AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY

Carcinogenesis *Human Behavior* *Screening & Diagnosis*
Ecology *Economics* *Epidemiology & Biometry*

AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY

FIFTH ANNUAL MEETING

THURSDAY AND FRIDAY

MARCH 26th and 27th, 1981

HOLIDAY INN
THE VERSAILLES BALLROOM

****

BETHESDA
MARYLAND

ASPO AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY
Carcinogenesis Human Behavior Screening & Diagnosis
Ecology Economics Epidemiology & Biometry

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1981
AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY

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Chicago, Illinois

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Bethesda, Maryland

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THURSDAY, MARCH 26TH
HOLIDAY INN BETHESDA
THE VERSAILLES BALLROOM

7:30 - 8:15 REGISTRATION - FOYER

8:15 - 9:15 BUSINESS MEETING

9:15 - 9:30 WELCOMING REMARKS

NATHANIEL BERLIN, M.D.
PRESIDENT

9:30 -10:00 PREVENTIVE ONCOLOGY: CURRENT DEVELOPMENTS WITHIN THE NATIONAL CANCER INSTITUTE

VINCENT DEVITA, M.D.
DIRECTOR, NATIONAL CANCER INSTITUTE

10:00 -10:30 COFFEE BREAK

10:30 -12:30 SYMPOSIUM ON SCREENING

ANTHONY B. MILLER, M.B., CHAIRMAN
DIRECTOR, NATIONAL CANCER INSTITUTE
OF CANADA EPIDEMIOLOGY UNIT

-ISSUES IN EVALUATING LONG-TERM EFFECTS OF BREAST CANCER SCREENING

PROFESSOR SAM SHAPIRO
DIRECTOR OF HEALTH SERVICES RESEARCH
AND DEVELOPMENT CENTER
THE JOHNS HOPKINS MEDICAL INSTITUTIONS

-MODELS OF SCREENING FOR CERVICAL CANCER

GERRY B. HILL, M.B.
DIRECTOR, DEPARTMENT OF EPIDEMIOLOGY
PROVINCIAL CANCER HOSPITALS BOARD OF
ALBERTA

continued...

THURSDAY, MARCH 26TH
CONTINUED

-ECONOMIC DECISION ANALYSES OF EARLY DETECTION PRACTICES FOR BREAST AND CERVICAL CANCERS

JOHN K. GOHAGEN, PH.D.
ASSOCIATE PROFESSOR
DIVISION OF HEALTH CARE RESEARCH
WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

12:30 - 2:00 LUNCH

2:00 - 3:00 PRESIDENTIAL ADDRESS

NATHANIEL BERLIN, M.D.
PRESIDENT, ASPO
DIRECTOR, CANCER CENTER, NORTHWESTERN UNIVERSITY

3:00 - 5:20 PRESENTATION OF SUBMITTED PAPERS:

RAYMOND SELTSER, M.D.
PROFESSOR OF EPIDEMIOLOGY
JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH

3:00 - 3:20 *Cholecystectomy and Right-Side Colon Cancer*
L.J. Vernick, Ph.D. and
L.H. Kuller, M.D.
University of Pittsburgh
Graduate School of Public Health

3:20 - 3:40 *Epidemiologic Findings in Cancer of the Gallbladder*
K. Mabuchi, M.D. and I.I. Kessler, M.D.
Department of Epidemiology and Preventive Medicine
University of Maryland School of Medicine

3:40 - 4:00 *A Cost-Effectiveness Analysis of Screening for Carcinoma of the Prostate by Digital Examination*
R.R. Love, M.D., D.G. Fryback, Ph.D. and S.R. Kimbrough
Center for Health Sciences and Department of Industrial Engineering
University of Wisconsin

THURSDAY, MARCH 26TH
CONTINUED

4:00 - 4:20 *Optimising the Approach to Cervical Screening in Canada*
Y. Shun-Zhang, M.D., A.B. Miller, M.B. and G. Sherman, M.Sc.
NCIC Epidemiology Unit
University of Toronto

4:20 - 4:40 *Screening Vs. Total Hysterectomy: Reduced Cervical Cancer Mortality in the U.S., 1950-1975*
G. Copley, M.D., J. Cornoni-Huntley, Ph.D. and J. Young, Ph.D.
Johns Hopkins University School of Hygiene and Public Health

