PROGRAM
and
ABSTRACTS

23rd Annual Meeting

American Society
of Preventive Oncology

March 14-16, 1999

J. W. Marriott
Houston, Texas

Program Chair: **Scott Lippman, MD**
The University of Texas
M. D. Anderson Cancer Center

American Society of Preventive Oncology

The **American Society of Preventive Oncology** is an active and growing organization that is striving to: 1) promote the exchange and dissemination of information and ideas relating to cancer prevention and control; 2) identify and stimulate research areas in cancer prevention and control; and 3) foster the implementation of programs in cancer prevention and control.

After attending the **23rd Annual Meeting** of the American Society of Preventive Oncology, participants should be better able to:

- comprehend state of the art research on markers of cancer susceptibility

- improve existing skills and gain new skills and understand about recruitment of subjects in cancer prevention trials

- understand about new intermediate markers for intervention trials

- design community-wide interventions aimed at reducing cancer risk

- comprehend the array of research opportunities for cancer prevention

- understand new initiatives in cancer screening research

Meetings of the American Society of Preventive Oncology are organized for professionals in clinical, educational or research disciplines who appreciate the challenges of a multidisciplinary scientific forum and who are committed to a comprehensive approach to cancer prevention and control.

Special Acknowledgements

Executive Committee

Officers

President
Margaret R. Spitz, MD
The University of Texas
M. D. Anderson Cancer Center
1515 Holcombe Blvd., Box 189
Houston, TX 77030
(713) 792-3020

Secretary/Treasurer
Alfred I. Neugut, MD, PhD
Columbia University
School of Public Health
600 W. 168th Street
New York, NY 10032
(212) 305-9414

President-Elect
Alfred I. Neugut, MD, PhD

Past-President
Richard R. Love, MD, MS
University of Wisconsin School of Medicine
1300 University Avenue, Suite 7-C
Madison, WI 53706
(608) 263-7066

Study Group Chairs
Women's Cancers
Kathy Helzlsouer, MD, MHS
Johns Hopkins School of Public Health
615 N. Wolfe St., Room 6029 B
Baltimore, MD 21205
(410) 955-9727

Chemoprevention
Mary Daly, MD, PhD
Fox Chase Cancer Center
510 Township Line Road
Cheltenham, PA 19012
(215) 728-2705

Roberd M. Bostick, MD, MPH
University of South Carolina
Family & Preventive Medicine
15 Richland Medical Park, Suite 301
Columbia, SC 29203
(803) 434-1602

Diet & Nutrition
R. Sue McPherson, PhD
University of Texas
School of Public Health
1200 Herman Pressler
Houston, TX 77030
(713) 500-9317

Tobacco
Paul Cinciripini, PhD
The University of Texas
M. D. Anderson Cancer Center
1515 Holcombe Blvd., Box 243
Houston, TX 77030
(713) 792-0919

Susan Curry, PhD
Group Health Cooperative
Center for Health Studies
1730 Minor Ave., Suite 1600
Seattle, WA 98101
(206) 287-2873

At-Large Executive Committee Members

Robert Hiatt, MD, PhD
National Institutes of Health
National Cancer Institute
6130 Executive Blvd., EPN 232
Rockville, MD 20852
(301) 496-6616

Elizabeth Holly, PhD, MPH
UC - San Francisco
Dept. of Epi. & Biostatistics
1388 Sutter Street, Suite 920
San Francisco, CA 94109
(415) 476-3345

Bernard Levin, MD
The University of Texas
M. D. Anderson Cancer Center
1515 Holcombe Blvd., Box 203
Houston, TX 77030
(713) 792-3900

Frederick Li, MD
Dana-Farber Cancer Institute
44 Binney Street
Boston, MA 02115
(617) 632-2508

Victor Vogel, MD, MHS
Univ. of Pittsburgh Cancer Inst.
802 Kaufmann Bldg.
Pittsburgh, PA 15213-3221
(412) 692-2620

Rodger J. Winn, MD
The University of Texas
M. D. Anderson Cancer Center
1515 Holcombe Blvd.. Box 501
Houston, TX 77030

1999 Program Committee

Scott Lippman, MD, Chair
The University of Texas
M. D. Anderson Cancer Center

Caryn Lerman, PhD
Georgetown University
Lombardi Cancer Center

Gary Goodman, MD
Fred Hutchinson Cancer Research Center

Sheila Prindiville, MD, MPH
University of Colorado
Health Sciences Center

Margaret R. Spitz, MD
The University of Texas
M. D. Anderson Cancer Center

Richard R. Love, MD, MS
University of Wisconsin
School of Medicine

FOR THE FUTURE. . .

Please take a few minutes at the close of the meeting to complete the questionnaire at the back of this printed program. This will help future Program Committees and conference staff to better meet your professional and logistical needs. The 2000 Meeting is scheduled for March 5-7, 2000, at the Hyatt Regency, Bethesda, Maryland.

