

Department of Epidemiology
School of Public Health

Memories



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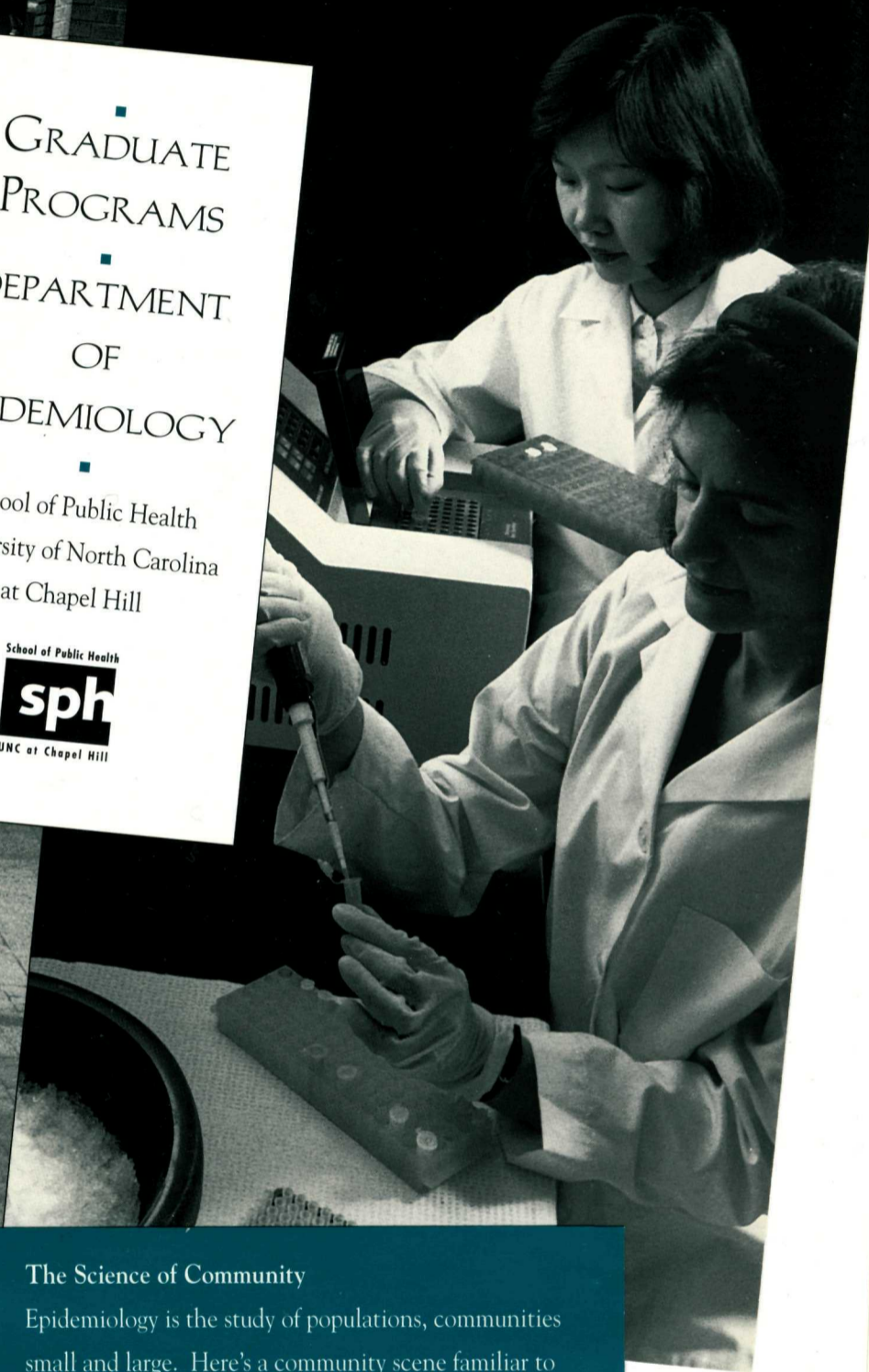
THE SCIENCE OF COMMUNITY

THE COMMUNITY OF SCIENCE



GRADUATE
PROGRAMS
DEPARTMENT
OF
EPIDEMIOLOGY

School of Public Health
University of North Carolina
at Chapel Hill



DEPARTMENT OF
EPIDEMIOLOGY

School of Public Health

University of North Carolina at Chapel Hill



The Science of Community

Epidemiology is the study of populations, communities small and large. Here's a community scene familiar to all the students on campus — a view of Franklin Street in Downtown Chapel Hill.

The Community of Science

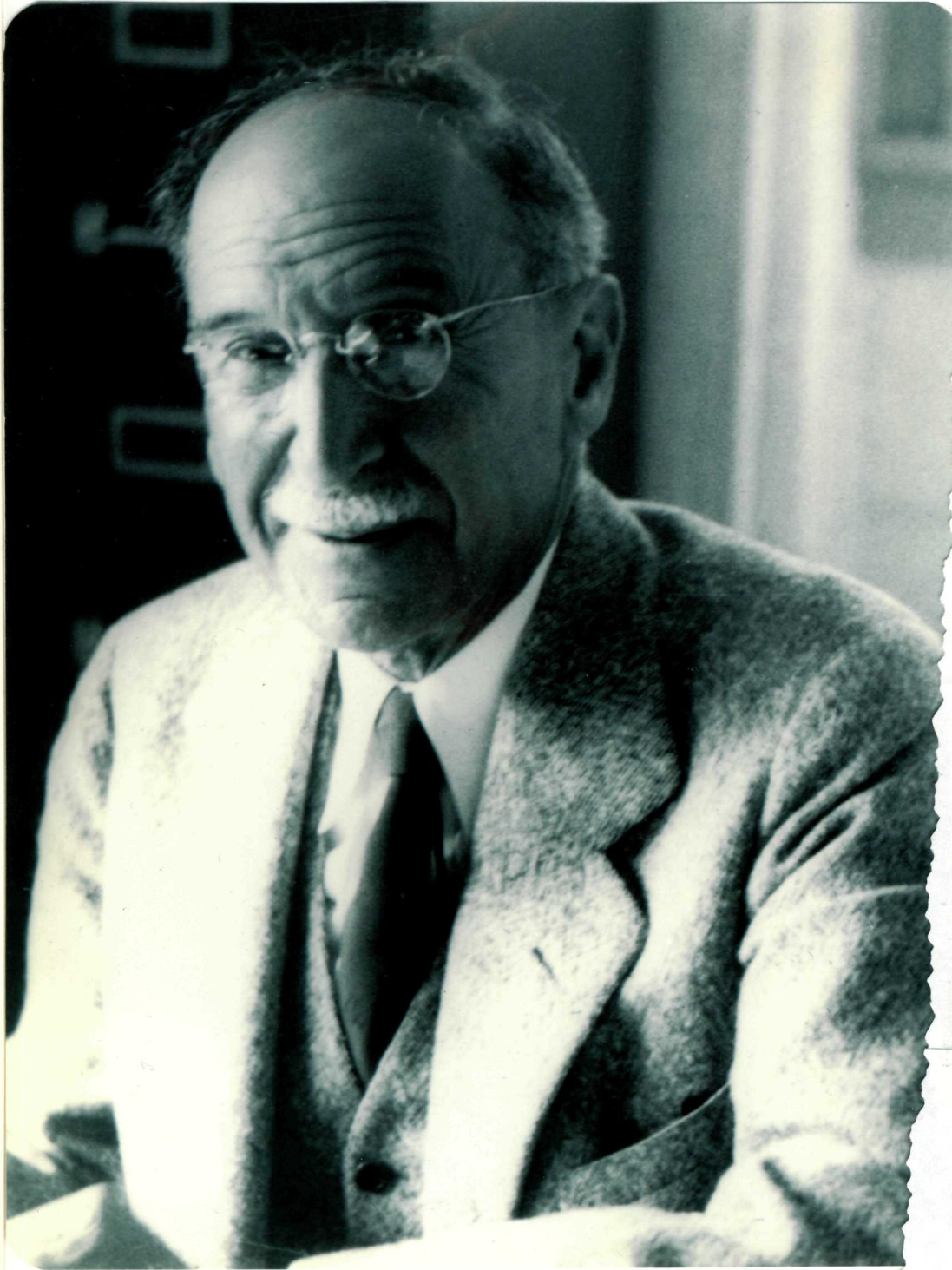
The School of Public Health's faculty enjoy excellent working relations in the tradition of a scientific community — in the health sciences and social sciences, as well. Epidemiology Professor Christine Moe (foreground) and Laboratory Manager Helen Sun prepare clinical sample for analysis by polymerase chain reaction and load them into a thermal cycler in the Infectious Disease Epidemiology Laboratory.

Dr. Milton J. Rosenau

Dean of the School of Public Health 1936-46

First Professor of Epidemiology

Dr. Milton J. Rosenau came to Chapel Hill in 1936 to head up the new division of Public Health within the medical school. Courses included public health administration, vital statistics, principles of sanitation and Epidemiology taught by Dr. Rosenau.



P. O. Box 103
Elizabeth City NC 27907
December 6, 1994

Dear Fellow Public Health Professional,
In going through some books etc
in preparation for moving I came across
the enclosed materials which I have
held onto for over fifty years! I am
sending them to you in case any of
it has value to the library or archives -

I entered the Health Education program
at the School of Public Health in the
fall of 1942 - There were three of us:
Margaret McDaniel, Maribelle Guin and
me - One of our professors told us that
we were the first three women Dr. Rosenau
had ever had in his classes; he thought
some of the material covered was too
rough for young ladies -

I have enclosed the copy of his
book that he autographed for me
and what I think is more interesting
my class notes for his fall of
'42 epidemiology class - Inside
are some yellow slips of paper he
passed out at the start of nearly
every class for a pop quiz answer to
be written on - You can imagine that
we let other subjects go in order to
be always well prepared for the yellow-
slip question -

Sincerely,
Ann Elliot Newdy
(Mrs. W. F.)
Class of 1944

Ann Elliot

Epidemiology is the study of epidemics, of the factors causing them, of means of control, their history, etc. It is a scientific study of group diseases in contrast to a treatment of the disease of an individual, though the epidemiologist may be able to learn much about a communicable disease through a thorough study of it as it affects an individual.

In epidemiology we make more distinction in prevalence and incidence than is made by the layman. By prevalence we mean the total amount of a disease over a given period of time, while by incidence we refer to the number of new infections occurring over that given period of time. In a disease of long duration, as tuberculosis, prevalence would refer to total number of cases of existing T.B. during a period of time while incidence would be the new cases of the disease ^{contracted} in that time.

In pneumonia, which is a disease of short duration, the prevalence of the disease during a year would be the same figure as the incidence as each of the cases occurring during the year would have lasted for a short period. The new cases then, would be the same as the total number of cases for a year.

A. - Ann Elliot

The evolution of our knowledge of typhoid fever:

Once all fevers were considered to be the same disease. In the 1820's Louis, a French clinician distinguished, or divided fevers into two types - typhus, and typhoid. Gerhard an American working with him further helped to distinguish typhoid fever, calling it "typhus abdominalis".

Early in the 1900's Metchnikoff and Besredka proved conclusively that the typhoid bacillus caused typhoid fever when they produced the disease in aape.

Also early in the 1900's Kolle worked with immunization, by injecting the dead bacillus into man. A.E. Wright used this method on British Soldiers, but for various reasons, it was not effective - culture was too weak, killed at too high a temperature, not enough injected, etc. Today this has been perfected so immunization is practical and effective.

To summarize, we now know the cause of the disease, how it is spread, can easily diagnose it, and have perfected immunization against it.

We do not insist on compulsory vaccination for typhoid because not all people are equally exposed to typhoid, and only those living in areas where poor sanitation exists, or who may travel through such areas need to be vaccinated. This is not true of smallpox. Though the disease occurs rarely now - this is not because it is not present, but because people are immune - due to vaccinations. Sanitation is not a great factor in control of smallpox, it is a highly infectious disease, and if vaccination were not required, we would have large epidemics of it. It is because of the universal danger of being exposed to it - any time that makes it necessary that vaccination be compulsory. We must not be lulled into false security and think smallpox no longer exists. If our immunization were relaxed, we should have large amounts of it again.

In epidemiology, when we say disease, we do not mean that disease is an entity, a concrete thing. To us, a disease is a reaction, a struggle between man (the host) and the parasite causing the infection. This struggle occurs because man's body is fighting to live, and the parasite is fighting to keep his source of "food and shelter". The parasite does not wish to kill his host, but the host's struggle is aimed at destruction of the parasite. The symptoms then, of a disease will vary widely, according to the way the struggle or reaction takes place, but with each parasite will follow to some extent a pattern. An epidemic of a disease, then, is a struggle between a parasite and a community of men.

Ann Elliot

How do you "catch" pneumonia?

A person contracts pneumonia when his lungs have become infected with pneumococcus, and he is unable to prevent the increase in number of the bacteria. Many people act as carriers for the pneumococcus, but all do not become sick with pneumonia. Accessory factors enter into whether or not a person will get the disease. A person who is suffering from fatigue or exposure, whose diet has been deficient, who has weakened resistance by excessive use of alcohol, may be much more likely to develop pneumonia if he comes in contact with the pneumococcus, than a person whose resistance is good. Resistance may also be lessened if a person is already sick, and comes in contact with the pneumococcus. In other words, to catch pneumonia, a person must be exposed to the pneumococcus, and must be susceptible to it, or have lowered resistance.

No. 21--Series of 1946--North Carolina State Board of Health
Station WPTF, Raleigh, Tuesday, May 28, 1946--5:30-5:45 P.M.
Subject: Dr. Milton J. Rosenau, Public Health Architect
Speaker: William H. Richardson

This is neither a biographical sketch nor an obituary, although, at first glance, it might be taken for either. It concerns a man who, while he is no longer with us in flesh, will continue to live in the results of his work for the alleviation of suffering and the promotion of human happiness.

Milton Joseph Rosenau, a medical doctor by profession, was, in reality, more than that. He was an architect, who helped to plan the modern structure of public health. The contributions he made to this great humanitarian enterprise were not entirely the results of his thorough knowledge of curative and preventive--and especially preventive--medicine, which gave him a place in history as one of the world's leading men in his profession. He possessed that virtue without which no physician or public health worker can ever reach the coveted goal of real proficiency--namely, compassion for those who suffer, coupled with a sincere desire to alleviate that suffering. Any minister--whether of medicine, religion, or social service--who is inspired solely by a desire for mercenary gain, is a failure, in the ultimate, and belong to a class in which Doctor Rosenau could never have been at home.

Following his passing, various resolutions were passed--one, for example, by the State Board of Health; another by the North Carolina Academy of Public Health.

One of the most effective appraisals of Doctor Rosenau that has appeared in print is in the form of an editorial in the current issue of the American Journal of Public Health, to which your attention now is directed:

"Milton J. Rosenau, President-Elect of our Association, was born in Philadelphia in 1869 and died at Chapel Hill at the age of 77, on April 9, last.

"Dr. Rosenau took his medical degree at the University of Pennsylvania in 1889, and pursued his postgraduate studies in Berlin, Paris, and Vienna. His professional life was divided into three successive phases.

1950's

Epidemiology had been one of the original departments in the school, headed first by Rosenau and then by McGavran. But administrative responsibilities left little time for teaching or research by either of the deans. "The result," McGavran wrote in the 1953-54 annual report, "is that this department, which should be the strongest in the School of Public Health, is actually the weakest." That situation began to turn around in 1954 when McGavran obtained funds from the Public Health Service to start a Chronic Disease Section, for which he hired Dr. John Cassel. A native of South Africa, Cassel received his medical degree at the University of Witwatersrand. He won a Rockefeller Foundation fellowship to study at the School of Public Health in 1952, and after receiving his M.P.H. he returned to South Africa to work as a medical officer at a health center.¹³

Medical science had made such strides since the late nineteenth century that by 1950 there were effective cures for most infectious diseases. But scientific understanding of chronic maladies such as cancer, mental illness, and heart disease was still rather primitive, and investigations of these illnesses dominated the medical research agenda. Cassel's job was to provide instruction in the treatment of cancer and other chronic diseases to public health students and to conduct epidemiological research on such ailments. Cassel quickly established a reputation as an excellent teacher and researcher and within a few years had received attractive offers from both The Johns Hopkins and Harvard.¹⁴

Epidemiology grew dramatically in 1958 with the addition of three new faculty members paid by training grants from the Public Health Service and NIH. McGavran wanted an experienced, well-known person for the job of chairman and, through John Cassel, contacted Dr. Sidney Kark. Kark was professor of social, preventive, and family medicine at the University of Natal in South Africa, but prior to his academic appointment had had extensive experience as a public health officer and as a research epidemiologist. Kark was at the time pursuing a job with the World Health Organization (WHO), but McGavran offered him a one-year contract to help direct the growth and reorganization of the department.¹⁵

Kark left after a year to be WHO professor of public health and social medicine at the Hebrew University in Jerusalem. McGavran recommended John Cassel as Kark's replacement. A few years later McGavran wrote to Kark, "I am sure you would be proud to see how well John Cassel has continued and developed your good work here in establishing a dynamic Department of Epidemiology. John is a jewel and is gaining more and more national recognition. His department is stimulating to students and faculty alike and intensely loyal to John. I think we have a new and fresh approach to the teaching of epidemiology which is going to make its mark."¹⁶

That fresh approach involved a focus on the social causes of disease. Michel Ibrahim, another future dean, came to study at the school in 1960. He spent one year in biostatistics, but a desire to use his medical background led him to transfer to epidemiology. Ibrahim described the insights that propelled Cassel's research and teaching: "Most of medicine was very biologically oriented. We thought in terms of germs and degenerative diseases. He advanced the theory—he did not invent it, but he pushed it very hard—that social and psychological factors affect people's health. [He was concerned with] cultural values, societal values and stress and how they related to illness."¹⁷

Dr. Edward McGavran

Dean of the School of Public Health 1947-63

Professor of Epidemiology



**REPORT
TO THE
*FACULTY**

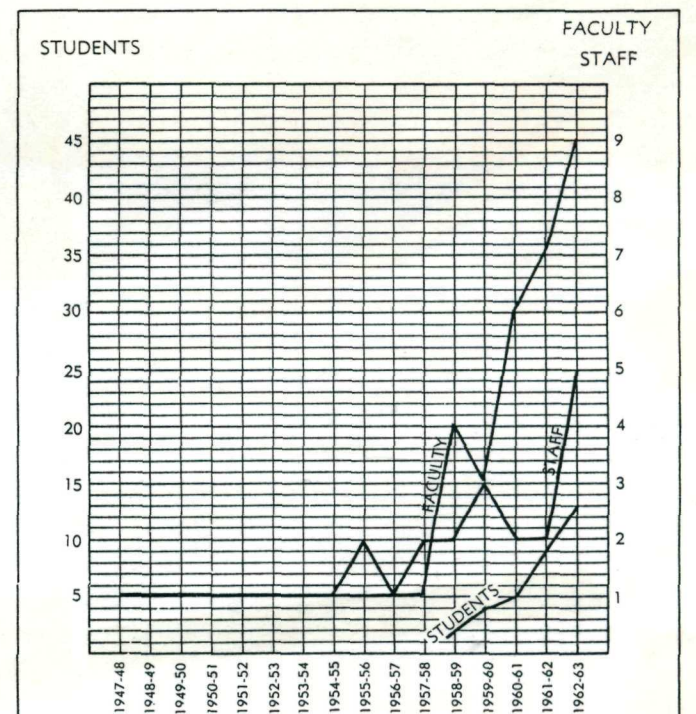
Dr. E.G. McGavran, Dean

1963
* School of Public Health,
University of North Carolina,
Chapel Hill, N.C.

