



Tenth Annual Meeting of the
American Society of Preventive Oncology

March 5-7, 1986

Hyatt Regency Bethesda

Bethesda, Maryland

MASTER AGENDA

Wednesday, March 5

MORNING

AFTERNOON

EVENING

Registration
12:00 - 5:00 pm

Free evening

Workshop -
Year 2000 Goals -
Rationale and Achievability
2:00 - 5:00 pm
CABINET JUDICIARY SUITE

Thursday, March 6

MORNING

AFTERNOON

EVENING

Registration
8:00 am - 4:30 pm

Tobacco and Cancer -
Unsettled Issues
2:00 - 4:30 pm

Reception
6:30 - 7:30 pm
CHESAPEAKE SUITE

Welcoming Remarks
8:30 - 8:40
CABINET JUDICIARY SUITE

Symposium
Colo-Rectal Cancer
8:40 - 11:00 am

Selected papers
11:00 - 12:30 pm

Banquet
Role of Behavioral
Research and Modification
in the Future Control
of Cancer
7:30 - 10:30 pm
CHESAPEAKE SUITE

Friday, March 7

MORNING

MORNING

AFTERNOON

**Distinguished Achievement
Award**
8:30 - 9:00 am
CABINET JUDICIARY SUITE

Selected papers
9:30 - 10:15 am

Public Health Forum:
Hormonal Replacement
Therapy During Menopause
Risks and Benefits
10:45 - 12:00 pm

Status Report:
Chemoprevention Trials
1:30 - 3:00 pm

Keynote address
From Epidemiology to
Molecular Biology
9:00 - 9:30 am

Adjourn

Poster Session Open
9:30 - 3:00 pm

PROGRAM AND SELECTED PAPERS

Welcome to Bethesda!

Program chairman: Guy R. Newell, MD

sponsored by:

American Society of Preventive Oncology

American Cancer Society

National Cancer Institute

Conference information

This tenth annual meeting of the American Society of Preventive Oncology focuses on some of the current major issues in cancer prevention: NCI Year 2000 Goals, colorectal cancer, tobacco and cancer, hormonal replacement therapy during menopause and chemoprevention trials. The program chairman, Dr. Guy R. Newell, and the Executive Committee of ASPO have brought together what promises to be an extraordinary series of presentations by leaders in their fields of scientific inquiry. This meeting is supported by ASPO and by generous grants from the American Cancer Society and the National Cancer Institute.

ASPO

In its tenth year ASPO is striving to:

- promote the exchange and dissemination of information and ideas relating to cancer prevention and control;
- identify and stimulate research areas in cancer prevention and control;
- foster the implementation of programs in cancer prevention and control.

A growing and active membership facilitates achievement of these goals. The Executive Committee and council members listed below are very interested in hearing from prospective or current members.

Nicholas Petrakis, M.D.
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Dept. of Epidemiology &
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The National Office for ASPO is at the University of Wisconsin, where the executive secretary, Ms. Joan Wiegel, may be contacted for any information or assistance: 1300 University Ave. - 7C, Madison, WI 53706, (608)263-6919.

CME credit

Forms may be picked for continuing medical education credit at the registration desk.

Messages

Please see Ms. Joan Wiegel at the registration desk if you wish to leave or expect a message.

Banquet

Please let Ms. Joan Wiegel know immediately of your plans to attend the banquet on Thursday evening.

Dining and discovering Washington

Booklets regarding tourist information is available at the registration desk.

Special acknowledgement

The Executive Committee of ASPO wishes to offer special thanks to Dr. Guy R. Newell, the program chairman, Louise Brinton and Jennifer Kelsey, co-chairmen, for their tireless efforts in arranging this meeting.

Wednesday, March 5

12:00 pm - 5:00 pm

2:00 pm - 5:00 pm

CABINET JUDICIARY SUITE

REGISTRATION

WORKSHOP

Year 2000 Goals - Rationale and Achievability

Moderator: Guy R. Newell, MD

Overview by NCI

Edward J. Sondik, PhD

Smoking

C. Anderson Johnson, PhD

Diet

Walter C. Willett, MD

Treatment

Paul F. Engstrom, MD

Projections for the World

Anthony B. Miller, MB, FRCP(C)

Panel Discussion

Thursday, March 6

8:00 am - 4:30 pm		REGISTRATION
8:30 am - 8:40 pm		WELCOMING REMARKS
CABINET JUDICIARY SUITE		Nicholas L. Petrakis, MD President, ASPO
8:40 am - 11:00 am		SYMPOSIUM Colo-Rectal Cancer Bernard Levin, MD Introduction to Etiology and Pathogenesis Adrianne Rogers, MD Biochemical and Genetic Markers Robert Coffey, MD Chemoprevention Trials Michael Wargovich, PhD
9:40 am - 10:10 am		REFRESHMENT BREAK Screening and Detection Sidney Winawer, MD Panel Discussion
11:00 am - 12:30 pm		SELECTED PAPERS Moderator: Richard R. Love, MD
11:00 am - 11:20 am	1*	Evaluation of a school-based primary skin cancer prevention program Janet L. Ramstack, DrPH
11:20 am - 11:40 am	2	Dependence of total nevi on dysplastic nevi in determining risk for melanoma George C. Roush, MD
11:40 am - 12:00 pm	3	Total body nevi count and other risk factors for melanoma Elizabeth A. Holly, PhD, MPH

*Number refers to the abstract printed in the selected paper section of this program.

