

Epidemiology

ANNUAL REPORT

July 1, 1971 - June 30, 1972

I. MAJOR DEVELOPMENTS AND TRENDS

The major problems faced by the Department of Epidemiology in common with all other departments of the School are the familiar ones of lack of space and lack of a secure funding base. It is perhaps ironical that in an era when there are increasing demands and expectations from departments in the School of Public Health and at a time in which the applications of excellent students far exceeds our ability to accept them, the sources of funds for our support become ever less secure and always more evanescent.

Perhaps the major landmarks of this year have been the decision by the faculty to develop our total educational program (both at the Masters and Doctoral level) on a problem-oriented basis. The faculty has agreed that it is neither desirable nor feasible to try to teach all the known facts in any given discipline. There are too many facts to be learned and they are likely to change in the near future even if well learned. Consequently, we have recognized that we will have to accept the fact that students of the future will graduate with gaps in their knowledge. In lieu of any attempt to teach all the known facts the faculty has abandoned any notion of a fixed curriculum and required courses, and now expects each student to be able to specify within a reasonable time an issue or series of issues he feels it is important to resolve. Given these issues it is then the responsibility of the faculty advisor together with the student to make explicit the areas of competency needed to resolve these issues. Following this it is the faculty responsibility to indicate to the students the various methods by which these competencies can be acquired. Some of these methods are attendance at formal courses, others would involve directed reading, informal seminars, participation in ongoing research or exploration of the existing data sets available in the Department. Whatever technique the student chooses to gain these competencies, the requirement is that at the end of his stay he produce evidence that he has been able to bring together the various skills and theories from the different disciplines to show how his issues could be resolved or better still produce evidence that he has been able to resolve such issues. Such teaching is enormously expensive of faculty time and requires a faculty intimately and

deeply involved on a personal basis with many of the issues that are brought to their attention by the students. Fortunately all the faculty of this department are involved in a number of ongoing research and consultative activities covering a wide span of application. These activities range from the study of the consequences of our changing environment to the identification of psycho-social factors in disease etiology and include problems concerned with the recovery or lack of recovery from disease as well as research into various aspects of the effectiveness and efficiency of the health services and the problems of population control and family planning. Within this spectrum it is rare to find a student specifying a series of issues which are not of vital concern to one or more faculty members. As far as the faculty time is concerned, we are convinced that this is repaid many fold by the success of this approach to an educational curriculum. Such success while not as yet quantified is evident from the comments we have received from employers of recent graduates of this program as well as the generally favorable comments from students in the program.

II. ORGANIZATION

Full-time Faculty

John C. Cassel, M.B.B.Ch., M.P.H., Professor and Chairman  
Caroline Becker, M.D., Assistant Professor  
✓ Frank Cordle, M.P.H., Ph.D., Assistant Professor  
Joan C. Cornoni, M.P.H., Ph.D., Assistant Professor  
John T. Fulton, D.D.S., Professor Emeritus  
✓ Felix J. Gruber, M.D., Dr. P.H., Instructor  
Barbara S. Hulka, M.S., M.D., M.P.H., Associate Professor  
Michel A. Ibrahim, M.D., M.P.H., Ph.D., Associate Professor  
C. David Jenkins, M.A., Ph.D., Professor  
Berton H. Kaplan, M.S., Ph.D., Associate Professor  
David Kleinbaum, Ph.D., Assistant Professor (B165)  
Abdel R. Omran, M.D., D.P.H., M.P.H., Dr. P.H., Professor  
- Ralph C. Patrick, Jr., A.M., Ph.D., Associate Professor  
Cecil Slome, M.B., Ch.B., D.P.H., Associate Professor  
✓ Philip S. Spiers, Ph.D., Associate Professor  
✓ Herman A. Tyroler, M.D., Professor  
✓ A. Wouter Voors, M.D., M.P.H., Dr. P.H., Associate Professor  
Stephen J. Zyzanski, M.S., Ph.D., Associate Professor

Part-time Faculty

Francis Gust, Assistant Professor  
Edward Wagner, M.D., Instructor

Visiting Faculty

Sigismond Deutscher, M.D., M.P.H., Adjunct Associate Professor  
Curtis G. Hames, M.D., Adjunct Associate Professor  
Douglas I. Hammer, M.D., M.P.H., Adjunct Assistant Professor  
Carl G. Hayes, M.P.H., Ph.D., Adjunct Assistant Professor  
Siegfried Heyden, M.D., Priv. Docent, Adjunct Associate Professor  
Carl M. Shy, M.D., Dr. P.H., Adjunct Assistant Professor  
Richard A. Tjalma, D.V.M., M.S., Adjunct Associate Professor

Joint Appointments

Claude W. Drake, D.D.S., M.P.H., M.S., Assistant Professor  
Lawrence L. Kupper, Ph.D., Assistant Professor  
Samuel M. Putnam, M.D., Assistant Professor  
Carolyn A. Williams, Ph.D., Assistant Professor

Other Academic Personnel

Phillip N. Gallagher, B.A., M.S., Research Assistant  
Anita Fulchiero, Research Assistant  
Carol J. Hogue, R.N., Research Assistant  
Frank Jones, M.D., Research Associate

Jo E. Maready, B.A., Research Associate  
Geraldine Talarczyk, Research Associate  
Roger L. Ward, Ph.d., Graduate Assistant  
Susanne Wolf, M.P.H., Research Associate  
Ervin H. Young, M.S., Graduate Assistant

V. INSTRUCTIONAL ACTIVITIES

During the current year, there have been 33 registered students in the field of Epidemiology. One student will complete the requirements for the MPH degree by May, 1972. Eight students will complete the requirements for the MPH degree by August, 1972. One student has completed the requirements for the Dr. P.H. degree and received the degree in December, 1971, while 3 more students will complete the requirements and receive the Dr. P.H. degree in May, 1972. Three students will complete the requirements for the Ph.D. degree, receiving the degree in May, 1972. Nine students have finished all coursework for the Ph.D., and are working on their dissertations.

