



AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY

*Carcinogenesis
Ecology*

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Epidemiology & Biometry*

AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY

FOURTH ANNUAL MEETING

THURSDAY AND FRIDAY

MARCH 6th and 7th, 1980

THE DRAKE CHICAGO
GRAND BALLROOM

CHICAGO-
ILLINOIS



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Director of Cancer Control and Epidemiology
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Director
Preventive Medicine Department
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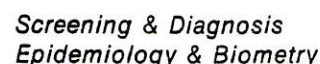
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Thursday, March 6th (continued)

Telephone Cancer Information Services

Gregg Wilkinson, Ph.D.

Behavioral Aspects of Cancer Prevention Among Laymen

Curtis Mettlin, Ph.D.

5:30 -Social Hour-

Friday, March 7th

7:30 - 8:30 Registration - Foyer

8:30 - 9:45 Session on Contributed Papers II: Occupational Studies

Joseph Fraumeni, M.D., Chairman
(see attached program)

9:45 -10:00 -Coffee Break-

10:00 -10:45 Thrust and Programs of Preventive Oncology in the
International Agency for Research on Cancer

John Higginson, M.D.

10:45 -12:25 Session on Contributed Papers III: Epidemiology

Joseph Fraumeni, M.D., Chairman
(see attached program)

12:25 - 2:00 -ASPO Executive Committee Luncheon-

2:00 - 5:30 SYMPOSIUM II: Occupation and Cancer

Anthony B. Miller, M.B., Chairman

Epidemiologic Surveillance of Petroleum
Refinery Workers

David Schottenfeld, M.D.

A National Record Linkage Study of Occupation
and Cancer

Geoffrey Howe, Ph.D.



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Friday, March 7th (continued)

Environmental Health Monitoring

Peter Greenwald, M.D.

Discussion - Irving Kessler, M.D., Leader

Debate: Is it possible to determine the preventable fraction of cancer caused by industrial exposure?

Opening Remarks

Carol Redmond, Sc.D.

Methodologic Issues

Robert Morgan, M.D.

Discussion - Paul Kotin, M.D., Leader

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THURSDAY, MARCH 6th

SESSION ON CONTRIBUTED PAPERS I: DETECTION

Dr. Thomas Hodgson, Chairman

- 10:00 -10:25 Detection of Endometrial Carcinoma in Asymptomatic Examinees
L. G. Koss, M.D., S. Oberlander, M.D.,
K. Schreiber, M.D., et al
*Montefiore Hospital and Medical Center and
Albert Einstein College of Medicine
Bronx, New York*
- 10:25 -10:50 A Comparison of Hemoccult and Proctosigmoidoscopy Results in a Colorectal Cancer Detection Program
E. Day, M.D., G. Lieder, R.R.A., J. Baker, M.P.H.
*George and Anna Portes Cancer Prevention Center
Chicago, Illinois*
- 10:50 -11:15 Abnormal Cytology in Nipple Aspirates of Breast Fluid from Women with a Family History of Breast Cancer
N. L. Petrakis, M.D., E. B. King, M.D.,
V. L. Ernster, Ph.D., et al
*University of California
San Francisco, California*

FRIDAY, MARCH 7th

SESSION ON CONTRIBUTED PAPERS II: OCCUPATIONAL STUDIES

Dr. Joseph Fraumeni, Chairman

- 8:30 - 8:55 Bladder Cancer After Benzidine Exposure
G. M. Matanoski, M.D., E. P. Radford, M.D.,
P. C. Walsh, M.D., et al
*Johns Hopkins University School of Hygiene
and Public Health
Baltimore, Maryland*
- 8:55 - 9:20 Lung Cancer: Etiological Clues from Sugar Cane Farming and Mesothelioma?
A. W. Voors, M.D., H. Rothschild, M.D.,
R. A. Welsh, M.D., et al
*Louisiana State University Medical Center
New Orleans, Louisiana*