12:00 pm - 12:20 pm 4

Risk factors of breast cancer among asian born chinese women, U.S. born chinese women and caucasian women in a northern California breast cancer screening program

Ka Sing Yeung, PhD

12:20 pm - 12:40 pm 5

Influence of reproductive and menstrual factors on breast fluid and serum estrone (E₁) and estradiol (E₂) and lack of relationship between serum and breast fluid E₁ and E₂: implications for breast cancer risk

Margaret Wrensch, PhD

12:40 pm - 2:00 pm

LUNCH

2:00 pm - 4:30 pm

Tobacco and Cancer - Unsettled Issues

Steven D. Stellman, PhD

Unresolved Cancer Risk

Louise A. Brinton, PhD

Smokeless Tobacco

Dietrich Hoffmann, PhD

Passive Smoking

Pelayo Correa, MD

3:00 pm - 3:15 pm

REFRESHMENT BREAK

Tobacco and Coffee Interactions

Alan Morrison, MD

Preventive Strategies

Steven D. Stellman, PhD

Panel Discussion

4:30 pm - 5:30 pm

BUSINESS MEETING

6:30 pm - 7:30 pm

RECEPTION

CHESAPEAKE SUITE

7:30 pm - 10:30 pm

BANQUET

CHESAPEAKE SUITE

Role of Behavioral Research and Modification in the Future Control of Cancer

Joseph W. Cullen, PhD

Friday, March 7

8:30 am - 9:00 am
CABINET JUDICIARY SUITE

ASPO DISTINGUISHED ACHIEVEMENT AWARD PRESENTATION

1985 Award recipient:

William Haenszel

Presentation of award:

Nicholas L. Petrakis, MD

Awardee Address

Awardee

9:00 am - 9:30 am

Keynote address: From epidemiology to molecular biology

Fred Li, MD

9:30 am - 3:00 pm

POSTER SESSION OPEN

9:30 am - 10:15 am

SELECTED PAPERS

Moderator: Richard R. Love, MD

9:30 am - 9:50 am

6

Do all women benefit from screening for cancer of the cervix?

Gustave Riotton, MD

9:50 am - 10:10 am

7

Cigarette attributable risk of cancer in women

Gary H. Lyman, MD, MPH

10:10 am - 10:30 am

8

The interaction of smoking and alcohol on laryngeal cancer risk

Roni Falk

10:30 am - 10:45

REFRESHMENT BREAK

10:45 am - 12:00 pm

Public Health Forum: Hormonal replacement therapy during menopause: risks and benefits

Robert N. Hoover, MD

Benefits of estrogen use

Jennifer Kelsey, PhD

Risks of estrogen use

Barbara Hulka, MD, MPH

12:00 pm - 1:00 pm

1:30 pm - 3:00 pm

3:15

Rationale for progesterone supplementation

George Huggins, MD

Summary and overview

Virginia L. Ernster, PhD

Panel Discussion

LUNCH

Status report: Chemoprevention trials

Marc Micozzi, MD

Agent selection: Integration of laboratory and human data

Thomas Moon, PhD

Design issues in population selection

Meir Stampfer, MD, DrPH

Problems in the conduct of chemoprevention trials

E. Robert Greenberg, MD

Panel Discussion

ADJOURNMENT

AS
PO PO

INVITED SPEAKERS

AS
PO PO

- Louise A. Brinton, PhD**
Environmental Epidemiology Branch
National Cancer Institute
Bethesda, Maryland
- Pelayo Correa, MD**
Department of Pathology
Louisiana State University Medical Center
New Orleans, Louisiana
- Robert Coffey, MD**
Department of Gastroenterology
Mayo Clinic
Rochester, Minnesota
- Joseph W. Cullen, PhD**
Division of Cancer Prevention and Control
National Cancer Institute
Bethesda, Maryland
- Paul F. Engstrom, MD**
Fox Chase Cancer Center
Philadelphia, Pennsylvania
- Virginia L. Ernster, PhD**
Department of Epidemiology
and International Health
University of California
San Francisco, California
- E. Robert Greenberg, MD**
Dartmouth Medical School
Hanover, New Hampshire
- Dietrich Hoffmann, PhD**
Naylor-Dana Institute
American Health Foundation
Valhalla, New York
- Robert N. Hoover, MD**
Environmental Epidemiology Branch
National Cancer Institute
Bethesda, Maryland
- George Huggins, MD**
Obstetrics and Gynecology Service
Francis Scott Key Medical Center
Baltimore, Maryland
- Barbara Hulka, MD, MPH**
Department of Epidemiology
School of Public Health
University of North Carolina
Chapel Hill, North Carolina
- C. Anderson Johnson, PhD**
Health Behavioral Research Institute
John Stauffer Pharmaceutical Sciences Center
Los Angeles, California
- Jennifer Kelsey, PhD**
Division of Epidemiology
Columbia University
School of Public Health
New York, New York
- Bernard Levin, MD**
Section of Gastrointestinal Oncology and
Digestive Diseases
University of Texas System Cancer Center
Houston, Texas
- Fred Li, MD**
Clinical Epidemiology Branch
National Cancer Institute
Boston, Massachusetts
- Richard R. Love, MD**
University of Wisconsin
Wisconsin Clinical Cancer Center
Madison, Wisconsin
- Marc Micozzi, MD**
Division of Cancer Prevention and Control
National Cancer Institute
Bethesda, Maryland
- Anthony B. Miller, MD, FRCP(C)**
NCIC Epidemiology Unit
University of Toronto
Toronto, Ontario, Canada
- Thomas Moon, PhD**
University of Arizona
Arizona Cancer Center
Tucson, Arizona
- Alan Morrison, MD**
Department of Community Medicine
Brown University
Providence, Rhode Island
- Guy R. Newell, MD**
Department of Cancer Prevention
The University of Texas System Cancer Center
Houston, Texas
- Nicholas L. Petrakis, MD, President of ASPO**
University of California
Department of Epidemiology and
International Health
San Francisco, California