Condensed Meeting Program

---For your quick review. Greater detail is available in the following pages.---

Sunday, March 14

8:00 am - 8:00 pm	**Registration**
7:30 am - 5:00 pm	**Grant Writing Workshop** (open only to accepted pre-registrants)
	Sponsored by the Cancer Research Foundation of America
1:00 pm - 5:00 pm	**General Meeting for NCI/K07 Fellows**
10:00 am - 3:00 pm	**New Investigators' Workshop**
	Organizer: Alfred I. Neugut, MD, PhD
	Columbia University School of Public Health
	(Open only to those whose applications have been selected)
11:30 am – 3:30 pm	**General Meeting for NCI/K07 Fellows** (lunch will be provided)
4:00 pm - 6:00 pm	**Cancer Center Associate Directors /Cancer Prevention & Control**
6:30 pm - 10:00 pm	**ASPO Executive Committee Meeting** (Working Dinner)

Monday, March 15

7:00 am - 5:00 pm	**Registration**
7:30 am	**Study Group Breakfast**—Combined Chemoprevention/Women's Cancers Study Group
9:00 am	**Welcome Keynote Address**
	Patricia Ganz, MD, UCLA Schools of Medicine & Public Health
10:05 am	**Plenary Paper Session**
11:45 am	**ASPO Business Meeting**
Lunch on your own/Poster Set-up	
1:15 pm	**Symposium: *"Latest Developments in Research on Smoking: Integrating Pharmacologic, Genetic and Behavioral Perspectives"***
	Chair: Caryn Lerman, PhD, Georgetown University, Lombardi Cancer Cntr
3:30 pm	**Distinguished Achievement Award Address #1**
	John D. Potter, MD, PhD, co-recipient, Fred Hutchinson Cancer Research Center
4:15 pm	**NCI Listens**
5:00 pm	**Two Concurrent Paper Sessions--Epidemiology & Behavioral Science**
6:00 pm	**Poster Session and Reception**
7:45 pm	**Presentation of "Best Poster" Award**
7:45 pm	**Presentation – 1999 CRFA/ASPO Cancer Prevention Research Fellowship**

Tuesday, March 16

7:00 am - 5:00 pm	**Registration**
7:30 am	**Study Group Breakfasts--Tobacco Research & Molecular Epidemiology**
8:45 am	**Presidential Address: Margaret R. Spitz, MD**
	The UT M. D. Anderson Cancer Center
9:45 am	**Symposium: *"A Molecular Approach to Cancer Detection & Prevention"***
	Chair: Richard R. Love, MD, MS, University of Wisconsin
	Distinguished Achievement Award Address #2
	Waun Ki Hong, MD, co-recipient, The UT M. D. Anderson Cancer Center
11:30 am	**Luncheon & Joseph W. Cullen Memorial Award and Lecture**
	John P. Pierce, PhD, University of California, San Diego
12:45 pm	**Two Concurrent Paper Sessions--Diet & Physical Activity & Lung Cancer Research**
2:45 pm	**Symposium: *"Methodologic Issues in Chemoprevention Trials"***
	Chair: Gary Goodman, MD, MS, Fred Hutchinson Cancer Research Center

Conclusion of Program

ASPO 1999 – Program Details

Sunday, March 14

7:30 am - 8:00 pm   **REGISTRATION**

7:30 am - 5:00 pm   **Grant Writing Workshop** (Open only to accepted pre-registrants)
   GALVESTON ROOM   Sponsored by the Cancer Research Foundation of America

10:00 am - 3:00 pm   **New Investigators Workshop** (Open only to accepted applicants)
   DALLAS ROOM

           Organizer: **Alfred I. Neugut, MD, PhD**
                                Columbia University School of Public Health

           Faculty: **Roshan Bastani, PhD**
                                UCLA, Jonsson Comprehensive Cancer Center

                     Marilee Gammon, PhD
                                Columbia University School of Public Health

                     Elizabeth A. Holly, PhD
                                University of California, San Francisco

                     Bernard Levin, MD
                                The University of Texas
                                M. D. Anderson Cancer Center

11:30 pm – 3:30 pm   **General Meeting for NCI/K07 Fellows** (A light lunch will be served)
   BALLROOM "C"

4:00 pm - 6:00 pm   **Cancer Center Associate Directors for Cancer Prevention & Control**
   BALLROOM "C"

6:30 pm - 10:00 pm   **ASPO Executive Committee Meeting** (Working dinner)
   DALLAS ROOM

ASPO 1999 -- General Session

Monday, March 15

7:00 – 5:00 pm **REGISTRATION**

7:30 - 8:45 am **Hot Topics Breakfast Session**
HARRIS-HIDALGO-NAVARRO ROOMS

"Breast Cancer Chemoprevention—A New STAR on the Horizon?"