4:40 - 5:00 *The Potential Effectiveness of Selective Screening for Breast Cancer in Northern Alberta*
G.B. Hill, M.B., P.E. Burns, M.B., A.W. Lees, B.M., L.R. Birkett, B.Sc.
Cross Cancer Institute

5:00 - 5:20 *Employee Cancer Education and Detection Demonstration Program*
S. Lundahl, M.P.H., E. Weller, R.N., D. Celentano, Sc.D. and T.P. Waalkes, M.D.
Johns Hopkins Hospital and Oncology Center

EVENING

8:00 -10:00 CANCER PREVENTION SEMINAR: COURSES IN CANCER PREVENTION FOR MEDICAL STUDENTS, RESIDENTS, NURSE PRACTITIONERS AND PHYSICIANS ASSISTANTS

DAVID SCHOTTENFELD, M.D., CO-CHAIRMAN
CHIEF OF EPIDEMIOLOGY AND PREVENTIVE MEDICINE
MEMORIAL SLOAN-KETTERING CANCER CENTER

ARLENE BARRO, PH.D., CO-CHAIRMAN
ASSOCIATE DIRECTOR FOR EDUCATION AND
ACTING CHIEF, EDUCATIONAL RESEARCH
AND EVALUATION BRANCH, DIVISION OF
RESOURCES, CENTERS AND COMMUNITY ACTIVITIES
NATIONAL CANCER INSTITUTE

continued...

THURSDAY, MARCH 26TH
CONTINUED

-PROGRAM FOR NURSE PRACTITIONERS

CAROL REED-ASH, R.N., M.A.
DIRECTOR OF NURSING EDUCATION
MEMORIAL SLOAN-KETTERING CANCER CENTER

-PROGRAM FOR MEDICAL STUDENTS

BENJAMIN F. TRUMP, M.D.
PROFESSOR AND CHAIRMAN
DEPARTMENT OF PATHOLOGY
UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE

-PROGRAM FOR RESIDENTS

RICHARD LOVE, M.D.
ASSISTANT PROFESSOR
UNIVERSITY OF WISCONSIN
WISCONSIN CLINICAL CANCER CENTER

FRIDAY, MARCH 27TH

7:30 - 8:30 REGISTRATION - FOYER

8:30 - 9:30 THE COST OF CANCER CARE

DOROTHY RICE, PH.D.
DIRECTOR
NATIONAL CENTER FOR HEALTH STATISTICS

9:30 -10:00 COFFEE BREAK

10:00 -12:00 SYMPOSIUM ON MELANOMA

JOSEPH F. FRAUMENI, JR., M.D., CHAIRMAN
CHIEF, ENVIRONMENTAL EPIDEMIOLOGY BRANCH
NATIONAL CANCER INSTITUTE

-EPIDEMIOLOGIC PATTERNS

JOHN A. H. LEE, M.D.
PROFESSOR
DEPARTMENT OF EPIDEMIOLOGY
UNIVERSITY OF WASHINGTON

-PRECURSOR SYNDROMES

MARK H. GREENE, M.D.
CLINICAL EPIDEMIOLOGIST
ENVIRONMENTAL EPIDEMIOLOGY BRANCH
NATIONAL CANCER INSTITUTE

-ULTRAVIOLET CARCINOGENESIS

MARGARET L. KRIPKE, PH.D.
DIRECTOR OF CANCER BIOLOGY PROGRAM
FREDERICK CANCER RESEARCH CENTER

-STRATEGIES FOR PREVENTION

WALLACE H. CLARK, JR., M.D.
RESEARCH PROFESSOR OF DERMATOLOGY
AND PATHOLOGY
UNIVERSITY OF PENNSYLVANIA
SCHOOL OF MEDICINE

FRIDAY, MARCH 27TH
CONTINUED

12:00 - 1:30 EXECUTIVE COMMITTEE LUNCHEON

1:30 - 3:30 SYMPOSIUM ON RECENT DEVELOPMENTS IN CANCER ETIOLOGY

NICHOLAS L. PETRAKIS, M.D., CHAIRMAN
PROFESSOR OF PREVENTIVE MEDICINE
CHAIRMAN, DEPARTMENT OF EPIDEMIOLOGY AND INTERNATIONAL HEALTH
UNIVERSITY OF CALIFORNIA SCHOOL OF PUBLIC HEALTH