Adrianne E. Rogers, MD
Department of Pathology
Boston University School of Medicine
Boston, Massachusetts

Edward J. Sondik, PhD
Surveillance Operations &
Research Branch
National Cancer Institute
Silver Spring, Maryland

Meir J. Stampfer, MD, DRPH
Harvard Medical School
Channing Laboratory
Boston, Massachusetts

Steven D. Stellman, PhD
American Cancer Society
New York, New York

Joseph A. Tangrea, MPH
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National Cancer Institute
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Michael Wargovich, PhD
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Digestive Diseases
University of Texas System Cancer Center
Houston, Texas

Walter C. Willett, MD
Harvard Medical School
Channing Laboratory
Boston, Massachusetts

Sidney Winawer, MD
GI Service
Memorial Sloan Kettering Cancer Center
New York, New York

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SELECTED PAPERS

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EVALUATION OF A SCHOOL-BASED PRIMARY SKIN CANCER PREVENTION PROGRAM. Janet Ramstack, Dr.P.H., S.White,M.Ed., K.Hazelkorn,B.A., F.Meyskens, M.D. Arizona Cancer Center, Tucson, Az. 85724

We have evaluated a primary skin cancer prevention curriculum in a controlled situation, targeted at pre (4th - 5th grades) and early (6th - 8th grades) adolescents who are beginning to develop unhealthy suntanning habits at that age. Two unique 6 unit comprehensive "Sunshine and Skin Cancer" curricula were developed, implemented, and evaluated in the Casa Grande (CG), AZ School System. The teachers were involved in the development of the curricula and were trained to teach it. A 4-part evaluation instrument [demographics, knowledge (K), attitude (A), and behavior (B)] was administered to the CG students 2 months before, immediately before, immediately after, and 6 months after curriculum exposure. Using ANOVA with 2-tailed tests and a 95% CI, the KAB portions were analyzed independently. The p-values for the short-term changes in each section by grade was determined:

p-Values of Test Score Changes*				
Grade	N	Knowledge	Attitude	Behavior
4	58	0.001	0.004	0.014
5	267	0.001	0.001	0.001
6	82	0.001	0.299	0.001
7	212	0.001	0.563	0.001
8	77	0.001	0.515	0.001

(* 15 questions each section)

The results indicate that youth can be educated about skin cancer prevention in a formal school setting. A behavioral change (most likely via knowledge change) was demonstrated for all grades. The delayed evaluation results are being compiled.

DEPENDENCE OF TOTAL NEVI ON DYSPLASTIC NEVI IN DETERMINING RISK FOR MELANOMA. George Roush, Lisa McKay, James Nordlund, Bernadette Forget, Linda Titus, John Kirkwood. Yale University, New Haven, CT and University of Cincinnati, Cincinnati, OH.

Risk for cutaneous melanoma is increased in those with increased numbers of total nevi (TN) in one set of recent studies and in those with atypical moles or dysplastic nevi (DN) in another set of recent studies. But the interdependence of these quantitative and qualitative markers of risk has never been examined to our knowledge. Also, the conceptual validity of DN has been repeatedly challenged — particularly in the non-familial setting. Based on a case-control study conducted in Sydney, Australia (see Cancer Res 1985;45:1855-1861), we compared 246 cases of melanoma (excluding 7% of targeted patients with a history of melanoma in a first degree relative) to 134 non-melanoma controls. Study subjects were examined by a dermatologist (JN) and oncologist (JK). 16+ TN were found in 56.1% of cases and 46.3% of controls with a relative risk (RR) for melanoma = 1.9 (95% confidence limits (CL): 1.2, 3.1). DN were found in 34.2% of cases and 7.5% of controls with RR = 7.2 (95% CL: 3.5, 14.6). Adjustment for DN lead to substantial reduction in risk due to TN to a statistically non-significant level (RR = 1.3, 95% CL: 0.8, 2.2). However, adjustment for TN led to about the same risk estimate due to DN (RR = 7.1, 95% CL: 3.3, 14.9). These patterns were even more evident in those under age 50 (the younger half of the study population). 31% of all non-familial melanomas were attributable to DN. These analyses suggest: 1) the increased risk for melanoma in those with increased numbers of nevi may be largely due to DN; 2) in non-familial melanoma, DN is a clinically distinct syndrome.