Co-Chairs: **Robin Bostick, MD, MPH** (Chemoprevention)
Mary Daly, MD, PhD (Chemoprevention)
Kathy Helzlsouer, MD, MHS (Women's Cancers)

9:00 am **Welcome: Scott Lippman, MD**
BALLROOM "B" The UT M. D. Anderson Cancer Center
1999 ASPO Program Chair

Andrew von Eschenbach, MD
The UT M. D. Anderson Cancer Center
Special Assistant for External Affairs

Keynote Address: Patricia Ganz, MD
UCLA Schools of Medicine & Public Health

*"Patient-focused Outcomes after Cancer Treatment:
Lessons Learned from the Study of Breast Cancer"*

9:50 am **Break**

10:05 am **Plenary Paper Session**
BALLROOM "B"

Chair: **Scott Lippman, MD**

10:05 am **Karen Woodson**
National Cancer Institute

*"Predicting p53 Mutation Status in Head and
Neck Cancers"*

| 10:25 am | **Stephen Hursting** |
| | The UT M. D. Anderson Cancer Center |

"A Novel Mammary Tumor Model for Cancer Prevention Studies"

| 10:45 am | **Long-Long Gao** |
| | Fox Chase Cancer Center |

"Alpha-Fetoprotein Screening for Hepatocellular Carcinoma"

| 11:05 am | **James Cerhan** |
| | Mayo Clinic |

"Twin Membership and Risk of Breast Cancer"

| 11:25 am | **Li-E Wang** |
| | The UT M. D. Anderson Cancer Center |

"Gamma Radiation-induced Mutagen Sensitivity as a Biomarker for Glioma Risk"

(See abstracts on following pages)

Title: Predicting p53 mutation status in head and neck cancers.

Author(s): Woodson K, Brotzman M, Goodrow T, Sauter E, Cleveland D, Mohr R, Klein-Szanto A, Trock B

Institution of 1st Author: Georgetown University/NCI

We assessed the relationship between p53 mutations (exons 5-9), tobacco and alcohol use, and their modification by GSTM1 or CYP2D6 in 135 patients with head and neck cancer. p53 mutations were determined using single-strand conformation polymorphism analysis and DNA sequencing. Cumulative tobacco exposure (years smoked) was a strong predictor of p53 mutation status, the odds ratio (OR) and 95% confidence interval (CI) for the highest quartile of years smoked (≥ 41 years) was 5.53 (95% CI, 1.60-19.1) relative to nonsmokers (P for trend =0.006). We demonstrate for the first time an effect of quitting smoking on p53 mutations. Patients who quit smoking 10 or more years prior to diagnosis had the same frequency as never smokers, OR=1.04 (95% CI, 0.22-4.56). However, those quitting less than 10 years before diagnosis had the same risk relative to nonsmokers as current smokers, OR=4.25 (95 CI, 1.32-13.7). This effect persisted after adjusting for cumultive duration of smoking. Alcohol consumption was not associated with p53 mutation status nor was it an effect modifier of the tobacco associations. We also investigated the relationship between p53 mutations and germ line polymorphisms of CYP2D6 and GSTM1. Neither genotype acted as an independent risk factor for p53 mutations. However, we did observe a stronger effect of tobacco on p53 mutation frequency in those with GSTM1 null genotype. Longer tobacco exposure (>29 vs ≤ 29) strongly increased p53 mutations, OR=5.60 (0.60-52.6) among GSTM1 null but not among the GSTM1 present genotype, OR=1.09 (0.19-6.20). In conclusion, we demonstrate cumulative tobacco exposure had the greatest impact on p53 mutations in head and neck tumors, and smoking cessation for 10 years or more reduced p53 mutations to levels similar to never smokers. GSTM1 may modify the effect of tobacco on p53 mutations.

A Novel Mammary Tumor Model For Cancer Prevention Studies.
Hursting S, Baum L, Shen J, Thompson H, Davis B, Clinton S.
U.T.- M.D. Anderson Cancer Center, Houston, TX 77030.

Like many kindreds diagnosed with the Li-Fraumeni familial cancer syndrome, heterozygous p53-deficient (p53+/-) mice have only one functional allele of the p53 tumor suppressor and are prone to a variety of neoplasms at mid-life; the median time to tumor-related death (MTD) of p53+/- mice is 18 months. We have previously reported that spontaneous tumorigenesis in p53+/- mice can be suppressed by several preventive interventions. Since mammary tumors in these mice are rare, we have crossed p53+/- mice with *Wnt-1* transgenic (TG) mice to develop a rapid spontaneous mammary tumor model. *Wnt-1* TG mice develop mammary tumors at a high rate by 1 year of age due to mammary gland overexpression of the *Wnt-1* oncogene. We have shown that p53-deficiency accelerates mammary tumorigenesis in these mice, with 100% of p53-/- *Wnt-1* TG mice and p53+/-*Wnt-1* TG mice dead from mammary tumors by 5 months and 8 months of age, respectively. To test their response to cancer preventive regimens, we randomized 100 female p53+/- *Wnt-1* TG mice (5 weeks of age, 20 mice/treatment) to receive: 1) control diet (AIN-76A diet); 2) fenretinide (AIN 76A diet with 0.04% w/w fenretinide); 3) fluasterone (AIN-76A diet with 0.2% fluasterone); 4) soy (AIN-76A diet with 0.45% phytochemical-enriched soy extract); or 5) a calorie restriction regimen (40% reduction in carbohydrate calorie intake relative to the control group). All mice were euthanized once a tumor reached 1.5 cm in diameter. We found that, relative to the control group (MTD=22 weeks), the fenretinide (MTD=32 weeks, p=0.03) and fluasterone (MTD=29 weeks, p=0.04) groups displayed moderate but significant delays in tumor development and death, while the soy (MTD > 40 weeks) and calorie restricted (MTD > 40 weeks) groups experienced highly significant delays in spontaneous mammary tumor development. Mechanistic studies are underway to determine the cellular and molecular responses underlying the preventive effects of these interventions. We conclude that p53+/- *Wnt-1* TG mice provide a rapid and sensitive model of spontaneous mammary tumorigenesis for characterizing breast cancer prevention strategies. (Funded by DAMD 17-96-1-6216 and P30 ES07784).