Number of Courses Given.....	25
Number of Majors in Department.....	33
MPH.....	13
MSPH.....	1
Dr. P.H.....	3
Ph.D.....	15
Non-degree.....	1
Total Enrollment in Department Courses.....	519

A. Enrollment of major students:

Fall, 1971 (1 MSPH, 10 MPH, 4 Dr.P.H., 15 Ph.D., 1 non-degree).....	31
Spring, 1972 (1 MSPH, 13 MPH, 3 Dr. P.H. 15 Ph.D., 1 non-degree).....	33
Summer, 1972 (estimated) ( MSPH, 9 MPH, 2 Dr. P.H., 13 Ph.D., 1 non-degree).....	25

Men: (1 MSPH, 10 MPH, 2 Dr. P.H., 7 Ph.D.,  
1 non-degree).....21

Women: ( MSPH, 3 MPH, 1 Dr. P.H.,  
8 Ph.D.).....12

Undergraduate:.....	0
Graduate: MPH:13, MSPH:1.....	14
Doctoral: Dr.P.H.:3, Ph.D.:15.....	18
Non-degree:.....	1

Place of Residence:

North Carolina.....	8
Southern States.....	4
Maryland.....	3
Mississippi.....	1
Other States.....	15
Connecticut.....	1
Illinois.....	2



C. Students receiving less than one semester's instruction from faculty:

Name of Course	Hours of Instruction	Number of Students
Environmental Epidemiology Luncheon Seminar	4	7
Special Seminar in Selected Topics in Statistics	6.25	25
Public Health for Physiotherapists	1	16

D. Students outside the Department of Epidemiology taking courses especially set up for them by our faculty:

Name of Course	Hours of Instruction	Number of Students
Epidemiology for 2nd Year Medical Students	18	180
Continuing Education Epidemiology	48	100
BIOS 105	42	31
BIOS 145	42	15
BIOS 135	40	20
Special Course for students in 1972 Urban Coalition Program	16	

E. Students from other universities receiving instruction set up for them at those universities:

Name of Institution	Course or Class	Hours of Instruction	Number of Students
University of Minnesota Summer Session 1971	EPID	3	30
University of New York at Buffalo	EPID	4	8

F. Students from other departments and schools in the University enrolled in regular Public Health courses in the School of Public Health:

Course Number	Breakdown of Students	Hours	Number of Students	Total
EPID 140	1-Graduate School	30	1	30
EPID 160	9-Graduate School			
	1-Education	20	10	200
EPID 161	2-Graduate School	20	2	40
EPID 162	3-N.C. State			
	1-Education	20	4	80
EPID 168	1-Education			
	1-Graduate School	30	2	60
EPID 211	2-Education	20	2	40
EPID 260	1-Graduate School	30	1	30
EPID 262	1-Education			
	1-Graduate School	20	2	40
EPID 266	1-Graduate School	30	1	30
EPID 368	1-Graduate School	20	1	20
EPID 394	1-Graduate School	90	1	90
TOTAL:		420	26	660

G. Environmental Epidemiology Research Training Program

This program will train doctorates in epidemiology competent to research environmental health problems. The training experience will be individualized for each candidate and will be research problem oriented. It will draw on the professionals, facilities, and research training resources of the University of North Carolina, the National Air Pollution Control Administration, the National Institute of Environmental Health Services, the Division of Occupational Health of the North Carolina State Board of Health and other research workers and field opportunities in Environmental Epidemiology.

The epidemiological inquiries would be of two major types: those concerned with studying the health consequences of exposure to various combinations of environmental agents, and those concerned with identifying the antecedent determinants of various manifestations of ill health. This program will be geared toward new research strategies which take into account three major concepts: (1) the need to conceptualize, identify and measure the health effect of multiple factors acting in synergistic or antagonistic fashions, rather than continuing to examine the effects of single agents taken one at a time (2) the need to give greater consideration to the determinants of individual variations of response both within and between populations,



particularly to the role of social factors in increasing or decreasing susceptibility to environmental insults (3) the need to develop indicators more sensitive and more subtle than current mortality and morbidity rates.

#### H. Health Services Research Training Program

This training program is being developed primarily for two types of students, professional health workers and social scientists. Students will have the option of enrolling in a four year Ph.D. or Dr. P.H., a two year master's program, or a residency program directed jointly with the Department of Preventive Medicine at UNC Medical School.

The goals of this program are, broadly, to integrate the social and health sciences in an epidemiological framework, particularly emphasizing the application of epidemiological skills in four areas which have been developed relevant to this program: (1) Community Diagnosis, which includes determining (a) the extent and trends of health and social problems in a community, and (b) the existing attempts to remedy these problems (2) Determinants of Utilization and Compliance (3) The Effectiveness and Efficiency of the Delivery of Health Care, including the impact of the health services on the total community as well as the utilizers and (4) Methodological skills appropriate for these analyses.