TOTAL BODY NEVI-COUNT AND OTHER RISK FACTORS FOR MELANOMA.
EA Holly, PhD, J Kelly, MD, S Shpall, MD, N Friend, MS.
University of California San Francisco and Northern
California Cancer Program, Palo Alto, California.

We conducted a case-control study among whites to determine whether the total number of nevi on patients diagnosed with cutaneous melanoma was different from the number found on control patients. 121 consecutive patients seen in the melanoma clinic at UCSF comprised the case group. 138 patients seen in other UCSF clinics served as controls. Physicians counted all nevi (excluding scalp) that measured at least 2mm in diameter on each subject. Cases had total body nevi counts 3 times greater than controls ($p < 0.001$). This three-fold difference existed over each body part (head and neck, upper extremities, lower extremities and trunk). Men had twice as many nevi on the trunk as women ($p < 0.001$) but there were no other significant differences by location of nevi for the two sexes. Cases experienced more blistering burns as children and young adults than did controls ($p < 0.001$), but not as adults ($p = 0.16$). Eye color when grouped as light (blue, green, grey) vs. dark (light brown, hazel, brown) showed no statistically significant differences between cases and controls ($p = 0.14$). Cases were more likely to have blond or red hair than were controls (odds ratio = 2.0, 95% confidence limits = 1.0-3.8). The odds of getting melanoma was 7.5 times greater for persons with 10 dysplastic nevi compared to those with none (95% CL = 2.7-21.1). Cases were also more likely to report 2 prior skin cancer than were controls (OR = 2.9, 95% CL = 1.0-9.0). These odds ratios were obtained using a logistic model that contained the following variables: total number of dysplastic nevi, hair color, previous skin cancer, burn score, age, and family members with large numbers of nevi. These results show that total body nevi count, as well as total number of dysplastic nevi should be considered as risk factors for melanoma.

RISK FACTORS OF BREAST CANCER AMONG ASIAN BORN CHINESE WOMEN, U.S. BORN CHINESE WOMEN AND CAUCASIAN WOMEN IN A NORTHERN CALIFORNIA BREAST CANCER SCREENING PROGRAM.

Yeung, K.S., Ph.D. (University of California, Berkeley), King, M-C., Ph.D. and Petrakis, N.L., M.D.

To demonstrate that environmental exposures are important determinants of breast cancer risks, hence implying possibilities of prevention, we examined the distributions of some recognized risk-factors of breast cancer among 121 Asian born Chinese, 191 U.S. born Chinese, and 241 Caucasian women in the San Francisco Bay Area. All women were participants of the Northern California Breast Cancer Detection Demonstration Project. Information on demographic and breast cancer risk factors were obtained in 1976 from the intake questionnaire to the screening program. Analyses showed that the 3 groups were similar in age but with respect to age at menarche, age at first live birth and years of pre-child birth hormonal activities, U.S. born Chinese women were similar to Caucasian women but significantly ($P \leq 0.05$) different from Asian born Chinese. All 3 groups were different in number of live births ($P < 0.01$) and family history of breast cancer ($P < 0.06$). U.S. born Chinese had a higher prevalence of breast abnormalities ($P < 0.01$) than Asian borns. No difference in age at menopause was observed, probably due to higher proportions of surgical menopause among Caucasian and U.S. born Chinese women. The study suggests that several recognized risk factors of breast cancer are acquired, either early in life; or through long term environmental exposures such as diet. Further, breast cancer incidence among U.S. born Chinese women might increase to rates similar to Caucasian women in the near future.

INFLUENCE OF REPRODUCTIVE AND MENSTRUAL FACTORS ON BREAST FLUID AND SERUM ESTRONE (E_1) AND ESTRADIOL (E_2) AND LACK OF RELATIONSHIP BETWEEN SERUM and BREAST FLUID E_1 AND E_2 : IMPLICATIONS FOR BREAST CANCER RISK; M Wrensch, NL

Petrakis, VL Ernster, PK Sliteri, J Murai, N Simborg, RE Lee, ME Dupuy; Department of Epidemiology and International Health, University of California, San Francisco.

This is a study of the relationship of serum with breast fluid estrogens and risk factors for breast cancer. Serum and nipple aspirate fluid were obtained from women participating in a large on-going case-control study of breast cancer and benign breast disease. All women had a comprehensive interview, including a detailed menstrual and reproductive history. Estrone (E_1) and estradiol (E_2) were measured in blood from 475 premenopausal control women and in breast fluid from 101 of these women. Breast fluid estrogen levels were approximately 10 times those of serum and were not correlated with serum levels.

Furthermore, while serum E_1 and E_2 levels fluctuated as expected with day in the menstrual cycle, breast fluid E_1 and E_2 were constant throughout the menstrual cycle. Breast fluid E_1 and E_2 levels were low in lactating women. These levels increased with months since last full-term birth and with months since lactation. Also, breast fluid E_2 and E_1 levels were negatively correlated with the total months a woman had breastfed. Women who had a full-term birth had lower breast fluid E_1 levels than women who had not. No associations were found between serum E_1 or E_2 levels and these measures of parity and lactation.