-GENETICS

MARY-CLAIRE KING, PH.D.
ASSISTANT PROFESSOR OF EPIDEMIOLOGY
UNIVERSITY OF CALIFORNIA SCHOOL OF PUBLIC HEALTH

-RADIATION

EDWARD P. RADFORD, M.D.
DIRECTOR, CENTER FOR ENVIRONMENTAL EPIDEMIOLOGY
GRADUATE SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF PITTSBURGH

-HORMONES

BARBARA HULKA, M.D.
PROFESSOR OF EPIDEMIOLOGY
UNIVERSITY OF NORTH CAROLINA
SCHOOL OF PUBLIC HEALTH

-VIRUSES

W. THOMAS LONDON, M.D.
SENIOR RESEARCH PHYSICIAN
FOX CHASE CANCER CENTER
ADJUNCT PROFESSOR OF MEDICINE
UNIVERSITY OF PENNSYLVANIA
SCHOOL OF MEDICINE

continued...

FRIDAY, MARCH 27TH
CONTINUED

-CHEMICALS IN OCCUPATIONAL CANCERS

DAVID SCHOTTENFELD, M.D.
CHIEF OF EPIDEMIOLOGY AND PREVENTIVE MEDICINE
MEMORIAL SLOAN-KETTERING CANCER CENTER
PROFESSOR OF PUBLIC HEALTH
CORNELL UNIVERSITY MEDICAL COLLEGE

3:30 - 4:50 PRESENTATION OF SUBMITTED PAPERS:

MARGARET H. SLOAN, M.D., CHAIRMAN
ACTING CHIEF, OCCUPATIONAL CANCER BRANCH
DIVISION OF RESOURCES, CENTERS AND COMMUNITY ACTIVITIES
NATIONAL CANCER INSTITUTE

3:30 - 3:50 *The Discrepancy Between Incidence and Mortality Due to Endometrial Cancer*
C.E. Lawrence, Ph.D., S. Durgerian, B.S., I. Farrell, M.S., P. Greenwald, M.D., T. Caputo, M.D., A. Paulson, Ph.D., A. Reilly, M.S.
Division of Epidemiology
New York State Department of Health

3:50 - 4:10 *Oral Contraceptive-Use and Breast Cancer in Northern Alberta: A Case-Control Study*
A.W. Lees, B.M., G.B. Hill, M.B., P.E. Burns, M.B., L.R. Birkett, B.Sc.
Cross Cancer Center

4:10 - 4:30 *The Role of Primary and Secondary Prevention in Reducing Cancer Mortality Among U.S. Blacks*
J.P. Enterline, M.S. and J.E. White, M.D.
Howard University Cancer Center and College of Medicine

4:30 - 4:50 *Comparison of Cancer Incidence Among New Mexico's Indian, Hispanic and Anglo Populations*
C.R. Key, M.D. and J.M. Samet, M.D.
University of New Mexico Medical Center

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-ABSTRACTS OF SUBMITTED PAPERS-

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Ecology Economics Epidemiology & Biometry

CHOLECYSTECTOMY AND RIGHT-SIDE COLON CANCER. Leonard J. Vernick, Ph.D. and Lewis H. Kuller, M.D., University of Pittsburgh, GSPH, Pittsburgh, PA.

Cholecystectomy has been shown to alter bile acid metabolism which may result in an increased risk of colon cancer. A case-control study investigating the relationship between right-side colon cancer and cholecystectomy was conducted in Pittsburgh, PA, SMSA. Right-side colon cancer cases (RSC) (histologically confirmed adenocarcinoma of the cecum or ascending colon) consisted of 150 white males and females ages 45-85. Two control groups were selected: 1) left-side colon cancer controls (LSC) (histologically confirmed adenocarcinoma of the descending or sigmoid colon) consisting of 150 white males and females matched pairwise with the RSC on sex, age, and whenever possible, year and hospital of initial diagnosis/surgery; and 2) living general population controls (NC) consisting of white males and females individually matched with the RSC on sex, age and residence at time of diagnosis, and at the same time, on sex and age with the LSC. Cholecystectomy history was obtained for both the RSC and LSC from hospital records, surgeons' records and interviews with the study subjects or their relatives. Ascertainment of the gallbladder's status at colon cancer surgery was obtained through operative reports, x-ray studies and physical exams. Cholecystectomy history for the NC was obtained from subject interviews. Hospital record data and study subject interviews provided valid information. Consistent odds ratio estimates appear in both the LSC (1.87) and NC (1.66) groups. Finally, when comparing the RSC with the LSC and NC combined, the estimated odds ratio was 1.77 with 95% confidence limits of .95 and 3.3. These findings indicate an association between right-side colon cancer and cholecystectomy consistent in two distinct control groups where major emphasis was directed towards the quality of data. Furthermore, the results from this investigation are consistent with our previously reported findings.