The program's opportunities for students are considerable and are based on an educational philosophy of active collaboration between students and faculty. As such, arrangements with the UNC Health Services Research Center, Duke University and the laboratories and Computation Center at the Research Triangle Institute provide collaborative research opportunities for students. In addition, there are ten courses and research seminars offered by the Department of Epidemiology which provide interdisciplinary learning experiences. Particularly valuable to health Services Research Trainees are the additional educational experiences of participation in teaching and assisting in research consultation. The latter experience gives the senior student a chance for direct application by working within the state. These programs are brought to Chapel Hill by key members of the agencies and with them the students attempt to abstract the information necessary for subsequent evaluation. This process includes specifying the objectives of the program in operational terms, making explicit the conceptual framework upon which the program is based, identifying the indices to be used to assess changes, determination of the types of data to be gathered, the methods by which these data will be gathered, and the methods of analysis to be used. Following this the staff member returns to the agency and over a period of one year puts the evaluation plan into effect. During this period the student is available to go to the field for consultation and provide guidance should trouble arise.

I. Training Program in Alcohol Studies:

This is a proposal for support of a three-year program for research training on the use of alcohol. This program would be unique from several perspectives. First, the approach will be comprehensive and multidisciplinary with emphasis on the fact that problems related to alcohol use do not exist in mutually exclusive categories, but instead are complex interactions of factors in many different areas. This multidisciplinary approach will include faculty from the Departments of Psychology, Psychiatry, Medicine Pharmacology, Anthropology, Sociology, Health Education, Health Administration, Education, Law, Nursing and additional interested people participating in work in alcohol related areas.

Secondly, the program itself is unique in that we know of no other total program which offers training on alcohol use and problems, an area of immense social importance and concern. The program will offer an M.P.H. or M.S.P.H. degree. Two other areas of emphasis within this program will be studying individual variability within the subgroups associated with certain drinking behavior and the development of new methodological approaches for obtaining valid answers to questions concerning the use of alcohol. The latter would include development of more precise sociological instruments predictive of alcoholic behavior and consumption, development of quantitative estimates of blood alcohol in relation to the amount consumed, and development of indices for measuring the amount of frequency of alcohol consumption.

Finally, although we expect to examine alcohol use in a variety of social and cultural settings, emphasis will be on American practices and, within that topic, a special emphasis on the Southern United States.

VI. DEPARTMENT ACTIVITIES IN THE GREATER UNIVERSITY

Dr. Cassel

Teaching responsibilities at the Medical School  
Member, Administrative Board of the School of Nursing  
Member, Steering Committee on Consortium for Evaluation  
of Community Mental Health Center Programs  
Member, Steering for Mental Health Service Evaluation  
Project  
Member, University Committee for Community Health Services  
Member, Faculty Council  
Member, Task Force on Goals, Function, Instruction and  
Organization of the Department of Family Medicine

Dr. Cornoni

Member, Scientific Advisory Committee for the North Carolina  
Center for Alcohol Studies  
Epidemiologic Consultant, N.C. Center for Alcohol Studies

Dr. Hulka

Member, Faculty Council  
Member, Committee to Formulate Statement on Faculty  
Member Rights and Responsibilities

Dr. Ibrahim

Member, Task Force on Evaluation Methodology, HSMHA  
Feasibility Study  
Member, Evaluation Panel for the Orange-Chatham Com-  
prehensive Health Service  
Member, School of Public Health Clearing House Committee

Dr. Jenkins

Lectures in Medical School "Group Biology" course  
Member, School of Public Health Planning Council  
Member, School of Public Health Research Review Committee

Dr. Kaplan

Lectures in Medical School "Group Biology" course  
Seminars in Community Psychiatry Division, Department  
of Psychiatry

Dr. Kleinbaum

Member, Chancellor's Committee on the Status of the  
Minorities and the Disadvantaged  
Member, School of Public Health Task Force on Minority  
Affairs

Dr. Kupper

Member, Graduate Assistants Grievance Committee, School  
of Public Health

Dr. Omran

Chairman, Egypt Study Group  
Member, Advisory Committee for the International Programs  
Office of the Carolina Population Center  
Member, School of Public Health Population Studies Committee  
Member, Iran and Thailand Study Groups of the Carolina  
Population Center  
Member, Nutrition Institute

Dr. Patrick

Chairman, Human Research Review Committee  
Member, Minorities Task Force

Dr. Spiers

Member, Health Affairs Library Committee  
Member, Dean's Committee on the Use of General  
Research Funds

Dr. Tyroler

Program Director, Environmental Epidemiology Research  
Training Program, SPH, National Institute of  
Environmental Health Sciences, UNC  
Program Director, Cardiovascular Undergraduate Training  
Grant  
Co-Director, Preventive Medicine - Epidemiology Residency  
Program, School of Medicine and School of Public Health  
Member, Faculty Council  
Member, Administrative Board, SPH  
Coordinating Epidemiologist and member of the Advisory  
Committee - The Rubber Project.

Dr. Zyzanski

Teaching in research seminars given in the School of  
Business  
Teaching in research seminars given in the Department of  
Psychology

VII. DEPARTMENTAL SERVICES

Dr. Cassel

Associate Editor, American Journal of Epidemiology  
Consultant, Division of Environmental Health Sciences,  
National Environmental Health Sciences Center, 1966-  
present  
Consultant, National Institute for Mental Health, 1965-  
present.  
Consultant, U.S. Public Health Service (Cooperative  
Drug Study in Hypertensive Disease), 1967-present.  
Consultant, World Health Organization  
Member, Study Section of Therapeutic Evaluation  
Committee of National Heart and Lung Institute.  
Member, Ad Hoc Review Committee, National Center for Health  
Services Research and Demonstration, National Center  
for Health Statistics  
Chairman, Ad Hoc Review Committee, Heart Disease Multi-  
Factor Intervention Study

Dr. Cordle

Departmental Seminar Series

Dr. Hulka

Consultant, Health Manpower Division of the National Center  
for Health Services Research and Development  
Member, Executive Committee, Society for Epidemiologic Research

Dr. Ibrahim

Chairman, Health Manpower Committee, American Public Health  
Association Epidemiology Section  
Consultant, The National Center for Disease Control, USPHS.  
Atlanta, Ga.  
Consultant, The National Cancer Institute, National Institute  
of Health, Bethesda, Maryland  
Member, Editorial Board, The American Journal of Public Health  
Director, Niagra County Air Pollution Board of Directors, Niagra,  
N.Y.