CHART #9

DEPARTMENT OF EPIDEMIOLOGY

SCALE 5:1



Dr. Sidney L. Kark
Chair, 1958-59

For the Department of Epidemiology

In the latter 1950's, Dr. Ed McGavran, Dean of the School of Public Health, invited me to initiate a Department of Epidemiology within the school. It was at the time that Emily and I were planning to leave South Africa for political reasons.

We and our family of three arrived in Chapel Hill in 1958 and settled in to an enjoyable and stimulating stay, with friendly hospitable people and pleasant surroundings. Before accepting the appointment, I had indicated to Dean McGavran my previous commitment to another post as visiting World Health Organization Professor of Social Medicine to the Hebrew University-Hadassah Medical School in Jerusalem, Israel. Therefore I could only remain for one year at the School.

Dr. John Cassel was the first appointment to this new Department of Epidemiology. He had been a close colleague and friend of ours in South Africa over many years, and had left to join the UNC School of Public Health five years previously. He had invited a number of people to join the staff: these included Dr. Ralph Patrick, Social Anthropologist and Dr. John Fulton, Community Dentistry, and later, Dr. Al Tyroler, an epidemiologist who had been conducting Industrial Health projects in North Carolina. The Dean and Sidney completed the founding group. Dr. Kerr Whyte of the Department of Internal Medicine and Dr. John Filley, psychiatrist, of the UNC Medical School, also linked with us.

The main subjects taught were the traditional epidemiological topics, and in addition an aspect with which the department was especially concerned, that is, the role of epidemiology in primary health care, both as a subject of interest to general practitioners in their individual practices and as an interest in itself. Later the department collaborated in a long term cardiovascular epidemiological study with Dr. Curtis Hames, a general practitioner in Claxton, Georgia, the Evans County Study. Emphasis was placed on the social and cultural determinants of health and disease.

American Journal of Public Health

July 1993, Vol. 83, No. 7

Established 1911

Editorials

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941 Needed: Universal Monitoring of All Serious Diseases of Global Importance: Directors of the WHO Non-Communicable Disease Collaborating Centers and Key Officials
944 Evaluating the Nutrition Screening Initiative *D. Rush*
945 Health Care Reform: A New Public Health Movement *Q. D. Young*
946 Community-Oriented Primary Care: The Legacy of Sidney Kark *H. J. Geiger*



Sidney L. and Emily Kark

A South African Odyssey in
Community Health: A Memoir of
the Impact of the Teachings of
Sidney Kark

The concept of epidemiologic surveillance with which my colleagues and I based our practice and teaching was introduced on the following lines:

Studies or service based on a population or community require consideration of its health status, together with its biological, social and cultural characteristics, and its environmental and material resources.

This involves two broad areas of health related actions:

- * Integration of personal and environmental health services, community organization and health promotion.
- * Relating these with the community's changing health status and its determining factors. Special attention needs to be given to the people's concepts of cause and effect of illness.

After that very enjoyable year in Chapel Hill, we left with much regret. It had really been our second home, thanks to the wonderful hospitality of John and Margaret Cassel, their family and friends, as well as that of the many good friends we had made during our stay in the department and the school.

We have since kept our links with Chapel Hill, having returned to visit a number of times over the years, as had our son, Jeremy, who received a PhD in Epidemiology from the Department almost two decades after our leaving.

John Cassel, a leader in social epidemiology, went on to develop an internationally renowned department, which, through its excellence, has continued to develop strong and varied research and teaching programs, continually attracting students and visiting scientists worldwide.

By Dr. Sidney Kark
September 4, 1997

Sidney Kark in America

H. JACK GEIGER

Mervyn Susser's poignant reminiscence of the work of Sidney and Emily Kark in South Africa [August 1987, Vol. 17, No. 4] has a second, American, chapter. In ways that are still unfolding, and insufficiently recognized, the Karks have had a direct and profound effect on community medicine in the United States. Sidney Kark is, in a sense, the "grandfather" of the U.S. community health center network, and mentor, friend, and consultant to a generation of American community-health workers.

In 1940, fresh out of residency, Sidney Kark created the first modern comprehensive community health center at Polela, a 500-square-mile rural area in what was then termed a Zulu "tribal reserve." Over the next decade Kark, his wife Emily, also a physician, and their colleagues added five more health centers to serve African, Asian, and poor white urban communities, and created the Institute of Family and Community Health in Durban to serve as the training center and intellectual headquarters for all of these.

In 1954, the whole operation was incorporated as the Department of Social Medicine of the University of Natal Medical School, an institution that trained African and Asian students. To study social medicine at the Institute was to be immersed in practice as well as theory, to work at real health centers serving real communities, defined populations, and to do so through a strategy of community diagnosis and intervention.

Kark's American connection began by merest chance: in 1956, as a sophomore medical student in Cleveland, I stumbled across a report on Polela. I had been reading the American literature on social medicine with increasing despair; it was full of references to what was then called "comprehensive care" of the "whole man"—in other words, attention to social and emotional problems of the individual patient. Social medicine, apparently, wasn't something you did; it was just an attitude you held. If the word "community" appeared, it was in the public-health literature, and public health—in the prevailing culture of medical education—was a lowly territory of sewers and statistics, the province of failed clinicians, unconnected with "real" medicine.

And then, suddenly, there was Polela: health teams, community organizers, epidemiological surveys, applied social science—physicians who treated patients but were out to change whole communities. I scrambled, juggled elective time, begged; in June of 1957, on a scholarship from the Rockefeller Foundation, I arrived in Durban for a six-month clerkship.

H. Jack Geiger, MD, is Arthur C. Logan Professor of Community Health and Social Medicine at CUNY Medical School.

I was put to work first in the health center at Lamontville, an African housing project of 22,000 people on the edge of Durban. It was a clerkship, I think, unlike any other. Zulu community organizers walked me through the endless jumble of cinder-block homes and squatters' shacks, teaching me the social structure of a community that mixed people from half a dozen tribal origins and languages with second-generation urban residents and just-arrived rural migrants. Public-health nurses took me on their rounds and taught me which subgroups were at special risk: in Merebank, an East Indian satellite community living in patriarchal, multi-generational families, it was always the wife and children of the youngest son who were malnourished.

I also received a crash course in environmental sanitation, housing, and nutrition; my first patient, a mother of seven, had typhoid fever, her oldest child had tuberculosis, and her youngest had kwashiorkor, a severe form of malnutrition. As in real life, there was no way to separate an individual's medical chart from those of other family members; they were literally

I realized that Kark's model might fit the third world that exists within the U.S.

stuck together. On the wall of the examining room in which I saw my patients hung a long row of epidemiological charts for Lamontville: rates of infant mortality and hypertension, incidences and prevalences of infectious disease, growth and weight curves by family composition and income, social networks, and charts of ethnic origins.

Later, in the health center serving the thatched huts and clustered hilltop villages of Polela, the same message came through. One never merely saw an individual patient; one saw patient, family, and community, and the community—a social entity, not just a defined population—was the ultimate focus of concern. The disciplines of epidemiology, the social sciences, and biology were the basis for diagnosis of and intervention in whole communities, and they were as central as all the clinical diagnoses and treat-

ments of individuals. In a community health center, "clinical medicine" and "public health" were one and the same.

There was a profound limitation, however. As some senior staff at Polela and Lamontville bitterly complained, the whole program was cautiously and carefully apolitical. Community organization never meant community control and never aimed at fundamental social change. The community health centers at Polela and Lamontville never addressed the roots of disease and poverty in South Africa's oppression and apartheid, and probably could not have and still survived. Health, not liberation, was Kark's concern, and though he surely understood the connection between the two, the health centers never acknowledged it directly.

Seven years later, while in Mississippi with the Medical Committee for Human Rights to provide medical support for voter registration and community organization during the "freedom summer" of 1964, I realized that Kark's model might be modified to fit the third world that exists within the United States: blacks and Hispanics in the urban ghettos, blacks in the rural south and Mexican-Americans in the southwest, poor whites in Appalachia, and Native Americans on reservations. At the end of that long hot summer and fall, at a meeting of civil rights activists in Greenville, I described Polela and Lamontville and suggested (as I had, to no effect, in my senior medical-school thesis six years earlier) that an American medical school and its department of preventive medicine should develop a center for the teaching of community health based on those models. Count Gibson, then chairman of preventive medicine at Tufts, volunteered his department.

The United States had had "health centers" before—the term covered many different models—but they were, almost without exception, public-health clinics, limited to preventive services, divorced from clinical medicine, and, most important, lacking a social and political mandate.

Gibson and I took the idea of a Polela-like center to the brand-new Office of Economic Opportunity, which boasted of its commitment to "maximum feasible participation." Everyone knows, I argued, that the primary determinants of health are social—housing, food, income, the physical and social environment—not strictly medical. But why couldn't health services themselves—based in community health centers—be used as a route to community organization and social, economic and, political change, be used to attack the deepest causes of disease? And shouldn't we have a new model for primary care, drawing on the resources of the people themselves and of their communities, making them active colleagues in health-care teams?

Six months later, after a long review, the OEO approved our first project that would also serve as a Health Center at Columbia Point, a black housing project on the edge of Columbia Point opened its doors. Tufts-Delta Health Center began serving a mile area around Mound Bayou in

All of Sidney Kark's ideas informed our models in Mississippi and Boston.

THE LEGACY OF JOHN C. CASSEL

MICHEL A. IBRAHIM, BERTON H. KAPLAN, RALPH C. PATRICK, CECIL SLOME,
HERMAN A. TYROLER AND ROBERT N. WILSON¹

Dr. John C. Cassel
Chair, 1959-75

The contributions of John C. Cassel as investigator, scholar and teacher continue to influence contemporary epidemiology, both in the United States and throughout the world. In anticipation of current trends in the teaching and practice of epidemiology, Cassel synthesized the concepts of the social and behavioral sciences as they affect the health of populations. The continuing impact of Cassel's innovative approach on the field of epidemiology is illustrated in a forthcoming monograph, "Family and Health: An Epidemiological Approach. Volume II" (1), and in a series of research papers to be published in a special issue of the *Journal of Chronic Diseases* (2).



AMERICAN Journal of Epidemiology

Formerly AMERICAN JOURNAL OF HYGIENE

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VOL. 112

JULY 1980

NO. 1

Reviews and Commentary

THE LEGACY OF JOHN C. CASSEL

MICHEL A. IBRAHIM, BERTON H. KAPLAN, RALPH C. PATRICK, CECIL SLOME,
HERMAN A. TYROLER AND ROBERT N. WILSON¹

The contributions of John C. Cassel as investigator, scholar and teacher continue to influence contemporary epidemiology, both in the United States and throughout the world. In anticipation of current trends in the teaching and practice of epidemiology, Cassel synthesized the concepts of the social and behavioral sciences as they affect the health of populations. The continuing impact of Cassel's innovative approach on the field of epidemiology is illustrated in a forthcoming monograph, "Family and Health: An Epidemiological Approach. Volume II" (1), and in a series of research papers to be published in a special issue of the *Journal of Chronic Diseases* (2).

John Charles Cassel, the son of a dentist and a physician, was born in Johannesburg, South Africa, in 1921. He received his medical education at the University of Witwatersrand, and together with his wife Margaret, a nurse, he joined the new Institute of Family and Community Health at the University, directed by Dr. Sidney Kark. (This Institute later became the clinical center of the Depart-

ment of Social, Preventive and Family Medicine of the University of Natal in Durban.) The Institute was strongly oriented toward the social and cultural aspects of health and health care, and to the importance of the community's participation in its own health care. The Cassels lived and worked at the Pholela Health Center, serving a Zulu population, for six years. Here Cassel experienced at first hand the importance of cultural forces that were very different from forces he had known before in the determination of the etiology of disease and the effectiveness of health care delivery. After becoming director of the Pholela Health Center, he implemented a number of epidemiologic surveys in order to put the practice of his center on a firmer scientific base. The success of this endeavor is well documented (by Cassel (3) as well as other authors (4, 5)) and he emerged from this experience strongly committed to the need for scientific studies of a population's social and cultural, as well as biological, attributes.

In 1953, John Cassel left South Africa for the United States to obtain further training in public health at the University of North Carolina. At that time, the definition of epidemiology emphasized as its major task the understanding and con-

¹ From the Department of Epidemiology, School of Public Health, U. of N. Carolina at Chapel Hill, Rosenau Hall 201H, Chapel Hill, NC 27514. (Send reprint requests to Dr. Ibrahim at this address.)

1



VI. SERVICES TO STATE AND NATION

Member, Medical Research Study Section, Vocational Rehabilitation Administration, Washington

Consultant to Epidemiological Studies in Cardiovascular Diseases in Charleston, South Carolina and Atlanta, Georgia

Consultant to the Executive Committee, Guilford County Committee of Chronic Illness

Member of Rehabilitation Institute Planning Committee for Tuberculosis

Consultant to North Carolina Chapter of Cerebral Palsy

Member of the Orange-Durham County Committee on Chronic Illness

Member of Nominating Committee of the American Public Health Association

Member Advisory Committee for Study of Crippling Conditions in Childhood

Panel Member Annual Conference of N. C. Health Council

Consultant, N. C. State Board of Health on Diabetes Project

Participant, Workshop on Research in Public Health Raleigh, North Carolina

Panel Member, Discussion on "Workshop on Problems of Method in Epidemiologic Studies of Mental Disorder," Miami, Florida

Participant, CDC Training Course, "Applied Epidemiology," Applications of Epidemiology, Epidemiology of Noninfectious Diseases, Atlanta, Georgia

Participant, Frontiers of Current and Future Medical Research, New York

Dr. Michel A. Ibrahim
Chair, 1975-82

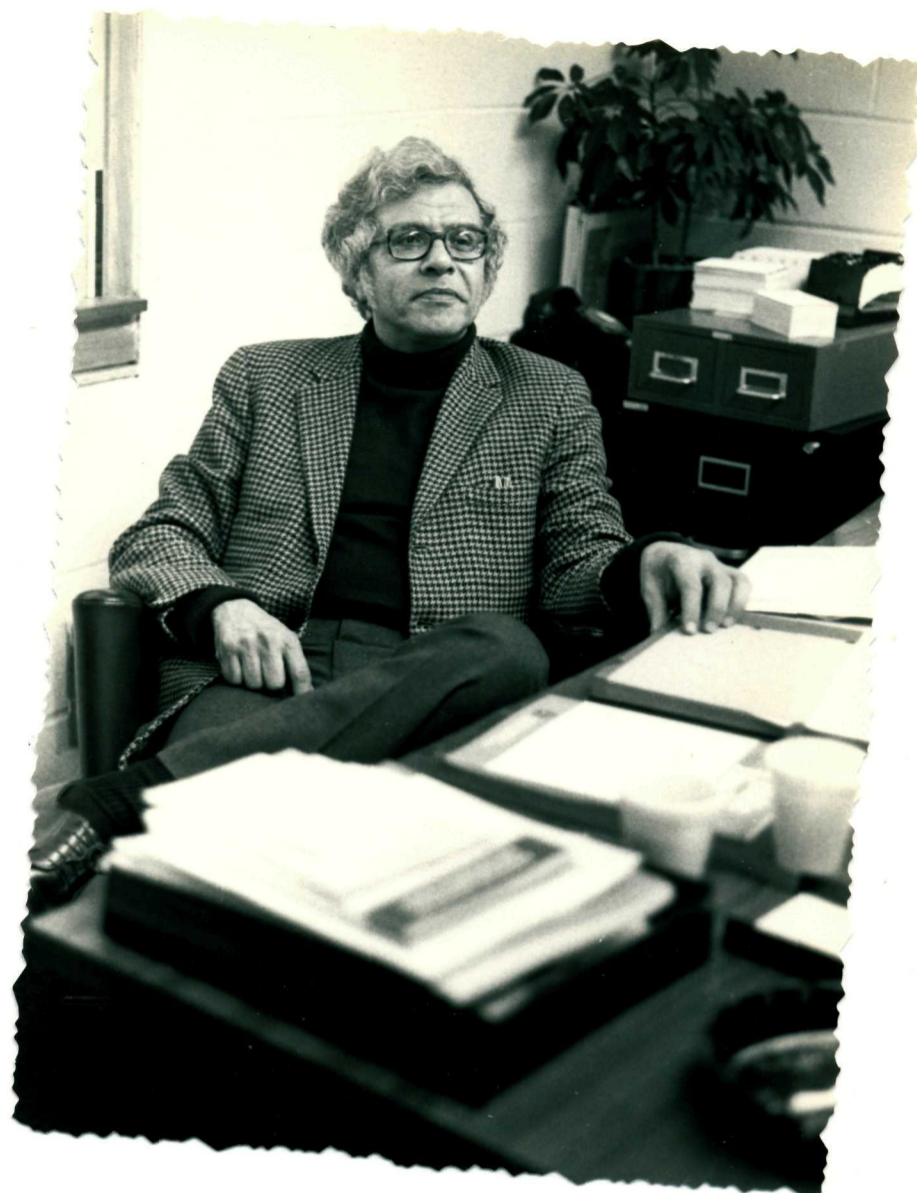
Recollections

From 1960 to 1964, I had the privilege of having a unique educational experience in the Departments of Biostatistics and Epidemiology of the UNC-CH School of Public Health, under the tutelage of Bernard Greenberg and John Cassel, and in the Department of Social Medicine of the School of Medicine with mentoring from Kerr White. During that period I had significant interactions with Berton Kaplan, David Jenkins, Robert Wilson, Ralph Patrick, and the legendary Al Tyroler. I remember that on one occasion I was under intense "cross-examination" while making a presentation before several of these people. I said, defensively, "I am not an epidemiologistyet", to which John Cassel replied: "we'll make you one!" Armed with appropriate academic skills, I left Chapel Hill in 1964 with fond memories of the people and places of this southern part of Heaven, to experience the working world by joining the medical faculty at the University of Buffalo.

In 1971, after completing a stint as a health officer in the Erie County Department of Health, I returned to my beloved university, determined to forego administration and to pursue health care epidemiology and health services research with Cecil Sheps and John Cassel (indeed, the Department of Epidemiology and the Health Services Research Center shared my salary at the time). It was glorious to return to the School as a faculty member to do what faculty usually do—scholarship!

In 1975 John Cassel had an unfortunate recurrence of cancer and as the illness took its toll on him, the Dean asked me to serve as acting chair of the department, a responsibility that I assumed reluctantly, because it was going to take away from the "scholarship" that I came to pursue. But I also entertained the naive assumption that it was going to be a temporary appointment until a new chair was selected. The new chair who was finally selected was me!

My administrative tenure of eight years in the department was a period in my professional life of which I'm intensely proud. Not only was I surrounded by great friends and colleagues, but the department's administration presented several challenges. The faculty, staff, and students welcomed me as their new chair with open arms while continuing to maintain, understandably, loyalty to the former chair. Faculty meetings were most interesting: I would sit at the head of the table while the popular and ailing former chair, together with my former professors and mentors, sat around it. The challenge was to seize the reins and to lead in a subtle but decisive way, to bridge the good past to an even better future. All this needed to be done rather quickly for a rapidly growing department in an equally rapidly growing school.



My philosophy was a simple one: Recruit the best and the brightest among the faculty, staff, and students; give them the resources to grow and to show their talents; and ensure that they get credit for their good deeds and supported when the chips are down. I wanted the people in the department to function in a democratic organizational structure that would serve them consistently and well. To this end, strong and functional committees—such as admissions and graduate studies, in particular—were established. Finally, the financial base of the department needed be strong and to be understood. A critical element of this was for faculty, staff, students, and alumni to understand the budget requirements for a department of this size, the way the money is raised, and the way it is allocated.

