Science and the Future of Primary Care

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A global glance reveals a worldwide resurgence of interest in primary care,[1] and the United States has joined other countries in revisiting the role of primary care in health care systems. Churchill appears to be right again with his declaration, "You can count on the Americans to do the right thing after they have exhausted all the other possibilities." Perhaps the United States finally has depleted the supply of alternatives to excellent primary care and is indeed ready to take the steps necessary to establish a foundation of primary care within the most expensive but not necessarily the most effective health care system in the world.

Contributing another element to this rediscovery of primary care, the Institute of Medicine (IOM) appointed in 1994 a multidisciplinary committee to reexamine the future of primary care. This committee redefined primary care[2] and concluded that primary care is a complex but achievable enterprise, fundamental to effective health care systems. The concepts and services of primary care were found to apply to all ages, both sexes, and all socioeconomic groups. Believing that a fundamental, complex enterprise important to everyone should rest on a solid foundation of relevant knowledge, the committee convened a workshop at the National Academy of Sciences in Washington, DC, in January 1995 to explore the scientific base of primary care.

At this workshop, a spectrum of thought-provoking views were expressed by a broad representation of clinicians and other scientists. Some of the most salient aspects of this workshop are captured in the series of papers published in this issue of *The Journal*. While each session offered insight into specific topics, the speakers and discussants also contributed to several themes that emerged from this workshop.

Submitted, revised, December 19, 1995.

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 ISSN 0094-3509

Theme One: *Reasoning in primary care is complicated and differs in fundamental ways from referral/subspecialty clinical practice.*

Rosser[3] took a comprehensive view and identified differences between primary care and specialty care from theoretical, philosophical, statistical, and practice perspectives. He summarized the situation with a metaphor, suggesting that specialty care is appropriately more like "reading a map," while primary care is more like "living in the terrain." As a map reader, following the right routes for the chosen destination is productive yet distinctly different from actually dwelling in the area and knowing firsthand its appearance, sounds, smells, and weather conditions. Dwelling in the environment was seen to support the notion of a *sustained partnership* in the new definition of primary care, and it became possible to imagine how practice guidelines based on map reading might not flourish in primary care practice.

Sox[4] focused on testing as one element of clinical practice through which primary care practice and specialty practice can be compared. Using both theoretical and empirical arguments, he demonstrated that the selection and interpretation of tests differ in primary care and specialty care. The prevalence of conditions in the population under care powerfully determines the interpretation of the same test, and referral practice should be enriched for patients with an intermediate probability of disease. The expected and measured consequence of this circumstance is that the probability of disease, given a particular history or test result, will be lower in primary care patients and testing will be less fruitful, while the reverse will be true in specialty practice. Thus, a productive strategy in specialty practice may be inappropriate in primary care, and vice versa; and various algorithms probably work differently in primary care and referral practice. It appears that specialists and primary care clinicians become experts about different things. These differences probably should be celebrated and understood rather than ignored or punished.

Virtually all workshop participants contributed to the realization that in primary care, diagnosis is often not

achievable and sometimes is overrated or even unnecessary. The patient complaint, "This has been three years of hell and I can't take it anymore" cannot be neatly and singly labeled as Alzheimer's disease or caretaker burnout. "I can't walk to church anymore" at 104 years of age is not just angina. In many instances, diagnosis is simply not possible, perhaps because it is too early in a disease process or because we have yet to define conditions as they are actually seen in primary care. In other circumstances, making and recording a diagnosis may be contraindicated because of contextual issues, such as adverse effects of stigmatization in the community.