Title: Alpha-Fetoprotein Screening for Hepatocellular Carcinoma
Author(s): Gao L-L, Chen G, Chen G-C, Lin W-Y, Ross E, Evans AA, Shen F-M, London WT, Haimen City Cooperating Group
Institution of 1st Author: Fox Chase Cancer Center

Alpha-fetoprotein (AFP) is used as a screening tool for hepatocelluar carcinoma (HCC). Such screening is controversial because the natural history of HCC is variable and AFP is elevated by several mechanisms in hepatitis B virus (HBV) carriers. To evaluate the efficacy of AFP screening for early detection of HCC, we conducted a randomized, controlled trial.

14,794 HBV carriers in Haimen City, China were randomized to either an unmonitored group for usual care, or monitored group for every 6-month AFP screening followed by ultrasonography if AFP was > 20 ng/ml. From January, 1994 to February, 1998, a total of 27,032 tests for elevated AFP levels were performed. 6,809 subjects were tested; 6,102 subjects were tested more than once. Of 704 subjects who had at least one AFP > 20 ng/ml, 146 (20.7%) developed HCC during follow-up. 36% (82/228) of HCCs had no prior elevation of AFP. Elevated AFPs among those who did not develop HCC during follow-up were associated with higher than normal alanine aminotransferase, male gender and history of acute hepatitis in adulthood. 22% of HCCs in the monitored group were < 3 cm in diameter at diagnosis compared to 15% of HCCs in the unmonitored group. Population screening for HCC in Haimen City did not reduce HCC mortality, which was 698/100,000 in the unmonitored group, and 750/100,000 in the monitored group, or all cause mortality. AFP was neither sufficiently sensitive nor specific to be an adequate screening method for the secondary prevention of HCC.

Title: TWIN MEMBERSHIP AND RISK OF BREAST CANCER.
Author(s): Cerhan J, Kushi L, Olson J, Rich S, Zheng W,
Folsom A, Sellers T.
Institution of 1ˢᵗ Author: Mayo Clinic
Rochester, MN 55905

It has been hypothesized that intrauterine exposure to high levels of endogenous estrogens increases the risk of breast cancer. Estrogens are substantially elevated in twin pregnancies, particularly dizygotic pregnancies, and are higher when the fetus is female. We evaluated the association between aspects of twin membership and risk of breast cancer using a cohort of 29,197 postmenopausal Iowa women with no history of cancer. Breast cancer risk factors were determined using a mailed questionnaire in 1986 (baseline), and twin membership, sex of the twin, and zygosity was determined using a follow-up questionnaire in 1992. In the cohort, 538 (1.8%) women reported being a twin, and of these 24% were monozygotic, 63% were dizygotic, and 13% did not know. From 1986 through 1996, 1,230 breast cancers were ascertained by linking to the Iowa Cancer Registry. Compared to singletons, women who were a twin were at elevated risk of breast cancer (age-adjusted relative risk (RR)=1.6; 95% confidence interval (CI) 1.1-2.2). Risk was elevated (compared to singletons) if the sex of the other twin was female (RR=1.7; 1.1-2.6); however, this risk was limited to female dizygotic twins (RR=2.2; 1.2-3.7) as no excess risk was evident among monozygotic twins (RR=0.9; 0.4-2.2). The risk to women with a male twin was only modestly elevated (RR=1.3; 0.7-2.5). Adjustment for education, family history of breast cancer, body mass, body fat distribution, age at menarche, age at first live birth, hormone replacement therapy, alcohol use and smoking did not attenuate these associations. This cohort study lends further support to the theory that there may be important intrauterine influences on carcinogenesis in the breast.

γ-induced Mutagen Sensitivity as a Biomarker for Glioma Risk

L. E. Wang, M. L. Bondy, A. J. Sigurdson, A. P. Kyritsis, J. Gu, M. de Andrade, V. A. Levin, J. M. Bruner, and Q. Wei
Department of Epidemiology, M. D. Anderson Cancer Center, Houston, TX 77030

Brain tumors constitute about 9% of all human cancers, and gliomas account for 90% of these. Although the etiology of brain tumors remain unclear, gamma (γ) radiation is one of the few known risk factors. We have previously reported in a pilot study that mutagen sensitivity was an independent risk factor for gliomas. The purpose of the current study was to confirm our earlier findings in a larger case-control study of 136 glioma patients and 206 age- and sex-frequency matched healthy controls. We cultured whole blood in a short-term assay and irradiated it with a 1.5 Gy dose of gamma radiation. After an additional 5 hours in culture, the cells were harvested and we randomly scored 50 metaphases from each sample. Our results showed a significantly higher mean frequency of chromatid breaks per cell (b/c) in glioma patients (0.62 b/c ±0.34) than in the healthy controls (0.44 b/c ±0.19) ($p<0.001$). Using the median number of induced b/c (0.42) in the controls as the breakpoint for defining mutagen sensitivity, we observed an odds ratio of 3.2 (95% CI = 2.0-5.2) after adjustment for age and sex. In conclusion, the results of this larger study confirm our earlier findings that gamma-induced mutagen sensitivity is an independent risk factor for glioma.

