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May 19, 2004

Dear Howard:

I enjoyed the visit with you and Yang Wang. I need to bounce things off of you both. On other issues, I hope we will get closer together on understanding what epidemiology and epidemiologists are about. I'll try to clarify; my next memoir will elaborate. You will get it this summer!

My "poem," as you call it, on the 3 medical research methodologies was the introduction to the Ancel Keys lecture at AHA some time ago and puts epidemiology alongside clinical and laboratory approaches as the 3 major medical research methods:

*Consider the Three Beauties of Medical Science:*

*The Baroque Beauty of Biology;  
The Modern Beauty of the Clinic;  
The Classic Beauty of Epidemiology.*

*Ponder their separate missions:*

*The search for universal truths and specific mechanisms in the laboratory;  
for uniquely individual phenomena and their causes and cures in the clinic;  
and for mass phenomena, their causes and prevention in the population at large.*

*Each muse is distinctive and each complements the others. None is inherently superior to the others. Broadest understanding derives from all three taken together. The greatest strength comes from the ability to employ each according to the stage of knowledge and the question asked.*

*Finally, each beauty must be fostered for all to flourish!*

Enough "poetry"!

Epidemiology is a scientific discipline, the basic science of prevention and public health. Masters and doctoral degrees in epidemiology are part of graduate schools, usually not medical schools. There are progressively fewer MDs getting Epi PhDs, but more getting MPHs (including quite often, Mayo fellows).

An epidemiologist uses epidemiological methods in the study of diseases IN POPULATIONS, their frequency and distribution and trends, their associations, causes, and preventives. He, or increasingly she, may or may not do clinical trials (which can be done perfectly well by clinicians if skilled or associated with a statistician to design, randomize, and analyse. No epidemiologist is needed though many of “us” have done and do trials.

The main and unique function of the epidemiologist is design and analysis of population-based surveys and cohort (longitudinal) studies as well as conduct disease surveillance. He may or may not act to prevent disease in patients or individuals (preventive cardiologist), and may or may not act to implement public health measures (public health physician), neither of which practices need degrees in epidemiology.

Epidemiologists vary widely, just as do research physicians, in their activism for the public health. I often teased Geoff Rose, after he became a public health figure, about what he once said to me in the ‘60s: “It is not an intellectual imperative that the epidemiologist *act* on his findings of probable cause.” He evolved after that. But it is not the imperative, as you apparently thought, that the epidemiologist “treat” either patients or populations.

Epidemiology is both a value-free basic science and an applied science. It provides the evidence base for public health policy.

Contributions of epidemiology include:

Measurement of the population frequency, distribution, and trends of diseases.

Determination of Risk Factors, that is, factors that predict future risk of disease and are potentially in the causal pathway to disease.

Estimation of relative and absolute risk (for preventive cardiology).

Estimation of the population risk (events) attributable to single and multiple risk factors (for public health).

Development of reliable, valid methods for diagnosis in observational studies, surveillance, and trials.

Identification of clues to mechanisms and causes for lab. and clinical science to explore.

I guess I now begin to understand a little better why most of your kind notes to me over the recent years have addressed mainly information about or questions about clinical trials. That must be what you think I mainly do. I have done; but it's not what I solely or mainly do. Epidemiologists also do surveys (cross-sectional studies of disease and risk in and among defined cohorts and populations), longitudinal studies of risk and disease rates in healthy cohorts (the Seven Countries Study still going after 40 years) and patients, and surveillance studies of trends in morbidity and mortality rates (as in the 7-county Twin Cities Minnesota Heart Study started in 1978, still funded after 25 years), and cohort studies of "novel" and old risk factors (ARIC), community research demonstrations (population-wide health promotion) within an experimental design for their evaluation (as in the Minnesotal Heart Health Program in 6 Minnesota communities). More and more epidemiologists work in hospitals and are called "Clinical Epidemiologist" to study "natural history, therapy outcomes. They teach and advise graduate students in Epidemiology and in Clinical Research (a Masters level program for Academic Health Center post-docs). They teach literature criticism and research design to young types in national and international seminars.

Of course, epidemiologists write editorials (as in the White Paper on cardiovascular disease in Minnesota, enclosed), and books and memoirs on concepts of prevention and the history of research in epidemiology and

disease prevention. They may or may not examine patients or trial subjects. They have active collaborations with physicians on therapy outcomes. He or she brings specific design and analysis skills to multiple clinical and public health questions.

I will impose my next thick memoir (1972-2002) on you soon, Howard, and you may scan it for areas where we have overlapping interests, clinical trials or otherwise. No wonder you are puzzled by my book outline for a history of CVD epidemiological research. It omits much clinical and laboratory research impinging on prevention. Even the epidemiological contribution is too much for one volume. Maybe this inventory helps indicate what an epidemiologist, particularly of non-communicable diseases, really does. At any rate, don't fret. I won't foist upon you any new or old pet "paradigms"!

Best regards to you and Margaret,

Henry