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EPIDEMIOLOGIC FINDINGS IN CANCER OF THE GALLBLADDER.

Kiyohiko Mabuchi, M.D. and Irving I. Kessler, M.D.
Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, Maryland 21201.

Risk factors for gallbladder cancer include parity and obesity. These risk factors together with the preponderance of cases occurring among postmenopausal women suggest the involvement of endocrine factors in the development of gallbladder cancer. A case-control study to investigate the relationship of this cancer with various reproductive, menstrual and medical factors was undertaken in 80 gallbladder cancer cases and demographically matched controls in five metropolitan areas (Minneapolis/St. Paul, Detroit, Miami/Dade County, New York City and Buffalo/ Erie County). Consistent with previous findings, female gallbladder cancer cases were more likely to be obese and parous than controls. They were also less likely to have experienced late menarche, menstrual irregularities, uterine fibroids and cervical lesions. A previous history of benign breast diseases was more frequent in cases than controls. No differences between cases and controls were observed in oral contraceptive use. Among males, a history of benign prostatic hypertrophy was more frequently reported by cases than controls. The etiologic significance of endocrine factors is also further discussed.

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A COST-EFFECTIVENESS ANALYSIS OF SCREENING FOR CARCINOMA OF THE PROSTATE BY DIGITAL EXAMINATION. Richard R. Love, M.D., Dennis G. Fryback, Ph.D., and Steven R. Kimbrough, Center for Health Sciences and Department of Industrial Engineering, University of Wisconsin, Madison, WI

Screening for carcinoma of the prostate by digital examination has been promoted as low cost, safe, and effective; however, recent reviews have questioned the cost-effectiveness of this screening procedure. Critical analysis of this question has been lacking because of limited understanding of the preclinical phase of the disease and absence of pertinent large cohort data. We have conducted a cost-effectiveness analysis of digital examination for prostate cancer using computer simulation of a large cohort study. The computer program allows for study of variations in critical assumptions about the disease (e.g., prevalence, duration of preclinical phase, mortality rates), the screening procedure (e.g., sensitivity, specificity, screening interval, age at first screen, cost of the procedure, costs of further diagnostic biopsy), and keeps track of outcome descriptors (e.g., total cost of the screening program, cost of biopsies, distribution of age at death for cohort members, numbers of lesions found, residual morbidity such as incontinence and impotence) over the life of the cohort. Based on current understanding of preclinical disease and the procedure, the results indicate that the current practice of annual screening by digital examination should be re-examined in view of marginal benefit for the costs. Recommendations are discussed in terms of different combinations of the critical assumptions.

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OPTIMISING THE APPROACH TO CERVICAL SCREENING IN CANADA

Yu Shun-Zhang, M.D., A.B. Miller, M.B., and G. Sherman, MSc.
NCIC Epidemiology Unit, University of Toronto, Canada

Using a computer simulation model of screening developed by Knox and input parameters on the natural history of the preclinical precursors of cancer of the cervix from a cohort study of women in British Columbia from 1949-69, an attempt has been made to evaluate different approaches to screening using the pap smear. The natural history input parameters and the output parameters without screening were modified to reflect the earlier onset of carcinoma in situ in younger cohorts than those studied in British Columbia resulting in a mortality from cancer of the cervix, approximately 50% greater than operated in the referent year.

It has been found that the sensitivity of the test and the proportion of women in the population who accept invitations to attend for screening materially influence the extent to which programs reduce mortality. Thus a reduction in the proportion attending from 80% to 50% produces a far greater impact than variation in age of onset of screening, frequency of rescreening or age of cessation of screening. Missed screens also have an important impact.

On the basis of these simulations, an optimal program might commence at age 25, involve three yearly screens to age 40 and five yearly to age 60, a total of ten tests in a lifetime. A repeat test at age 26 contributes nothing to the mortality benefit. Such a schedule, using a test of 75% sensitivity with 80% population acceptance, would reduce lifetime mortality from cancer of the cervix by at least 90%.

