REFLECTION

Optimizing Practice Through Research: A New Perspective to Solve an Old Problem

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Conflicts of interest: Drs Woolf and Green have declared that their academic institutions receive funding from federal agencies and foundations to conduct research and to operate practice-based research networks and CTSAs to address the research needs discussed in this article. No other author has a potential conflict of interest with the material presented.

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ABSTRACT

Policy makers, researchers, clinicians, and the public are frustrated that research in the health sciences has not resulted in a greater improvement in patient outcomes. Our experience as clinicians and researchers suggests that this frustration could be reduced if health sciences research were directed by 5 broad principles: (1) the needs of patients and populations determine the research agenda; (2) the research agenda addresses contextual and implementation issues, including the development of delivery and accountability systems; (3) the research agenda determines the research methods rather than methods determines the research agenda; (4) researchers and clinicians collaborate to define the research agenda, allocate resources, and implement findings; and (5) the level of funding for implementation research is commensurate with and proportional to the magnitude of the task. To keep the research agenda focused on the task of improving health and to acknowledge that the effort must be seen as more comprehensive than translating or transferring research into practice (TRIP), we suggest that the task be reframed, using the term *optimizing practice through research.*

Ann Fam Med 2008;6:459-462. DOI: 10.1370/afm.862.

INTRODUCTION

Policy leaders are frustrated that recent discoveries in the health sciences have not been incorporated rapidly and completely into clinical or community practice.[1] This frustration has led to the creation of the NIH Roadmap[2] and Clinical and Translational Science Awards (CTSAs).[3] Although the task of improving quality through innovation in the delivery of health services is frequently described as "translating research into practice," or TRIP,[4] our experience as researchers and clinicians leads us to believe that conceptualizing the task in this way fails to describe the process that must be set in motion if research is to improve the health status of patients and populations. It also places undue emphasis on only one component of the mission of research in the health sciences, "pursuit of fundamental knowledge about the nature and behavior of living systems."[5] To retain the focus of health sciences research on its ultimate mission, "to extend healthy life and reduce the burdens of illness and disability,"[5] we suggest that the task be reframed, using the term *optimizing practice through research*, and we suggest that the task of improving health outcomes through research be based on 5 broad principles.

IMPROVING HEALTH OUTCOMES THROUGH RESEARCH

Principle 1. Needs of Patients and Populations Determine the Research Agenda

Before the development of highly sophisticated basic sciences, the health sciences research agenda was defined by the problems that clinicians faced in their daily practices. Today, there are indications that the research agenda is defined with little apparent regard for clinical or population epidemiology.[6] Claude Lenfant, the former director of the National Heart, Lung, and Blood Institute, expressed his concern about this trend in his Shattuck Lecture, when he wrote that science must answer the question, "Are the results [of research] likely to be applied in a clinical setting?"[7]

Research in heart disease illustrates the importance of asking this question. Heart disease, the leading cause of death in the United States,[8] has both genetic and behavioral causes. Hypertrophic cardiomyopathy, the leading cause of death from heart disease among young athletes, is caused by missense gene mutations.[9] Developing a successful gene identification and therapy program might allow athletes with this genetic disease to live longer and continue in competition. Eradicating the disease, however, could lower population death rates only by the prevalence rate of the disease, 0.2%.[9]

By contrast, effective lifestyle programs focused on a healthful diet, abstinence from tobacco, adequate physical activity, and moderate alcohol consumption could benefit up to 95% of persons in typical US populations.[10-12] With better adherence to these 4 lifestyles, it is possible that life expectancy could be extended by up to 14 years,[13] and nearly two-thirds of coronary heart disease events might be prevented.[14]

Changes of this magnitude should not be considered impossible. Associated with a sustained chronic disease prevention program and improved health service delivery, death rates from coronary heart disease fell by 82% in Eastern Finland.[15] Changes in risk factor levels were responsible for up to 73% of the decline through 1997.[16]

Although effective behavioral interventions to address the lifestyle causes of heart disease can be applied to 95% of a practitioner's patients, therapies for hypertrophic cardiomyopathy are not applicable to 99%. Society may decide that it is appropriate to devote resources to develop treatments that can only be applied to a few, but the goal of improving the health of the many can be accomplished only by addressing the common causes of common diseases.

Principle 2. Research Agenda Addresses Contextual and Implementation Issues, Including Development of Delivery and Accountability Systems

Failure to adopt health sciences innovations can be due to the lack of intervention and accountability systems. Two 19th century innovations are illustrative: systems to maintain a sterile operating field, and the morbidity and mortality conference.[17] Surgeons made little progress in improving outcomes until systems to maintain asepsis were developed. Even after it was shown that these systems were the key to improved surgical outcomes, they did not become the standard until the morbidity and mortality conference made surgeons accountable for their outcomes.[17] A more contemporary example is systems research that has demonstrated the efficacy of protocols to reduce infections from venous and arterial catheters.[18]

As chronic diseases have emerged as a management challenge for 21st century care systems, the importance of care management and accountability systems has become apparent.[19,20] Although the potential contribution of systems science is increasingly appreciated, more research is needed to understand how to improve care delivery systems.[21]

Principle 3. Research Agenda Determines the Research Methods Rather Than Methods Determine the Research Agenda

It has been observed that research is often driven by topics which are considered researchable rather than by the needs of the end user.[22] Although other research methods—for example, interrupted time series analysis—are more appropriate for some tasks, best-quality evidence is frequently still defined as the results of a randomized trial. Improved outcomes resulting from improved practice require that (1) the scope of research is defined by the questions which must be addressed and (2) a much broader range of investigative methods be used. These methods include epidemiologic observations, clinical observations, quasi-experimental evaluations of natural experiments, time series experiments, case studies of apparently successful projects or organizations, rapid-cycle learning, and qualitative studies, either alone or as mixed methods studies in combination with quantitative studies.[23] When addressing certain issues, these designs can often produce more pertinent results without the expense and delay that conventional randomized trials require.