With all these initiatives in place in the department, the school once again called on me to continue in an administrative/leadership role, this time as the school's dean, and this time it lasted 15 years. It was enlightening to view the department from a dean's perspective and to compare its scholarship and national standing with similar organizational units. It is fair to say that our department has enjoyed an excellent and well-deserved reputation nationally and worldwide.

Having vowed in 1971 to drop administration and to pursue scholarship, I find it hard to believe that it took 26 years to finally realize that goal. In 1997, I returned to the department and found that it really didn't matter how long I had been away. I am back on the faculty having a great time building a program in health care epidemiology, winning grants, advising students, teaching courses, and promoting research with managed care organizations. So, I have come full circle: student--faculty--chair--dean--faculty—with joy and satisfaction. It has been an honor and a privilege to serve this wonderful organization.

by **Dr. Michel A. Ibrahim**
September 1998

Dr. Barbara S. Hulka
Chair, 1982-93



.....
FROM THE CHAIR'S DESK

After ten years of chairing the Department of Epidemiology, I will be stepping down from that position on July 1, 1993, to resume the usual professorial duties of teaching, research and service. It is with mixed emotions that I make this change. Without doubt, these have been exciting and demanding years. The Department has grown in numbers of students, faculty and staff. It has also changed in many of its substantive directions and emphasis areas. One recognizes the new programs in reproductive epidemiology, infectious diseases and molecular epidemiology. Cardiovascular diseases and cancer epidemiology have flourished while environmental epidemiology has grown, consistent with worldwide interests and concern over the environment. Only in the area of health care epidemiology has the Department lost ground, which is unfortunate given the current emphasis on health care reform and the need for epidemiology in the evaluation of those activities.

Much of the growth and increasing prominence of the Department has come about through changes within the University. Dean Ibrahim was successful in getting the new School of Public Health building, McGavran-Greenberg, completed. With the move to McGavran-Greenberg and the expansion of epidemiologic research projects at the Nations Bank building in downtown Chapel Hill, we have doubled our Departmental space. Adding laboratory faculty in both infectious diseases and molecular biology, and their laboratory facilities, also extend Departmental programmatic and research capabilities. These are thrusts that bring our Department into the current and future forefront of epidemiologic investigation. Thus, I am indebted to the administration of our School and University, which has facilitated opportunities for our Department's growth and expansion.

Most of all I want to express my appreciation to the many people I have worked with on a daily basis. The students, who are the reason for the Department's existence, have not surprised me. They were always excellent and have continued to be so, providing the vitality and intellectual vigor that makes teaching a reward, rather than an obligation.

The staff in the Epidemiology Department I have come to know well, and with that knowledge I have come to appreciate them deeply. Their commitment and loyalty make it possible for the Department and faculty to function. They have developed a level of cooperation and flexibility in shifting work loads (to meet grant deadlines!) that few other Departments have achieved. Much credit for this high level of morale and commitment goes to the administrative staff who have managed successfully to keep the work flow moving on track.

Most gratifying to me has been working with our faculty, all of whom I have come to know better than previously. I am pleased to have been influential in recruiting many of the newer faculty to the Department. Whether "new" or "old," the faculty have been outstanding in helping to make the Department function effectively. Without exception, every faculty member has accepted and excelled in performing the teaching and administrative responsibilities of the Department. I view with amazement the consistency of this responsiveness. It is with pleasure that I return to working more directly with many faculty in our teaching and research activities.

In the future, it is our alumni who I hope to know better. As the Department has "aged" we have developed a large cadre of alumni, many of who have moved from our purview. Among my future goals is to reacquaint myself with our many former graduates.

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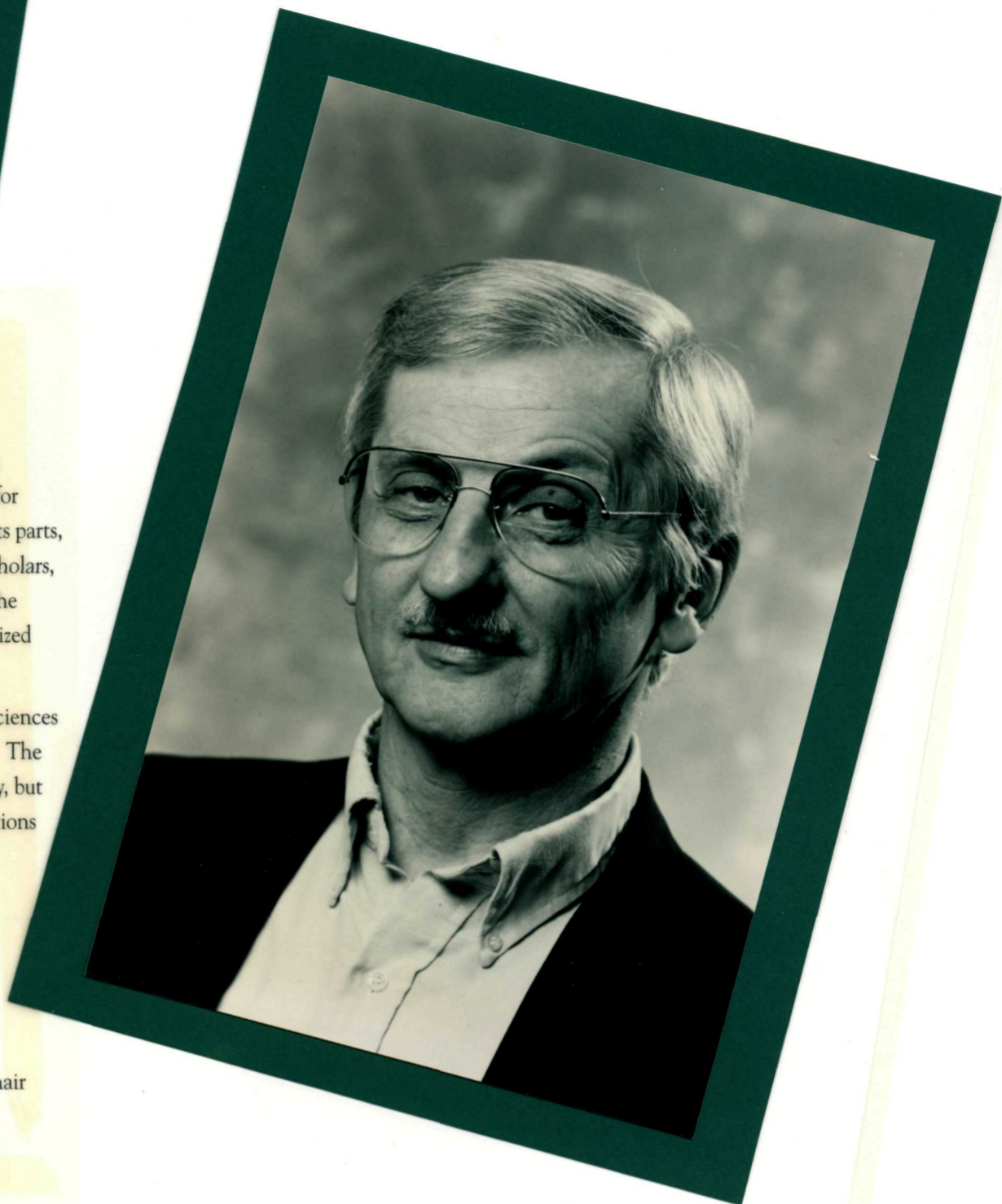
Dr. Carl M. Shy
Chair, 1993-96

THE SCIENCE OF COMMUNITY THE COMMUNITY OF SCIENCE

The faculty, staff, and students of the Department of Epidemiology are a community of learners working together to advance the scientific basis for the public health mission. Just as the whole is greater than the sum of its parts, so is the department more than a collection of independent students, scholars, and staff. It is an academic community linked by a shared concern for the prevention of disease and promotion of health in society, through organized community efforts.

Our expertise in the study of populations includes not only the health sciences but social sciences, as well. Epidemiology has a population perspective. The community that the School's epidemiologists study can be a town or city, but may be broader — states, regions of the country, our nation, or even nations and regions of other parts of the world.

Carl M. Shy
Professor and Chair
Department of
Epidemiology



Dr. David A. Savitz Chair, 1996-

Reflections on the Department of Epidemiology in the late 1990s

Having served as Chair for just under two years, it seems a bit presumptuous to offer any perspective or reflection. However, I have learned that one of my duties as Chair is to make just such pronouncements, offering my views on the collective enterprise of the Department and serve as its spokesperson. Not only would other faculty quite possibly (certainly) take other points of view, but given the autonomy of faculty and decentralization of the Department, their views have every bit as much merit as mine. Nevertheless, it is a pleasure to step back from the routine flow of paperwork and minor crises to consider how we're doing and where we're headed.

We are undergoing some significant shifts in the constitution of the School and Department, with a new Dean (for the first time in 15 years) and shifting roles for the senior faculty who have led the Department for decades. Under Dean William Roper, who brings remarkable public health leadership experience and talent to the School, we have the opportunity to take an outstanding institution and see how much better it can become. In the Department, we are fortunate to retain the involvement of such long-term faculty as Barbara Hulka, Michel Ibrahim, Bert Kaplan, Carl Shy, and Al Tyroler, but there is an important change in progress as junior faculty become senior and the role of senior faculty evolves. Projecting forward, the composition and activities of Department faculty will be notably different in 2000 than in 1995.

With that evolution in progress, we are sorting out what stable traits define the Department, transcending the individuals who come and go. Newly recruited faculty observe how we operate, and even with no formal guidelines, are subtly acculturated over time. Some of the more obvious sources of continuity are the unwavering commitment to the graduate program and to our students; a tone of informality in relationships among faculty, students, and staff; autonomy and responsibility of faculty to develop their own program through initiative and collaboration; and diversity of interests and philosophy that precludes defining a generic "UNC professor" or "UNC student." The heterogeneity of substantive research areas and type of epidemiology that is pursued is a strength of the department relative to other leading institutions to whom we are often compared, but the lack of coalescence among faculty interests is a problem that we would like to overcome.

We are responding to the growing public health concerns and opportunities those represent to expand some ventures and allow others to diminish in scale. Some clear trends are the resurgence of infectious disease epidemiology, integration of molecular genetics into epidemiologic research, and recognition of the critical role of epidemiology in addressing health services. Obviously, infectious disease epidemiology is the origin of the field, thus not necessarily "new" and health services epidemiology has been a theme in the Department since its origins. What may be new is the growing integration of threads of research that had been pursued separately, all tied together with a focus on fundamental methodological issues that crosscut the spectrum of applications. Social epidemiology, with the

emphasis on culture and poverty, was a major theme that is less visible now as a distinct entity. Quantitative methods in epidemiology, for which the Department was well known, are no longer an activity that is isolated from applications, and the same can be said for health services, which is largely tied to specific health problems.

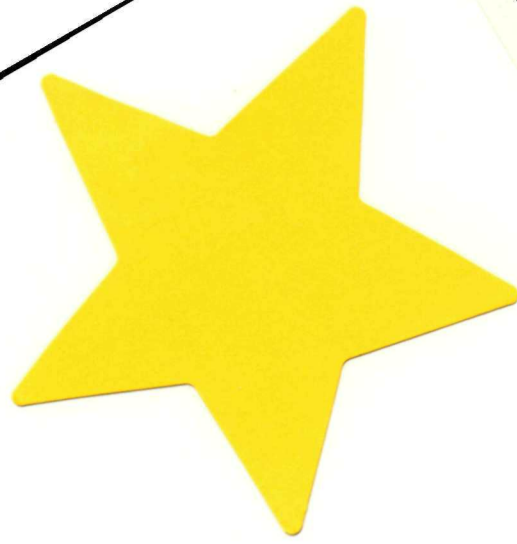
What seems to be evolving, in the field and in the Department, is an integration of sophisticated biology, social science, and statistical methods to tackle complex public health problems, along with the necessary collaboration with outside experts that is essential for progress. Though we've known for some time that doing epidemiology well involves many disciplines and tools, in hindsight, recent past eras seem to have overinvested in some threads and neglected others. Most recent was the era of esoteric statistical methods used in isolation (whatever the problem, a fancier model is the solution). At present, the revolution in molecular biology is marketed by some as the solution to all of epidemiology's problems (at last, we are free of the imperfect data from questionnaires and records). Increasing the array of statistical tools and biological markers can only be beneficial, but the fundamental challenges of understanding disease in human populations remain. There is a growing realization, within the Department and the field more generally, that the components of epidemiology are not in competition with one another (e.g., sociologic sophistication rather than biological elegance? elegant questionnaires instead of advanced statistical methods?). If asked which is most important for training and practice in epidemiology among such concerns as clinical, biological, social, and statistical elements, the answer is "yes."

Looking to the future, some predictions are easier to make than others. Some of these are guesses and others are hopes. We are in the process of refining and extending our training in epidemiologic methods. Much of the structure and some of the content are left over from faculty who have been gone for a decade or more, and the revolution in epidemiologic methods is nearly as dramatic as that in laboratory techniques. In preparing students to tackle issues beyond those which the faculty can address, a deep understanding of methods is central. This is not a new theme for the Department, but one in need of constant refinement.

There is likely to be a resurgence of interest in clinical and health care epidemiology, with the development of activities in close collaboration with others in the School of Public Health and other components of health affairs. Epidemiology is increasingly valued by others, and from that position of strength, the opportunities for partnerships, particularly with the School of Medicine, are substantial. The division in both research and training between "clinical epidemiology" and "public health epidemiology" is increasingly blurred, to the benefit of both.

As the field of epidemiology matures, there will be increasing pressures to compete for funds, students, and ideas. We enjoy an excellent reputation and unprecedented research productivity, but it's certain that sustaining the status quo is insufficient. A consequence of the expansion of epidemiology is that more institutions are training students and doing research, and more ambitious and talented people are attracted to the field than ever before. We have a tradition of high achievement within a fairly relaxed, informal culture. A major challenge is going to be expanding the quantity and quality of our work, enhancing the collegial environment, sustaining our commitment to the training of graduate students, fostering the application of epidemiology to public health, and enjoying what we do. While there is no way to persuade people to do all those things, we must continue to recruit and retain faculty, staff, and students who pursue those goals because of their enjoyment of tackling intellectually challenging issues of importance to the public's health.

by David Savitz
August 1, 1998



Epidemiology has had a number of homes ...



Miller Hall



ROSENAU HALL



Rosenau Hall



McGavran-Greenberg Hall



... and satellites



Institute for Environmental Studies
(Brown House)

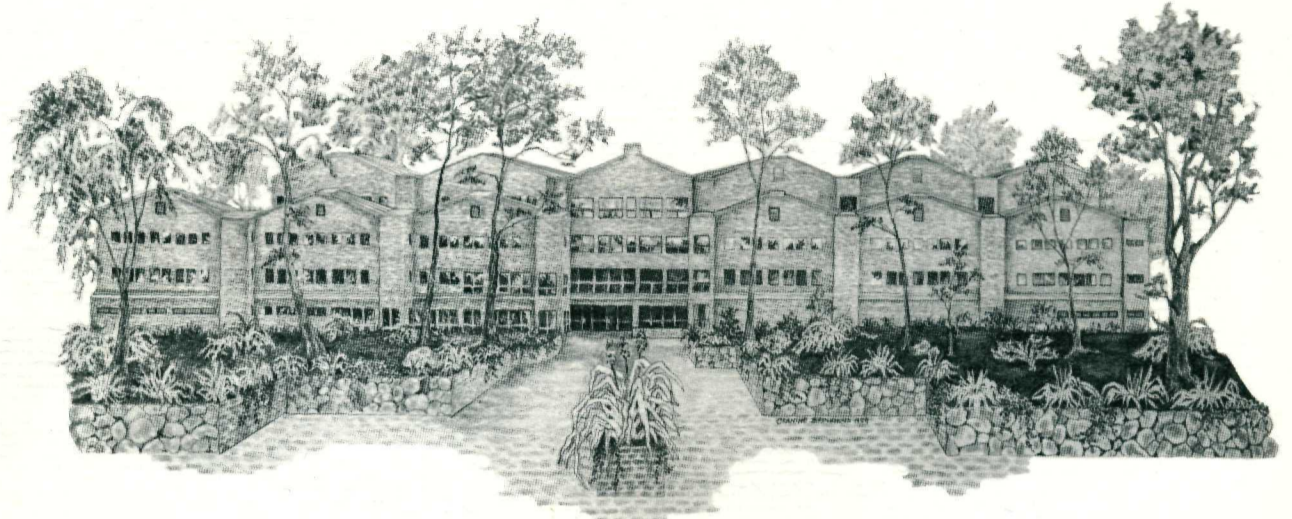


NationsBank Plaza, Franklin St.



... and episodes of moving and renovating

Dedication



McGavran-Greenberg Hall

McGavran-Greenberg Hall

*Herman G. Baity
Environmental Engineering
Laboratory*

*May 4, 1990
2:00 pm*



Ernie Schoenfeld Bob Moorhouse Michael Ibrahim Don Lauria

School of Public Health
University of North Carolina at Chapel Hill

**Department of
Epidemiology**

School of Public Health



UNC at Chapel Hill

COMPUTERS HAVE NOT DIMINISHED THE NEED FOR ...