Workshop participants recurrently pleaded for recognition of the need to change the way clinicians are trained to think in primary care. "What we see is what we can see in our mental models." "Clinical reasoning in the current paradigm is too narrow and insufficiently connected to what people have, need, and want in both primary care and specialty practices." Lamberts and Hofmans-Okkes[5] offered a broad conceptual framework linking the paradigms and values of medicine in a manner that could organize dialogue in search of a better understanding of how primary care can be further developed. Repeatedly, clinicians expressed a yearning for new knowledge about the difference it makes in diagnosis and treatment when clinician and patient know each other and expect to have a sustained partnership. And Leopold et al[6] challenged primary care researchers to take action by proposing a theoretical basis for assessing the existence, antecedents, and outcomes of sustained partnership between clinician and patient.

Theme Two: *Primary care can be improved through research to the benefit of many.*

There remain great mismatches between our teaching and research enterprises and what besets people, and between what people need and want and what they get from the health care system. Similarly, there are great mismatches between what primary care clinicians need and the help that they get. Even though primary care benefits from health services research, biomedical research, behavioral and epidemiological research, and other areas of scientific inquiry, these are only interfaces and do not comprise the substance of primary care research.

Starfield[7] described an architecture of research, suggesting that there are four categories of research, each of which applies to all levels of clinical care: basic, clinical, health services, and health systems research. She completely rejected the notion that research becomes primary care research just because it focuses on something that exists in primary care. After all, all problems exist in primary care. Instead, she developed the case that research in any of these categories becomes primary care research when it is done in primary care settings, or in the context of primary care. To assess the frequency with which such research is done, she reviewed recent issues of the *Journal of General Internal Medicine* (JGIM) and *The Journal of Family Practice* (JFP) and compared the articles in these primary care journals with those in *JAMA*. In her sample, some 40% of JFP articles, 25% of JGIM articles, and 3% of *JAMA* articles were based on data from primary care settings. Furthermore, when these articles were sorted according to whether they addressed previously published high-priority areas for primary care research,[8] 15 of the 36 specified areas were not represented at all in this recent sample of published work in leading journals.

Other presenters emphasized the need for further attention to methods suitable for and available now for use in primary care research. Lawrence emphasized the interaction of human biology, human behavior, environmental and occupational factors, and health services as the domains that determine health status (Lawrence RS. Health promotion and evidence-based medicine, population-based and preventive medicine. Paper presented at the IOM invitational workshop on the Scientific Base of Primary Care, National Academy of Sciences, Washington DC, January 24–25, 1995). The broad arena of prevention, which is central to primary care, interfaces with all these domains. Measuring the results of interventions could be improved by using tools such as "the disability-adjusted life year" as well as mechanisms to measure self-efficacy, labeled by Lawrence as "the penicillin of the 21st century."

Lamberts and Hofmans-Okkes[9] demonstrated the capacity of episode-oriented epidemiology to unite time with other variables in primary care to characterize the elements in the new definition of primary care, specifically to determine what actually comprises a large majority of primary care problems. They went further to propose how episodes could be used as a unit of analysis to assess whether primary care clinicians actually achieve primary care as defined. Regrettably, such episode-oriented data hardly exist in the United States.

Through this workshop, primary care research could be seen to be in a fledgling state, not well understood by traditional academicians, funding agencies, journal reviewers, primary care clinicians, subspecialty clinicians, or those who aspire to discover primary care. This should come as no surprise. It has always been difficult to see and understand the undiscovered. Largely an uncharted frontier, primary care research beckons bright minds motivated to improve primary care. The scope of research can be glimpsed through Povar's listing of opportunities organized around the new definition of primary care.[10] It is inspiring to think that improving primary care through

research could have a large impact on so many, often those with greatest need. It is a particularly attractive possibility that enhanced primary care may contribute to our ability to cope with prevalent problems, such as domestic violence, not fully amenable to solutions restricted to biomedical strategies.