Dr. Jenkins

Chairman, Admissions Committee  
Member, Epidemiology and Disease Control Study Section, National  
Institute of Health  
Member, Review Panel for Specialized Centers of Research in  
Atherosclerosis, National Heart and Lung Institute  
Member, Review Panel for Contracts for Multiple Risk-Factor  
Intervention, Trials, National Heart and Lung Institute  
Delegate, American Heart Association Council on Cardiovascular  
Epidemiology  
Member, Medical and Community Program Committee, N.C. Heart  
Association  
Member, **Program** Committee of American Psychosomatic Society, 1972  
and 1973.  
Consultant, World Health Organization, Division of Research in  
Epidemiology and Communication Sciences on Risk-Factor Control  
Studies in Lithuania and the Netherlands

Dr. Kaplan

Member, Research Advisory Committee of the American Nurses  
Foundation, American Nursing Association  
Consultant, Community Epidemiology Survey Study Group, Community  
Mental Health Epidemiology Study Group

Dr. Kleinbaum

Recruiting trips to black colleges

Dr. Kupper

Co-Chairman, American Statistical Association Committee on  
Statistics in Sports and Competition

Dr. Patrick

Member, Admissions Committee

Dr. Spiers

Chairman, Data Processing Committee

Dr. Tyroler

Member, Health Services Research Study Section, NCHSRD, HEW, 1970-  
Chairman, Epidemiologic Panel of Consultants to the National  
Center, Health Services Research, 1968-  
Co-chairman, Task Force on Epidemiology and Biostatistics Research  
Training, 1971-  
Epidemiologic Consultant, North Carolina Regional Medical Program,  
1967-  
Member, Task Force on Stroke, North Carolina Regional Medical  
Program, 1972-  
Task Force on Community Blood Pressure Intervention Studies,  
National Regional Medical Program, 1969-  
Consultant, Health Information System, D.I.H., Seels, Arizona, 1969-  
Consultant OPSAM, Division Indian Health, USPHS, 1966-  
Consultant to the Director, Division of Occupational Health, NASA, 1965-  
Consultant to Occupational Health Director of the New York Times, 1955-  
Member, Study Section on Records Linkage, National Center for Health  
Statistics, USPHS, 1967-  
Past Chairman, Executive Committee, Society for Epidemiologic Research,  
1971-  
Member, International Epidemiological Association, 1969-  
Member, Board of Directors, Orange-Chatham Counties Comprehensive  
Health Services, Inc,  
Chairman, Scope and Sciences Committee, Orange-Chatham Counties  
Comprehansive Health Services Committee  
Consultant, Division of Research in Epidemiology and Communications  
Science, World Health Organization

Dr. Voors

Senior Analyst, Division of Research and Economics, Research  
Triangle Institute  
Member, Calcium Study Panel, North Carolina Nutrition Survey  
Consultant, Stanly County Health Department at Albemarle, N.C.

VIII. RESEARCH PROJECTS

Dr. Casse

AAFP Study of Primary Health Care  
Ponape  
Evans County Study  
Rubber Contract  
Nurse Practitioner Evaluation  
International Fertility Research Project

Dr. Cordle

An Assessment of the Delivery of Primary Medical Care  
The Development of Automated Clinical Records - the Primary Medical  
Care Area  
The Development of Prognostic Models using the Mayo Clinic Records  
The Development of Evaluation Methods for Family Nurse Practitioners  
Programs

Dr. Cornoni

Evans County Heart Study  
Emergency Room and Clinic Study of N.C. Memorial Hospital  
Student Matters and Doctoral Dissertations

Dr. Gruber

International Fertility Project

Dr. Hulka

Organization, Utilization and Assessment of Primary Health Care  
Herpesvirus and Cervical Cancer Center Specific Studies in the  
International Fertility Research Programs

Dr. Ibrahim

Group Therapy in Prognosis of Myocardial Infarction  
Evaluation of the Family Nurse Practitioner Programs  
Epidemiologic Foundations of Program Evaluation for Nurses  
Analysis of Data on Patterns of Medical Care and Epidemiology  
for Stroke Patients

Dr. Jenkins

Coronary Disease Risk  
Behavioral Factors in Coronary Heart Disease

Dr. Kaplan

Evans County Study  
Review of Social Psychiatry Project  
Study of Social and Psychological Correlates to Strokes (in  
collaboration with Heyman and Jenkins et al.)

Dr. Kleinbaum

International Fertility Research Project  
Ponape Study  
Evans County Study  
Design Implementation and Analysis of Questionnaire on Attitudes  
and Problems of UNC's Minority and Disadvantaged Students

Dr. Omran

W.H.O. International Collaborative Studies in ten countries  
Analysis of Wake County Survey  
International Fertility Research Project  
Community Medicine  
Population Problems and Prospects in the Countries of the  
Middle East

Dr. Patrick

Culture Change and Blood Pressure and Heart Disease (Ponape)  
Health Consequences of Rapid Cultural Change (Ponape)

Dr. Spiers

The Effect of Father's Age on Infant Mortality Rates  
Mother's Age and the Risk of Childhood Leukemia  
Secular Changes in Death Rates from Childhood Malignancies  
The Sudden Infant Death Syndrome

Dr. Tyroler

Cardiovascular Epidemiology  
Epidemiology of Health Services Research  
Health Consequences of Industrialization

Dr. Voors

Trace Metals in Cholesterol-Induced Chick Atheroma  
Trace Element Concentrations in Autopsy Tissue of Exposed  
Population Groups in North Carolina  
Rubber Project, Adjunct Co-ordinator  
Trace Metals and Cardiovascular Death



Dr. Zyzanski

Behavioral Factors in Heart Disease  
Nursing Evaluation Study  
Satisfaction with Medical Services

IX. PUBLICATIONS

Dr. Cassel

"Psychiatric Epidemiology." Chapter in American Handbook of Psychiatry, edited by Gerald Caplan. In Press.  
"Health Consequences of Population Density and Crowding." In Press.