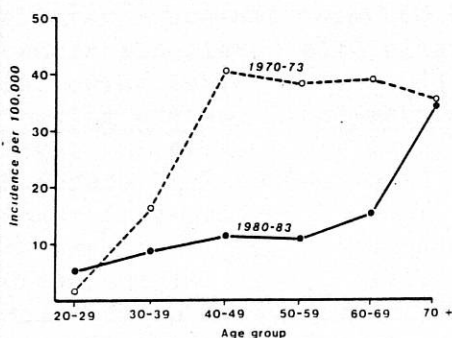
The absence of a relationship of breast fluid with serum E_1 and E_2 levels may explain why studies of serum estrogen have failed to elucidate endocrinologic mechanisms for breast cancer risk. The prolonged low levels of estrogen in breast secretions following a full-term birth and lactation may, in part, explain why parity reduces breast cancer risk.

DO ALL WOMEN BENEFIT FROM SCREENING FOR CANCER OF THE CERVIX ?

Riotton G., M.D., Obradovic M., M.D.
Geneva, Switzerland

In the State of Geneva, Switzerland, screening for cancer of the cervix by cytology began modestly thirty years ago. In the three year period 1973-75, more than half the population aged 25-70 was screened at least once; however the proportion of attending women decreased steadily among those aged over 40. In 1978, about two thirds of the women aged over 65 had either not consulted a gynecologist for at least five years, or had never

been seen by one. The result of this situation can be seen on the figure : a striking decrease in incidence - and also in mortality, not shown here - of invasive carcinoma of the cervix among women aged 30-69, but none in older age-groups.



Cytology before the age of 30 may have hidden an increased incidence, as observed in many places. On the other hand, failure to reach a high enough proportion of women aged over 40 not only accounts for a significant number of needless deaths, but has caused needless, serious, painful, expensive and invalidating treatments.

It is therefore essential that screening programs be reconsidered in the light of both the extensive experience acquired so far and the screening resources available. In our case, emphasis should be laid on reaching older women instead of overscreening young women.

CIGARETTE ATTRIBUTABLE RISK OF CANCER IN WOMEN

GH Lyman, M.D. and HG Stockwell, Sc.D., HL Moffitt Hosp and Cancer Research Inst, Colleges of Medicine and Public Health, University of South Florida, Tampa, FL.

Cigarette use has been associated with a reduced risk of endometrial cancer and an increased risk of lung cancer and several other neoplasms. The case-control study reported here utilized 21,111 incident cases of cancer in women reported during a one year period to a population-based cancer registry for the State of Florida. Cases included 1374 women with endometrial cancer, 2376 with lung cancer while 3921 women with colorectal cancer, malignant melanoma and endocrine cancer served as controls. Current/past cigarette use was reported by 6915 (33%). The risk of cancer associated with cigarette use is summarized in the following table.

Smoking status	Odds Ratio		
	Endometrial	Lung	All other Cancer
Light (<1 ppd)	1.06	7.30	2.06
Moderate (1-2 ppd)	0.79	14.45	2.54
Heavy (> 2 ppd)	0.57	35.16	4.13
Ex-smoker	0.64	7.42	1.40
Other/unknown	1.12	1.44	1.17

Moderate to heavy cigarette use was associated with a significant reduction in risk of endometrial cancer. The greatest effect of cigarette use on endometrial cancer risk was observed in patients age 50 or greater. A strong dose response effect was observed between increasing cigarette use and the risk of lung cancer as well as the risk of all cancers. A cigarette attributable reduction in annual risk of endometrial cancer for the State of 7% (96 cases) was estimated. Alternatively a cigarette attributable increase in annual risk of lung cancer in women of 66% (1565 cases) and of all cancers of 16% (2815 cases) was estimated. While the reduction in risk of endometrial cancer is of biologic interest, cigarette use is associated with a dose-dependent net increase risk of cancer in women.

The Interaction of Smoking and Alcohol on Laryngeal Cancer Risk. Falk R*, Brown LM, Pickle LW, Mason TJ and Buffler PA.

Recent studies have suggested a synergistic effect of alcohol and tobacco use on laryngeal cancer risk. Since these factors are highly correlated, the large excess risk found for heavy alcohol consumption and smoking may only reflect strong confounding for which no adequate adjustment can be made. Using questionnaire data from 153 cases and 178 population-based controls participating in an incident case-control study of laryngeal cancer in the Texas Gulf Coast area during 1975-80, the authors evaluated the individual and combined effects of these risk factors. Eight cases (5%) and 43 (24%) controls reported no history of cigarette smoking, while less than 1% of both cases and controls indicated no history of alcohol consumption. A dose-response effect for smoking intensity (cigarettes per day) was suggested for current smokers where a 13-fold risk was seen for persons smoking 1 1/2 packs per day compared to never smokers. No excess risks for low or moderate alcohol consumption were apparent, however an approximate doubling in risk is seen for heavy consumers (26 or more (standardized) drinks per week). To address the interaction of alcohol and smoking we used the low consumers of alcohol (< 11 drinks/week) and cigarettes (1-30/day for 1-36 years) as a referent group. Preliminary results suggest that heavy alcohol consumption confers an additional risk only among long term smokers; among persons smoking for shorter periods, risks for heavy and light alcohol consumption were similar. The minimal interaction noted among long term smokers was not consistent with either additive or multiplicative effects, suggesting an absence of synergy between alcohol consumption and cigarette smoking.

