

Editor's note: VOICES is a project of the journal to provide personal, historical, and scientific perspectives on the field of epidemiology, as seen through the eyes of the field's most senior and accomplished practitioners. Readers are welcome to nominate candidates for the editors' consideration.

An Interview With Lew Kuller

Trevor Orchard

Lewis Kuller was born in Brooklyn, NY on 9 January 1934. He received his bachelor's degree from Hamilton College, Clinton, New York in 1955, and a medical degree from George Washington University in 1959. After completing his residency at Maimonides Hospital, Brooklyn, New York, he became a US Naval medical officer (1961–1963). He continued his education at the Johns Hopkins School of Hygiene and Public Health, where he received both a master's and doctoral degree in public health. He joined the faculty at Hopkins and rapidly rose to the rank of Professor of Epidemiology. In 1972, he moved to Pittsburgh to become Chair of the Department of Epidemiology at the Graduate School of Public Health—a position he held for 30 years. Dr. Kuller has published more than 500 research articles, with major research interests in cardiovascular disease and, more recently, in the application of noninvasive technology (such as ultrasound and electron-beam computed tomography) to identify subclinical disease. Other major interests include women's health, diabetes, and aging. He is the recipient of the 2002 American Heart Association Distinguished Achievement Award, the 1994 Chancellor's Distinguished Research Award (University of Pittsburgh), the 1988 Abraham Lilienfeld Award (American College of Epidemiology), and a NIH MERIT Award (1986). In 2009, he received the Distinguished Scientist designation from the American Heart Association.

INTERVIEW

TO: How did you become interested in epidemiology?

LK: I started out in the early 1960s in internal medicine. I spent time in the emergency room and especially on ambulance call in New York City. While doing that, I recognized the high frequency of sudden deaths in the community, most of which we attributed to coronary heart disease. It intrigued me that we didn't know very much about these—it seemed more people were dying of heart attacks out of the hospital than in the hospital.

I then went into the Navy. While I was in the Navy, I got interested in the idea of doing chronic disease research. After I was discharged, I applied to Johns Hopkins to work in the Program in Chronic Diseases at the Moore Clinic, which at that time was directed by Dr. Victor McKusick. Dr. McKusick had an appointment in the Epidemiology Department with Dr. Abe Lilienfeld. Pretty much everybody who went into McKusick's program also went into the epidemiology program to get training in epidemiology.

Unfortunately, by the time I got to the Moore Clinic, it had become primarily a clinical genetics program, studying people who were either 7-feet 3-inches, or 3-feet 2-inches tall. I was more interested in chronic diseases, and Dr. Lilienfeld was an exciting investigator, so I moved further and further toward epidemiology.

From the University of Pittsburgh School of Public Health, Pittsburgh, PA.

This interview was conducted in Pittsburgh, PA on 6 November 2007. Lew Kuller has approved this transcript for publication.

SDC Lew Kuller's curriculum vitae is available with the online version of this journal at <http://links.lww.com/EDE/A394>.

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Lew Kuller, college graduation (1959).

TO: What do you think is the biggest difference between epidemiology when you were learning it and how it's practiced now?

LK: First, when I began, the field was heavily related to public health and preventive medicine. Second, most of the epidemiologists were reasonably well-trained physicians. Third, epidemiology had a strong biologic bent. The field was already changing in the sense that Dr. Lilienfeld was bringing in experts in social science, psychology, and economics to help understand etiology of disease. But still, it was heavily biologically oriented and clinically oriented. Most of the leaders had a strong interest and training in either public health or preventive medicine, which I don't think is the case anymore.

TO: Do you think students have changed a lot over the years?

LK: Yes. When I trained in epidemiology at Hopkins, almost the entire class was physicians. There were a few people who had training in dentistry, veterinary medicine, or maybe PhDs in psychology or sociology. But almost everybody had an advanced degree and a specific vocational bench, you might say, before they entered the epidemiology program. It's totally different now.

TO: Is there a particular individual who influenced your career?

LK: Dr. Lilienfeld was obviously the person who had the greatest influence. If I hadn't come under his influence, I doubt very much I would have become an epidemiologist. He

was such a dynamic leader that he basically convinced not only me but many other people to become epidemiologists.

TO: Over your career you've had many collaborations. What do think are the most important ingredients of a successful collaboration?

LK: A good collaboration is when you can share an interest in a problem, but also each bring something different to the table. Over the years, my best collaborations have occurred with people who have a similar interest in trying to solve a problem, but who may approach it from a little bit different bent. People who are willing to share their knowledge base and their intellectual skills—I think that's probably a good ingredient. If the collaboration doesn't bring new things to the table, it's not good collaboration.

TO: If you had to choose 3 epidemiologists who have made the most important contributions in the field, who would you pick?

LK: Dr. Lilienfeld really established chronic disease epidemiology, at least as many of us know it now—linking it with biology, genetics, and an interest in public health and prevention. Dr. Jeremiah Stamler was the second great influence on my career. He brought a phenomenal knowledge of the biology of atherosclerosis to the table, but also an unbelievable commitment to both epidemiology and the prevention of cardiovascular disease. He just swept everybody in his path in the same direction. The third person would be Dr. Al Evans, who I worked with for many years at the Minnesota summer course. Dr. Evans was an infectious disease epidemiologist from Yale, one of the most intellectually stimulating individuals, and one of the most challenging people to work with. He really stimulated my interests in the linkages between infectious and noninfectious disease epidemiology. Dr. Evans was one of the most intelligent people I'd ever met, and probably had a better knowledge of infectious disease epidemiology than anybody.

TO: Which do you think has been the most influential of your papers?