PAPER



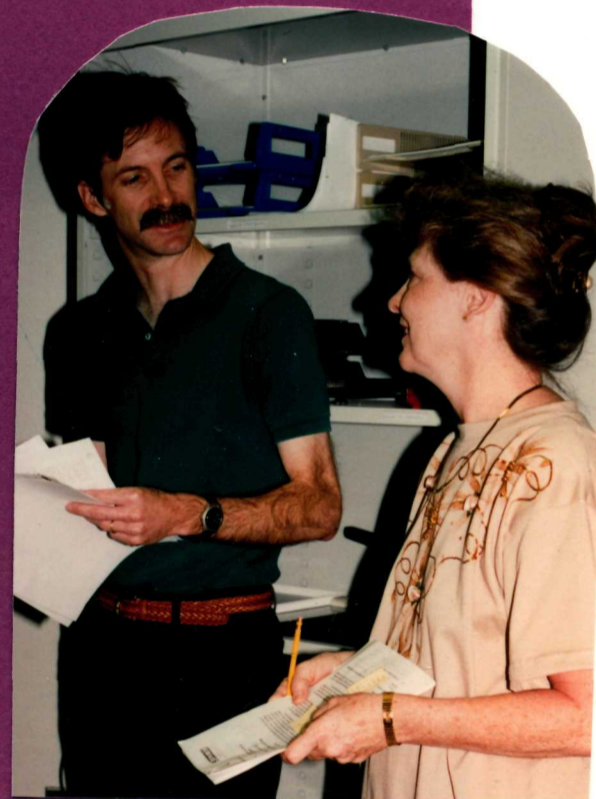
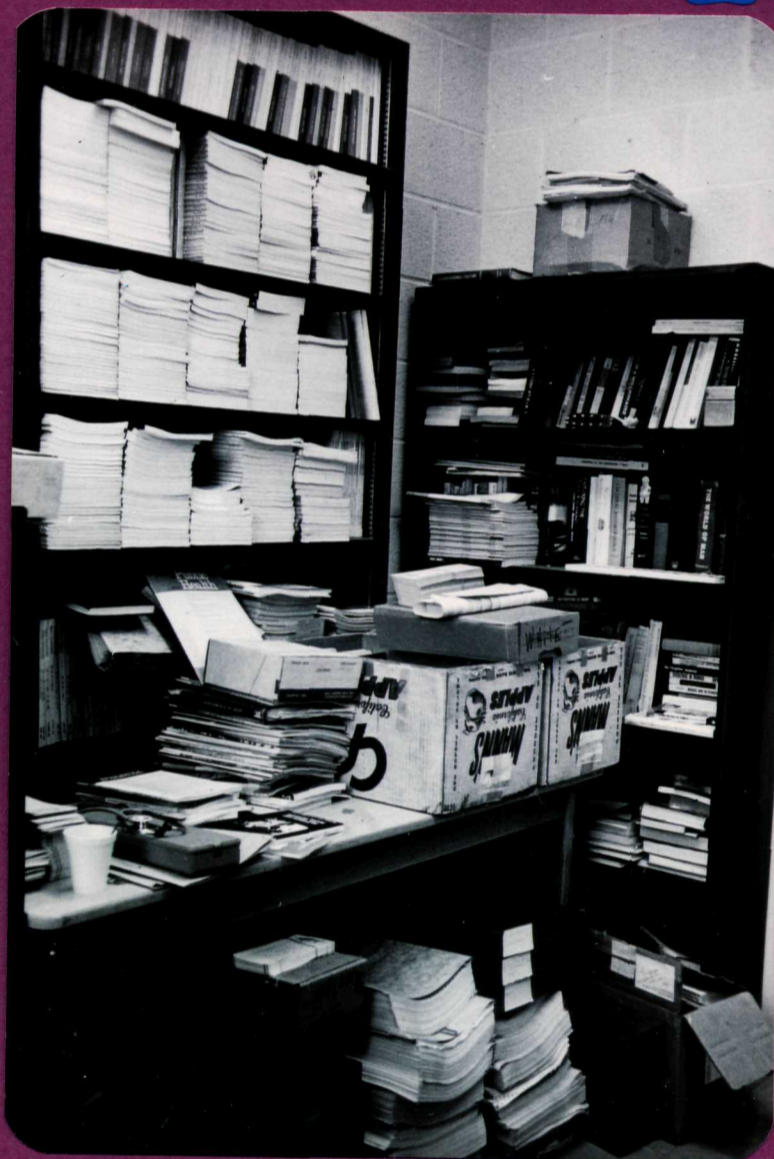
Jinny Reid



Carmen Woody



Nancy Colvin



Dana Loomis

Jane Foust



Marybeth



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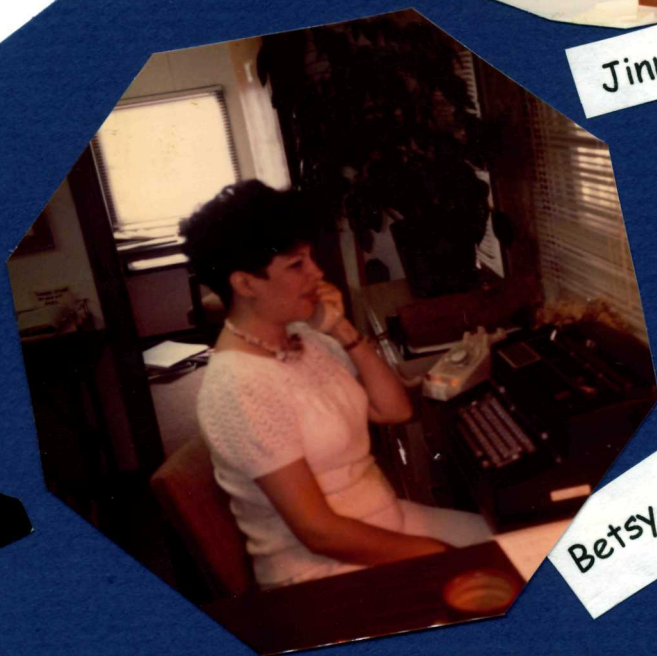
HELLO?



Jinny Reid



Pat Taylor



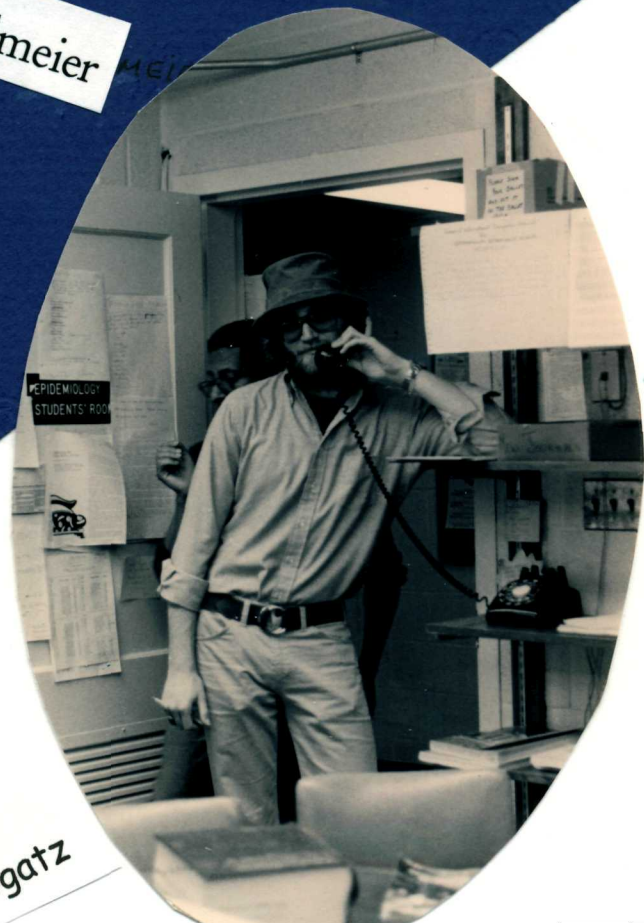
Betsy Seagroves



Leonore Kohlmeier



Joyce Allen



Dave Strogatz



1960's: The Evans County Heart Study

The other bright star in Dean Mayes's "constellation" was the Department of Epidemiology. The department undertook numerous studies in the 1960s, but the Evans County Cardiovascular and Cerebrovascular Epidemiologic Study drew the most attention. Evans was a small Georgia county about sixty miles inland from Savannah. Dr. Curtis Hames, a local physician in Claxton, noticed in the 1950s that the black patients he treated seemed to have a lower incidence of coronary heart disease than whites. He contacted the Public Health Service about the possibility of doing a study in Evans County to see if his clinical observations were correct, and if so what the explanation might be. The Public Health Service suggested that Hames contact the Department of Biostatistics at Chapel Hill for help in designing the program. Bernie Greenberg remembered the occasion:

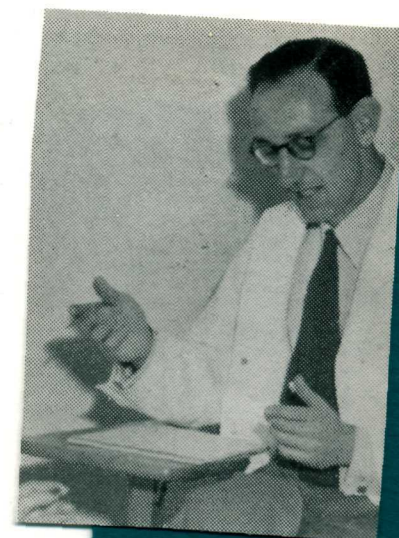
The Public Health Service asked me to evaluate a research project proposed by a solo medical practitioner in private practice in Claxton, Georgia. I visited there for a few days with this physician but returned with serious doubts about the project's feasibility.

Nevertheless, I persuaded John Cassel to go back to Georgia with me a few weeks later to meet Dr. Curtis Hames in order to take a closer look at this project. I was still skeptical when we got on the plane to go there, but by the time we came home, John and I were thoroughly convinced that this project represented a unique epidemiological potential.¹¹

Between 1960 and 1962, 92% of Evans County's population over the age of forty underwent medical examinations and laboratory tests. The results confirmed Hames's observation. Black males suffered heart disease at half the rate of white men. More surprising, however, was the fact that white men in lower socioeconomic groups had rates comparable to blacks. When the investigators studied the population again between 1967 and 1969, there was less difference among white men. "The only circumstances in which white men had as low rates as blacks," John Cassel reported, "was when they were both sharecroppers. The only relevant difference between white sharecroppers and all other white men that could be invoked to explain this finding was the high level of physical activity in sharecropping." Hames and the school's epidemiologists concluded that psychosocial experiences and genetics might be contributing factors, but that levels of physical activity were primarily responsible.¹²

That study grew exactly as John [Cassel] had predicted. Today it is the most famous nongovernmentally-administered cardiovascular study in the world. Dr. Curtis Hames turned out to have the medical and managerial capability that John had seen in him, and the Evans County project became a uniquely comprehensive field of study of heart disease in a natural, rural setting.

The project had given rise to hundreds of manuscripts, dozens of doctoral dissertations, and best of all, to some of the most important discoveries ever made about the precursors of coronary thrombosis, hypertension, and myocardial infarction.¹³



A Susan Way

A Susan Way

Summary of Major Findings of the Evans County Cardiovascular Studies

John C. Cassel, MD, MPH, Chapel Hill, NC

The studies reported in this issue have resulted from an unusual "partnership" between a primary care physician Curtis Hames, MD, and an academic department of epidemiology. The initiative for this collaboration came from Dr. Hames who wished to determine whether certain phenomena he was observing in his practice were occurring throughout the community or were restricted to the types of people who selected him for their physician. To the extent that his practice observations were found to be generalizable, he would then be interested in seeking some explanations. In particular, Hames was impressed with the rarity with which he saw black patients, particularly black men, with any manifestation of coronary heart disease (CHD), despite the fact that levels of blood pressure in many of these patients were markedly elevated. This observation was all the more surprising as coronary disease was a very common manifestation in his

white patients. (Evans County, Ga, is situated in the "high coronary belt," the area extending down the Eastern seaboard from Virginia to Georgia which has one of the highest mortality rates from coronary heart disease in the United States.¹)

In an attempt to find answers to these questions it was decided to conduct a study in which every adult resident of the county over the age of 40 years and 50% sample of those between the ages of 15 and 39 years would have a standard medical examination and a battery of laboratory tests. For this purpose a private census of the county was undertaken in 1960, the population divided into ten random subsamples (to avoid the potential problem of examiner variation over time) and over an 18-month period an attempt was made to examine all eligible residents (3,377 in all) by two physicians assigned to this study. Largely due to the excellent rapport between Hames and this population 3,102 (92%) of the residents cooperated and underwent the examinations. The major findings of this study have been published^{2,3} and are summarized in this issue.⁴ Since that examination the availability of a well categorized defined population has provided the basis for literally dozens of additional studies, conducted by a

wide variety of universities.⁵ The papers in this issue, however, are restricted to some of the findings in the follow-up study that was conducted between 1967 and 1969 on all those individuals originally examined in 1960 through 1962.

As indicated in this issue⁴ the 1960 through 1962 prevalence study documented the fact that all manifestations of coronary heart disease (myocardial infarction and angina) occurred very rarely in black men, their age-adjusted rate being only one half that of white men. Among white men there was a sharp difference in the rate by social class, men in the higher half of the social class scores having a rate of 99 per 1,000, while the rate for those in the lower half was only 40 per 1,000, not very different from the rate for blacks. (There was too little variation in social class among the blacks—as measured by occupation, education, and source of income—to permit any examination for the effect of social class in that group.)

None of the risk factors measured, namely systolic and diastolic blood pressure, serum cholesterol level, cigarette smoking, body weight, or diet could account for either the ethnic or the social class differences in these prevalence rates. Either there

ly of a total county coronary heart disease black than in white category except share-croppers the occurred in the 1960 prevalence study. The most findings was that sustain critical threshold CHD. This explanatory support from the leisure time and on-prevalence of CHD. Possible pathogenic productivity might operate

Occupation and Physical Activity and Coronary Heart Disease

John Cassel, MD, MPH, Chapel Hill, NC; Siegfried Heyden, MD, and Alan G. Bartel, MD, Durham, NC; Berton H. Kaplan, PhD; Herman A. Tyroler, MD; and Joan C. Cornoni, MPH, PhD, Chapel Hill, NC; and Curtis G. Hames, Claxton, Ga

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men in the sample. Since no direct measure of activity was obtained in 1960-1962, this variable was used as a substitute. The non-farm occupations were classified into five groups: (1) professionals, proprietors, managers; (2) clerks, office workers; (3) trades, service workers; (4) manual laborers; and (5) unemployed. Farmers were classified into three groups: (1) farm owners; (2) sharecroppers and farm laborers; and (3) farm workers unemployed. This classificatory scheme, derived from McGuire and White's "The Measurement of Social Status,"² can be used both for constructing an index of social status and as a rough index of on-the-job physical activity.

Secondly, in the 1967-1969 follow-up examination, a physical activity questionnaire measuring both on-the-job and leisure time activity was administered. For this purpose the questionnaire used in the HIP study was modified slightly to make the items appropriate for a rural community.³ The major modifications required were in the leisure time activities categories which were derived from interviews with the first 100 individuals examined. Weights were assigned to each item to approximate as closely as possible those used in the HIP study. Because of the modifications introduced, the absolute value of the scores derived from this questionnaire may not be strictly comparable to the HIP scores, but the rank order of the items within Evans County is probably very similar to that in the New York sample. Thus, while Evans County residents who scored in the most active category, for example, may be more or less active than the New Yorkers with the same score, they would share in common the fact that within each study they were more active than those with a sedentary score.

The items and scores used were as follows:

Physical Activity Questionnaire

	Score Assigned
1. About how much time on the job spent sitting?	
Practically all the time	0
More than 1/2 the time	1
About 1/2 the time	2
Less than 1/2 the time	3
Almost none of the time	4
2. About how much time on the job spent walking?	
Practically all the time	4
More than 1/2 the time	3
About 1/2 the time	2
Less than 1/2 the time	1
Almost none of the time	0
3. About how much walking getting to and from job?	
None	0
Less than 1/2 mile	2
1/2 mile or more, but less than 1 mile	4
1 mile or more, but less than 2 miles	5
2 miles or more	6
4. How often do you have to lift heavy weights or carry heavy things on the job?	
Frequently	6
Sometimes	3
Very infrequently (or never)	0

	Fre- quently	Some- times	Very Infre- quently or Never
Take walks in good weather	2	1	0
Work around house or apartment	2	1	0
Yard work or gardening	2	1	0
Take part in sports			
(i) Active ball game other than golf, bowling, pool or billiards	4	3	0
(ii) Hunting or fishing	4	3	0
(iii) Other sports	3	2	0
In addition to your regular job, do you do any farm work (livestock, feeding hogs, work on farm land, etc.)	4	3	0
Other activities	3	2	0
Any additional types of employment (Specify)			

Received for publication May 13, 1971; accepted July 13.

From the Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill.

Reprint requests to Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC 27514 (Dr. Cassel).

AN INTRODUCTION TO THE DEPARTMENT

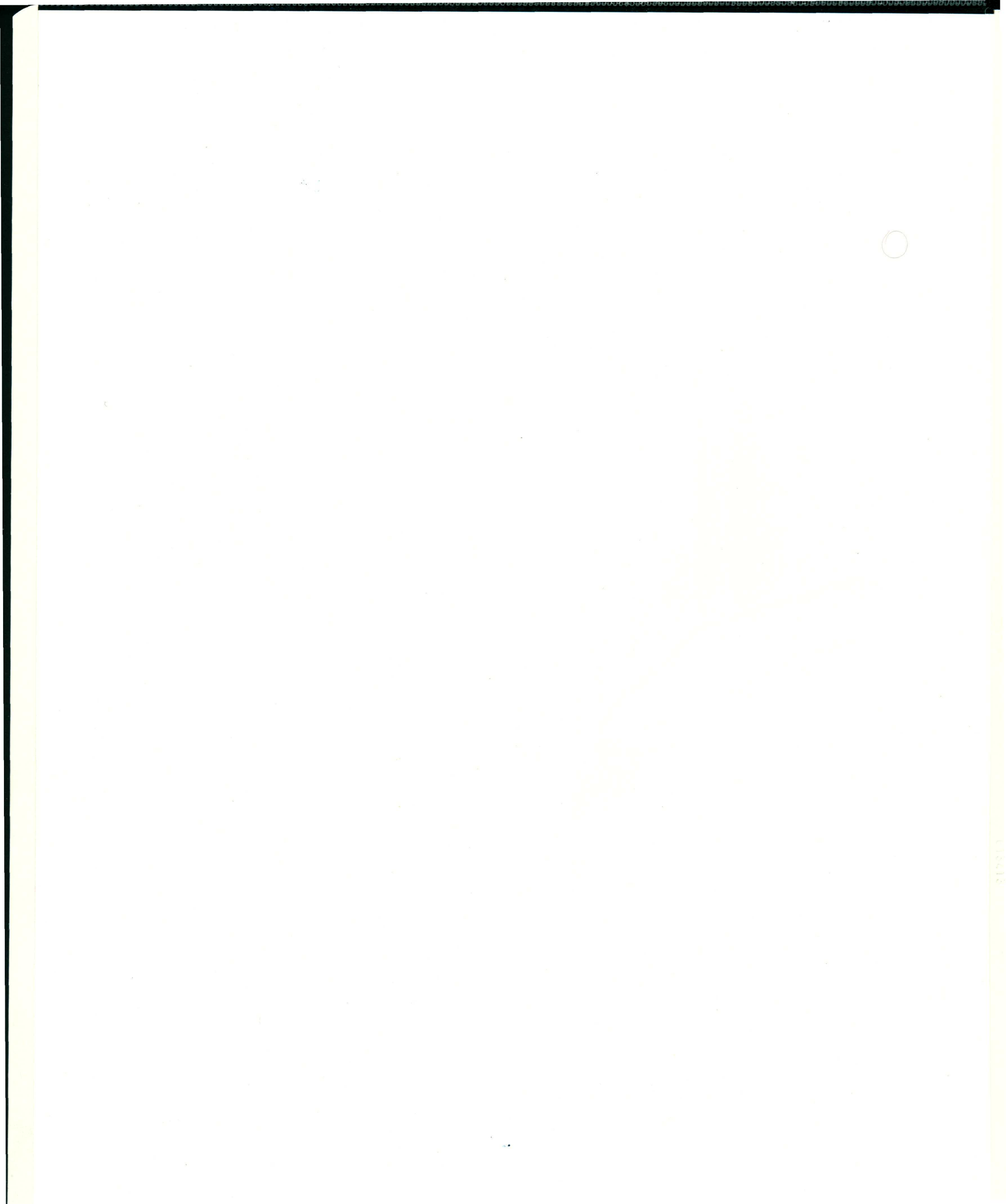
In the last half century the developing world has experienced a decline in the magnitude and impact of serious infectious diseases only to find them replaced by the modern plagues of heart disease, cancer and stroke.

The Department of Epidemiology has a multidisciplinary faculty which addresses these current problems using complex biological-psychosocial models of health and disease. Research training is offered in six specialty areas of epidemiologic research: **cancer, cardiovascular disease, environmental and occupational health, health services research and clinical epidemiology, population and psychosocial epidemiology.** Central to the pursuit of knowledge in these areas is the development of skills and competency in quantitative methods in epidemiology. The department offers students the framework to study the quantitative issues, methods and strategies necessary for the conduct of epidemiologic inquiry. Students who have demonstrated competence in the biomedical, behavioral or quantitative sciences may choose from a variety of training program options in the six specialty areas, including two master's degree tracts and two doctoral degree tracts.