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SCREENING VS. TOTAL HYSTERECTOMY: REDUCED CERVICAL CANCER MORTALITY IN THE U.S., 1950-1975.

Genrose Copley, M.D., Joan Cornoni-Huntley, Ph.D. and John Young, Ph.D. The Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md.

U.S. age specific mortality rates, 1949-1975, for 5 year birth cohorts suggest an age specific pattern for cervical cancer. Peak mortality occurs at about 45-50 years of age for both whites and nonwhites. The age specific pattern for white and nonwhite women is similar except for magnitude and some evidence of younger susceptibility among earlier nonwhite birth cohorts. Risk varies in absolute level by birth cohort, decreasing with increasing birth year from 1900-1950. Data from Connecticut, 1935-1975, on invasive cancer and carcinoma in situ of the uterine cervix, respectively, suggest the mortality rates are not inappropriate as indices of age specific risk by birth cohort. The invasive incident age specific patterns by birth cohort are very similar to those exhibited by U.S. mortality data except that the age of maximum risk is shifted downward by about 10 years. In situ data displayed by birth cohort suggest maximum susceptibility at about 25-30 years, consistent with other reports and estimates of transit time from in situ invasive cancer. Published data from community based screening programs suggest that cervical cancer screening is probably biased toward women younger than 45 years, and may play a role in decreasing risk of mortality for recent birth cohort. However, the downward trend for cervical cancer mortality with increasing age began before the widespread availability of cervical cancer screening. A question is posed about the role since 1940 of total hysterectomy for noncancerous indications as a possible "primary prevention" effector among older women.

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THE POTENTIAL EFFECTIVENESS OF SELECTIVE SCREENING FOR BREAST CANCER IN NORTHERN ALBERTA. Gerry B. Hill, M.B., Patricia E. Burns, M.B., Alan W. Lees, B.M., Lucille R. Birkett, B. Sc. Cross Cancer Institute, Edmonton, Alberta, Canada.

The northern Alberta Breast Disease Registry collects information on many characteristics of the women treated for breast cancer at the Cross Cancer Institute, Edmonton, Alberta, Canada. While the emphasis of the data-base is on etiological factors, some of these are also related to the stage of the disease at presentation. Using this information, for breast cancer patients presenting from 1976 to 1978 (N = 737), it is possible to estimate the benefit, in terms of increase in expectation of life, which would be obtained by screening the population selectively, using one of the factors, rather than screening the whole population. The efficiency of selective screening, choosing first those groups for whom the benefit-cost ratio is greatest, can be illustrated graphically. The cumulative benefit in terms of years gained per woman screened is plotted against the proportion of the population screened. If the screening is unselective the graph is a straight-line. With selective screening the graph is a curve which is convex upwards, and a measure of the comparative efficiency is the area between the curve and the line. This analysis showed age to be an efficient factor for selective screening; the age groups to be screened, in order of greatest to least benefit-cost ratio, are: 50-59 years, 60-69 years, 70-79 years, 80 years and over, 40-49 years, and 20-39 years. Similar analyses are presented using other factors such as education, parity, age at first childbirth, and oral contraceptive use.