A preventive services improvement initiative illustrates how the agenda should be used to drive the research methods rather than vice versa. Working in their fee-for-service ambulatory care network, the Baylor Health System quality improvement group set a goal of improving patient outcomes by increasing the delivery of the preventive services recommended by the United States Preventive Services Task Force. To change the care delivery system, the group rapidly implemented 11 interventions that had been tested in clinical trials. Making no particular effort to determine whether one intervention generated more impact than any other, the Baylor group continuously monitored their progress and documented that the proportion of services "recommended or done" rose from 68% in 2000 to 92% in 2006. During the period from 2001 to 2006, the group increased the proportion of services that were "done" from 70% to 86%, and they increased the proportion of patients who received "perfect care" from 19% to 51%. Their intervention strategy can be described as the application of an ensemble of multiple efficacious system development tools to increase delivery of efficacious patient-level interventions, and their evaluation design was pre-post tracking of objective performance data.[24]

Principle 4. Researchers and Clinicians Collaborate to Define the Research Agenda, Allocate Resources, and Implement Findings

At more than 100 practice-based research networks (PBRNs) in the United States, researchers and clinicians collaborate to conduct care improvement studies in the outpatient setting.[25,26] Similarly, the Centers for Disease Control and Prevention supports a network of prevention research centers mandated to engage their community agencies, practitioners, and populations in participatory research planning, execution, and interpretation.[27] The National Institutes of Health Roadmap and its CTSA program also give some recognition to the potential contribution of practitioners and PBRNs to promote science and seek to involve them in the task of translating research into practice.[2,3] Collaborative efforts of researchers and practitioners in other fields have been shown to increase the adoption of innovations.[28]

Although the dividing line between conventional quality improvement programs and scholarly research to improve quality can be ill-defined,[29] important research efforts to improve quality occur in that nexus. For example, the Veterans Health Administration Quality Enhancement Research Initiative (QUERI) program has been cited as a successful model of collaboration.[30] This data-driven approach to quality improvement has resulted in improved influenza and pneumococcal vaccination rates, increased collaborative care for depression, computerized decision support for treating hypertension, improved diabetes care, prompt revascularization for patients with acute coronary syndromes, and increased colorectal cancer screening rates.[31,32] The leadership of the QUERI program has identified 4 processes that they consider critical to the success of their program: (1) research is linked to the needs of patients and system performance, (2) implementation is studied systematically, (3) researchers and policy makers interact directly, and (4) activities are both top-down and bottom-up (ie, generated by both research directors and front-line clinicians).

Other organizations have also recognized the value of end-user participation in developing the research agenda. For example, the Canadian Health Services Research Foundation program—Research, Exchange & Impact for System Support (REISS)—requires 4 components in the programs it supports: original research, a capacity-development activity (to conduct, disseminate or use research), knowledge transfer and exchange activities, and system-relevant program deliverables.[33] The program requires both matching funds from cosponsoring organizations and the formation of interdisciplinary teams that include researchers and decision makers from relevant organizations.

To focus research on population and clinical priorities, HealthPartners Research Foundation has created Partnership Grants for its parent managed care organization, HealthPartners. Partnership Grants are internal grants designed to answer questions about high-priority programs and patient care issues for the organization by fostering partnerships between researchers and operational leaders. Researchers and operational leaders work together to study how the HealthPartners enterprise might improve the delivery or administration of health care. Applicants are required to show that the proposal represents a real partnership between researchers and operational leaders, and they must include both clear plans for implementation of research findings and an operational leader's commitment to use the plans.

Principle 5. Level of Funding for Implementation Research Is Commensurate With and Proportional to the Magnitude of the Task

Although the Agency for Healthcare Research and Quality is committed to funding PBRNs[34], the agency budget is only 0.3% of the investment in health sciences discovery and development in the United States.[35] The CTSA program may help alleviate some funding shortfall for implementation research, but the total pool of money for CTSAs is small relative to the more than $111 billion spent on health research and development in the United States in 2005.[35] Without adequate funding, innovation in clinical practice to improve patient outcomes cannot be expected to proceed.

In conclusion, we recognize that broadening the health sciences research agenda and changing the process by which scarce resources are allocated will not be easy; it will require nothing less than changing the culture of health sciences research. Basic scientists, epidemiologists, and clinicians will need to share the power to set agendas and allocate scarce resources.

The conditions are otherwise ripe for quantum improvements in clinical outcomes, however. The expectations of patients and purchasers of health care are creating pressure for accountability and care improvement. When medical records are designed appropriately, they create the opportunity to rapidly assess gaps in care, variations in care, efforts to improve care, and patient-centered outcomes. A large cadre of clinicians seeks to participate in research endeavors and has the interest and ability to develop, test, and implement innovative service and accountability systems to meet these expectations. If reframing the task as optimizing practice through research maintains focus on the target of extending healthy life and reducing the burdens of illness and disability, and if the 5 principles described in this essay are followed, we believe that the sought-after revolution in health care improvement will occur.

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Key words: Research; translation; practice

Submitted October 20, 2007; submitted, revised, February 16, 2008; accepted February 25, 2008.

Funding support: This report was supported in part by an Agency for Healthcare Research and Quality small conference grant.

Disclaimer: The views expressed in this article are solely those of the authors.

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