SELECTED POSTERS

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Lawrence W. Green, Dr.P.H., University of Texas;
Veronica Conley, Ph.D., National Cancer Institute;
Chris Y. Lovato, Ph.D., University of Texas

DEVELOPMENT AND EVALUATION OF OCCUPATIONAL HEALTH
EDUCATION PROGRAMS TO REDUCE EXPOSE TO CANCER HAZARDS

This presentation will provide an overview of five labor union projects designed to inform workers of their cancer risks and to assist them in reducing those risks. This National Cancer Institute (NCI) supported research was undertaken to: 1) measure the impact of prevention education on workplace behavior change, and 2) develop a greater understanding of those workplace organizational, administrative, and social factors which serve as reinforcements or deterrents to the cancer control goals of educational interventions. Background on the initiative will be addressed by the NCI Project Director. Each project's approach will be compared on specific dimensions of the educational intervention and research methods. A model will be presented that characterizes the intervention programs. Implications for future cancer control programs and research in occupational settings will be discussed.

SECONDARY CANCER PREVENTION IN ORAL DYSPLASIA

Condict Moore, M.D., University of Louisville School of Medicine, Louisville, Kentucky.

Dysplasia of the oral cavity is often the histopathologic diagnosis of the clinical "red" lesion, which often also shows carcinoma-in-situ. Associated with tobacco in 95% of cases, dysplasia transforms into invasive cancer more often than the "white" lesion, leukoplakia, although they often coincide. In order to know the outcome of conservative management over time of these patients we analyzed a series presenting with clinical "red" oral lesions in a 10 year period (1972-1982). All patients had biopsies, usually multiple over time. All were tobacco users and 10% were heavy alcohol users. The average age was 64.5 yrs.; the average follow-up was 8.5 yrs. (range 3-13 yrs.). Seventy three percent had or developed invasive cancer while 27% remained as dysplasias. Most all had "red", "white" or superficial invasive cancer at various times in varying oral sites. Treatment included local excision, cauterization, tobacco withdrawal, vitamin A analogue administration, in varying combinations or altogether, plus frequent follow-up visits. No deaths occurred from oral cancer. Three have died, two with minimal oral cancers. All others are living and well free of cancer. Three conclusions seem warranted: Vitamin A analogues had little effect in permanently reversing the carcinogenic process; successful prevention of death from oral cancer in these patients is possible; of multiple treatment measures, frequent follow-up is the single most important one.

Haughey, B.P.; O'Shea, R.; Dittmar, S.; Mathewson, M.;
Smith, S., State University of New York at Buffalo.
Bahn, P., D'Youville College.

SMOKING BEHAVIOR AMONG STUDENT NURSES IN BUFFALO, NEW YORK

The purpose of this study was to describe the smoking habits of student nurses and determine the correlates of smoking initiation, continuation and cessation. The sample included 1,163 student nurses attending 10 nursing schools in Buffalo, New York. Data were gathered by means of a self-administered questionnaire.

Approximately 30% of the students were current smokers, 25% were ex-smokers and 45% never smoked. More than half of the smokers (57%) expressed the desire to quit and, on the average, had tried five times to do so. Major reasons for trying to quit were to protect future health, save money, self-discipline and pressure from significant others. Most (90%) had tried to quit on their own and all at once. Knowledge of the health consequences of smoking was not significantly related to smoking behavior. However, preventive health orientation and attitudes toward the professional responsibility for promoting anti-smoking efforts were significantly related to smoking status.

These data suggest the need for health educators to promote personal health practices among their students that are congruent with the professional goals of health promotion and disease prevention.

VITAMIN USAGE AMONG WOMEN WITH COLORECTAL POLYPS
AND CANCER. AI Neugut, CM Johnsen, KA Forde, MR
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Chemoprevention of various epithelial cancers with vitamins or minerals has been of great interest recently. Multiple intervention trials are in progress to assess its impact, including several trials in patients with adenomatous polyps of the colon (APs). We interviewed 252 women who underwent colonoscopy at our institution between 1979 and 1981 and collected data on vitamin usage. Eight women with inflammatory bowel disease were excluded. The remaining 244 women ranged in age from 34 to 98 years (median 69). Overall, 57.7% used vitamin pills on a regular basis, with 6.6% using vitamin A, 20.7% using vitamin C, and 16.2% using vitamin E. There were no differences in vitamin usage among women with APs (105 cases), women with colon cancer (56 cases), and women without colon neoplasia (83 cases). Despite widespread use of vitamins, this study did not demonstrate benefit in preventing colorectal polyps or cancer.

EFFICACY OF LOW COST MAMMOGRAPHY David V. Schapira, M.B. Ch.B., Gayle Martin, Philip Strax, M.D. Papanicolaou Comprehensive Cancer Center, U of Miami and Strax Breast Cancer Detection Institute (SBCDI), Ft. Lauderdale.