-see graph attached-

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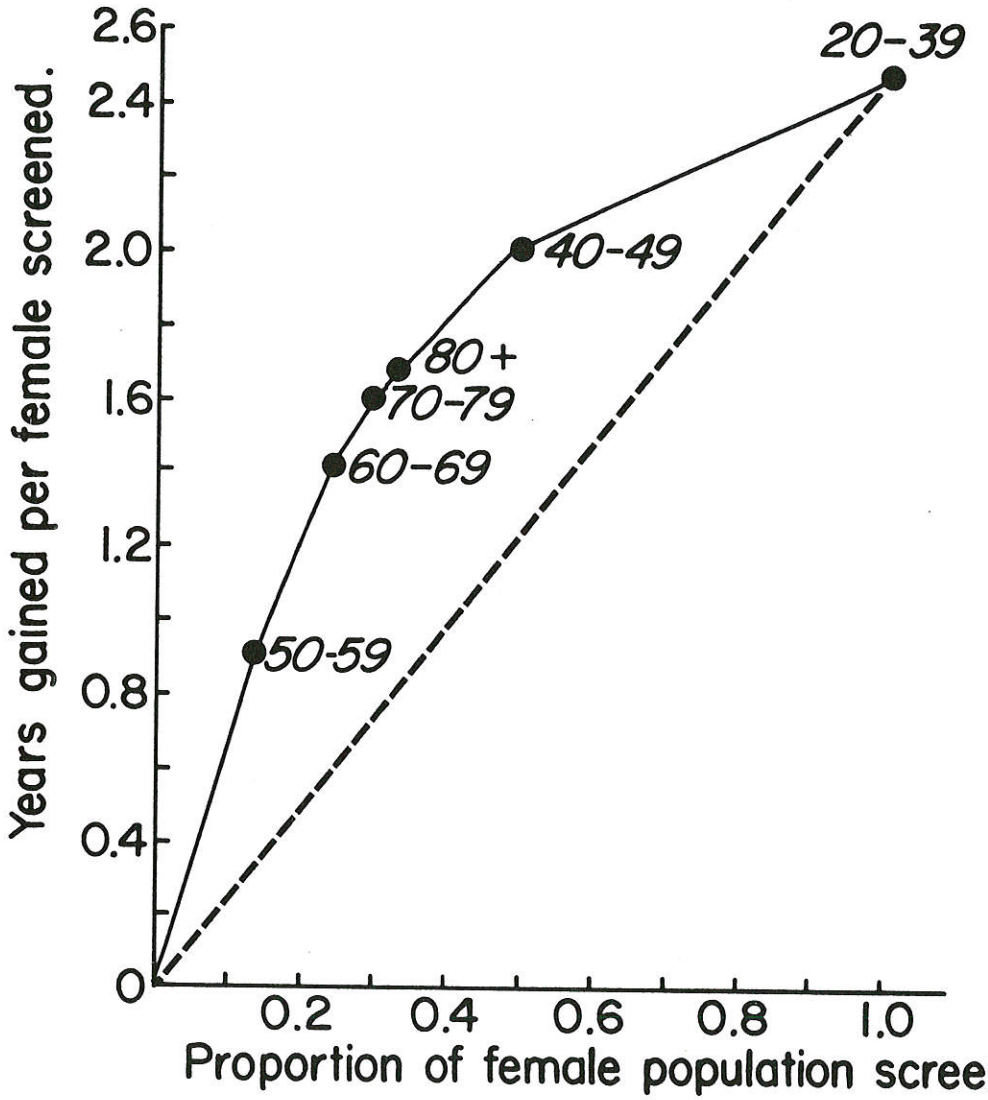
Hill et al:



Breast cancer.

Efficiency of selective screening by age.

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EMPLOYEE CANCER EDUCATION AND DETECTION DEMONSTRATION PROGRAM. Sandra Lundahl, M.P.H., Eileen Weller, R.N., David Celentano, ScD. and T. Phillip Waalkes, M.D. Johns Hopkins Hospital and Oncology Center, Baltimore, MD

One of the aims of the Community Outreach Program of the Johns Hopkins Oncology Center is to encourage the development of cancer education and detection programs, particularly directed toward high risk populations. It was felt that to develop a program at this institution would provide additional evidence of a strong committment to cancer education and detection. After consulting with N.C.I. and determining the availability of local resources it was decided to restrict our efforts to cervical cancer testing, breast palpation and instruction in Breast Self-Examination. The female employees of the Johns Hopkins Medical Institution were selected as the target population because many Hopkins employees are older, members of minority groups and residents of the inner city neighborhood surrounding the Johns Hopkins Hospital. Furthermore, the literature suggests that working women in general do not have the time (or take the time) to avail themselves of preventive health care. The Employee Cancer Education and Detection Program has been organized and publicized in a variety of ways to determine the optimal procedure(s) of reaching target population in an employee setting. It was found that offering the program in conjunction with the T.B. Testing Program, a requirement for all Hopkins employees, was most effective in reaching the highest percentage of the target population. Program results and guidelines for conducting cancer education and detection programs to reach target populations in an employee setting will be presented.

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THE DISCREPANCY BETWEEN INCIDENCE AND MORTALITY DUE TO ENDOMETRIAL CANCER

Charles E. Lawrence, Ph.D. (Division of Epidemiology, NYS Department of Health, Albany, NY), Sally Durgerian, B.S., Irene Farrell, M.S., Peter Greenwald M.D., Thomas Caputo, M.D., Albert Paulson, Ph.D., Andrew Reilly, M.S.