11:45 am   **ASPO Business Meeting**
   BALLROOM "B"

12:15 pm   **Lunch on your own (Poster Set-up in *BALLROOM "C"*)**

1:15 – 3:15 pm   **Symposium:**
   BALLROOM "B"
                  "Latest Developments in Research on Smoking: Integrating
                  Pharmacologic, Genetic and Behavioral Perspectives"

                  Chair: **Caryn Lerman, PhD**
                                  Georgetown University School of Medicine
                                  Lombardi Cancer Center

                  "Pharmacology of Nicotine"

                          Neal L. Benowitz, MD
                          University of California, San Francisco

                  "Genetic Basis of Cigarette Smoking"

                          Peter G. Shields, MD
                          NCI Laboratory of Human Carcinogenesis

                  "Recent Advances in Behavioral and Pharmacologic Treatment
                          of Nicotine Dependence"

                          Paul M. Cinciripini, PhD
                          The UT M. D. Anderson Cancer Center

                  Discussant: **Neil E. Caporaso, MD**
                               NCI Pharmacogenetics Section

3:15 pm   **Break**

3:30 pm – 4:15 pm   **Distinguished Achievement Award Lecture #1**
    BALLROOM "B"

John D. Potter, MD, PhD (co-recipient)
Fred Hutchinson Cancer Research Center

"Morphostats – A Missing Concept in Biology"

4:15 – 5:00 pm   **NCI Listens**

"The Board of Scientific Advisors (BSA) of the National Cancer Institute (NCI) believes it is important to interact with and receive feedback from the clinical and laboratory research communities affected by NCI policies. BSA Members and NCI Staff invite conference participants to join them for this session. A brief presentation will be given by NCI Staff emphasizing the status of grant funding. the By-Pass budget, and the status of several new initiatives. The brief presentation will be followed by an open question and answer period. The NCI is committed to providing a written response to the Society concerning issues raised during the session. The BSA hopes that conference participants will take advantage of this opportunity to raise their concerns."

Participant List

Chair: **Mary B. Daly, MD, PhD**
Associate Director, Cancer Control Science Program
Fox Chase Cancer Center

Speaker: **Peter Greenwald, MD, DrPH**
Director, Division of Cancer Prevention
National Cancer Institute/National Institutes of Health

Paulette S. Gray, PhD
Deputy Director, Division of Extramural Activities
National Cancer Institute/National Institutes of Health

Robert Hiatt, PhD
Deputy Director, Division of Cancer Control & Population Sciences
National Cancer Institute/National Institutes of Health

Waun Ki Hong, MD
American Cancer Society Clinical Research Professor
The UT M. D. Anderson Cancer Center

Caryn Lerman, PhD
Director, Cancer Genetics
Georgetown University Medical Center, Lombardi Cancer Research Center

5:00 pm - 6:15 pm   **Two Concurrent Paper Sessions**

SESSION B: **Intervention Research**

BALLROOM "A"

Chair: **Jamie Ostroff, PhD**
                    Memorial Sloan-Kettering Cancer Center

5:00 pm   **Stephen H. Taplin**
                    Group Health Cooperative

                    *"Testing Reminder & Motivational Telephone Calls
                    to Increase Screening Mammography"*

5:20 pm   **Ellen R. Gritz**
                    The UT M. D. Anderson Cancer Center

                    *"Smoking Initiation and Nicotine Dependence in a
                    Multiethnic Sample of Adolescents"*

5:40 pm   **Kathryn Kash**
                    Strang Cancer Prevention Center

                    "Intervention for Women at Risk for Breast Cancer"

6:00 pm   **Mack T. Ruffin**
                    University of Michigan, Dept. of Family Medicine

                    *"Impact of Office Interventions to Increase Cancer
                    Screening"*

(See abstracts on following pages)

Taplin

5:00 pm

Title: Testing Reminder & Motivational Telephone Calls to Increase
Author(s): Screening Mammography
Taplin S, Barlow W, Ludman E, MacLehose R, Meyer D, Seger D, Herta D
Institution of 1st Author: Chin C, Curry S.
Group Health Cooperative and the University of Washington

Objective: To test whether motivational telephone calls increase mammography use compared to two simple reminders.

Design: Prospective randomized trial stratified on prior mammography experience.

Setting: Staff-model health maintenance organization (HMO)

Participants: We approached 5063 women ages 50-79 and due for mammograms. Seventy-four percent (n=3747) consented to the study. Forty-eight percent (n=1765) did not schedule mammography within two months of a mailed recommendation and were eligible for the trial. This included 488 women without prior mammography experience.

Interventions: A theory-based motivational telephone call, a reminder telephone call, and a reminder postcard. Both calls included the capacity to schedule the examination during the contact.