Dr. Cornoni

- (With L.E. Waller, J.C. Cassel, H.A. Tyroler, and C.G. Hames.)  
"The Incidence Study - Study Design and Methods." In Arch. Intern. Med. 128 (Dec. 1971), 896-900.
- (With J.C. Cassel, S. Heyden, A.G. Bartel, B.H. Kaplan, and H.A. Tyroler.) "Incidence of Coronary Heart Disease by Ethnic Group, Social Class and Sex." In Arch. Intern. Med. 128 (Dec. 1971), 901-906.
- (With H.A. Tyroler, S. Heyden, A.G. Bartel, J.C. Cassel, C.G. Hames, and D. Kleinbaum.) "Blood Pressure and Cholesterol as Coronary Heart Disease Risk Factors." In Arch. Intern. Med. 128 (Dec. 1971), 907-914.
- (With S. Heyden, J.C. Cassel, A.G. Bartel, H.A. Tyroler, and C.G. Hames.) "Body Weight and Cigarette Smoking as Risk Factors." In Arch. Intern. Med. 128 (Dec. 1971), 915-919.
- (With J.C. Cassel, S. Heyden, A.G. Bartel, H.A. Tyroler, and C.G. Hames.) "Occupation and Physical Activity and Coronary Heart Disease." In Arch. Intern. Med. 128 (Dec. 1971), 920-928.
- (With B.H. Kaplan, J.C. Cassel, H.A. Tyroler, D.G. Kleinbaum, and C.G. Hames.) "Occupational Mobility and Coronary Heart Disease." In Arch. Intern. Med. 128 (Dec. 1971), 938-942.
- (With S. Heyden, C.G. Hames, A.G. Bartel, J.C. Cassel, and H.A. Tyroler.) "Weight and Weight History in Relation to Cerebrovascular and Ischemic Heart Disease." In Arch. Intern. Med. 128 (Dec. 1971), 956-960.
- (With S. Heyden, A.G. Bartel, E. Tabesh, J.C. Cassel, H.A. Tyroler, and C.G. Hames.) "Angina Pectoris and the Rose Questionnaire." In Arch Intern. Med. 128 (Dec. 1971), 961-964.

Dr. Hulka

- (With G.K. Redmond.) "Factors Related to Progression of Cervical Atypias." Amer. J. Epid. 93 (Jan. 1971), 23-32.  
Reviewed in Obstetrical and Gynecological Survey 26 (July 1971), 539-541.

- (With L.L. Kupper, J.C. Cassel, and S.J. Thompson.) "A Method for Measuring Physician's Awareness of Patients' Concerns." HSMHA Health Reports 86 (August 1971), 741-751.
- (With S.J. Zyzanski, J.C. Cassel, and S.J. Thompson.) "Satisfaction with Medical Care in a Low Income Population." J. Chronic Dis. 24:661-673, 1971.
- (With L.L. Kupper, and J.C. Cassel.) "Determinants of Physician Utilization: Approach to a Service Oriented Classification of Symptoms." Medical Care. In Press.
- "Review of Family Planning and Abortion in the Socialist Countries of Central and Eastern Europe - A Compendium of Observations and Readings by Henry P. David. Amer. J. P.H. In Press.
- (With S.J. Zyzanski) "Predictors of Atypical Smear Status among Women Attending a Cervical Cancer Screening Program." Amer. J. Epid. 94 (6):564-571, 1971.
- (With L.L. Kupper) "An Epidemiologic Test of the 'Spectrum of Disease' Concept in Cervical Neoplasia." J. National Cancer Inst. 47 (Dec. 1971), 1215-1222.

Dr. Ibrahim

- (With R.M. Köhn, and J.F. Feldman) "Ventricular Premature Beats and Coronary Heart Disease Risk Factor." Amer. J. Epid. 94:556, 1971.
- Ibrahim, M.A. et al. "Screening of the Coronary-Prone by Study of their Offspring: A Report of 500 Father-Child Pairs." HSMHA 86 (June 1971):577-582.
- (With R.B. Wallace, P. Libert, and P. Isacson) "Joint Symptoms Following a Countywide Rubella Immunization Campaign: A Report of a Survey." Amer. J. P.H. In Press.
- Ibrahim, M.A. "The Psychotherapeutic Management of Acute Myocardial Infarction: A Controlled Trial of the Effect of Group Therapy upon Prognosis." In Press.

Dr. Jenkins

- "Psychological and Social Precursors of Coronary Disease: A Review of Recent Findings." New Eng. J. Med. 284:244-255 and 307-317, 1971.
- (With S.J. Zyzanski, and R.H. Rosenman.) "Progress toward Validation of a Computer-Scored Test for the Type-A Coronary Prone Behavior Patter." Psychosom. Med. 33: 193-202, 1971.
- "Psychology in Community Medicine." Chapter in Manual of Community Medicine. A.R. Omran, Editor. In Press.
- (With S.J. Zyzanski, R.H. Rosenman, and G.L. Cleveland.) "Association of Coronary-Prone Behavior Scores with Recurrence of Coronary Heart Disease." J. Chronic. Dis. 24: 601, Nov. 1971.