The field of epidemiology at UNC has grown over the past four decades from a single course offered by the School of Public Health to our current department, which includes 18 full-time faculty and 26 adjunct professors representing the health and social sciences, as well as a large administrative and research support staff. The Department has become one of the leading centers for teaching, research and consultation in epidemiology. The changing research emphasis of the department during the years of its growth parallels the changing health problems of the population. From studies such as those in Evans County, Georgia, which delineated risk factors for cardiovascular and cerebrovascular diseases, research has expanded to intervention trials, examination of health care issues and into the area of carcinogenesis and the relationship of environmental pollution and occupational hazards to disease.

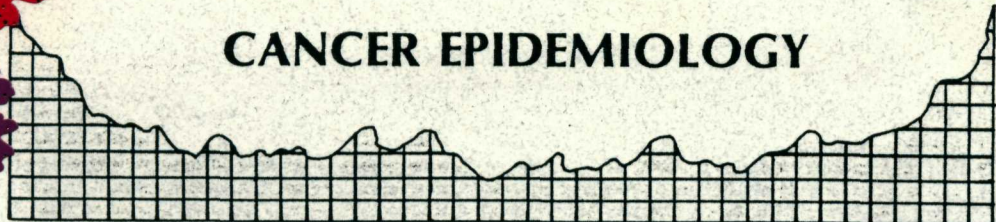
In a problem-oriented training curriculum, students are expected to seek answers to their research questions. They are encouraged to develop an individualized program of study depending on their academic background, previous experience and research interests. Faculty advisors are assigned to aid students in the formulation of their educational program.







CANCER EPIDEMIOLOGY



Cancer epidemiology has emerged as one of the prime research interests of faculty and students. Although the training program in cancer epidemiology is the department's newest, years of study in other specialty areas, particularly environmental and occupational health in which cancer was a primary disease outcome, have built an excellent multidisciplinary research base for students.

The department is fortunate to have two major cancer research centers located nearby: The Cancer Research Center on the UNC-CH campus and the Duke Comprehensive Cancer Center in Durham. Joint faculty appointments and research projects with both centers provide excellent resources for trainees.

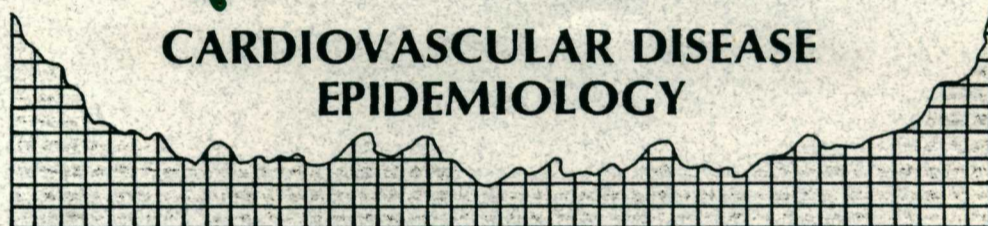
The Cancer Epidemiology Training Program equips students with the epidemiologic and quantitative skills necessary in cancer research, both etiologic and therapeutic, and for development of cancer control programs. The intent is to produce cancer epidemiologists who can assume leadership roles in cancer research and utilize the resources of many disciplines. The various types of cancer, their causative factors and the methods used in developing and substantiating new etiological hypotheses provide the model for the study.

There are three basic components to the training program in cancer epidemiology: 1) integration of knowledge about specific types of cancer from epidemiology, clinical practice and the basic sciences; 2) synthesis of information about the carcinogenic potential and mechanisms of action of exogenous and endogenous carcinogens; and 3) mastery of those methods in epidemiology which are particularly relevant to the study of cancer and other chronic diseases, including their application in cancer clinical trials. Building on this information base, students are assisted in developing research skills for formulating hypotheses that can be translated into feasible study designs which they can execute.

1980



CARDIOVASCULAR DISEASE EPIDEMIOLOGY



No other area of chronic disease epidemiology has progressed as far as the investigation into the determinants of cardiovascular disease. During the past two decades research has moved from the elucidation of risk factors to the development of national and international community intervention trials.

The study of cardiovascular and cerebrovascular diseases has had the highest priority in the Department of Epidemiology since its inception. An extensive collection of past research data, combined with a variety of ongoing studies, provide students in the Cardiovascular Disease Training Program with maximum opportunities for research training and field experiences.

For the last 20 years, the Evans County Heart Study has provided a research base for faculty and students. As the first biracial longitudinal study, it contributed to an understanding of the physical and behavioral antecedents of the developed world's major cause of morbidity and mortality. Epidemiologists now are applying what was learned in Evans County and other studies such as the well-known Framingham Heart Study, to intervention trials and the development of health programs for control of hypertension and other risk factors in black and white populations.

Studies in the rural South, as well as studies of diverse populations such as the Papago Indians, South African Zulus, Ponape Islanders and National Aeronautical and Space Administration (NASA) workers, have revealed the effects on health of factors such as the modernization and industrialization of the society, familial, social and biological factors, and the medical care system. Other work has quantified the importance of the major personal risk factor in elevated serum lipids, high blood pressure, cigarette smoking and physical inactivity. This research shed light on three additional precursors of cardiovascular disease: rapid cultural change, membership in ethnic and other social groups, and shared familial factors.

Connected with the study of cardiovascular disease are several departmental research efforts in the cerebrovascular disease area. Using data compiled from census tracts, etiologic studies have been designed to determine if there is a relationship between stroke mortality and psychosocial factors such as social disorganization. Continuing studies of the stroke belt running through the Piedmont region of North Carolina are attempting to isolate the personal and environmental factors which would explain the higher incidence of stroke in these areas.



Gerardo Heiss (L) and Al Tyroler, principal investigators in Lipids Research Clinics Program.



Caroline Becker, epidemiologist, and Roger Grimson, biostatistician, meet with research staff members, Mimi Andjelkovich, Veda Manley and Sylvia Hubbard.



ENVIRONMENTAL AND OCCUPATIONAL EPIDEMIOLOGY

Health problems arising from the nature of the contemporary environment have brought about an increasing interest in the multifactorial etiology of these conditions. The Environmental and Occupational Health Training Program prepares students to fill the national need for scientists in this burgeoning field of research.

The environmental epidemiologist is particularly concerned with the presence of hazards in the air, water and earth. Departmental research seeks to explain such relationships as that of pesticides to lung cancer, air pollution to pulmonary disease and water chlorination products to gastrointestinal cancer. The potential harmful effect of the occupational environment on workers is also the subject of intensive study. In collaboration with the Department of Environmental Sciences & Engineering and the Department of Biostatistics, the department is involved in research in the rubber industry. In other recent research, investigators are examining the effects of occupational exposure to low-level ionizing radiation.

The department is affiliated with the Institute for Environmental Studies which provides students with excellent research and training opportunities. Other local resources for students are the Environmental Protection Agency and the National Institute for Environmental Health Sciences, both located close by in the Research Triangle Park. Several members of these institutions hold adjunct faculty appointments in the department.

Implementing the research strategies in the environmental and occupational areas requires that students be trained in the environmental sciences and human biology, with awareness of the contributions of the behavioral sciences. Though predominantly an epidemiologist, the trainee should be capable of initiating and recommending laboratory experiments for refining or refuting clues, and subsequently testing laboratory findings in human populations. The training program is designed to build on the student's experience in some of these areas while filling the gaps in knowledge in other areas.



Harvey Checkoway, Gory Love and Carl Shy (L to R), three of department's specialists in occupational and environmental health.



Carolyn Williams, Assistant Professor of Epidemiology and Nursing, is currently interested in the relationship between women's health status and work roles.



Edward Wagner, Associate Professor of Epidemiology and Medicine, is also an associate director of the Health Services Research Center and a primary investigator with the Rural Primary Health Care Evaluation Program.

HEALTH SERVICES RESEARCH AND CLINICAL EPIDEMIOLOGY

The Department of Epidemiology offers a research training program which provides the epidemiologic and quantitative skills necessary for answering questions about health care delivery. The only organized study program of its kind in a department of epidemiology, this training program in health services research and clinical epidemiology applies epidemiologic methods to the study of health and medical services. The objectives of the program are to provide educational experiences useful in: (1) measuring health needs and demands; (2) investigating the utilization of health services and adherence to the care offered; and (3) measuring the efficacy, effectiveness and quality of health delivery strategies. In conjunction with UNC's Health Services Research Center and the School of Medicine, research in this area is conducted in private practices, satellite clinics, neighborhood health centers, hospital outpatient departments and other medical care settings.

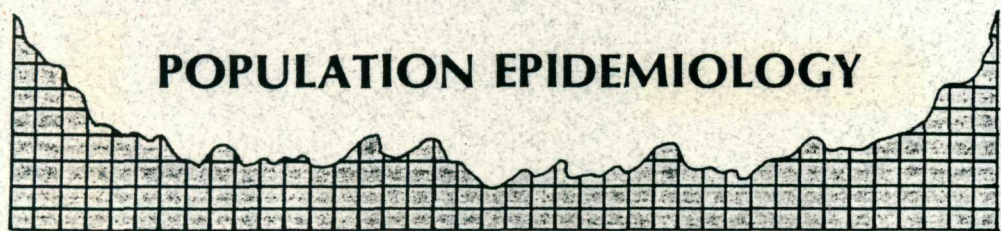
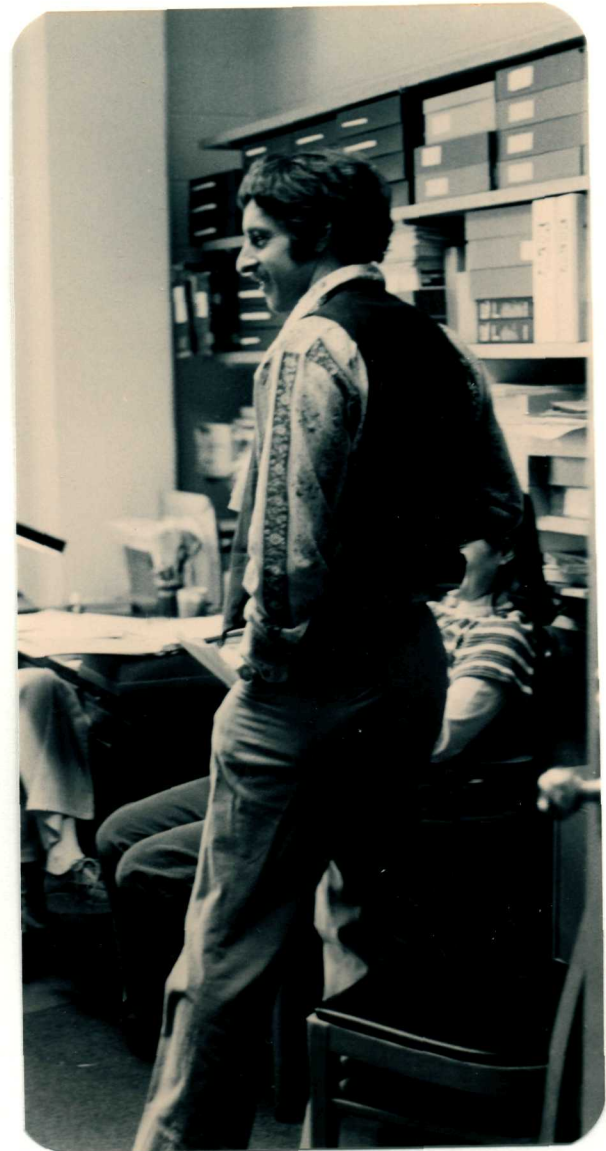
The epidemiologic approach to health services research is concerned with the relationship of service programs to community health needs and the investigation of their impact on the health of the population. Clinical epidemiology shares the same approach and concerns, but focuses its attention on the clinical questions facing individual providers of care in the course of their practice. These questions relate to the clinical course of various conditions, the utility of diagnostic techniques and the efficacy of various approaches to management.

The epidemiologic perspective in both areas of study necessitates continuous reassessment of the methodologic problems and questions inherent in the study of the complex interaction between individuals needing and/or seeking help with providers of services. Using a decade of collective experience in this research area, the educational program emphasizes the design, measurement and analysis issues relevant to the study of health services and clinical care.



Department of
Epidemiology and
Community Health

Applied
Epidemiology



POPULATION EPIDEMIOLOGY

The application of epidemiologic principles and techniques to the study of population dynamics and family planning has given rise to the relatively new field of population epidemiology. This educational program in the Department of Epidemiology accepts only a few students and is designed to equip students with the competencies necessary to: (a) develop new research strategies in population dynamics and family planning; (b) describe a body of knowledge with an epidemiologic perspective on various population phenomena; and (c) expand the existing network of hypotheses on the determinants, process and consequences of population change.

Students acquire a background in the determinants and health consequences of population size and structure and in the application of this knowledge to the development of intervention strategies that will alleviate adverse health conditions related to overpopulation. Such factors as biosocial interactions, patterns of human reproduction, acceptance of fertility control and the nature of family structure are analyzed for insights into population trends.

There are predictable changes in the composition and fertility patterns of populations undergoing transformation from rural, dispersed and underdeveloped states to urbanized industrialized states. Accompanying changes occur in the type and frequency of various diseases. The Department's ongoing research in cooperation with international agencies enables students to study the demographic, social, developmental and health parameters of these changes.



PSYCHOSOCIAL EPIDEMIOLOGY

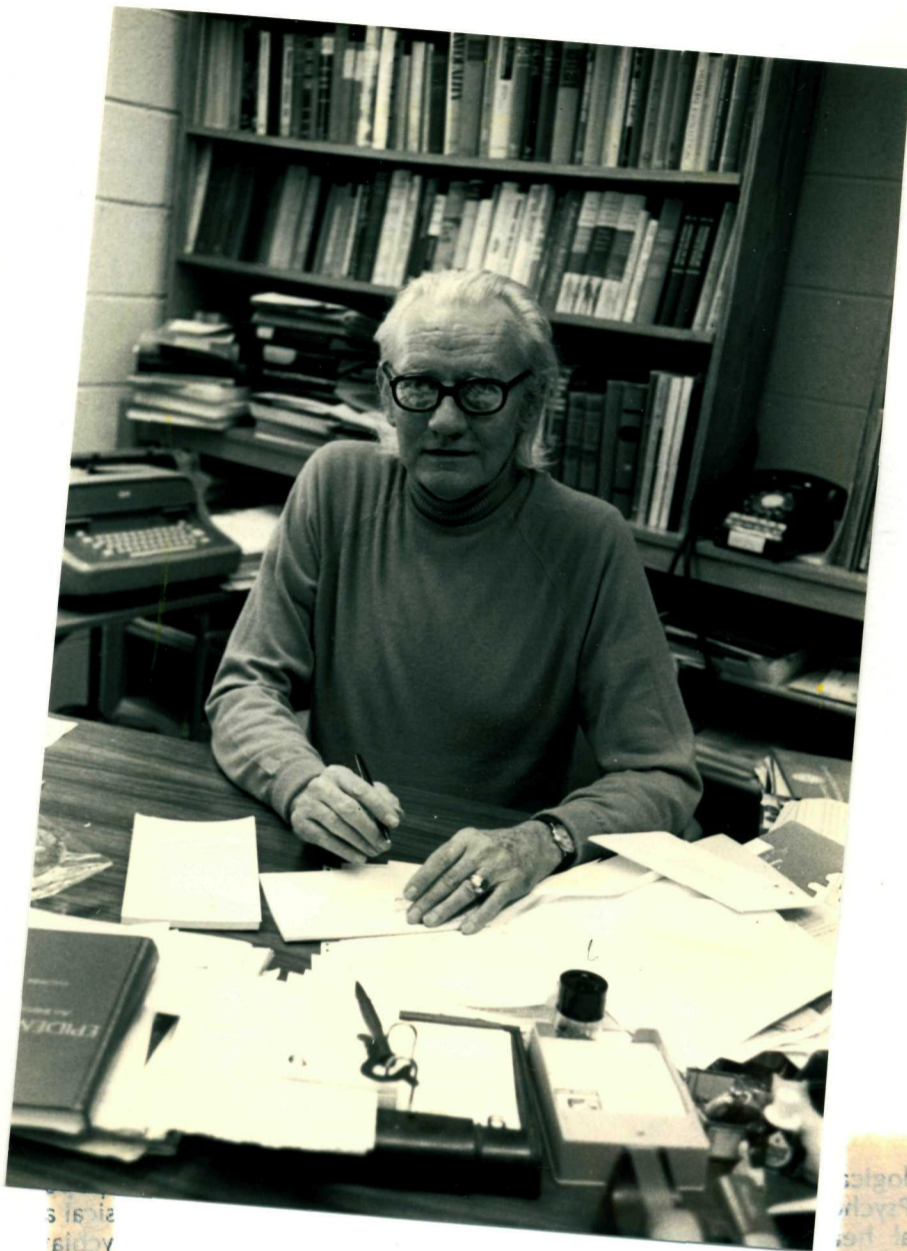
Biological risk factors alone do not predict the burden of disease in a population. Psychosocial factors have been implicated in the etiology of physical and mental health problems, especially cardiovascular disease and psychiatric disorders.

The psychosocial epidemiologist investigates how personal experience, life events and personality dimensions affect susceptibility to disease. In terms of social milieu, the researcher is concerned with such concepts as social disorganization, marginality, incongruity and relative deprivation as they are related to disease distribution in a population.

The department's program in psychosocial epidemiology is a companion training opportunity for students specializing in one of the other programs offered by the department. Cancer, cardiovascular disease, environmental health, occupational health and health services can be investigated from the perspective of determining the psychosocial aspects of etiology, clinical course and recovery from disease.

Faculty members from the disciplines of anthropology, sociology and psychology bring diversity to investigations in this specialty area. Past research by faculty and students includes development of a self-assessment instrument for Behavioral Type A in various populations. Another example is the development of a scale to measure family routines and rituals using Thurstone's Equal-Appearing Interval Scaling technique. Cross-sectional and follow-up studies are designed to test the hypothesis that the greater number of positive or culturally valued routines/rituals in which a family participates, the greater will be its resistance to disease. In other work such factors as life events, social and emotional stress, coping mechanisms and religious affiliations have been related to pregnancy outcome, stroke mortality, hypertension and recovery from heart attack.

Students wishing to specialize in this area should have competency in the behavioral sciences. They can acquire skills in the biomedical and quantitative sciences during their program of study in the department.