Main Outcome: We used Cox proportional hazards models to estimate the hazard ratio (HR) and 95% confidence interval (CI) for mammography documented on automated records within one year.

Results: Women randomized to the motivational call (n=590) were much more likely to get mammograms (HR 1.80: CI 1.48-2.19) than women mailed postcards (n=590). The two calls had equivalent effects (HR: 0.97; CI 0.81-1.16). Women with prior mammography experience were much more likely to get a mammogram (HR 3.4; CI 2.7-4.3).

Conclusions: A brief reminder telephone call may be as effective as a motivational call to promote mammography use.

Title: Smoking Initiation and Nicotine Dependence in a Multiethnic Sample of Adolescents

Author(s): E.R. Gritz, A.V. Prokhorov, & C. de Moor

Institution of 1st Author: The University of Texas M.D. Anderson Cancer Center

We investigated cigarette smoking and its predictors among a multiethnic population of adolescents. A volunteer sample of Houston-area public school students in the 5th, 8th, and 12th grades was studied using new and established predictors of smoking behavior. Associations with ever smoking and susceptibility to smoking were assessed within ethnicity (White, N=537; African-American, N=454; and Hispanic, N=297). Consistent with previous studies, White students smoked in substantially higher proportions than African Americans, with Hispanics in between. Simultaneously adjusting for other variables, the odds of ever smoking (OR=.47, $P<.01$) and susceptibility to smoking (OR=.64, $P<.01$) were significantly lower among African American adolescents when compared to Whites; odds ratios for Hispanics and Whites did not differ. Across all three ethnicities, the most important predictor of both ever smoking and susceptibility to smoking was the best friends' smoking status. Several ethnic-specific predictors also were identified. For example, depression was an important predictor of ever smoking among Whites and Hispanics, and pubertal development (females only)—among Whites and African Americans. Among current smokers, nicotine dependence measured by the mean modified FTQ score significantly increased over the 1-year observation period (from 2.33 to 3.09; $P=.02$). In concordance with previous investigations, cigarette smoking prevalence differs by ethnicity, and the factors associated with ever smoking and susceptibility to smoking differ among White, African American, and Hispanic adolescents. Our results may lead to culturally appropriate smoking prevention programs.

Title: Intervention for Women at Risk for Breast Cancer
Author(s):   Kash KM, Holland JC, Miller DG, Osborne MP

Institution of 1st Author: Strang Cancer Prevention Center

Previous research found that anxiety interfered with adherence to screening in women with family histories of breast cancer. A randomized controlled trial of a psychoeducational group intervention is being conducted. The specific aims are to examine the impact of the intervention on the: 1) intermediate outcome variables of knowledge of breast cancer and risk factors, breast cancer beliefs, breast cancer anxiety, and coping skills; and 2) endpoint variables of quality of life and adherence to screening. The intervention components include social support enhancement, education, cognitive restructuring, and problem-solving. Group sessions (8 to 10 women in each group) meet for one and a half hours each of six weeks, with six month and one year booster sessions. Interviews are conducted prior to randomization (Time 1), at the end of the six week intervention (Time 2), at six months (Time 3) and one year (Time 4).

To date 192 healthy, asymptomatic women at high risk for breast cancer (control condition N=84; experimental condition N=108) have participated in the study and many have completed Time 1, 2, 3, and 4 assessments. The mean age is 43, primarily white (90%), with 39% having a college education. At baseline, 67% of women overestimated their risk, 21% accurately estimated their risk and 12% underestimated their risk for developing breast cancer. A t-test found a significant reduction in breast cancer specific anxiety within the experimental group from Time 1 to Time 4 ($p<.04$), as well as a decrease in perception of risk ($p<.05$). In addition, women in the experimental condition significantly improved their knowledge of breast cancer ($p<.02$) and knew significantly more risk factors for breast cancer than women in the control condition at Time 3 and 4 ($p<.002$). These findings suggest that the intervention helps to decrease anxiety and increase knowledge about breast cancer and its risk factors.

Title: Impact of Office Interventions to Increase Cancer
Author(s): Screening
      Ruffin, M. T. and Gorenflo, D. W.
Institution of 1ˢᵗ Author: University of Michigan

Purpose: To determine if two office interventions would significantly increase the cancer screening provided to patients 40 and older in primary care community-based practices. **Methods:** 24 practices were randomly assigned to one of four study arms: usual practice, office information, patient held cancer screening guides, and a combination. Each practice reviewed the data of 100 male and 100 female charts randomly audited for screening for breast, cervical, colorectal, and prostatic cancer followed by a consensus building educational process. **Results:** The baseline rates for women were 64% Pap smear within three years, 45% ever had a discussion of breast self-exam, 41% clinical breast exam within a year, 49% age 40-49 mammogram within 2 years, and 39% 50 and older mammogram within one year. Only 29% of women age 40-49 and 17% of women 50 and older were current for all breast cancer screening tests. 29% of men and 38% of women had a rectal exam within a year. 22% of men and 24% of women had a fecal occult blood test within a year. 15% of men and 12% of women had a flexible sigmoidoscopy within five years. 20% of men had a prostate specific antigen with a year.