- (With R.H. Rosenman and S.J. Zyzanski.) "Epidemiological Study of Cigarette Smokers and Non-Smokers." 1971. Submitted for publication.
- "Psychology in Epidemiology: The Growing Edge." Chapter in New Trends in Epidemiology, G.T. Stewart, Editor. In Press. American Lecture Series, Springfield, Ill.
- (With S.T. Barnes.) "Changing Personal and Social Behavior Experiences of Health Workers in a Tribal Society." Social Science and Medicine. In Press, 1971.
- "Social and Epidemiologic Factors in Psychosomatic Disease." Invited paper for special issue of Annals of Psychiatry (Milton Greenblatt, M.D., Issue Editor).

Dr. Kaplan

- Kaplan, B.H. (Editor) (In collaboration with A.H. Leighton, J.M. Murphy, and N. Freyberg.) Psychiatric Disorder and the Urban Environment. New York: Behavioral Publications, 1971.
- Blue Ridge: An Appalachian Community in Transition. Morganton: University of West Virginia, Center for Appalachian Studies, 1971.
- "Psychiatric Sociology: Social Factors and Working Through," Chapter in Perspectives on Psychiatric Sociology, P. Roman and H. Trace (Editors). New York: Science House, 1971.
- "Social Disintegration and Poverty." Encyclopedia of Social Work, 1971.
- "Development and Change: Further Notes on a Non-Weberian Model." Chapter in Inter-Organizational Models. Kent State University, 1972.
- (With J.C. Cassel, H.A. Tyroler, J.C. Cornoni, D.G. Kleinbaum, and C.G. Hames.) "Occupational Mobility and Coronary Heart Disease." Arch. Intern. Med. 128 (Dec. 1971), 938-942.
- (With J.C. Cassel, S. Heyden, A.G. Bartel, H.A. Tyroler, J.C. Cornoni, and C.G. Hames.) "Incidence of Coronary Heart Disease by Ethnic Group, Social Class and Sex." Arch. Intern. Med. 128 (Dec. 1971), 901-906.
- (With J.C. Cassel, S. Heyden, A.G. Bartel, H.A. Tyroler, J. Cornoni, and C.G. Hames.) "Occupational and Physical Activity and Coronary Heart Disease." Arch. Intern. Med. 128 (Dec. 1971), 920-928.

Dr. Kleinbaum

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- (With B.S. Hulka and J.C. Cassel.) "Determinants of Physician Utilization: Approach to a Service Oriented Classification of Symptoms," Medical Care (1972). In Press.

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- (With H.A. Tyroler.) "Epidemiologic Studies of Mortality Using the Papago Indian Population Register." Human Organization. In Press.

Dr. Spiers

- "Father's Age and Infant Mortality." Social Biology. In Press.
- "The Role of Mother's Age in the Risk of Childhood Leukemia." Amer. J. Epid. 94 (1971), 521.
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- (With N.O. Borhani, D. LaBarthe, and R.D. Remington.) "The Control of Hypertension as a Community Problem--Epidemiologic Perspective." Chapter in Medical Basis for Comprehensive Community Hypertension Control Programs. N.O. Borhani, Editor, in collaboration with the special task force on Hypertension Regional Medical Programs Services, Health Service and Mental Health Administration, Public Health Service, H.E.W., 1971.
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- (With H. Wetherby.) "The Relation of Migration to Coronary Heart Disease Risk Factors." In Arch. Intern. Med. 128 (Dec. 1971).
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- (With J.C. Cornoni, L.E. Waller, J.C. Cassel, and C.G. Hames.) "The Incidence Study - Study Design and Methods." In Arch. Intern. Med. 128 (Dec. 1971).
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- (With S. Heyden, C.G. Hames, A. Bartel, J.C. Cassel, and J.C. Cornoni.) "Weight and Weight History in Relationship to Cerebrovascular Disease and Ischemic Heart Disease." In Arch. Intern. Med. 128 (Dec. 1971).
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- (With A. Heyman, H.R. Karp, S. Heyden, A. Bartel, J.C. Cassel, J. Cornoni, C.G. Hames, and W. Stuart.) "Cerebrovascular Disease in the Bi-racial Population of Evans County, Georgia." In Arch. Intern. Med. 128 (Dec. 1971).

Dr. Voors

- "Atherosclerotic Heart Disease and Drinking Water Trace Metals in North Carolina." Trace Substances in Environmental Health (University of Missouri) 5 (1971).
- (With R.L. Reddick and G.G. Koch.) "Trace Metals May Decrease Hypercholesterolemia in Crowded Cholesterol-fed Roosters." Environ. Res. 5 (1972)
- (With M.S. Shuman and P. Gallagher.) "Zinc and Cadmium Autopsy Levels for Cardiovascular Disease in Geographical Context." Trace Substances in Environmental Health (University of Missouri) 6 (1972). Accepted for publication
- "Drinking Water Lithium and Mental Hospital Admission in North Carolina." North Carolina Medical J. 33 (1972). Accepted for publication.
- "Can Dental Development be Used for Assessing Age in Underdeveloped Communities?" J. Trop. Pediat. Envir. Hlth. 18 (1972). Accepted for publication.

Dr. Zyzanski

- "Prevalence Study of CHD." Psychosomatic Med. (1971)  
"Recurrence Study of CHD." J. Chronic Dis. (1971)  
"Cervical Cancer." Amer. J. Epid. (1971).  
"Satisfaction with Medical Care." J. Chronic Dis. (1971).

