

Guest Editorial

Primary Care Research and the New Epidemiology

Kerr L. White, MD
Baltimore, Maryland

Western medicine is on the threshold of a renaissance in clinical research. This will not be the clinical research conducted during recent decades at the bedside or in the laboratory. It will be clinical research conducted with the cooperation of ambulatory patients in the doctor's office, the health center, the clinic, the outpatient department, and the home. It will be based on the new epidemiology as Sir James Mackenzie predicted it would have to be.¹ It will involve patients and even "non-patients" at the earliest stages or phases in the natural history of illness or disease (or the converse, sound health); it will start at the beginning. Using methods that require skills in interviewing, observation, measurement and recording, and methods that embrace the rules of evidence and the laws of logic, primary care research will need to be soundly scientific in its conduct. In the broader sense of the term, primary care research may be regarded as a long-neglected frontier of research that is fundamental to a better understanding of the origins of ill health and the conduct of further basic biological and psychological research. For the pursuit of these enquiries, three developments seem important:

1. *Classifications.* These are needed for *lay terms*, including colloquial expressions for disturbances in well-

being, behavior or functional capacity, for *symptoms*, the language of disease, as they are recognized by the physician (or other health-care personnel), and for *reasons* that occasion the patient-physician encounter. The WONCA² and NAMCS³ classifications are designed to meet some of these needs. However, a full array of classification modules extending from lay terms to "underlying causes of death," the traditional rubrics of the International Classification of Diseases⁴ is needed. Other modules include classification schemes for levels of *disability* (ie, functional capacity), *discomfort* (pain, aching, worry, bother, and concern), *dissatisfaction* (with or about a situation, event, sensation, or person), *severity*, and *urgency*.

Together with the several classification modules, we need rules for classifying rubrics so that we can obtain a clear understanding of why people do or do not consult a physician (or other health-care personnel), enter a hospital or nursing home, comply with a regimen, or fulfill a therapeutic or behavioral contract. It is these classifications that get us started on the path of enquiry, comparison, and prediction that are the essence of science.

2. *Terms.* There is need to identify and define the terms used, for example, on encounter forms, on hospital discharge abstracts, and on long-term care assessment forms, as well as in related medical care records. The evolution of *uniform basic data sets*⁵⁻⁷ is an attempt to encourage more precise definitions and comparability within and among practices and institutions. The Ambulatory Medical Care Data Set is especially important



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in primary care research,⁸ and its widespread adoption should be encouraged by those interested in developing this important field.

3. *Denominators.* Objective comparisons within and among practices over time and place are best made by transferring raw numbers, be they counts of persons cared for or counts of visits or other activities, into rates per 1,000 population served. Few physicians, health centers, or outpatient departments in North America have age-sex registers of the populations they serve. This is not true, however, for most prepaid group practices. Recent published work by Kilpatrick⁹ and work in progress by others (Bass, Crombie, Garson and Kretchmer*) suggest that where the frequency of "episodes of illness" can be derived for persons using a particular source of ambulatory medical care (and assuming that they obtain all, or the great majority of their care from that source), a practice denominator can be calculated. This is a most ingenious observation and, if confirmed in other settings, implies the hope that at least total crude rates of problems, procedures, outcomes, encounters, and other measures can be calculated for individual or other practices and compared. When refinements such as the age and sex composition of the practice are known, the effects of different mixes in the characteristics of the population served can be removed, and more precise comparisons are possible.

*Based on papers presented and referred to at the 1976 meeting of the North American Primary Care Research Group in San Francisco, California, April 22-24, 1976.

Dr. White is Professor of Health Care Organization, The Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland. Requests for reprints should be addressed to Dr. Kerr L. White, Department of Health Care Organization, The Johns Hopkins University, School of Hygiene and Public Health, 615 North Wolfe Street, Baltimore, Md 21205.

The use of clearly defined classifications, terms, and denominators is a central concept in epidemiology; their application to primary care research constitutes the "new epidemiology." It is this epidemiology that constitutes the essential means to sound primary care research. With the means at hand, what are some of the problems that primary care physicians, and in many instances, *only* primary care physicians can undertake? Let me provide some examples of problems that I believe are important, researchable, and feasible in the context of primary, general, or family medical care:

● *What are the situational circumstances associated with the onset of illness?* Under what circumstances did the patient develop pneumonia, cardiac failure, or diabetes, or even the initial cough, fever, or chest pain? What is known about the marital, domestic, occupational, recreational, or climatic circumstances under which the patient became ill or first noted that all was not well?

● *What role does separation play in the genesis of illness?* How often are separations from families, spouses, children, employers, jobs, friends, or community associated with the onset of symptoms? Does the separation induce "stress" and can it be measured on the Holmes Social Readjustment Scale within and among practices and across time and place?¹⁰

● *What events or changes trigger consultation with a physician?* Influences similar to "situational" factors or "separations" may be associated with the patient's decision to seek care (or not to seek care). If more were known about the "trigger" mechanisms, more might be done to encourage patients to use services more appropriately, ie, earlier, later, not at all, or to use other types of health and social services.

● *What role do environmental factors play in the genesis of illness?* Primary care physicians are in an excellent position to establish early warning systems, surveillance networks, and epidemiological intelligence services to identify the presence or prevalence of potential industrial intoxicants, safety hazards, and occupational stresses, and the earliest symptoms associated with exposure to these. Coughs, rashes, excessive tearing, or headaches, for example, brought by employees of a particular plant or with a particular

occupation to a primary care physician participating in a surveillance system could alert all concerned to the potential hazards to which the patients are exposed and perhaps help to identify etiological agents in their environments.

● *Does the identification and monitoring of high-risk groups reduce morbidity?* Early recognition and management of illness in high-risk groups is believed to reduce morbidity, but little is known about the value of this approach in primary care practice. High-risk groups identified on the basis of family history, occupation, geographic mobility (ie, recent arrivals in town), living arrangements, or nutritional habits, for example, could be followed deliberately in an effort to practice anticipatory medicine, and the relative benefits of this could be measured objectively.

● *How valid are probabilistic models in primary care?* Most tertiary care, including most medical education, is based on a deterministic, even reductionist, view of health and disease. Much more needs to be learned about the statistical probabilities with which particular symptoms, clusters of symptoms, or sequences of symptoms are associated with self-limited, benign, or alternatively more serious outcomes. This type of research can best be conducted in primary care practices, and is difficult, if not impossible, to conduct in other settings.

● *What information does each test or x-ray really contribute to the resolution of the patient's presenting complaint?* Many tests and x-rays, apart from those motivated by pecuniary interests or by the physician's innate curiosity, are ordered because it has been traditional or "routine," or has been in the interests of defensive medicine, or for "peer review" protection. More needs to be known about the actual clinical benefit to the patient associated with many common tests and x-rays. What are the risks of not doing many of these tests?

This potential list could be expanded materially, especially by those who are undertaking primary care research. The primary care physician has more in common with the naturalist than with the physicist or engineer. In research, the naturalist observes and describes, the naturalist identifies patterns and associations and distributions; less frequently does the

naturalist undertake definitive experiments. Although both have their place, medicine urgently needs the wonder, curiosity, and observational powers of the naturalist, as much as, perhaps now more than ever, the mathematical certainty of the physicist or engineer whose methods and concepts have done much to advance the technological side of medicine.

It is time to redress the balance. It is time to ask questions about the origins of ill health and about the circumstances that promote good health. It is time to expand our fundamental knowledge about the natural history of disease, to the same extent that we have expanded our knowledge in cell biology. For all this, a renaissance of research in primary care is essential and the "new epidemiology" provides the means.

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