With respect to women's cancer screening rates, notable increases after baseline were seen for office information intervention and patient guide with a 7% and 11% increase, respectively, for mammography in past year; 10% increase from either for clinical breast exam in past year; and 5% increase from either intervention for Pap in last year.

With respect to men's cancer screening rates, notable increases after baseline were seen for patient guide and combination group with a 9% and 8% increase, respectively for PSA in last year. A 7%, 5% and 8% increase were noted, respectively for office intervention, patient guide, and combination for digital rectal exam in last year.

All of these increases were noted after 1-2 years of the intervention. At the end of 5 years, there was no significant difference between the interventions and control group screening rates. There was also no differences between baseline and year 5 screening rates regardless of study arm. **Conclusion:** The impact of either intervention or the combination of interventions had a relatively short term effect (1-2 years) on increasing the screening rates.

5:00 pm - 6:15 pm　　SESSION C:　　**Cancer Epidemiology**
BALLROOM "B"

　　　　　　　　　　Chair:　　**Christine Johnson, PhD, MPH**
　　　　　　　　　　　　　　　Henry Ford Health System Cancer Center

5:00 pm　　　　**Thomas A. Sellers**
　　　　　　　　Mayo Clinic

　　　　　　　　"Fifty Year Follow-up of Cancer Incidence in a
　　　　　　　　Historical Cohort of Minnesota Breast Cancer Families"

5:20 pm　　　　**Qingyi Wei**
　　　　　　　　The UT M. D. Anderson Cancer Center

　　　　　　　　"GSTT1 Polymorphism and Risk of Melanoma"

5:40 pm　　　　**Mary Beth Terry**
　　　　　　　　Columbia University

　　　　　　　　"A Pooled Analysis of Colorectal Carcinoma in situ"

6:00 pm　　　　**Anne McTiernan**
　　　　　　　　Fred Hutchinson Cancer Research Center

　　　　　　　　"Breast Cancer Estimates in Women with a Family History"

(See abstracts on following pages)

Title: Fifty year follow-up of cancer incidence in a historical cohort of Minnesota breast cancer families

Authors: Sellers TA, King RA, Cerhan JR, Grabrick DM, Vierkant RA, Vachon C, Couch FJ, Olson JE, Anderson VE

Institution of 1st Author: Mayo Clinic, Rochester, MN

Although the significance of a family history of breast cancer is well established, few longitudinal data sets are available on entire families regarding the incidence of breast and other cancers in a population-based sample. The Minnesota Breast Cancer Family Study is a historical cohort study of relatives of a consecutive series of 426 breast cancer cases identified at the University of Minnesota between 1944 and 1952. The incidence of cancer and the measurement of risk factors in sisters, daughters, granddaughters, nieces and marry-ins was determined through telephone interviews and mailed questionnaires. Ninety-eight percent of eligible families were recruited, and 93% of members participated. A total of 9,073 at-risk women were studied: 56% were biologic relatives of the case probands, the remainder were related through marriage. Through 1996, 564 breast cancers were identified in non-probands. Compared to the rate of breast cancer among marry-ins, first-degree relatives of the probands were at 1.9-fold greater age-adjusted risk (95% CI: 1.4-2.4), and second-degree relatives were at 1.5-fold greater age-adjusted risk (1.2 - 1.8). There was no evidence of increased risk for cancer at other sites, including the ovaries, cervix, uterus, colon, pancreas, stomach, or lymphatics. The breast cancer risk was not distributed equally across families: 166 (39%) experienced no additional cases of breast cancer, despite fifty years of follow-up. Most of the breast cancers occurred among a subset of 132 families: 21 families had 5 breast or ovarian cancers, 8 had 6, 2 had 7, and 4 had 8 or more breast or ovarian cancers. The fact that these families contain at least four generations of validated occurrences of cancer minimizes the uncertainty of genetic risk classification when the disease has a late and variable age at onset. This collection of families is a rich resource for genetic epidemiologic studies of breast cancer.

Title: **GSTT1 Polymorphism and Risk of Melanoma**

Author(s): Wei Q, Cheng L, Lee JE, Duvic M, Mansfield PF, Amos C, Strom SS, Chen M, Young L, Ross MI.

Institution of 1st Author: The University of Texas M. D. Anderson Cancer Center, Houston, TX 77030

Cutaneous melanoma is the most lethal cancer of the skin and is directly associated with exposure to ultraviolet light. Ultraviolet light-induced photoproducts include free radicals that cause oxidative damage to DNA. Glutathione S-tranferase (GST) isoenzymes such as GSTμ and GSTθ have been shown to reduce a wide range of carcinogenic electrophiles and oxidative DNA. In this study, we tested the hypothesis that null genotypes of *GSTM1* and *GSTT1* were associated with an increased risk of cutaneous melanoma. The analysis included 275 newly diagnosed melanoma patients and 261 healthy controls, who were Caucasians and were frequency matched on age and sex. A self-administered questionnaire was used to elicit information regarding sunlight exposure, prior skin diseases, and cancer family history. The PCR-based genotyping assays for *GSTM1* and *GSTT1* were performed on genomic DNA extracted from blood samples of each subject. In the univariate analysis, the crude odds ratio (OR) was 1.2 (confidence interval (CI)=0.8–1.7) and 1.8 (CI=1.1–2.9) for *GSTM1* null and *GSTT1* null, respectively. After adjustment for age and sex, the ORs were 1.2 (CI=0.9–1.7) and 1.9 (CI=1.2–3.0) for *GSTM1* null and *GSTT1* null, respectively. Stratification analysis indicated that the risk of developing cutaneous melanoma associated with *GSTT1* null was greater in females (OR=2.1; CI=1.1–4.1) than in males (OR=1.6; CI=0.8-3.1). However, there was no significant gene-gene interaction found in the logistic regression analysis. These results suggest that null genotype of *GSTT1* but not *GSTM1* may be a risk factor for sunlight-induced melanoma.