FRIDAY, MARCH 7th

9:20 - 9:45

Validity and Utility of Occupational Data
in a Population-Based Cancer Registry
M. J. Brennan, M.D., M. Swanson, Ph.D.
Michigan Cancer Foundation
Detroit, Michigan

SESSION ON CONTRIBUTED PAPERS III: EPIDEMIOLOGY

10:45 -11:10

Cigarette Smoke: A Virtually Safe Dose
C. E. Lawrence, Ph.D., A. S. Paulson, Ph.D.
New York State Department of Health
Albany, New York

11:10 -11:35

Epidemiology of Cancer of the Vulva
K. Mabuchi, M.D., I. I. Kessler, M.D.
University of Maryland School of Medicine
Baltimore, Maryland

11:35 -12:00

Cancer in Physicians: A Comparison with Lawyers
M. G. McC. Curnen, M.D., B. Valanis, Dr. P.H.,
M. L. Skovron, M.P.H., et al
Columbia University School of Public Health
New York City

12:00 -12:25

A Two-Parameter Method for Analyzing Cancer
Incidence Trends
T.-C. Chou, Ph.D., D. G. Miller, M.D.
Memorial Sloan-Kettering Cancer Center and
Preventive Medicine Institute-Strang Clinic
New York City



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ABSTRACTS OF CONTRIBUTED PAPERS



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DETECTION OF ENDOMETRIAL CARCINOMA IN ASYMPTOMATIC EXAMINEES. Leopold G. Koss, M.D., Samuel Oberlander, M.D., Klaus Schreiber, M.D., Harry Moussouris, M.D., Mamdouh Moukhtar, M.D., Suzanne Horan, M.P.A., Mari Begen, R.N., Paula Sifuentes, CT(ASCP), and Carol Bales, CT(ASCP). Montefiore Hospital & Medical Center, Albert Einstein College of Medicine, Bronx, N.Y.

Supported by Contract NCI-CB-84233-39 from the National Cancer Institute.

A feasibility study of endometrial cancer detection in asymptomatic women age 45 or older has been initiated in January 1979. This report will summarize the various aspects of the study based on evaluation of the first group of approximately 1,200 examinees. The clinical and technical approaches to the study, population data, epidemiologic data, and the initial results will be discussed. Eight occult endometrial cancers were diagnosed in the first 1,000 examinees. Additionally, 3 cancers of the breast, one of ovary, and several pre-cancerous lesions of uterine cervix were discovered. These preliminary data suggest that the search for occult endometrial cancer is possible and that it provides the elderly female patient with unexpected health benefits not necessarily related to the state of her endometrium.



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A COMPARISON OF HEMOCCULT AND PROCTOSIGMOIDOSCOPY RESULTS IN A COLORECTAL CANCER DETECTION PROGRAM
Emerson Day, MD, Gail Lieder, RKA, and Joanne Baker MPH.
George and Anna Portes Cancer Prevention Center,
Chicago, Ill.

At the George and Anna Portes Cancer Prevention Center proctosigmoidoscopy has been part of the detection examination since the 1940's. Since the early 1970's the Hemocult test has been included in the screening program. The contribution of the Hemocult test and of routine proctosigmoidoscopy in the detection of 45 proved colorectal cancers during the three year interval July 1975-June 1978 has been analyzed. During this interval the six slide Hemocult II kit was used by mail with conventional instructions; proctosigmoidoscopy was performed by experienced members of the professional staff using the 25cm. rigid sigmoidoscope. Each cancer case has been reviewed for location and stage of disease and the presence or absence of symptoms referable to the lower gastrointestinal tract. Both screening for occult blood and visualization of the rectum and sigmoidcolon contributed to the detection of cancer in this series. Their relative roles will be discussed and recommendations suggested for optimal colorectal screening-detection programs.