OAK RIDGE 1980. 1992 PROJECT

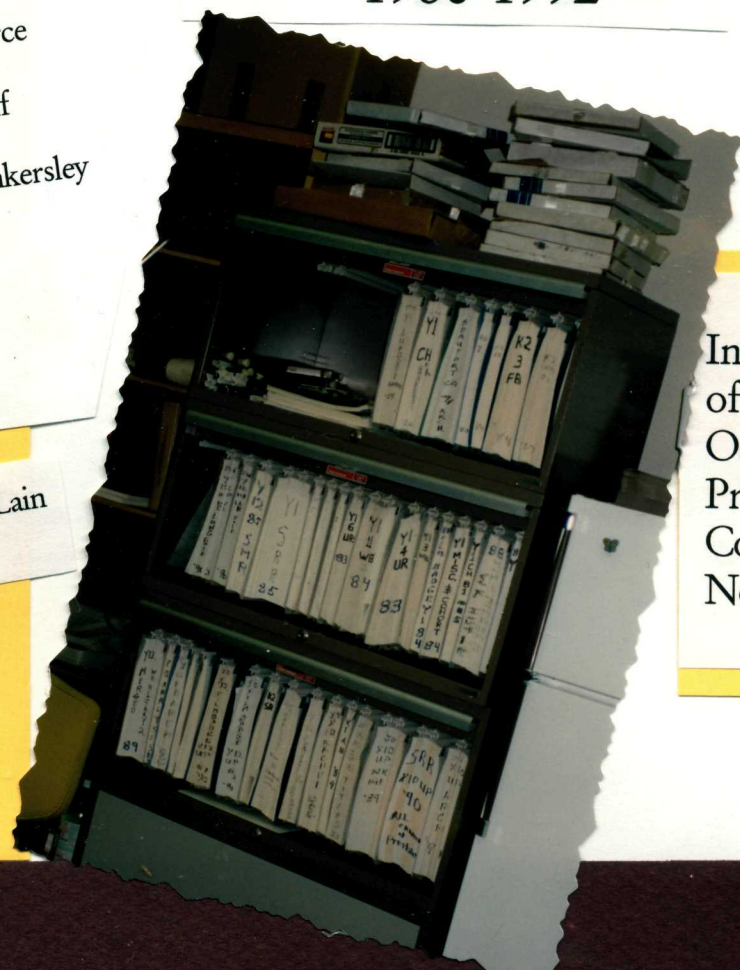
Diane Cookfair Harvey Checkoway Sally Mueller Jerome Wilson Sue Wolf Carl Shy Joanna Smith Jim Watson Betsy Dupree Dan Strom



Pisgah View Ranch, Candler NC - October 1985

IN MEMORIAM 1980-1992

Shirley Fry Phil Wau Donna Cragle Terry Hudgins Steve Blum
Neil Pearce
Sue Wolf
Bill Tankersley
Dick McLain
Betsy Dupree Carl Shy Arvind Carpenter John Hickey Doug Crawford-Brown



Interior of the Oak Ridge Project Coffin
November 1994

Center For Epidemiologic Research
Oak Ridge Associated Universities



Shirley Fry Shirley Taylor Clarence Lushbaugh "Lush" Donna Hollis Judy Qualters Donna Cragle

Oak Ridge Project, Advisory Committee Meeting, Chapel Hill



Dan Strom Ravi Mathew Carl Shy Jerome Wilson Ed Bachman Betsy Dupree Jim Watson Joanna Smith Harvey Checkoway Diane Cookfair Naima Abd-Elghany

Mortality Among Workers at Oak Ridge National Laboratory

Evidence of Radiation Effects in Follow-up Through 1984

Steve Wing, PhD; Carl M. Shy, MD; Joy L. Wood, MS; Susanne Wolf, MPH; Donna L. Cragle, PhD; E. L. Frome, PhD

White men hired at the Oak Ridge (Tenn) National Laboratory between 1943 and 1972 were followed up for vital status through 1984 (N=8318, 1524 deaths). Relatively low mortality compared with that in US white men was observed for most causes of death, but leukemia mortality was elevated in the total cohort (63% higher, 28 deaths) and in workers who had at some time been monitored for internal radionuclide contamination (123% higher, 16 deaths). Median cumulative dose of external penetrating radiation was 1.4 mSv; 638 workers had cumulative doses above 50 mSv (5 rem). After accounting for age, birth cohort, a measure of socioeconomic status, and active worker status, external radiation with a 20-year exposure lag was related to all causes of death (2.68% increase per 10 mSv) primarily due to an association with cancer mortality (4.94% per 10 mSv). Studies of this population through 1977 did not find radiation-cancer mortality associations, and identical analyses using the shorter follow-up showed that associations with radiation did not appear until after 1977. The radiation-cancer dose response is 10 times higher than estimates from the follow-up of survivors of the bombings of Hiroshima and Nagasaki, Japan, but similar to one previous occupational study. Dose-response estimates are subject to uncertainties due to potential problems, including measurement of radiation doses and cancer outcomes. Longer-term follow-up of this and other populations with good measurement of protracted low-level exposures will be critical to evaluating the generalizability of the results reported herein.

(JAMA. 1991;265:1397-1402)

March 20, 1991



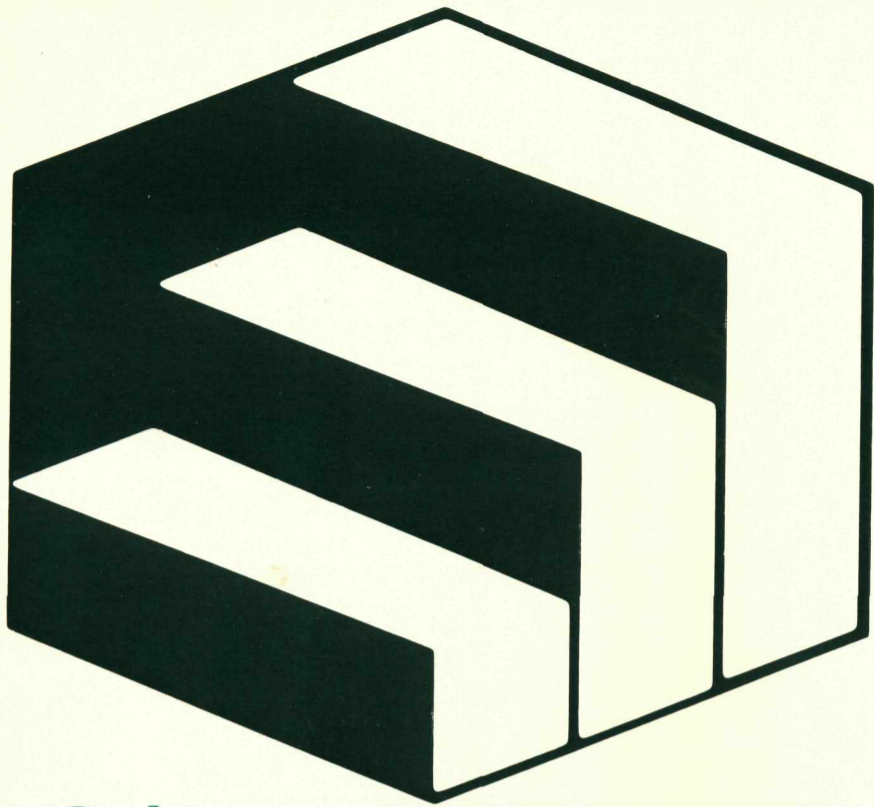
AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 29:131-141 (1996)

Mortality of Workers at a Nuclear Materials Production Plant at Oak Ridge, Tennessee, 1947-1990

Dana P. Loomis, PhD, and Susanne H. Wolf, RN, MPH

The Y-12 plant at Oak Ridge, Tennessee, produced nuclear materials for the U.S. government's nuclear weapons program beginning in 1943. Workers at Y-12 were exposed to low dose, internal, alpha radiation and external, penetrating radiation, as well as to beryllium, mercury, solvents, and other industrial agents. This paper presents updated results from a long-term mortality study of workers at Y-12 between 1947 and 1974, with follow-up of white men through 1990 and data reported for the first time for women and men of other races. Vital status was determined through searches of the National Death Index and other records, and the workers' mortality was compared to the national population's using standardized mortality ratios (SMRs). Total mortality was low for all Y-12 workers and total cancer mortality was as expected. Among the 6,591 white men, there were 20% more lung cancer deaths than expected (95% confidence interval [CI] 1.04-1.38). Death rates from brain cancer and several lymphopietic system cancers were also elevated among white men, with SMRs of 1.28 and 1.46. Mortality from cancer of the pancreas, prostate, and kidney was similarly elevated. There was evidence of excess breast cancer among the 1,073 female workers (SMR 1.21, 95% CI 0.60-2.17). Lung cancer mortality among these workers warrants continued surveillance because of the link between internal alpha radiation exposure and this disease, but other agents, notably beryllium, also merit consideration as potential causes of lung cancer. Other cancers and agents should also be investigated as part of a comprehensive study of the health consequences of the production of nuclear weapons.

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STEP

PROJECT



Professors (from left) James C. Thomas, Joanne L. Earp, Victor J. Schoenbach, and Eugenia Eng participate in one of the School of Public Health's interdepartmental studies. The professors enjoy a STEP meeting break in one of the community sites.



Top: Debra Weiner, Research Associate, STEP-1

Middle: Jadis Robinson, Research Assistant
Jerry Salak, Administrative Assistant

Left: Ans Janssens, Programmer, STEP-1

Right: Darrah Degnan, Research Associate, STEP-2

STEP = SEXUALLY TRANSMITTED EPIDEMIC PREVENTION



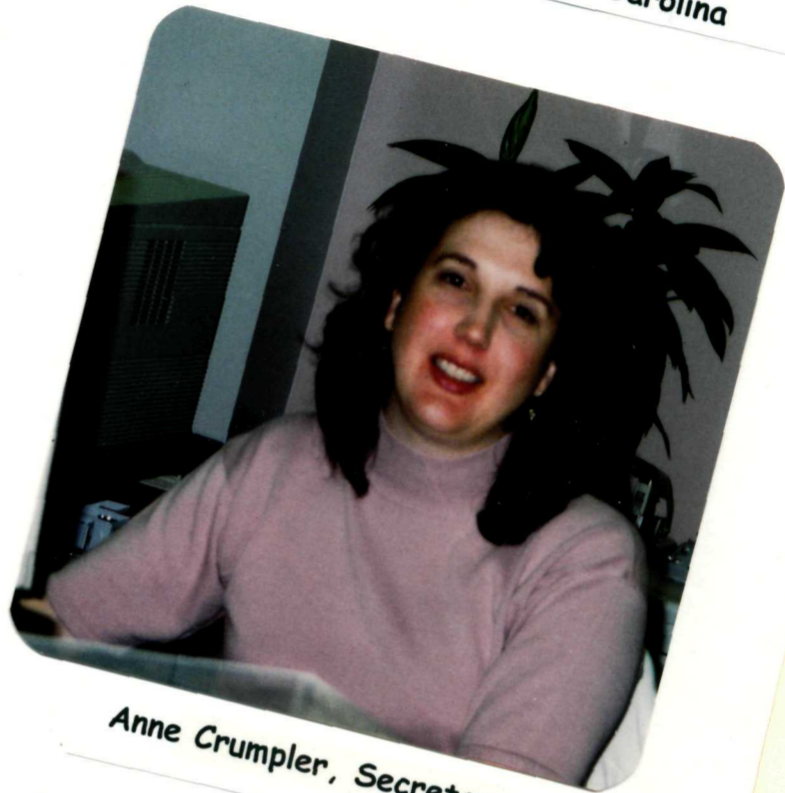
STEP-1 1991-1995



Aims:

1. Perform an ethnographic study of persons at high risk for STDs
2. Follow a cohort among 3000 clients from a public health STD clinic
3. Design a community-based intervention to prevent STDs

Investigators:
 Jim Thomas Jo Anne Earp Vic Schoenbach Geni Eng
 visiting Wilson County, North Carolina



Anne Crumpler, Secretary



Graduate Research Assistants with
 Mary Anne McDonald, Ethnographer
 Kat Turner, Mary Anne,
 Amy Lansky, Michelle Clark

Most of STEP-1 Team:

Front:

Hyun Yung Kim (work study student), Jim Thomas,
 Karen Thomas (history student), Vic Schoenbach

Middle:

Jadis Robinson, Debra Weiner, Geni Eng,
 Amy Lansky, Jerry Salak, Keshia Henderson
 (work study student), Mary Anne McDonald

Back:

Ans Janssens, Richard Pierce, Doug Smucker,
 JoAnne Earp, Patrell Lucas, Gary Millet



STEP-2 1995-1999

Aims:

- 1) to identify women respected by African-American women in 'core' STD census blocks
- 2) to train these women as lay health advisors (LHAs) to effect STD care-seeking behaviors and condom use
- 3) to evaluate LHA intervention using a pre/post household survey of 'core' census blocks.



Lay Health Advisors in Training with Geni Eng 1996



Most of STEP-2 team - 1998:
Front: Darrah Degnan, Jadis Robinson,
JoAnne Earp,
Back: Rachid Lamjaim, Claire Newbern,
Rebecca Hoffman, Jim Thomas,
Mary Anne McDonald, Geni Eng,
Shelly Harris, Vic Rhodes



Jadis Robinson,
Community Outreach Specialist
and Liaison for LHAs



"Respect and Protect" Lay Health Advisors
Graduation Ceremony - November 1996



Lay Health Advisors - 1st Anniversary of Service
November 1997



Evon Davis - LHA of the Year



Tammie Carlton
Field Supervisor for
Household Survey
1996 and 1998



Interviewers in Training 1998



1998 Household Survey Interviewer Training
Staff - Clockwise: Minna Wiley, Tammie
Carlton, Darrah Degnan, Kari Hartwig,
Marlene Smurzynski, David Napp (Lead Trainer).

STEP Project Interviewer
303 East Green Street
Wilson, NC 27893
Telephone 919-243-0388
FAX 919-243-9888

Vic Rhodes, Programmer
Darrah Degnan, Manager
STEP-2





Carl Shy, P.I.

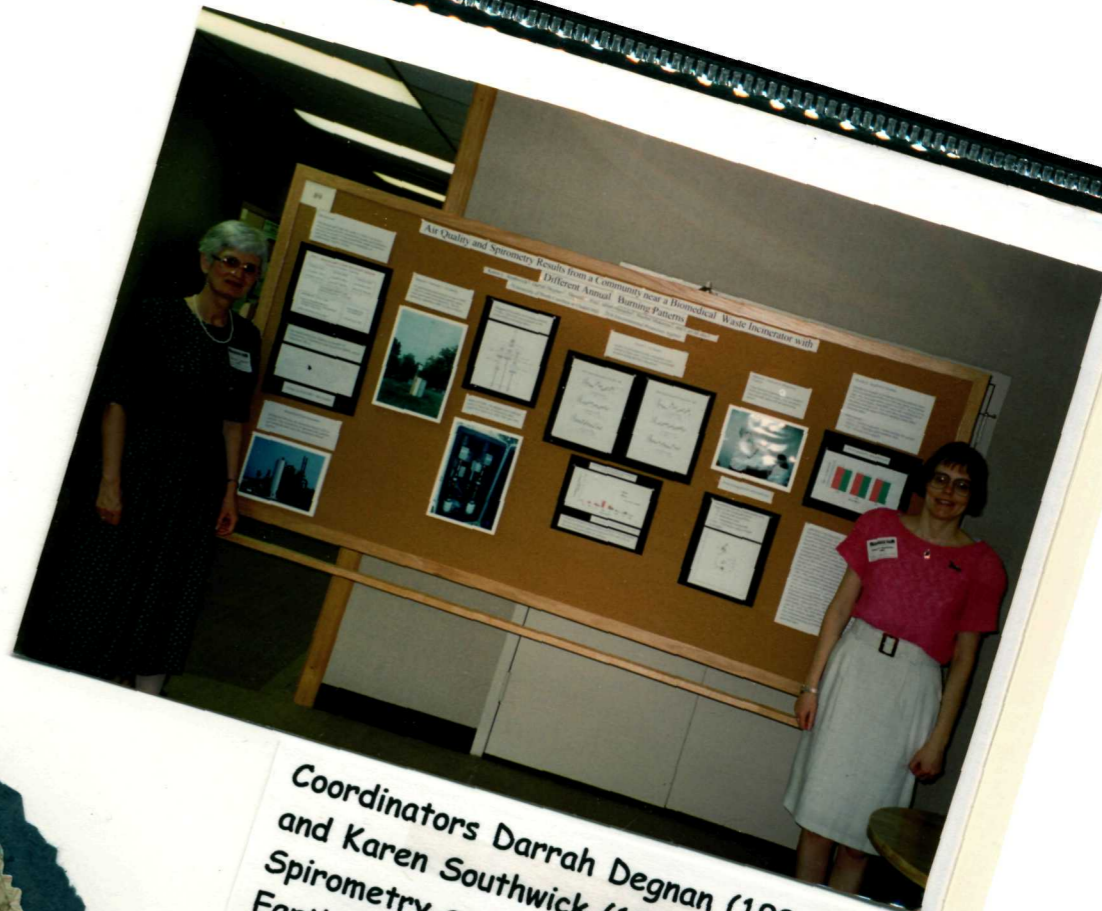
Articles • Shy et al.

Do Waste Incinerators Induce Adverse Respiratory Effects? An Air Quality and Epidemiological Study of Six Communities

Carl M. Shy,¹ Darrah Degnan,² Donald L. Fox,¹ Shaibal Mukerjee,² Milan J. Hazucha,¹ Brian A. Boehlecke,¹ Dietrich Rothenbacher,¹ Patsy M. Briggs,³ Robert B. Devlin,² Dennis D. Wallace,¹ Robert K. Stevens,² and Philip A. Bromberg¹

¹University of North Carolina at Chapel Hill, Chapel Hill, NC 27599 USA; ²U.S. Environmental Protection Agency, Research Triangle Park, NC 27711 USA; ³Mecklenburg County Health Department, Charlotte, NC 28211 USA

The purpose of the study presented here was to simultaneously measure air quality and respiratory function and symptoms in populations living in the neighborhood of waste incinerators and to estimate the contribution of incinerator emissions to the particulate air mass in these neighborhoods. We studied the residents of three communities having, respectively, a biomedical and a municipal incinerator, and a liquid hazardous waste-burning industrial furnace. We compared results with three matched-comparison communities. We did not detect differences in concentrations of particulate matter among any of the three pairs of study communities. Average fine particulate (PM_{2.5}) concentrations measured for 35 days varied across study communities from 16 to 32 µg/m³. Within the same community, daily concentrations of fine particulates varied by as much as eightfold, from 10 to 80 µg/m³, and were nearly identical within each pair of communities. Direct measurements of air quality and estimates based on a chemical mass balance receptor model showed that incinerator emissions did not have a major or even a modest impact on routinely monitored air pollutants. A one-time baseline descriptive survey (n = 6963) did not reveal consistent community differences in the prevalence of chronic or acute respiratory symptoms between incinerator and comparison communities, nor did we see a difference in baseline lung function tests or in the average peak expiratory flow rate measured over a period of 35 days. Based on this analysis of the first year of our study, we conclude that we have no evidence to reject the null hypothesis of no acute or chronic respiratory effects associated with residence in any of the three incinerator communities. *Key words:* air pollution, particulate matter, respiratory hypersensitivity, respiratory function tests, respiratory tract diseases, toxic waste, waste incinerators. *Environ Health Perspect* 103:714-724 (1995)



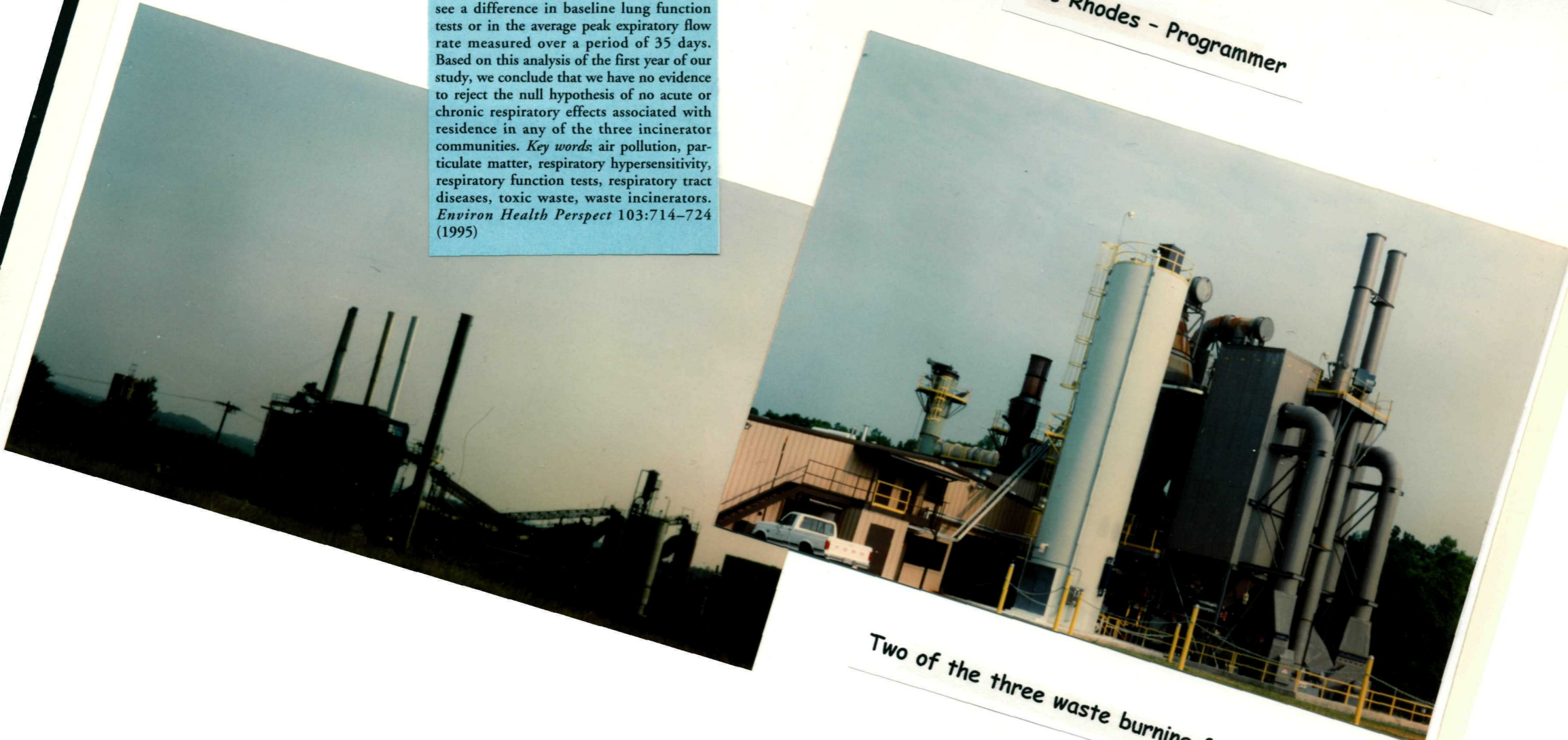
Coordinators Darrah Degnan (1991-94) and Karen Southwick (1994-95) with Spirometry and Air Quality Results at Earth Day Science Fair, EPA, 1995



Vic Rhodes - Programmer



1991-1995



Two of the three waste burning facilities



Mecklenburg County Nurse trains for Nasal Lavage Test with Shirley Hardis of EPA as her "client".

