed its name in 1984 after it received its first grant. It is one of the three oldest continually operating practice-based research networks in the country.

Today, there are 152 practice-based research networks certified by the Agency for Healthcare Research and Quality (AHRQ). Most are sponsored by medical societies and many are affiliated with a medical school. Some networks include different types of primary care specialists. Others like MAFP’s are specialty-specific. (Family physicians make up at least 75 percent of MAFP’s network.)

Some PBRNs are state-based. MAFP’s network and the Minnesota Department of Health’s Public Health Practice-based Research Network are examples. Others, including the Pediatrics Research in Office Settings (PROS) Network and the American Academy of Family Physicians Network, are national. Still others, such as Mayo Clinic Health System’s Practice-Based Research Network, are health system-based. There also are national networks for nurses, dentists and pharmacists.

More common today are networks focused on a specific type of care innovation such as medical homes or a specific area of practice. In Minnesota, networks of providers interested in behavioral health, sports medicine and women’s health are in the early stages of development.

Networks provide just one way physicians collaborate on practice-based research. Another is through the Rochester Epidemiology Project, a collaboration of Olmsted Medical Center, Mayo Clinic, Mayo Clinic Health System and the Rochester Family Medicine Clinic. The project’s medical records data are used by researchers trying to improve the health of Olmsted County residents by better understanding the causes of illnesses and the outcomes of various treatments. “This way,” Yawn says, “we can figure out the true-population-based frequency of certain conditions and how many patients improve with a particular treatment.” The NIH has funded the Epidemiology Project’s practice-based research for more than 45 years.

Health systems are also embracing this kind of population practice-based research. Solberg now directs Health Partners’ Care Improvement Research Department, which supports such research. Several Minnesota health systems now collaborate with the University of Minnesota and other networks on practice-based projects that have a systems perspective through the Midwest Research Network.

Such collaborative practice-based research is extremely important to medicine’s future, Yawn says, because the proof really is in the practice. “Practice-based research is something all physicians can participate in and should be allowed to participate in,” she says. “Research is not a four-letter word.”—H.B.
systems where there's a lot of top-down micromanagement of local clinics,” says Barbara Yawn, M.D., a family physician and director of research at Olmsted Medical Center in Rochester and a national expert on practice-based research. Yawn is one of Minnesota’s practice-based research pioneers. She got her start when she was a resident 45 years ago and now serves as a principal investigator for national studies.

Like Peterson, she beats the bushes looking for participants and knows first-hand how hard it can be to recruit primary care physicians who work for big health systems. “For practice-based research to thrive today,” Yawn says, “the big systems need to give their docs a little flexibility in how things get done.”

Often, these systems don’t allow their physicians to be paid for participating in practice-based research. “In the old days, you could pay them, or maybe buy them some needed office equipment,” Peterson says. “But now the money often goes into a general fund.”

Yawn still pays stipends (about $1,500 to $3,000 a year) to some practices that participate. “It's a token, and everybody knows it,” she says, “but it helps cover some support staff time spent on the project.” For a study she is doing on ways to better manage COPD in small clinics, Yawn provided participants with free spirometers and trained their staffs how to use them and interpret the results. When the study was over, the clinics were able to keep the systems.

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office staff are entirely unrealistic.” For those reasons, he says PBRNs encourage investigators to collaborate closely with participating physicians to make projects minimally time-consuming and maximally pertinent to their practice.

Some practice-based investigators employ research facilitators who help ease the process by training clinic staff on what’s expected of them and incorporating a study’s methodology into the clinic’s workflow as seamlessly as possible. Last summer, the MAFP network helped develop a 16-week course to train practice facilitators. Peterson likens the 20 facilitators trained so far to extension agents who go out into the field and help clinics conduct practice-based research and adopt new practices that come out of the research.

Family physician Stephanie Jakim, M.D., who works at a two-provider branch of Olmsted Medical Center in Preston, participated in a study to test the effectiveness of screening for COPD in order to identify and start treating patients earlier. She says the fact that the investigators did a lot of the legwork for them “made it a good experience for all of us.”

Mayo Clinic Health System’s network calls its facilitators “practice-based research coordinators.” They help clinics taking part in research projects retrieve patient data from medical records, interview patients, clean up data and, sometimes, do analysis.

Keeping physicians from losing interest in a study is another challenge. Yawn referred to it as “voltage drop” in an article she published in a 2013 issue of the Journal of the American Board of Family Medicine. “Practices usually begin a study with enthusiasm and willingness to learn,” she says. “But over time, the reality of a busy practice erodes their enthusiasm to keep participating.”

She says having a research coordinator to communicate about a project, give lots of positive feedback and infuse a dash of fun into the work can help maintain the enthusiasm.

**Worth the effort**

For nurse practitioner Penny Louise Flavin, D.N.P., R.N., C.N.P., the time and effort required to do practice-based research is worth it. She’s helped Olmsted Medical Center in Pine Island test and adopt new guidelines on COPD, cholesterol, asthma and diabetes. She took the lead on one project that involved getting diabetic patients’ input on method and route for taking medications, identifying what frequency and expense they’re willing to incur for medications and supplies, and creating talking points for the pre-diabetic patient with glucose levels of 100 to 126 mg/dL. She says such work has equipped her to better deal with patients’ misgivings.

As part of this study, she created “YIPPEE cards” that she now gives all of her diabetes patients who meet Minnesota Community Measurement’s goals for diabetes control. The cards, with the word YIPPEE! across the front, congratulate patients for meeting benchmarks for blood pressure, exercise and A1c. “Patients love them,” she says. “They put them on their fridge and are disappointed if they didn’t make the YIPPEE board at the clinic. It’s definitely an incentive and reinforcement tool, and it helps me build great relationships with my patients.”

Fergus Falls family physician Patty Lindholm, M.D., who participated in a study on asthma designed and coordinated by Yawn and her team and a depression study through what is now the American Academy of Family Physicians’ research network, says taking part in practice-based research allows her the intellectual challenge of conducting research without having to apply for grants or design the study. “It prompts me to study a topic in greater depth and evaluate my own practices,” she says.

MacLaughlin says being part of practice-based research improves practice in ways that are measurable and sustainable. “There’s value in having the people who provide direct patient care come up with ideas for practice improvement,” she says.

Practice-based research also improves the health of clinics, according to Yawn, who published an article on the benefits to physicians and their staff in a 2010 issue of the Journal of the American Board of Family Medicine. “Physicians learn that nurses and other staff can do more,” she says. “Everyone on the staff learns new skills and they work better as a team.” She says it also improves staff retention and the self-esteem of all clinic staff who participate.

Yawn says the physicians who do best at practice-based research want a little more stimulation than they get seeing one patient at a time. “They’re interested in quality improvement and contributing to a greater good that improves health care for lots of people. And isn’t that why most of us went into medicine?”

Howard Bell is a medical writer and frequent contributor to Minnesota Medicine.