ABNORMAL CYTOLOGY IN NIPPLE ASPIRATES OF BREAST FLUID FROM WOMEN WITH A FAMILY HISTORY OF BREAST CANCER. Nicholas L. Petrakis, M.D., Eileen B. King, M.D., Virginia L. Ernster, Ph.D., Susan T. Sacks, Ph.D. and Mary-Claire King, Ph.D. University of California, San Francisco, California

Previous studies by us of breast nipple aspirate cytology have demonstrated a progressive increase in the proportion of atypical epithelial cells in women over age 30 and an association of cytologic atypical hyperplasia/dysplasia with breast cancer. The present study is an analysis of breast fluid cytology and the major risk factors for breast cancer on over 1,000 women. Nipple aspirates were obtained and studied employing techniques described previously (*Am. J. Clin. Path.* 64: 728; 739, 1975). Risk factors investigated included age at menarche, parity, age at first pregnancy, use of replacement estrogens, family history of breast cancer and breast disease status. Significant associations of cytologic abnormality and risk factors were found only with family history of breast cancer and with clinical fibrocystic disease. These findings suggest that there may be a genetic predisposition to cellular abnormality in women with a family history of breast cancer, and they are compatible with studies demonstrating an increased risk of breast cancer in women with benign breast disease.



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BLADDER CANCER AFTER BENZIDINE EXPOSURE. Genevieve M. Matanoski, M.D., Edward P. Radford, M.D., Patrick C. Walsh, M.D., Fray F. Marshall, M.D., Michael J. Droller, M.D., Myron R. Melamed, M.D., and Elizabeth Elliott, B.A. Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland

Study goals included detection of bladder and other cancers among benzidine exposed employees of a Baltimore dye plant and determination of risk to spouses through secondary exposure. Records search revealed about 400 recent employees as opposed to 1000 estimated in a NIOSH report. To increase the study group, former employees were also identified. Since not all had been exposed and some exposures were of short duration, follow-up efforts have concentrated on long-term employees. Despite difficulties including poor attendance for diagnostic appointments, about 250 employees have been interviewed among whom there are 100 with cytology only and approximately the same number with both cystoscopy and cytology. An additional 60 are known to be dead. Examinations have revealed one suspect and one proven but previously unknown bladder cancer. Microscopic hematuria was found in about 5%. The spouses examined to date revealed neither bladder cancer nor a high rate of hematuria. Analysis of questionnaire data is being completed.

LUNG CANCER: ETIOLOGICAL CLUES FROM SUGAR CANE FARMING AND MESOTHELIOMA? A. W. Voors, M.D., H. Rothschild, M.D., R. A. Welsh, M.D., and L. J. Vial, M.D. Louisiana State University Medical Center, New Orleans, LA.

The excess respiratory system cancer (RSC) mortality in the wetlands along the Gulf and Atlantic coast is an enigma. To find clues we selected 10 southern Louisiana parishes, 4 with high and 6 with low RSC mortality, examined the death certificates, and selected subsamples for (A) a case-control study of occupational and smoking history, and (B) blind re-examination of the medical history and microscopic pathology specimens. (A) Of 815 death certificates, we interviewed the relatives of 274 RSC cases and for a 50% sample (n=137) we obtained control deaths matched for age, sex, race, parish, and year of death. Of the matched cases 34% (40% of matched and unmatched cases combined) had worked as sugar cane farmers compared with 12% of the controls ($p<0.0001$). The Mantel-Haenszel relative risk of RSC in sugar farmers was 3.8 ($p<0.0001$). (B) We reviewed 369 medical records. Tissue diagnosis was available in 253 cases. We found the death certificate diagnosis incorrect in 3%. Distribution of histopathological diagnoses was relatively similar in the high and low RCS parishes. However 3 of these cases had pleural mesothelioma: one housewife with unknown history and two sugar farmers with no reported exposure to asbestos who had smoked respectively 8 and 35 daily cigarette pack-years. This incidence of mesothelioma among the examined sugar farmer cases (n=55) was excessive ($p<0.05$). Mesothelioma in the absence of exposure to asbestos has been reported by Das (Aust NZ J Surg 1976) in Indian sugar cane farmers. Sugar cane farming may present an occupational hazard for development of lung cancer.