RESPIRATORY FUNCTION TESTS



Mecklenburg County Nurse monitors Spirometry Test on Study Participant



Randy Williams, Field Supervisor, practice-teaches how to use peak flow meter and how to keep a daily diary.

AIR QUALITY TESTS



Darrah Degnan observing Environmental Technician at his 12 hourly change-out of air monitoring system.

1993 – 1996



Epidemiology Professor Marilyn Vine, left, reviews locations of a new environmental epidemiology study with research associates, Dr. Leonard D. Stein of the School of Medicine and Epidemiology Postdoctoral Fellow Dr. Lorraine C. Backer.



Health and Environment Study

P. I. Marilyn F. Vine, Ph.D.
Assistant Professor

The goal of the Health and Environment Study, conducted in southern Moore County, NC, is to determine whether environmental chemical exposures adversely affect the immune systems of county residents. Of particular interest is residential exposure to the Aberdeen Pesticide Dump Site, a National Priority List Superfund Site containing organochlorine pesticides, volatile organic compounds and metals. The study has two parts. A telephone survey of about 1600 residents, 18-64 years of age, living in selected areas within southern Moore County, was conducted between May and August 1994 to determine whether residential location is associated with the risk of such infectious diseases as upper and lower respiratory infections, diarrhea, cold sores, and shingles. In the second part of the study, 302 randomly selected residents who participated in the telephone survey were asked to provide a blood specimen, undergo a skin test and answer a more indepth questionnaire concerning location of residence, tap water source, diet, medical history, smoking habits, and residential and occupational exposures to chemicals. The blood specimens were analyzed for pesticide levels as well as measures of immune competence such as numbers and types of white blood cells and immunoglobulin levels. Participant enrollment for the second part of the study was completed in March 1996.

UNC-CH scientists find Aberdeen pesticide exposure, but few symptoms

By DAVID WILLIAMSON
UNC-CH News Services

CHAPEL HILL — One of the largest, most comprehensive studies ever done of the effects of pesticide exposure on the immune systems of people living near U.S. chemical manufacturing plants and dump sites offers bad news and good news to southern Moore County residents.

The bad news is that some residents whose homes are within a mile of Aberdeen pesticide sites show elevated DDE levels in their blood, according to a University of North Carolina at Chapel Hill scientist. DDE is a byproduct of the body's struggles to break down the pesticide DDT, which has been banned since 1972 for use in the United States.

"The good news is that we are not seeing major clinical effects from the exposures, based on the health indicators we investigated," said Marilyn Vine, assistant professor of epidemiology at the UNC School of Public Health. "Despite the large number of pesticides contained in the dump sites, of a panel of 20 organochlorines, DDE was the only organochlorine detected in the blood of 302 study participants, with one exception.

"Levels of plasma DDE in the study population overall were low compared to nationwide levels between 1976 and 1980, just after the

DDT ban," Vine said.

Younger Aberdeen residents — those between ages 18 and 40 — and people who lived there before 1985 when the plants were operating did show a two- to three-fold increased risk of herpes zoster, or shingles, which indicates modest suppression of the body's immune system, the researchers found.

Most volunteers tested showed immune system indicators to be within normal ranges, however, she said.

Among people ages 40 to 59 who lived within a mile of what is called the Farm Chemicals site before 1985, the median plasma DDE level was six parts per billion. The median level among comparable people who moved there after 1985 was 2.7 parts per billion, which suggested heavier exposures while the plant was in operation, as one would expect.

"Given the general concern about the health effects of DDE exposure, including its role as a possible human carcinogen, and the fact that we saw small effects on some people's immune systems, it would be prudent to limit exposures to the dump sites," Vine said.

"Major soil and ground water remediation efforts, which began in 1996 and are expected to be complete" in 1998, should help limit future exposure to the contents of the dump sites."

The Aberdeen Pesticide Dumps Site is a National Priority List Superfund Site consisting of five former plants and dumps in and around Aberdeen, the scientist said. The study was conducted because of concern about possible threats to human health in the areas.

In 1948, Dr. Robert Mobbs, a local physician, wrote a letter to the Journal of the American Medical Association about a child who lived 100 yards from the Farms Chemicals site and died following convulsions. In 1993, one of Vine's students uncovered evidence suggesting immune system suppression and chromosome damage in area dogs.

Phase I of the work consisted of extensive telephone health interviews with about 1,600 residents of Aberdeen, Pinebluff, Taylortown and Pinehurst. Phase II consisted of more detailed interviews as well as skin and sophisticated blood tests on a random sample of participants in Phase I.

Others involved in the UNC research were Dr. Kristen Weigle, associate professor of epidemiology and pediatrics; Dr. Leonard Stein, associate professor of pediatrics; project director Darrah Degnan; public health doctoral student and veterinarian Jane Schroeder; and masters student Dr. Volker Arndt. Others were Drs. Lorraine Backer of the U.S. Centers for Disease Control and Prevention and Carol Hanchette, N.C. Center for Health Statistics.

Results of Health
and Environment Grant

FEATURES

Geographic Information Systems Their Use in Environmental Epidemiologic Research

Marilyn F. Vine
Darrah Degnan
Carol Hanchette

October 1998

Abstract

Advances in geographic information system (GIS) technology, developed by geographers, provide new opportunities for environmental epidemiologists to study associations between environmental exposures and the spatial distribution of disease. A GIS is a powerful computer mapping and analysis technology capable of integrating large quantities of geographic (spatial) data as well as linking geographic data (e.g., demographic information, environmental exposure levels). In this paper, we provide an overview of some of the capabilities and limitations of a GIS, including automated address matching, distance functions, buffer analysis, spatial query, and polygon overlay; we discuss methods and limitations of address geocoding, often central to the use of a GIS in environmental epidemiologic research; and we suggest ways to facilitate its use in future studies. Collaborative efforts involving epidemiologists, biostatisticians, environmental scientists, GIS specialists, and medical geographers are needed to realize the full potential of GIS technology in environmental health research and may lead to innovative solutions to complex questions.

Environmental Health

Darrah (left) and Marilyn (right)
learn and share about GIS.



North Carolina USA TODAY
6-25-98

Chapel Hill — People living near former pesticide dump sites in Moore County did not show signs of major health problems, a study said. There were elevated levels of DDE in the blood of some residents whose homes were within a mile of the site.

Occupational Injuries in North Carolina (1992-1999)




Dee Gray



American Journal of Epidemiology
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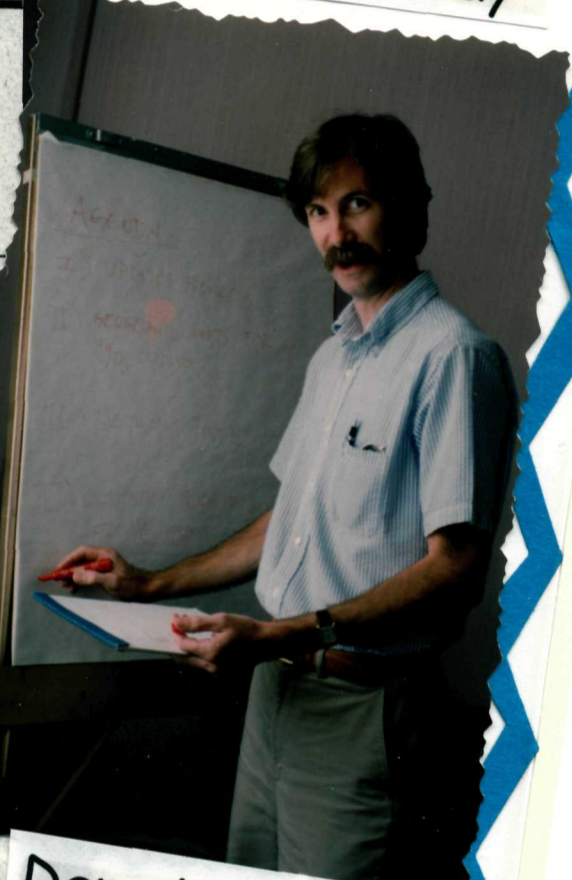
Vol. 145, No. 12
Printed in U.S.A.

Fatal Occupational Injuries in a Southern State

Dana P. Loomis,^{1,2} David B. Richardson,¹ Susanne H. Wolf,^{1,2} Carol W. Runyan,^{2,3} and John D. Butts^{2,4}

Fatal occupational injuries were studied using data from medical examiners' reports in North Carolina for the years 1977-1991. Cases were defined as deaths due to accidents or homicide at the workplace, and populations at risk were estimated from the 1980 and 1990 US Censuses. Mortality rate ratios and proportionate mortality ratios were used as measures of association, and the population attributable risk percentage was used as an indicator of the burden of injury. Standard weights for direct age-adjustment of rates were obtained from the total state workforce. There were 2,524 eligible deaths—83 percent from unintentional traumatic injuries, 14 percent from homicide, and the remainder from other causes. This report focuses on unintentional trauma deaths, which were strongly associated with the wood production, fishing, and transportation industries. Elderly, African-American, and self-employed workers had higher fatality rates than members of other groups. Among male workers, motor vehicle crashes were the principal cause of death on the job, followed by falling objects, machinery, and falls. The industries contributing the largest proportions of these deaths were construction, trucking, agriculture, and logging (population attributable risk percentages were 16.8%, 8.8%, 7.9%, and 6.9%, respectively). The fatality patterns of female workers were different: Numbers of deaths from homicide and unintentional trauma were equal, and 27% of the latter deaths occurred in one catastrophic fire. Decentralized and rural industries were the most hazardous, but many deaths were outside the current jurisdiction of occupational safety and health agencies. These patterns suggest that greater scrutiny of such industries, through both research and intervention, is warranted. *Am J Epidemiol* 1997;145:1089-99.

accidents, occupational; mortality; occupational health; southeastern United States; women, working; work; wounds and injuries



Dana Loomis



Sue Wolf



David Richardson



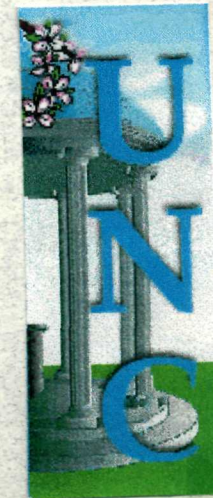
Gregory



Surveillance of Occupational Injuries in North Carolina

March 5, 1998
Thursday
8:45am - 4:30pm

UNC Chapel Hill
General Administration Building



Sponsors

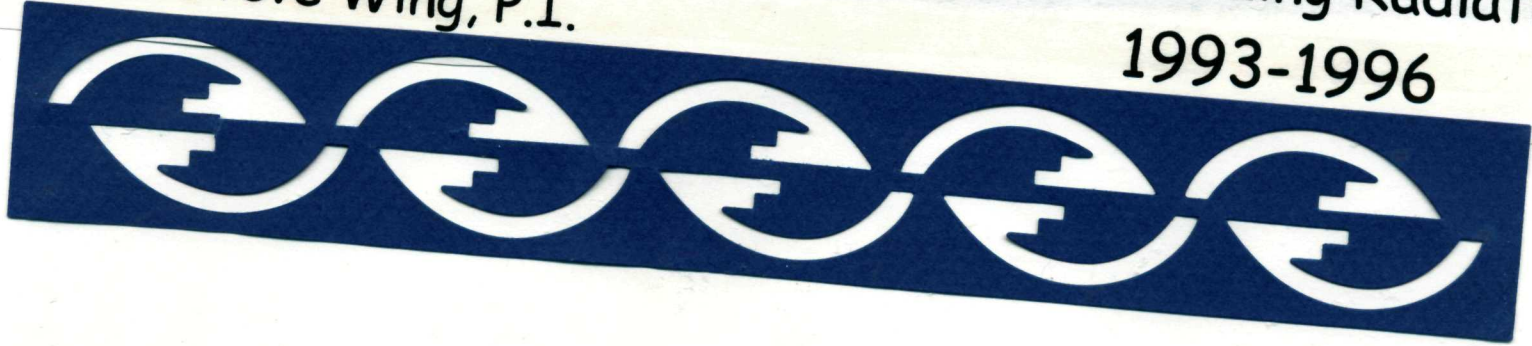
University of North Carolina at Chapel Hill

IPRC Injury Prevention Research Center

sph Department of Epidemiology,
UNC School of Public Health



Multiple Myeloma in Workers Exposed to Ionizing Radiation
Steve Wing, P.I.
1993-1996



"You can't make a silk purse out of a sow's ear" or can you?



Jim Emery



Steve Wing



Lori Todd



Gary Mihlan



Lisa Pompeii



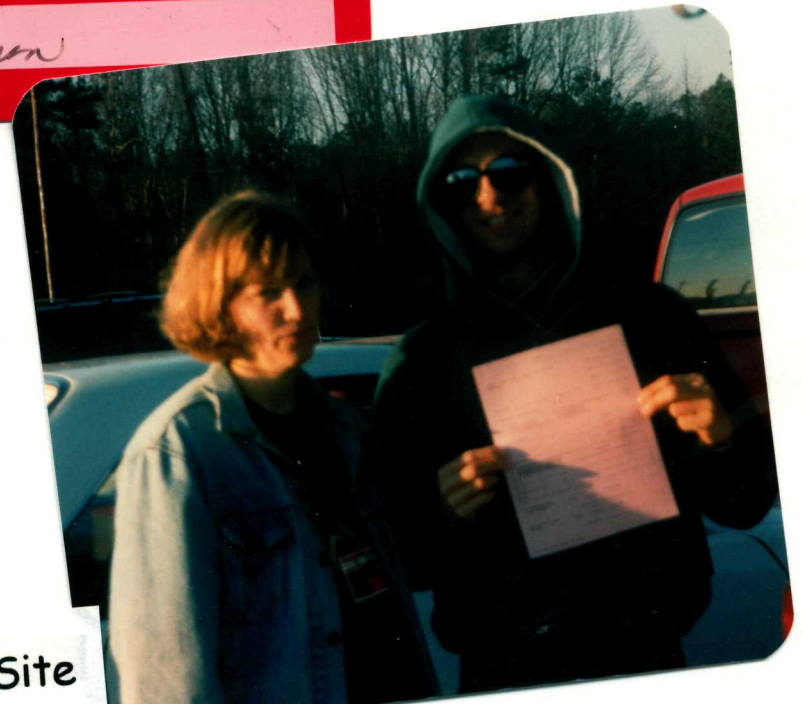
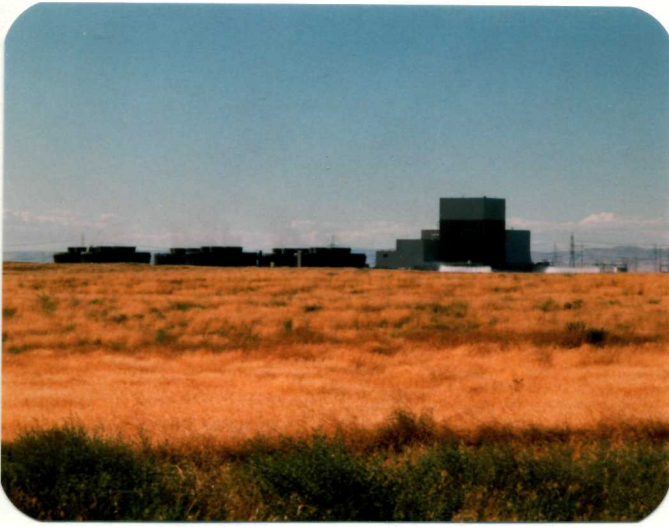
Sue Wolf