The SBCDI currently screens 1,000 women a month for \$35 per person. In the first five years of operation (1980-85) 20,128 women were screened. A total of 284 breast cancers have been detected - 2 among 1,929 mammos. in women 35 yrs. (1:965), 35 in 5,382 mammos. in women 50 yrs. (1:154) and 247 in 22,852 mammos. in women 50+ of age (1:92).

Detection of all cancers was by mammo. alone (14.1%), clinical exam alone (16.2%) or by both techniques (69.7%). At presentation 36.5% of women with breast cancer were asymptomatic. More asymptomatic patients were free of axillary mets. than symptomatic patients (67.6% vs. 60.2%) and their tumors were more frequently less than 2.0 cm in diam. (71.9% vs. 59.8%). Axillary nodal involvement in screened cases is compared with 2,616 cases of breast cancer seen at the Saskatchewan Cancer Foundation 1945-60 (SASK.I) and 1,071 cases seen 1977-82 (SASK.II).

	Mammo. only %	Clinician only %	Both %	Total %	SASK.I %	SASK.II %
Ax. nod. neg.	88.0	67.9	73.0	73.2	47.0	51.6
Tumor 2 cm.	72.7	71.4	60.2	63.5		

A positive family history was noted in 30.8% of cancer and 23.4% of women without breast cancer seen at the screening center compared to 6.4% from Sask.I. The cost of mammography and examination has been estimated at \$44. To detect 284 cancers 30,063 mammos. were performed at a cost of \$4,660 a cancer.

CONCLUSION: The accessibility of low cost mammography to women and physicians for screening or diagnosis resulted in more cancers being detected at an earlier stage. Clinical exam of the breast is an essential part of breast cancer screening.

THE EFFECTS OF CIGARETTE SMOKING, AND RADIATION EXPOSURE
ON THE LEVEL OF SEVERITY OF SPUTUM CYTOLOGY AMONG U.S.
URANIUM MINERS.

ABSTRACT

During the 1950's medical teams of the U.S. Public Health Service initiated a study of males who had worked underground in uranium mines in the Colorado Plateau. Occupational, medical, and smoking histories were obtained during the examinations and updated during subsequent annual censuses of the miners. Sputum samples were collected annually in the absence of severe abnormalities, and semi-annually if severe abnormalities were detected. Analyses to date utilizing transitional probability matrices have found a number of consistent associations between level of severity of cytology and extent of exposure to radiation and smoking intensity. Specifically, the transition from mild to moderate atypia exhibits the most consistent association of all possible transitions with both cigarette smoking and radiation exposure. Cytologic readings among miners were found to be less severe subsequent to the cessation of smoking.

IS LUNG CANCER A SEXIST DISEASE?

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and Saskatoon Cancer Clinic.

This report is based on responses to a mailed questionnaire from 927 patients with lung cancer (742 males, 233 females), or their next-of-kin, and information obtained from the Saskatchewan Cancer Foundation Tumour Registry. Females were diagnosed at an earlier mean age ± 150 than were men (63.5 ± 10 yrs. vs 67.6 ± 10 yrs., $p < .001$), a finding which was consistent for each major histological type. Females were more frequently diagnosed prior to age 60 (42.0%) than were males (25.6%) ($p < .001$). Female patients were significantly more likely to be lifetime nonsmokers of cigarettes than were male patients (23.0% vs 3.7%, $p < .001$). Among current smokers, females started smoking at an older age (19.3 ± 5.7 yrs. vs 16.5 ± 3.6 yrs., $p < .001$); had smoked for fewer years (41.0 ± 10 yrs. vs 47.4 ± 10 yrs., $p < .001$) and smoked fewer cigarettes per day than male patients (23.6 ± 8.4 vs 26.7 ± 11 , $p < .05$). Similar results were found for the duration of the smoking habit and number of cigarettes smoked among exsmokers. When current smokers and exsmokers are combined, the distribution of packyears by gender is significantly different. A higher percentage than expected of females as compared to males were clustered in the lower packyear categories ($p < .0003$). No occupational exposure or familial factors which might act in synergism with cigarette smoking were identified. Thus, females developed primary lung cancer at an earlier age while smoking for fewer years than males. A prospective study is underway to confirm this finding.

A QUESTIONNAIRE TO ASSESS HEALTH ATTITUDES, BELIEFS, AND
BEHAVIOR RELATED TO INTERIM DIETARY GUIDELINES FOR REDUCING
CANCER RISK.

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The purpose of the Dietary Modification for Cancer Prevention Questionnaire is to assess health attitudes, beliefs and behaviors related to each of the seven recommendations in the Interim Dietary Guidelines for Reducing Cancer Risk (National Research Council 1982). The items in the Questionnaire were developed to examine a list of variables based on the Health Behavior for Cancer Prevention Model (Atwood et al. 1985), including perceived benefits and barriers, levels of self-motivation and social support, personal and treatment efficacy, and current dietary practices. For each guideline, examples of dietary recommendations were given before a set of health behavior questions. The instrument was tested in thirty older adults for feasibility, reliability and validity according to preset statistical standards. Extensive ethnographic interviews and focus group discussions were also conducted with the same subjects. Results indicate that the perceived feasibility for implementing each of the seven dietary recommendations vary significantly, and the extent of behavioral change associated with each recommendation was often underestimated by subjects without adequate nutrition knowledge.