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Validity and Utility of Occupational Data in A Population-Based Cancer Registry. Michael J. Brennan, M.D. and G. Marie Swanson, Ph.D. Michigan Cancer Foundation, Detroit, Michigan.

A series of occupational studies are being conducted by the Michigan Cancer Foundations Registry (MCFR), which is the population-based cancer registry of the Comprehensive Cancer Center of Metropolitan Detroit. The purpose of these studies is to determine the validity of occupational data obtained from hospital records and their utility for epidemiological analyses. The MCFR records both occupation and place of employment for each case registered. Completeness and validity of these data were evaluated by comparing registry abstract data for 889 cases for whom interview data from three case control studies or personnel information from several occupational listings were available. Preliminary analyses indicate that 79% of the MCFR abstracts have one of these variables recorded and 48% have both recorded. An unexpected and encouraging finding is that 92% of the recorded occupational data were accurate. Additionally, comparisons made among hospitals and across ten years (1970-1979) of diagnosis reveal no significant differences. In those cases for which just one occupational item was complete, place of employment was the information most frequently obtained. The results indicate that cancer registry data may be useful for detecting excessive concentrations of suspect occupations within specific categories of neoplasia or within the overall set of neoplasms when the distribution of occupational frequencies within the population is known from Census Bureau or Labor Department data and the registry is population-based.

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CIGARETTE SMOKE: A VIRTUALLY SAFE DOSE. Charles E. Lawrence, Ph.D. and Albert S. Paulson, Ph.D. N.Y.S. Department of Health, Albany, New York.

Methods that are being adopted for the regulation of low dose exposure to carcinogenic substances are applied to epidemiological data on lung cancer mortality among cigarette smokers to establish a "virtually safe" dose of cigarette smoke for non-smokers. Regulatory dose-action levels are usually intended to protect against unwitting, unavoidable or involuntary contact with carcinogens. In the case of cigarettes, smokers would be exempt from these regulations since smoking is done by a conscious, voluntary decision to do so. However, there is a sizeable fraction of the population exposed to cigarette smoke unwittingly and involuntarily; the non-smokers. We have obtained the necessary high dose data from Dorn's prospective epidemiologic study of the effects of cigarette smoking on mortality among veterans. The two most widely used methods, the linear method and the Bryant-Mantel method were employed to extrapolate to the low dose levels encountered by non-smokers. Results show that with a virtually safe risk of one in one hundred thousand, a virtually safe dose of cigarette smoke is .0017 to .0068 cigarettes per day or about one-two hundredth of a cigarette per day. An examination of published data on atmospheric levels of cigarette smoke show that in a typical home, work and public assembly setting, this action level is greatly exceeded. Thus, there is a large discrepancy between the levels to which unwitting exposure to other carcinogens are increasingly being controlled and the level of unwitting exposure to cigarette smoke.

EPIDEMIOLOGY OF CANCER OF THE VULVA. Kiyohiko Mabuchi, M.D., Irving I. Kessler, M.D. Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, Maryland.

Little is currently known concerning the pathogenesis of cancer of the vulva. To investigate the etiology of this rare type of female genital cancer, a case-control study was undertaken in five major U.S. metropolitan areas (Minneapolis/St. Paul, Detroit, Miami/Dade County, New York City, and Buffalo/Erie County). The study included 149 cases with histologically proven vulvar cancer and a similar number of demographically matched controls without any type of cancer. Cases tended to be more frequently nulliparous and have experienced menarche, first coitus and first marriage at older ages than the controls. Cases also suffered from a variety of menstrual irregularities and heavy flows more frequently than the controls. These findings together with an increased frequency of chronic exposure to exogenous sex hormones, suggest the possible involvement of endocrinologic factors in the development of vulvar cancer. Cases were also more likely to have had fungal and other venereal infections, as well as inflammatory genital conditions and leukoplakia, a known premalignant state. The latter findings are suggestive of the role of venereal and infective factors in this neoplasm. The possible significance of interactive effects between the endocrine and the venereal factors is also in need of consideration.