X. SCIENTIFIC PAPERS PRESENTED

Dr. Cassel

- "Health Consequences of Crowding." Harvard Population Center.  
"Measurements of the Effectiveness and Efficiency of Primary  
Medical Care", Harvard Health Services.  
"Social Change and Health", American Public Health Association.  
"The Primary Medical Care Study", University of Buffalo Medical  
School.  
"Psycho Social Factors in Disease Etiology", University of  
Buffalo Medical School.

Dr. Cordle

- "Differences in Hospital Utilization and In-hospital Mortality  
by Age, Race, Sex, Place of Residence and Economic Status."  
Presented at the Society for Epidemiologic Research, Atlanta,  
Ga., 1971.  
"An Evaluation of the Team Approach in the Delivery of Primary  
Health Care in a Teaching Hospital." Presented to the  
N.C. Public Health Association, Winston-Salem, N.C., 1971.

Dr. Hulka

- "The Impact of Health Services Research on the Delivery of  
Health Care." Presented at the Southern Sociological  
Society Meeting, Miami, Florida, May 5, 1971.  
"The Evaluation of Family Planning Programs." Frontier  
Nursing Service, Hyden, Kentucky, July 23, 1971.  
"The Determinants of Physician Utilization in Response to  
Illness." North Carolina Public Health Association,  
Winston-Salem, N.C., October 7, 1971.  
"Evaluation of Family Planning Programs." Pan Asian Meeting  
of Obstetrics and Gynecology, Djakarta, Indonesia, October  
13, 1971.

Dr. Ibrahim

- (With J G. Feldman and H.A. Sultz.) "Filial Aggregation  
of Coronary Heart Disease Risk Factors. A Measure of  
the Environmental Influence." Presented at the American  
Public Health Association, Minneapolis, Minnesota, October  
11, 1971.

Ibrahim, M.A., et al: "The Management of Acute Myocardial Infarction," presented at the American Heart Association Council on Cardiovascular Disease Epidemiology, Tampa, Florida, February 28, 1972.

Dr. Jenkins

"Behavioral Factors in Platelet Aggregation," presented at the Annual Meeting of the American Psychosomatic Society, April, 1972.

"Do Psychosomatic Mechanisms Contribute to the Disease of Poverty?" presented as Leader of Workshop (American Psychosomatic Society).

Dr. Kupper

With B.S. Hulka and J.C. Cassel. "Determinants of Physician Utilization in Response to Illness," presented at the 60th Annual Meeting of the North Carolina Public Health Association, Winston-Salem, N.C., October 1971.

Dr. Omran

"A Resume of Islam's Position on Family Planning and Abortion," paper presented to the International Planned Parenthood Federation Conference on Induced Abortion - A Hazard to Public Health (Beirut 1971).

"Epidemiological and Sociological Aspects of Abortion," paper presented to the International Planned Parenthood Federation Conference on Induced Abortion - a Hazard to Public Health. (Beirut 1971).

"Health Benefits of Family Planning," paper presented to the Scientific Group on Human Development and Public Health, World Health Organization (Geneva 1971).

(With E. Kessel, J.J. Speidel, R.T. Ravenholt, and R.P. Bernard)  
"International Fertility Research Program," report prepared for the Seventh World Congress on Fertility and Sterility; Tokyo, 1971.

"Abortion in the Natality Transition in Muslim Countries," report prepared for the International Planned Parenthood Federation Seminar on Islam and Planned Parenthood; Morocco, 1971.

"The Case for Permanent and Reversible Sterilization in Muslim Countries," report prepared for the International Planned Parenthood Federation Seminar on Islam and Planned Parenthood; Morocco, 1971.

"The Dichotomy of Islam's Natality Design in an Epidemiological Context," report prepared for the International Planned Parenthood Federation Seminar on Islam and Planned Parenthood; Morocco, 1971.



"Epidemiological Methods in the Study of the Health Aspects of Family Planning." Working paper prepared for the Scientific Group on the Application of Epidemiological Methodology to the Health Aspects of Family Planning (Geneva: World Health Organization, 1972).

"A Graduate Program for Training in Population Epidemiology at the University of North Carolina." Working paper prepared for the Scientific Group on the Application of Epidemiological Methodology to the Health Aspects of Family Planning (Geneva: World Health Organization, 1972).

"Applications of Epidemiologic Methodology: Potential Priority Projects on the Interrelation of Family Size and Family Health." Working paper prepared for the Scientific Group on the Application of Epidemiological Methodology to the Health Aspects of Family Planning (Geneva: World Health Organization, 1972).

Dr. Voors

"Atherosclerotic Heart Disease and Drinking Water Trace Metals in North Carolina." Presented at 5th Annual Conference on Trace Substances in Environmental Health, Columbia, Mo. (July 1, 1971.)

"Trace Metals May Decrease Hypercholesteremia in Crowded Cholesterol-Fed Roosters." Presented at the Annual Meeting American Public Health Association, Minnesota, Minn. (Oct. 13, 1971).

"Drinking Water Lithium and Mental Hospital Admission in North Carolina." Presented at Annual Meeting. North Carolina Public Health Association, Winston-Salem, N.C. (November 1971.)

"Zinc and Cadmium Autopsy Levels for Cardiovascular Disease in Geographical Context." To be presented at the 6th Annual Conference on Trace Substances in Environmental Health, Columbia, Mo. (June 15, 1972).

Dr. Zyzanski

Psychosomatic Medicine Society (April 1972).