Theme Three: *The United States lacks capacity to improve primary care just as it lurches toward greater reliance on primary care as the foundation of health services.*

The structures and funding mechanisms that have fueled the successful linkage of science and subspecialty medicine do not exist for primary care research. There is no adequate national home for primary care research to serve as a forum to guide and nurture the improvement of primary care by applying scientific methods. Clancy described the current situation and suggested why this inadequate state of affairs exists (Clancy C. Building capacity for research in primary care. Paper presented at the IOM invitational workshop on the Scientific Base of Primary Care, National Academy of Sciences, Washington, DC, January 25–25, 1995). The small financial investment in primary care research is completely dwarfed by investments in other aspects of health care. At the moment, primary care research depends to a large extent on champions "working in their garages."

Stange[11] comprehensively defined the barriers and opportunities in primary care research. He emphasized that there are few incubators for the scarce species called "primary care researchers," and for those primary care researchers who grow to be independent, adequate career ladders do not exist. Various workshop participants pointed out that currently used classification schemes are often inadequate for capturing primary care phenomena; and information systems, though possible, are not yet deployed into primary care settings in a manner that undergirds careful scrutiny of the primary care enterprise.

The ability to formulate the important questions and the opportunity and means to investigate them in appropriate laboratories are other key capacities needed to improve primary care through research. These capacities require linkage to actual practice to identify key questions and develop approaches that permit investigation in the primary care environment without destroying the ecology. Therefore, primary care clinicians *must* participate in primary care research while managing their patients' problems. Networks of practicing clinicians devoted to primary care research already exist, and their early work has been useful. Nutting[12] emphasized, however, that no mechanism exists to sustain these laboratories as a basic infrastructure for primary care research.

Theme Four: *Primary care research is now an attractive investment.*

Only recently has primary care research become an attractive investment in the United States. This new state of affairs derives from several concurrent developments that were under way as this workshop was convened. Widespread concern about inadequate value for money spent on health services has created a willingness to consider alternatives to the status quo. There is a growing body of evidence that populations with access to primary care have better results at a lower cost. Instead of disdaining primary care, multiple provider groups now want to be part of the action and fear being excluded from primary care. Organized delivery systems are a new type of institution that may provide infrastructures and capital for primary care research. Nerenz[13] indicated why an integrated delivery system would want to do primary care research and suggested some of the conditions that merit attention when developing research in these complex systems of care and financing.

The information revolution has arrived with its practical applications of relevance to primary care's enormous information management challenges. Furthermore, the information revolution is stimulating further thinking about replacing reductionism and materialistic notions of health and disease with new language about patterns, meaning, and connectivity to whole systems. Such developments seem ripe for helping establish guiding theory and careful investigation of the relevant phenomena of primary care.[14]

We appear to have entered a time in the United States when accomplishing primary care is highly desired to help new types of organizations efficiently meet the needs of defined populations. Though not yet achieved, there is substantial evidence that primary care can be observed, classified, measured, researched, and improved by the application of scientific methods. The potential return on investment in primary care research has been glimpsed: equal or superior results at the same or lower costs.

Conclusions

Primary care is *not* the answer to every problem. Just because primary care must be able to accept any problem does not automatically mean it must be responsible for *solving* every problem. Good primary care is interdependent with the rest of the health care system and other systems within communities. Primary care by its nature is broadly based and touches on much of human experience. Organized responses to promoting health and preventing and treating disease and illness cannot be sufficient in the absence of excellent primary care.

The key questions that were addressed at the workshop were:

- *What is the scientific base of primary care?* Multidisciplinary, beginning to evolve, definitely not the sum of existing knowledge, grossly underdeveloped and inadequate for growing expectations of primary care.
- *Can it be developed?* Yes, to the great benefit of virtually everyone.
- *What next?* Accept the centrality of improved primary care to effective health care systems and move to undergird primary care with a relevant knowledge base. Start by building and securing the capacity to do primary care research.
- *Then?* Ask and rigorously answer important questions about the troubles and aspirations people perceive and bring to the front door of the health care system.

It is time for those in primary care to step forward and accept responsibility for improving the performance of primary care through the application of scientific method. And it is time for our national and local institutions to allocate resources to guarantee the resulting improvements in our nation's health that depend on effective primary care.

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