CANCER IN PHYSICIANS: A COMPARISON WITH LAWYERS

Mary G. McCrea Curnen, M.D., Barbara Valanis, Dr.P.H.,
Mary Lou Skovron, M.P.H., Livia Turgeon, M.S., and
Joseph L. Fleiss, Ph.D. Columbia University School of
Public Health, New York, N.Y.

To test the hypothesis that physicians are at an increased risk of dying with cancer because of occupational exposure, we conducted a cohort study of 11,527 male MDs and 6,318 male lawyers licensed to practice medicine or admitted to the Bar in Connecticut between 1900 and 1975. During this period 21% of MDs and 20% of lawyers were known to have died and death certificates were obtained for 97% and 90% of them respectively. Only 2% of MDs and 6% of lawyers were lost to follow-up. Death with cancer was the criterion used in the analysis, whether or not cancer was listed as the underlying cause of death. Physicians and lawyers were grouped into 5 birth cohorts: 1875-1894, 1895-1909, 1910-1919, 1920-1929 and 1930-1939. Each individual entered into the life table at the time of his Conn. licensure (MD) or Conn. Bar admission (lawyer). For each birth cohort, age-specific mortality rates within five-year age categories were computed and conditional probabilities of death per 1,000 persons obtained. Mortality rates with cancer tended to be higher for MDs than for lawyers in all 5 birth cohorts studied; the difference was significant for the 1910-19 birth cohort. Trends indicate that this difference may be increasing. Occupational exposure to radiation may be responsible in part for this finding since the significant difference in death rates with cancer was confined to the lymphatic and hematopoietic systems. Exposure to infections may also have contributed to the higher mortality rates with cancer for MDs. Further study of differences in cancer mortality among MDs in various specialties may reveal other carcinogens linked to occupational exposure.



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A TWO-PARAMETER METHOD FOR ANALYZING CANCER INCIDENCE TRENDS Ting-Chao Chou, Ph.D. & Daniel G. Miller, M.D. New York, NY

The trends in cancer incidences are usually reflected in changes in crude, age-adjusted, or age-specific rates. However, these changes are influenced by improvements in diagnosis, detection, registry and classification of cancer during the past decades. To minimize these influences a two-parameter method analogous to the mass-action law was devised for analyzing cancer trends which is based on a median-effect principle described by: $\log [f_a/(1-f_a)] = m \log (D/D_m)$, where f_a is the fraction of population afflicted with cancer, D is age in years (assuming D is proportional to cumulative exposure to causal factors), m is Hill-type coefficient, and D_m is the calculated number of years to have half of the population afflicted with cancer (assuming unlimited life-span). By plotting $y = \log [f_a/(1-f_a)]$ vs $x = \log D$, m is the slope and D_m is the antilog of intercept at $y=0$. Nearly all cancers from age 20-84+ have excellent fit to the above equation with regression coefficients of 0.97-0.99. m and D_m values are determined by relative increments of rate rather than actual magnitude of observed data and thus trends manifested by these values are not directly influenced by diagnostic and recording variables. Improvement of a given cancer trend is manifested by increases in D_m values and/or decreases in m values. The inverse is true for an increase of a cancer trend. The fit of data using the mass-action equation is as good or better than that using the power law calculations; thus it provides another basis for viewing the incidence of cancer in relation to age and reinforces the concept that cancer incidence is directly related to duration of carcinogen exposure rather than age per se.

(Supported in part by Grants NCI 18856 and ACS CH 36.)