Time series analysis of endometrial cancer incidence in the 70's in NYS shows an increasing then decreasing pattern similar to that found in other studies. However, endometrial cancer mortality has shown no change from its pattern of a gradual decline. In an effort to resolve this discrepancy, a two-phased epidemiologic study was undertaken. In the first phase, a time series sample of cases representative of upstate New York are independently staged and graded. Also, survival amongst these cases is analyzed. The second phase consists of a case-control study of advanced stage endometrial cancer.

Several alternate explanations of this apparent discrepancy have been offered. One explanation frequently given proports that estrogen-related cancers are predominantly high survival early stage cancers. Time series analysis of stage specific incidence shows that the proportion of advanced stage is increasing over time. Furthermore, a midstudy analysis of the case-control data shows an elevated relative risk of 2.7 for estrogen replacement therapy as compared to matched controls with intact uteri. Inadequate observation time has also been offered as an explanation of the failure to observe a change in mortality. However, our survival analysis shows that throughout the decade of the 70's 80% of excess mortality associated with endometrial cancer occurs within three years of diagnosis with little mortality after this initial period, in full agreement with the published historical findings. Thus, these two explanations seem to be unlikely candidates for resolving the discrepancy. Other explanations are also considered.

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ORAL CONTRACEPTIVE-USE AND BREAST CANCER IN NORTHERN ALBERTA. A CASE-CONTROL STUDY.

Alan W. Lees, B.M., Gerry B. Hill, M.B., Patricia E. Burns, M.B., Lucille R. Birkett, B. Sc. Cross Cancer Institute, Edmonton, Alberta, Canada.

The northern Alberta Breast Registry recorded 984 female patients with breast cancer during 1976 to 1978. A control group of 907 breast cancer free women, matched by age and place of residence, were selected from the general population. The age groups, 30-39 years, 40-49 years, and 50-59 years were examined for information concerning oral contraceptive use. Little association between breast cancer risk and oral contraceptive use was found (RR = 0.9). Risk was slightly increased for those in the youngest age group who used oral contraceptives within one year of diagnosis (RR = 1.7). No clear trend in risk emerged with length of use. Contrary to a previous publication, there was no increased risk with use of oral contraceptives and a previous benign breast biopsy (RR = 0.9). There was a suggestion of increased risk of breast cancer with oral contraceptive use and increasing parity in the youngest age group. Women with a family history of breast cancer and a prior benign breast biopsy were not found to be at greater risk of breast cancer through oral contraceptive use.

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THE ROLE OF PRIMARY AND SECONDARY PREVENTION IN REDUCING CANCER MORTALITY AMONG U.S. BLACKS.

John P. Enterline, M.S., and Jack E. White, M.D., Howard University Cancer Center, College of Medicine, Washington, D.C. 20060

A study was conducted to determine the potential effect of primary and secondary prevention activities on reducing the notably high cancer mortality rates among the U.S. black population. Data collected by the National Cancer Institute and the National Center for Health Statistics were used to partition the effect of black-white incidence and survival differentials on the resulting mortality differential. After adjusting for age, incidence was found to account for 30% of the mortality differential; cancer site distribution accounted for 35% of the differential; survival accounted for the remaining 35%. Black-white incidence and cancer site differences were assumed to be a result of differences in carcinogenic exposures. Relative 5-year survival rates were examined to determine the effect that secondary prevention, i.e., early detection, could have in reducing the black-white survival differential. After adjusting survival rates for stage of disease at diagnosis and cancer site, it was determined that 50% of the survival differential is due to the advanced stages at which cancers are detected among U.S. blacks. Using the above approach, it is theoretically possible that of the 7,000 excess cancer deaths which occurred among U.S. blacks in 1978 [using U.S. white rates as a standard] 4,550 could have been avoided through reductions in carcinogenic exposures [primary prevention], and 1,225 could have been avoided through early detection [secondary prevention]. The remaining 1,225 excess cancer deaths among U.S. blacks are probably related to black-white differences in treatment and the body's ability to withstand the effects of both cancer and cancer therapy. Application of this methodology could prove to be beneficial in quantifying the potential efficacy of site-specific primary and secondary prevention activities directed towards the U.S. black population.