Michelle Kotecki



Doug Crawford-Brown, Steve Wing and Gerry Petersen
at Savannah River



At the Savannah River Site



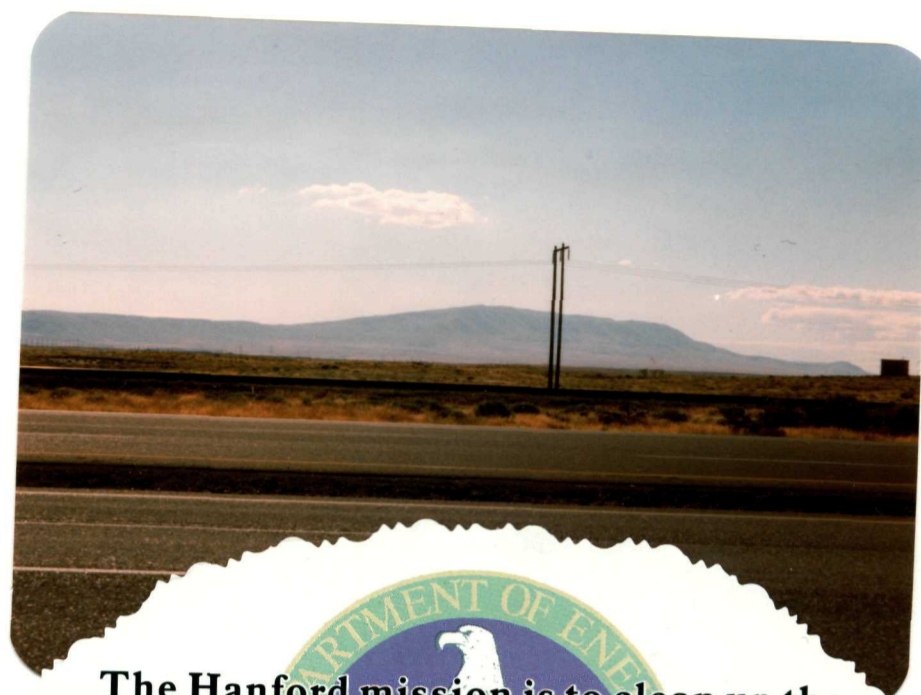
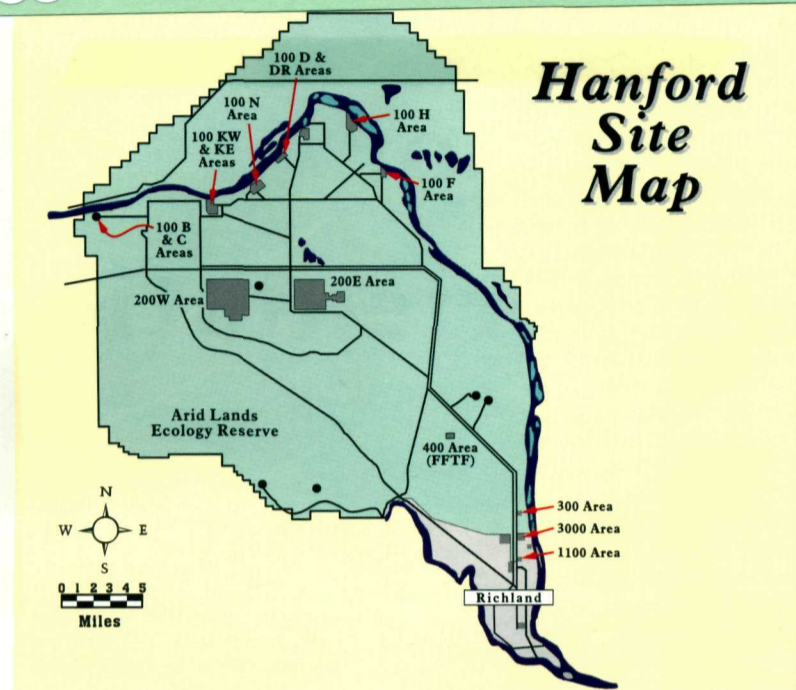
At the Los Alamos National Laboratory



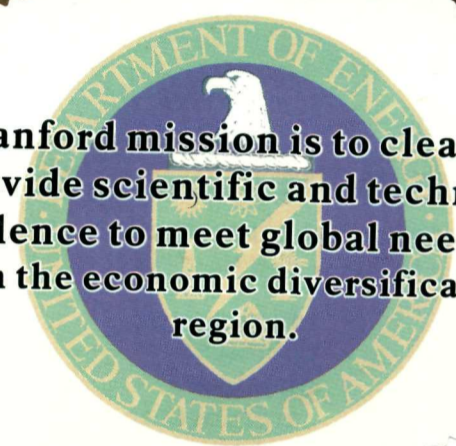


Ionizing Radiation and Cancer Mortality in Hanford Workers - (1996-99)

Steve Wing, P.I.



The Hanford mission is to clean up the site, provide scientific and technological excellence to meet global needs and partner in the economic diversification of the region.

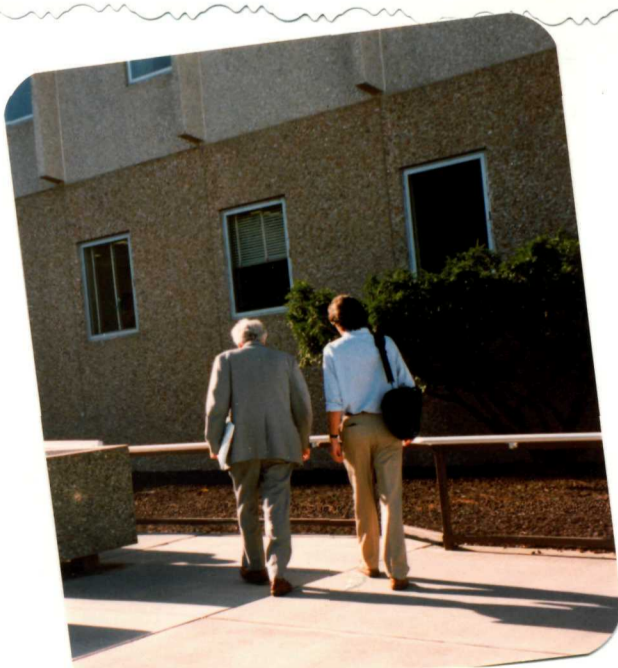


The Hanford Site was acquired by the federal government in 1943 and covers 560 square miles (1440 square kilometers) of arid land in southeastern Washington state. Facilities are grouped together in seven major areas.

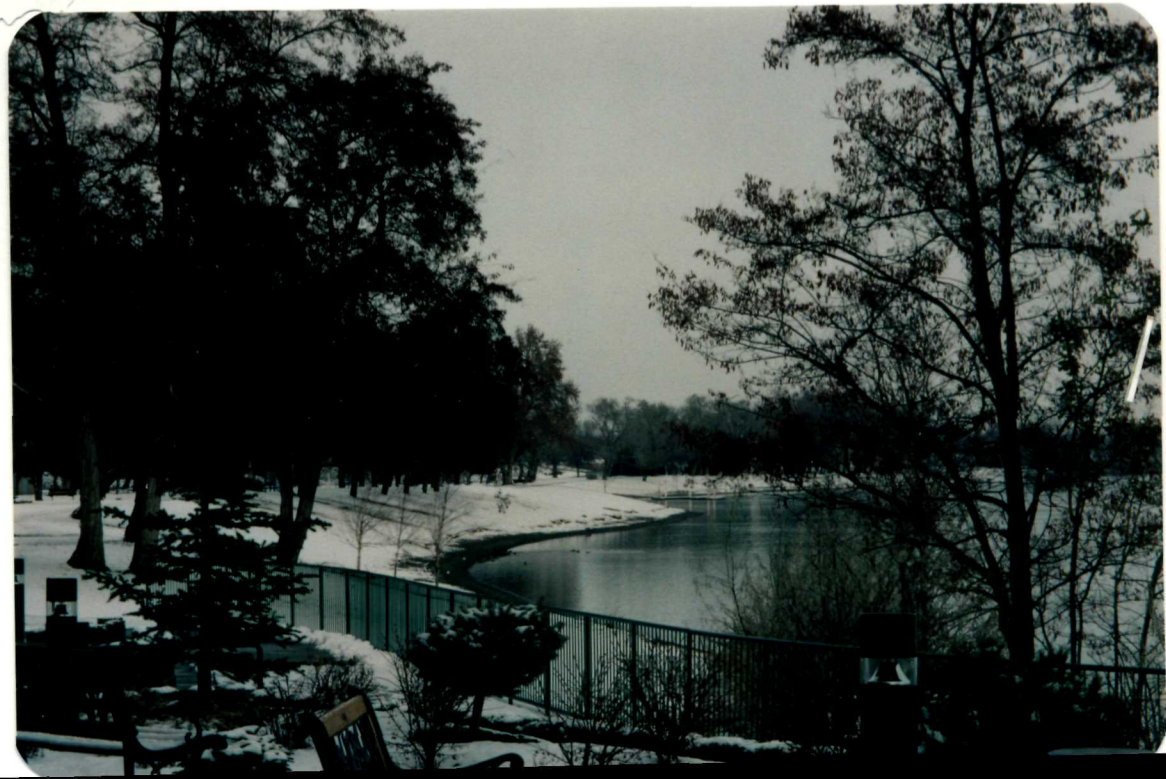
- 100 Area** N Reactor and eight other deactivated plutonium reactors
- 200 Areas (East & West)** Chemical processing and waste management
- 300 Area** Energy research and development
- 400 Area** Fast Flux Test Facility (FFTF) and other related support facilities
- 600 Area** Hanford Site not designated as 100, 200, 300, and 400 areas
- 700 Area** Administrative buildings in downtown Richland (e.g. Federal Building)
- 1100 Area** Site support services including; general stores and transportation maintenance
- 3000 Area** Facilities for ICF Kaiser Hanford and Battelle Memorial Institute (Pacific Northwest Laboratory)



In 1997, Alice Stewart visited with the Hanford research staff to share her many years of experience with Hanford data.



Steve and Gerry Petersen heading into the Federal Building in Richland for meeting with...



A FIRST ANNUAL UNIVERSITY OF WASHINGTON
 CONFERENCE ON THE ECOLOGICAL, COMMUNITY
 AND OCCUPATIONAL HEALTH ISSUES AT HANFORD

DECEMBER 3 & 4, 1997

THE
 HEALTH
 OF THE
 HANFORD
 SITE:

CURRENT CHALLENGES

The DoubleTree Hotel
 802 George Washington Way
 Richland, WA

Scientists Examine Health Issues at Hanford

RICHLAND, Wash. (AP) -- Older workers are more susceptible to health problems from exposure to low-level radiation, according to two studies presented at a conference focused on Hanford health issues.

David Richardson, a researcher at the University of North Carolina-Chapel Hill's Department of Epidemiology, described a series of studies that showed that exposure to radiation after age 50 is more likely to cause cancer. He is currently working on a new study with data collected through 1994 to further examine the effect.

Meanwhile, Susanne Wolf, from the same university, said she found similar results in a study of multiple myeloma among workers at Hanford and three other U.S. Energy Department sites.

Richardson and Wolf spoke Wednesday at the University of Washington-sponsored conference, "The Health of the Hanford Site: Current Challenges."



David Richardson along the banks of the Columbia River at Richland



Sue Wolf with Rudi and Loreen Nussbaum
 Hanford Site Conference, 1997



Jim Nestor, Programmer



CVD FACULTY & STAFF





Students
A representative sample...



Kathy Rose

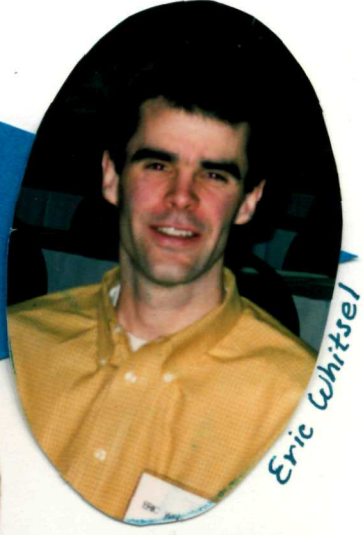


Duanping Luo

Kelly Evenson

Verna Lemay

Gussell Mark



Eric Whitrel



Rongling Li



Dong Watson



Pamela Schreiner



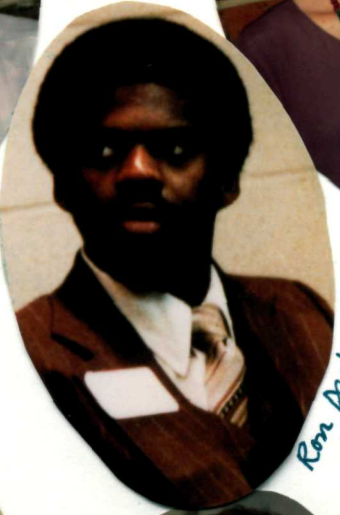
Angela Liese



Kelly Hunt



Miriam Morey



Ron Aubert



J.J. Nelson



Donna Arnett



Gerardo Heiss



Pertti Happonen



Janet Croft



Sandra Thomas



Dawn Howard



Susi Leiff



Michele



Rebecca Din-Zi

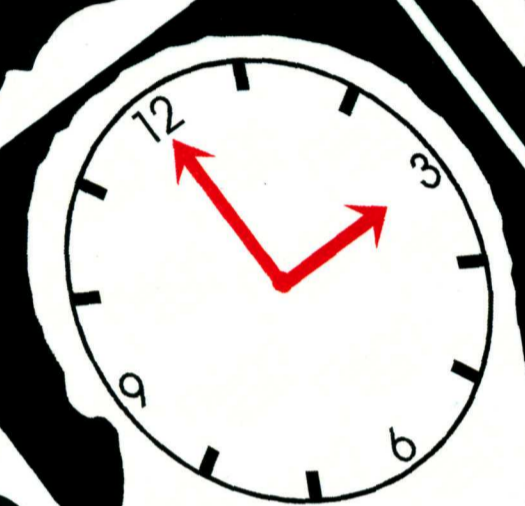


CVD PARTY



DASH II

The Delay in Accessing Stroke Healthcare Study



Chapel Hill, North Carolina
 Denver, Colorado
 Greenville, South Carolina

Abstract Accepted 1998 North American Stroke Meeting

The Effect of Patient's First Response to Stroke Symptoms on Pre-hospital Delay Time

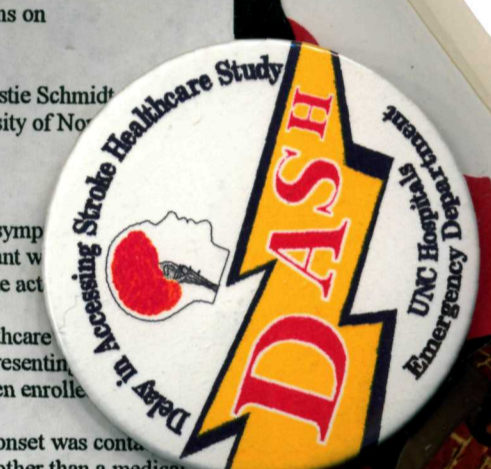
Wayne Rosamond, Dexter Morris, Kathryn Shriberg, Kristie Schmidt, Suzanne F. Cook, David Nyman, Martin Crane. University of North Carolina, Chapel Hill, NC

Background Reducing delay from the onset of stroke symptoms to Emergency Department (ED) arrival has become important with the advent of new time dependent treatments. The immediate actions taken by patients are a critical component of delay.

Methods The Second Delay in Accessing Stroke Healthcare Study is a multi-center prospective registry of patients presenting with symptoms of stroke. To date, 112 patients have been enrolled (72 women, 40 men).

Results The most common first action after symptom onset was contacting their physician (32%), followed by contacting someone other than a medical professional (24%), calling 911 (19%), going to the ED (not by ambulance) (13%), and self treating (9%). A first action was not identified in 4% of cases. The overall median delay was 3.3 hours. Delay was shortest among those calling 911 (1.4 hrs) and longest for those reporting self-treatment (24.4 hrs). Patients contacting their physician first also had an extended delay (5.5 hrs.). Although contacting their physician was the most common first action, it was associated with longer delay compared to calling 911 directly.

Conclusions These data suggest that future programs to reduce pre-hospital delay need to target health professionals as well as the community at large.



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ATHEROSCLEROSIS RISK IN COMMUNITIES STUDY

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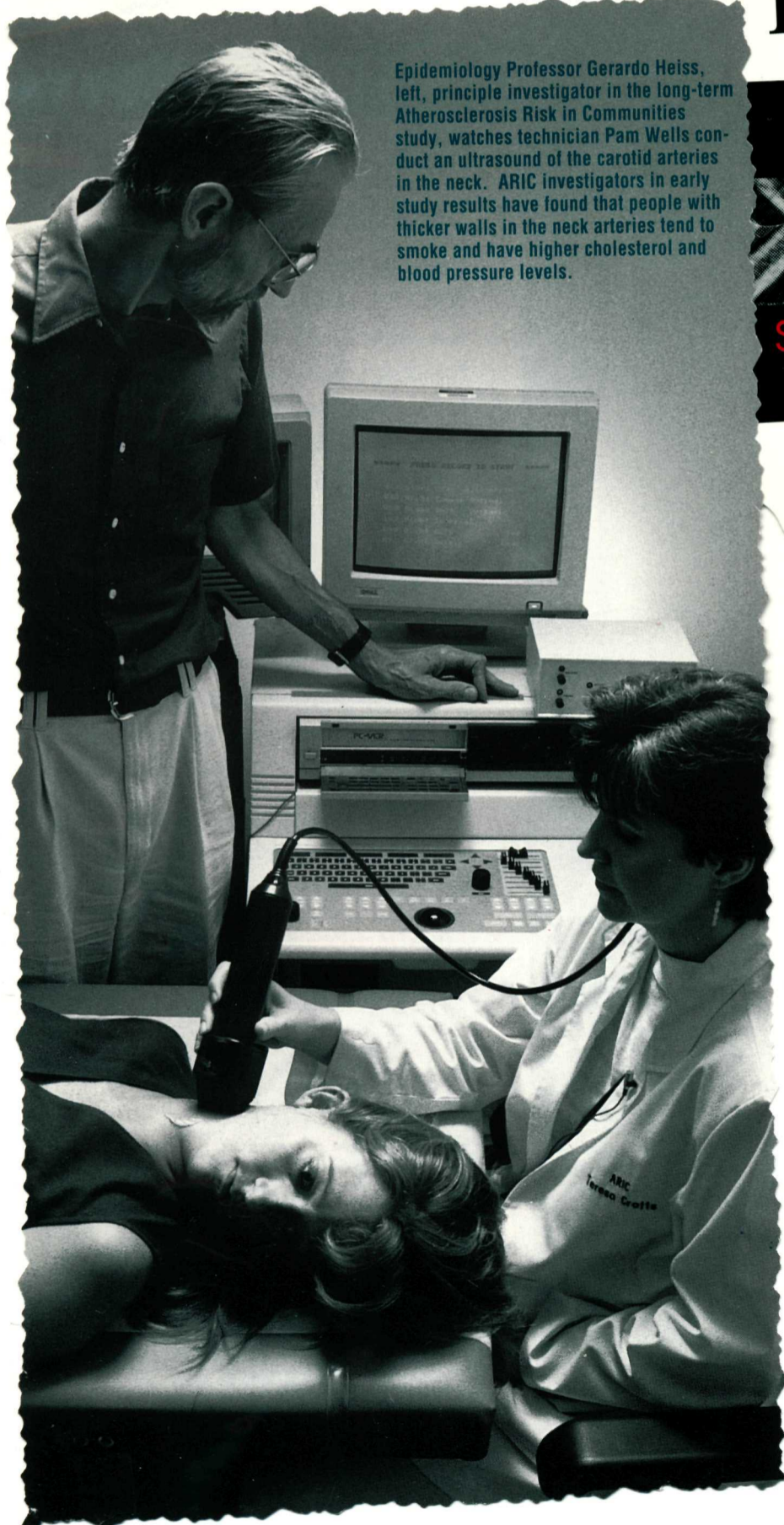
CONFERENCE ON ATHEROSCLEROSIS RISK IN AFRICAN-AMERICANS

Program and Abstracts

September 22-23, 1994 • School of Public Health
The University of North Carolina at Chapel Hill

Sponsored by
National Heart, Lung and Blood Institute

Epidemiology Professor Gerardo Heiss, left, principle investigator in the long-term Atherosclerosis Risk in Communities study, watches technician Pam Wells conduct an ultrasound of the carotid arteries in the neck. ARIC investigators in early study results have found that people with thicker walls in the neck arteries tend to smoke and have higher cholesterol and blood pressure levels.





Family Heart Study

A project of the University of North Carolina and Wake Forest University

in association with

- Boston University
- the University of Minnesota
- the University of Utah
- Washington University, St. Louis

Sponsored by the National Heart, Lung, and Blood Institute, a division of the National Institutes of Health.

The study is designed to help us understand better the inherited and lifestyle factors that relate to the risk of heart disease in families.

HyperGEN

The Hypertension Genetic Epidemiology Network

THE BOWMAN GRAY SCHOOL OF MEDICINE
OF WAKE FOREST UNIVERSITY

What is the ARIC Project?

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ATHEROSCLEROSIS RISK IN COMMUNITIES STUDY