What is "Clinical Epidemiology?"

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GUEST EDITORIAL

I SEEK here to make two points: first, that the term "clinical epidemiology" is an oxymoron; second, that the uncritical enthusiasm with which this activity is being embraced in many medical schools constitutes a danger to health. Epidemiology originally meant the scientific study of epidemics, implicitly communicable diseases. A few years ago, an international panel agreed, not without some argument, on a modern definition: the study of the distribution and determinants of health-related states and events in populations, and the application of this study to control health problems (1). The phrase "health-related" is there because epidemiologists study car-driving habits, physical fitness, pregnancy and many other phenomena that are not diseases. And the final clause is there because Zbigniew Brzeziński persuaded me that it would make no sense to study the distribution and determinants of such a condition as malaria, or any other condition, without doing something to control it and evaluate the control measures.

The term "clinical epidemiology" was first used 50 years ago by John R. Paul, who defined it as "a marriage between quantitative concepts used by epidemiologists to study disease in populations and decision-making in the individual case which is the daily fare of clinical medicine" (2). This definition implies that clinicians should consider the facts derived from population-based studies of clinical conditions before deciding what to do about individual patients.

If "clinical epidemiology" means using past experience to inform and guide decisions about care of individual patients, it is as old as medicine; its roots are discernible in the writings of Hippocrates. This activity is clearly essential to patient care, but we need a new word to describe the intellectual processes involved, because epidemiology is something altogether different; appropriation of the word in this way with a qualifying

adjective by clinical scientists devalues the science of epidemiology. Such a devaluation can adversely affect health policy, which must always rely on epidemiology. The infiltration of medical schools by clinicians who describe themselves as clinical epidemiologists but are really practicing clinical decision analysis could have serious consequences—physicians who lack a population perspective may be very good at clinical decision-making, but may not necessarily comprehend (or care much about) important common health problems of the communities in which they practice. "Clinical epidemiology," furthermore, tends to medicalize health in an era when we should be encouraging people to take responsibility for their own health.

In the 1980s, "clinical epidemiology" is being vigorously championed by clinical scientists who seem bent on giving epidemiology a new meaning. They offer plenty of definitions of clinical epidemiology. Patient care is central to David L. Sackett's definition: "The application, by a physician who provides direct patient care, of epidemiologic and biometric methods to the study of diagnostic and therapeutic processes in order to effect an improvement in health" (3). Taken literally, this definition would exclude all who lack medical qualifications, and would exclude application in public health. Sackett is really defining clinical decision analysis. The proper distinction between clinical decision analysis and epidemiology is that epidemiology is concerned with the study of disease or health-related phenomena in a defined population, even if it is a population of patients rather than a community-based population with numerator and denominator in the conventional epidemiologic sense. There is nothing wrong with this; much of our recently acquired understanding of causal and risk factors for many rare conditions has come from case-control studies, often of quite small numbers of cases. But I get uncomfortable when "clinical epidemiology" applies to studies of a single patient, as in "N of one" studies (4) wherein successive regimens are randomly allocated to a patient and the outcomes of each regimen are assessed. "N of one" studies are elegant and effective. But it is inappropriate to use the word epidemiology in this context. We need a different word to describe this branch of clinical science.

Such a narrow view of epidemiology would sadden the founders of the Epidemiological Society of London, most of whom were public health workers, and saw epidemiology as a discipline that existed primarily to protect and promote the public health (5). There were distinguished clinicians in this Society, however, whose clinical wisdom was enlightened

by epidemiological insights; they included Richard Bright, Thomas Addison and Benjamin Brodie; but the real thrust of the Society was population-based, as perusal of its *Transactions* makes clear.

Clinical Epidemiology is the title of at least five recent books, if one in French is included (6–10). All have useful, often important things to say; but all leave out some aspects of what most epidemiologists consider to be integral parts of the discipline, and a couple are hardly recognizable as epidemiology.

Words are our servants, not our masters, and in the English language their sense and meaning never stop evolving. Words are also our most sensitive and precise instruments, the *sine qua non* of scientific communication. It is unfortunate when a restrictive or different new meaning is conferred upon a word that has a long-standing and widely accepted usage—it is not necessarily Newspeak, but is avoidable. Alvan Feinstein recognized this when he coined the word "clinimetrics" (11) to describe the science of clinical measurement. This word best describes many activities that are discussed at length in some of the new books on "clinical epidemiology" (7–9), and it is the title of Feinstein's latest book (12). Its French equivalent, clinimétrie, is the subtitle of the excellent new book by Jenicek and Cléroux (9). I believe that clinimetrics enriches the language, as biometry did.

None of the new books on "clinical epidemiology" meet the need for a basic text that students can use when they are learning the science and art of epidemiology (some of them don't even describe coherently the features of either cohort or case-control studies, let alone the use of vital statistics, which all of them ignore). What they all make clear is the need that I have already mentioned, for a new word or phrase to describe the intellectual processes that these books expound. Epidemiology they ain't, and "clinical epidemiology" is an inappropriate, pretentious, and—most important—internally inconsistent term to apply. It is internally inconsistent because epidemiology refers to populations, and "clinical epidemiology" often refers to individual persons.

There are grounds for real concern, moreover, about the prospects of a takeover of medical school teaching *and the research agenda* of epidemiology by clinical epidemiologists. I applaud the teaching of epidemiology in a clinical setting, perhaps the most significant advance in clinical teaching in my lifetime. But if this leads to the abandonment of non-clinical teaching of epidemiology and related disciplines and concepts, the next generation of physicians, and the society they have been

trained to serve, will suffer. Medical sociology, social demography, community-based preventive medicine and health promoting activities are inextricably intertwined with epidemiologic teaching and practice; they are remote from, and might as well not exist for all the mention they receive in these new textbooks on "clinical epidemiology," which also say little or nothing about health and its determinants.

Health is, of course, too important to be left to the clinicians. Clinicians are at best usually indifferent to, often covertly, even overtly, hostile to preventive medicine, maybe still more hostile to the concept of health promotion. In the 1980s, we have seen the birth of new concepts of health promotion, a central feature of which, enshrined in the definition of health promotion (13) and in the Ottawa Charter (14), is enabling people to take responsibility for their own health. If the only pertinent teaching is provided by clinicians—physicians who wear white coats, carry stethescopes and work in hospitals—there are real risks that these concepts will become medicalized just as we are attempting to return responsibility for health to the people. I find it difficult to visualize the research agenda for health promotion as it might be conducted by clinical epidemiologists. Who wants to study health when they can study disease? Is research on health promotion possible without the participation of epidemiologists? Are medical schools to remain disease palaces in the era of "health for all"?

What if population-based surveillance and disease control activities cease to be part of medical education? Already there are medical schools where little or no attention is paid to these essential features of public health services. Do graduates from such schools realize their obligation to report certain communicable and other diseases, or why it is important that they provide precise diagnostic information on death certificates? They may know some sophisticated tricks that enliven their presentations at grand rounds, they may have an enlightened understanding of statistical tables that appear in articles in journals. But they may not know how to assess the health problems of the communities in which their clinical practices are located, and what is worse, they may not care. I tremble for the health of communities entrusted to a generation of physicians trained in clinical decision analysis but not in epidemiology. The prospect alarms me, and I hope it can be prevented.

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