XI. FULL-TIME FACULTY APPOINTMENTS AND RESIGNATIONS

Full-time Appointments

Felix J. Gruber, M.D., Instructor  
Michel Ibrahim, M.D., M.P.H., Ph.D., Associate Professor

Promotions

Barbara S. Hulka, M.S., M.D., M.P.H., Associate Professor  
Philip S. Spiers, Ph.D., Associate Professor  
A. Wouter Voors, M.D., M.P.H., Dr. Ph.D., Associate Professor  
Carolyn A. Williams, Ph.D., Assistant Professor  
Stephen J. Zyzanski, M.S., Ph.D., Associate Professor  
Abdel R. Omran, D. P. H., M.P.H., Dr. P.H., Professor

XII. NEEDS AND DIRECTION OF DEVELOPMENT

As the Department of Epidemiology moves into its 14th year, requests for its unique training program and faculty skills continue to accelerate. This is in part due to published research of faculty members, but to an even greater degree attributable to referrals from departmental alumni, many of whom have now reached positions of professional distinction. The Environmental Epidemiology Program Training Grant provides funds for student stipends and related faculty effort to train a new kind of health worker. As national concern for study and protection of the environment increases, the need for environmental epidemiologists will be multiplied. The major support for this program will have to continue to come from federal funding, but its inevitable growth will aggravate an already pressing space limitation.

The Department has entered into a contract for a training program in "Epidemiological Foundations for Program Evaluation." Departmental faculty will coordinate and instruct members of the faculties of several leading schools of nursing throughout the country, helping them to develop local cooperative relationships with health service agencies such as hospitals and health departments. The great majority of ongoing health programs in the United States have never been evaluated in terms of health benefits accruing to persons treated. This program is a pioneering effort to teach the teachers who will teach students the epidemiological skills necessary for adequate evaluation of health services.

The Department of Epidemiology has been invited by departments in the School of Medicine to participate in teaching 1st and 2nd year medical students. The topics to be covered have not been fully decided as yet, but will no doubt include issues of community medicine, social factors in health facilities usage, psychological factors in disease, scientific design of clinical field trials, and techniques for assessing health

of communities, in addition to traditional epidemiology. This teaching input should have the effect of making beginning medical students more knowledgeable and therefore more comfortable in dealing with natural communities of people. This has potentially great value for the state in that it serves to encourage more young physicians to enter general practice in local settings. The Department is also offering an introductory Epidemiology course to employees of the State Board of Health in Raleigh. This is part of an increased effort in the Department to provide needed services to the State of North Carolina. This will enable state employees to accumulate university credits toward the attainment of graduate degrees in Public Health.

The growth of the programs within the Department in the area of Health Services Research is expected to continue during the coming years. The Department has been invited to participate in basic planning and later in teaching and supervising of students who will be providing services at the Community Health Centers to be established in Orange and Chatham counties. The ongoing research work in evaluating patient attitudes toward different types of medical practices serves to prepare the Department to enter the local Community Health Centers with established techniques of community diagnoses and health services evaluation. This Department has been a pioneer in developing these research methods.

The above programs have all dealt with training and service. Basic research is also necessary so that we will know how to serve and in which ways to train. The Department is carrying on an active program of basic research. A study is now proceeding under contract to determine human tissue concentrations of trace elements. Autopsies from various areas in North Carolina are provided for study materials. One of the goals of the study is to explain the high excess of cardiovascular mortality which has been persistently found in the rural counties of eastern North Carolina. It is possible that fertilizers and pesticides containing cadmium may be related to this increased risk of death. Then again, the problem may be aggravated by the leaching of essential trace elements from the soil in that part of the state. The present study is designed to test both these possibilities. This work is based on previous research done in this department which has related presence of these same trace elements to altered lipid concentrations and aggravated depositions of atherosclerosis in animals.

The Department has been one of about six centers in the world conducting intensive studies of the relation of psycho and social factors to risk of coronary heart disease (CHD). This

disease is the leading cause of death in North Carolina and the United States. Now that the United States Public Health Service, American Health Association, the World Health Organization, International Cardiology Society, and other expert agencies have recognized behavioral factors as important in the etiology of Coronary Heart Disease, it is likely that there will be considerable pressure to expand this research program.

Several faculty members are participating in controlled clinical trial research. The effects of lipid-lowering and anti-hypertension medication upon the incidence of a coronary heart disease are questions of considerable national interest. Several controlled trials are underway in the nation, and our faculty play a major consulting role. Much of the data generated from these research endeavors will be used for the training of our students. Our department is also engaged in estimating the effect of group psychotherapy upon the prognosis of patients who have had myocardial infarctions. Considerable clinical, social and psychological data have been collected and is being analyzed. The findings of this investigation points to a favorable effect of this therapeutic modality. We will be expanding this concept of therapy to include other chronic illnesses in a variety of health care delivery systems.

The shortage of faculty office space is acute. We now have two senior faculty members at the Associate Professor level sharing the same office. Another faculty member has a small office adjoining a busy secretarial pool. The noise level is such as to interfere with his work. The space for secretaries and other staff is also severely limited. Five and six staff are crowded into a space originally designed for three. This crowding reduces the efficiency of the Department.

The recent severe fiscal cutbacks by the Federal Government have seriously reduced the number of student stipends. It is unreasonable to expect physicians, graduate nurses, and other experienced health workers with family responsibilities to become full-time students with no outside financial support. It is important to have the federal funds restored, and in the meanwhile to develop other sources of funds such as through private foundations and revolving loan funds. The increased efforts of the Department to teach the Medical School, at the State Board of Health, and to provide other training opportunities to residents of North Carolina suggest that it would be appropriate for increased State funds to be made available to this Department. The present system of count-

ing "full-time equivalents" does not thoroughly reflect the kind of individualized attention this Department traditionally gives to its graduate students.

The Department of Epidemiology has experienced substantial growth both in quantity and quality of its work in the past several years. It is now a stated policy of the Department to be more restrictive regarding future growth in size. It is nevertheless, important that certain of these stated basic needs of the Department be met so that it can continue at its present level of excellence and respond to the most vital of the new demands made upon it by the state and nation.