LK: The paper that has probably had the most influence was the original paper¹ we published in the *American Journal of Epidemiology* on the relationship of C-reactive proteins to coronary heart disease. That paper and the subsequent paper from the Cardiovascular Health Study really exploded the whole field of inflammation in coronary disease epidemiology—maybe more than it deserved. The second paper,² also in the *American Journal of Epidemiology*, was the paper in which we described subclinical cardiovascular disease and its potential relationship to clinical coronary heart disease. I think that paper really opened up the use of noninvasive methods to study atherosclerosis in epidemiologic studies.

TO: And the least appreciated?

LK: The least appreciated paper, I think, is a paper³ I published around 1986 that described the evolution of the AIDS epidemic and how you could prevent the spread of the



Lew Kuller (2009).

AIDS epidemic. Larry Kingsley, who's here at the University of Pittsburgh and has worked in AIDS all these years, and I described what was going to happen in the AIDS epidemic and what you had to do to prevent it from evolving. We basically predicted almost everything that happened in the AIDS epidemic to a T, but unfortunately nobody really paid much attention. And everything, unfortunately, happened exactly the way we said it would.

TO: You've researched a large number of questions in your career. How do you decide what to focus on, which questions you want to address?

LK: I used to tell my students that the best way to decide what question to focus on was to ask your mother, and if your mother knew the answer, then do something else. But in reality, I think you want to focus on topics and areas where there's a question still to be answered. Dr. Lilienfeld used to tell me that our job was to develop the science base, the knowledge, and the initial application. The later applications were basically not our job. We should be the leaders in attempting to understand specific problems. So I think it's most interesting to work on problems where you don't know the answer before you start. If you already know the answer, you often can get funded on your grants—but it doesn't mean you can do very good research.

TO: Which of your many contributions would you most like to be remembered for?

LK: I don't know. Probably the thing that most people will remember is my studies on the epidemiology of sudden

and unexpected cardiovascular death. I think that work opened up the field to the idea that coronary heart disease was preventable, that these individuals who were dying suddenly did not have end-stage coronary heart disease. Most heart-disease deaths were occurring out of the hospital and were sudden, and therefore, you needed to apply prevention. Also, those were probably the first studies to really look at the distribution of atherosclerosis and thrombosis in relationship to cardiovascular disease. Second, I think, is probably my interest in the area of subclinical vascular disease and its relationship to clinical disease—the understanding that there's a long incubation period in the evolution of atherosclerotic disease, and that during this incubation period the potential for prevention is very high.

TO: What are your interests outside epidemiology?

LK: Number 1, as many people know, I have a dog. I have an interest in canines, and I've always had dogs. I'm also an avid gardener—I garden extensively when it's possible, usually from April to November. I have a greenhouse to keep me a little bit busy in the wintertime. I also travel quite a bit with my wife, and I enjoy that very much. I have 6 granddaughters, and that's a very interesting enjoyment.

TO: In your opinion, what have been epidemiology's most important contributions?

LK: I think epidemiology is the basic science of preventive medicine and public health. What we do, basically, is to try to understand the etiology of disease, the places where we can do prevention, and then test whether we can prevent disease. I think that epidemiology without a link to preventive medicine and public health is really not very solid. That's one of the problems we have at the present time. Epidemiology is a tool, in many ways, to understand the distribution of disease in populations, and the factors that lead to higher or lower rates of disease, and ways of effectively preventing disease.

TO: Do you think epidemiology is currently in good health, or are there problems?

LK: I guess anybody who's getting old will always say there are problems with something new. I think there are a lot of problems, however, in epidemiology. There are a lot of good things, also. One of the problems is that epidemiology, in part, has lost its strong biologic underpinning. It's become, perhaps, a little too dependent on quantitative methodology, and not enough on understanding biology and the linkages between the epidemiologic methods and understanding the biology of disease. A second problem is the fact that epidemiology and preventive medicine, epidemiology and public health are not nearly as closely linked as they should be.

On the other hand, the rapid evolution of new biology, both in genetics and in molecular biology, is a bonanza for epidemiologic research. The new technology is going to open up a lot of vistas for better epidemiologic studies.

TO: Do you have any predictions about what the future holds for epidemiology?

LK: It's hard to say. There's probably going to be a fairly substantial contraction in the field, only because it grew very rapidly in an era when federal funding and other funding for research was readily available. Second, epidemiology is spreading out into more international collaboration—we previously focused more on the United States. Third, the revolution in genetics is a way of measuring host susceptibility, although this is still in its infancy. The methodologies we're using now in genetics and the techniques that we're using in the way we analyze the data will be looked on as primitive in the future. The ability to link genetics as a measure of host susceptibility, better methods of measuring the biology, and especially methods like proteomics, and better ways of looking at environmental and lifestyle factors will all be linked. There are still many diseases out there where we have no idea about the etiology, and that provide perfect opportunities for epidemiology.

TO: What would be the single most important piece of advice you could give to epidemiology students just starting out?

LK: There are several things I would advise them to do. First and most important, make sure that either their husband or wife is rich, or they have rich parents. That's probably the number one priority. And second, I think they have to focus on a specific area of interest. Just being able to

do statistical analysis of existing data sets, or finding new ways to improve statistical analysis or mine data sets is not going to get them very far. They should get solid training in understanding the biology and the science in the field they're working in, to develop some unique niche that will make them different from everybody else.

ABOUT THE AUTHOR

TREVOR ORCHARD is a physician epidemiologist who went to Pittsburgh in the late 1970's to work with Lew Kuller and his pediatric diabetes colleague, the late Allan Drash. Stimulated by these 2 mentors, Orchard has led a long-term epidemiologic follow-up of patients diagnosed with childhood-onset diabetes, and maintains an interest in cardiovascular disease. Orchard currently serves as Interim Chair of the department Lew Kuller built and chaired for 30 years.

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