-see attached tables-

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Enterline and White:

Expected Increase in 5 Year Relative Cancer Survival Rates Among Blacks if Diagnosed at Stages of Disease Comparable to Whites: All Cancers Combined

	5 YEAR SURVIVAL RATE (PERCENT)			
STAGE	BLACK	WHITE	ABSOL. DIFF.	REL. DIFF.[1]
All Stages[2] (observed)	30.0	39.0	9.0	23.0%
Localized	62.0	68.0	6.0	8.8%
Regional	32.0	38.0	6.0	15.8%
Distant	8.0	10.0	2.0	20.0%
All Stages[3] (expected)	34.5	39.0	4.5	11.5%

[1] (Absolute Difference ÷ White rate) x 100 = Relative Difference

[2] Cancer Patient Survival, Report No. 5 (Axtel, L.M., Asire, A.A., Myers, M.H., Eds.) DHEW Pub. No. (NIH) 77-992, Wash., D.C., U.S. GPO, 1976 (data from 1965-1969 cohort)

[3] Computing a stage-adjusted survival rate by using proportion of whites within each stage (i) as a weight (w) to calculate an expected survival rate E(S) from the observed survival rates (s) within each stage, i.e., $E(S) = \sum_i \overline{w_i s_i}$

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Expected Increase in 5 Year Relative Cancer Survival Rates Among Blacks if Diagnosed at Stages of Disease Comparable to Whites: Sites for which Secondary Prevention is Effective

SITE	5 YEAR RELATIVE SURVIVAL (PERCENT) OBSERVED[1] BLACK	OBSERVED[1] WHITE	EXPECTED[2] BLACK	EXPECTED[2] WHITE	% INCREASE IN SURVIVAL OF BLACKS RELATIVE TO WHITES[3]
Breast	50.0	65.0	58.9	65.6	56.0
Prostate	50.0	57.0	53.1	58.6	21.4
Colon	35.0	46.0	39.5	46.5	36.4
Corpus	52.0	75.0	63.7	76.1	46.0
Blader	29.0	62.0	41.5	62.3	36.9
Cervix	48.0	57.0	49.8	56.2	28.7
Rectum	28.0	42.0	32.9	42.2	33.4
Stomach	13.0	13.0	15.8	12.9	22.3
All Cancers	30.0	39.0	34.5	39.0	50%

[1] Cancer Patient Survival, Report No. 5 (Axtel, L.M., Asire, A.A., Myers, M.H., Eds.) DHEW Pub. No. (NIH) 77-992, Wash., D.C., U.S. GPO, 1976. (data from 1965-1969 cohort)

[2] Computing a stage-adjusted survival rate by using proportion of whites within each stage (i) as a weight (w) to calculate an expected survival rate E(S) from the observed survival rates (s) within each stage, i.e., $E(S) = \sum_i w_i s_i$

[3] Observed racial differentials (0) minus expected racial differentials (E) divided by observed racial differentials, i.e., Increase = (0 − E) ÷ 0

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COMPARISON OF CANCER INCIDENCE AMONG NEW MEXICO'S INDIAN, HISPANIC, AND ANGLO POPULATIONS.

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The population-based New Mexico Tumor Registry identified 25,084 new primary cancers (excluding in situ carcinomas and non-melanoma skin cancers) among state residents in the period 1969-78. Ethnic-specific, age-adjusted average annual incidence rates for specific cancer sites show marked differences among the state's 3 major ethnic groups. For all cancer sites combined, and for most common cancers, the Anglo (white, not-Hispanic) population has rates similar to the rates for U.S. whites, as reported by the SEER Program. Overall, the rates for Hispanic males and females are lower than for N.M. Anglos and for U.S. whites. However, the rates for several specific cancers, including gallbladder, stomach, and uterine cervix are higher. New Mexico's American Indians have very low total cancer incidence but for gallbladder, stomach and cervix the rates exceed those for Hispanics. For most "common" cancers such as lung, breast, colon, rectum and prostate, rates for Indians and Hispanics are far less than for U.S. whites. As a first step between descriptive epidemiology and eventual interventions, we conducted a prevalence survey of lung cancer risk factors in Albuquerque. Respondents (N=1700) completed a standardized questionnaire, with an overall response rate of approximately 70%. Within age-sex strata, the cigarette smoking status of Hispanics and Anglos was similar. Cumulative cigarette consumption of Hispanics was approximately half that of the Anglos. Occupational exposures associated with increased lung cancer risk were also less frequent among Hispanic males. These results suggest that the low lung cancer rates in Hispanic males are partially explained by cigarette smoking and occupational exposures. Health education should be directed at preventing increased smoking by Hispanics.