BREAST CANCER SCREENING: THE UTILIZATION OF MAMMOGRAPHY BY PRIMARY CARE PHYSICIANS. Sarah A. Fox, Ed.D., Carole V. Tsou, M.D., and Dennis S. Klos, Ph.D., University of Michigan, Ann Arbor, MI.

The success of screening programs is highly dependent on the cooperation of primary care physicians. Effective screening for breast cancer is no exception. Family physicians are the largest primary care specialty in the United States. The cooperation of this group in screening for breast cancer is an important area of investigation. A random sample of the entire membership of the Michigan Academy of Family Physicians was surveyed in detail to document clinical experience with breast cancer as well as their appreciation and understanding of breast self-examination (BSE) and mammography in screening. The majority of these physicians are seeing little breast disease. Regardless, this group underestimates the significance of the disease for women under 45 and over 55 years of age. There is considerable agreement that mammography's prime advantage is its sensitivity to the early detection of problems. Cost and safety factors are cited as primary disadvantages. Unfortunately the utilization of mammography is reserved for periodic usage for patients at high risk, for patients who request it, and least for regular screening, especially of the 35-50 year old group. Less frequent use of mammography for screening appears to be because of its expense, fear of radiation, and an ignorance of the potential of the procedure. In sum, this state-wide survey of residency-trained family physicians documents the necessity for professional education in many areas: the seriousness of breast cancer in women of all ages with age as the prime risk factor, the need to incorporate mammography into regular screening programs at at least as significant a level as BSE and the need for patients between 35-50 to be screened as carefully as those over 50 years of age. Mammography continues to be underused by the many primary care physicians who refer to radiologists.

SMOKELESS TOBACCO.

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Epidemiological studies in the Western world have thus far yielded only limited evidence that chewing tobacco is carcinogenic. However, case control studies from the Southeastern U.S.A. and from Sweden have implicated snuff-dipping in the etiology of cancer of the oral cavity and the pharynx. In one study, a strong dose-response has been observed. Only recently, bioassays with snuff and snuff extracts have demonstrated that this tobacco product is carcinogenic in the oral cavity of rats and hamsters, especially when snuff-treated animals have also been infected with HPV-1.

Chemical-analytical studies have revealed that chewing tobacco and, in particular snuff, contains polonium-210 (0.16-1.22 pCi/g) and very high concentrations of carcinogenic N-nitrosamines. From the latter group, the tobacco-specific nitrosamines (9.6-290 µg/g) are of major significance and here especially the powerful carcinogens NNN and NNK which are formed from nicotine by N-nitrosation during the processing of tobacco. NNK is metabolically activated by α -hydroxylation to a methylating species which gives rise in vitro and in vivo to 7-methylguanine and O⁶-methylguanine in DNA. The latter methylation product is known to cause miscoding in DNA. Currently, oral tissues of snuff-dippers and non-tobacco users are compared in respect to the presence of O⁶-methylguanine in DNA.

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INHIBITION OF BENZO(A)PYRENE INDUCED DNA DAMAGE IN ANIMAL AND HUMAN LUNG TISSUES AND METHYLBENZYLNITROSAMINE INDUCED ESOPHAGEAL CANCER IN RATS BY ELLAGIC ACID. Gary D. Stoner, Ph.D., Swapna Mandal, M.D., Department of Pathology, Medical College of Ohio, Toledo, Ohio 43699.

Ellagic acid (EA), a phenolic compound found in a number of fruits and vegetables, was tested for its ability to inhibit benzo(a)pyrene (BP)-induced DNA damage in cultured strain A mouse lung and human bronchial tissues. Lung explants were incubated in medium containing EA at non-toxic concentrations (10, 25, 50 and 100 μ M) for 16 hrs, followed by addition of 1 μ M [3 H]BP for 24 hrs. Explant DNA was isolated and quantitated to determine the level of binding of BP metabolites to DNA. BP metabolites in the culture medium were analysed by high-performance liquid chromatography. EA inhibited the binding of BP to DNA by 36-71% in mouse lung explants, and by 24-77% in human bronchial tissues. EA inhibited the metabolism of BP in mouse lung explants by 24-47% but had no effect on its metabolism by human bronchus.

In a separate study, EA was tested for its ability to inhibit methylbenzyl nitrosamine (MBNA)-induced esophageal tumors in male F-344 rats. Animals were fed a semipurified diet containing EA (0.4 g/kg) for 27 wks. Subcutaneous injections of MBNA (2.5 mg/kg) were started 2 wks after initiation of the diet, and administered once per wk for 18 wks. Control groups received MBNA only, EA only, or no treatment. Animals were sacrificed at 20 and 27 wks, and esophageal tumors (0.5-18 mm in diameter) were counted under a dissecting microscope. EA produced a significant ($p < 0.05$) decrease in the incidence of esophageal tumors at both 20 wks (50%) and 27 wks (26%). Tumors were not observed in untreated rats or in rats that received EA only.

These data indicate that EA may be an inhibitor of both benzo(a)pyrene-induced carcinogenesis in the lung and nitrosamine-induced carcinogenesis in the esophagus.