Title: A pooled analysis of colorectal carcinoma *in situ*

Author(s): Terry MB, Neugut AI, Jacobson J, Potter J, Sandler R, Bostick R, Haile R, and Fenoglio-Preiser CM.

Institution of 1ˢᵗ Author: Columbia University

While many risk factors for colorectal adenomas and cancer have been identified, little is known about specific intermediate lesions along the adenoma-carcinoma sequence, such as carcinoma *in situ* (CIS). Using data from four colonoscopy-based adenoma case-control studies (Columbia U, U of MN, UNC, and Wake Forest U), we compared cases of CIS (n=119) with a 1: 4 matched group of adenoma cases (n=441) and a polyp-free control group (n=1866) with regard to frequently studied risk factors for colorectal neoplasia. All cases were newly diagnosed and without a history of adenomas. An unordered polytomous logistic model was used to calculate multivariate odds ratios for CIS cases as compared to adenoma cases and polyp-free controls, controlling for age, gender, race, and study site along with other risk factors. The ratio of the odds ratios for CIS cases to that for adenoma cases was used as a measure of heterogeneity and to indicate possible risk factors for progression along the adenoma-carcinoma sequence. Odds ratios were elevated for the heaviest category of smoking relative to never having smoked, for both CIS and adenoma cases relative to polyp-free controls (CIS: 1.3, 95% CI 0.8-2.1; adenomas: OR = 1.3, 95% CI 1.0-1.8) and for the highest quartile of body mass index relative to the lowest (CIS: 2.3, 95% CI 1.2-4.2; adenomas: OR = 1.7, 95% CI 1.2-2.5). High fiber and fat intake relative to low intake were modestly associated with colorectal adenomas (fat: OR = 1.8, 95% CI 1.0-3.2; fiber: OR = 0.7, 95% CI 0.4-1.1) but were not associated with CIS (fat: OR=0.9, 95% CI 0.3-2.4; fiber: OR = 1.0, 95% CI 0.5-2.1). Neither high alcohol intake nor high caloric intake increased risk for either adenomas or CIS. The data suggest little or no heterogeneity between CIS and adenoma cases with respect to alcohol, smoking, body mass index, fat, fiber, and caloric intake.

Title: Breast Cancer Estimates in Women with a Family History

Author(s): McTiernan A, Burke W, Bars J, Anderson R, Durfy S, Bowen D

Institution of 1st Author: Fred Hutchinson Cancer Research Center

This report compares two models of risk assessment for breast cancer used in clinical counseling and in prevention trials. We obtained risk factor information in our clinical trials of breast cancer risk counseling in four populations with a family history of breast cancer in Western Washington: 1) women with an interest in counseling (n=344); 2) Ashkenazi Jewish women (n=85); 3) African American women (n=30); and 4) Lesbian women (n=66). We estimated risk to age 79 for developing breast cancer using the Gail and Claus models. The Gail model includes age, age at menarche, age at first live birth, number of previous breast biopsies, presence of atypical hyperplasia, and number of first-degree relatives with breast cancer. The Claus model uses the autosomal dominant major gene model to generate predicted age-specific risk for breast cancer in first- and second-degree relatives of cases. Among all women combined (n=525), the risk of developing breast cancer to age 79 was estimated as 12.4% by the Gail model and 11.4% by the Claus model (difference, p=0.001). The difference in risk estimates between the Gail and Claus models was greatest for the Lesbian women and least for the African-American women. In a general linear model, breast cancer in a second degree relative and history of a previous breast biopsy were statistically significant contributors to the difference in risk estimate between the two models. These results suggest that the Gail model may underestimate risk in women with affected second-degree relatives, and that the Claus model may underestimate risk in women with a history of benign breast disease. Validation of both models with appropriate modifications will be needed before they can be useful for identifying women most likely to benefit from particular prevention strategies.

6:15 pm – 7:45 pm   **Poster Session & Reception**
  BALLROOM "C"

7:30 pm   **Presentation of "Best Poster" Award**

7:30 pm   **Introduction of 1999 Recipient of the
                        Cancer Prevention Research Fellowship**

                        Carolyn Aldige'
                        President, Cancer Research Foundation of America

                        This Fellowship is sponsored by the Cancer Research Foundation of America and the
                        American Society of Preventive Oncology, and is funded by the Cancer Research
                        Foundation of America.

Tuesday, March 16

7:00 am - 3:00 pm	**Registration**

7:15 am - 8:30 am   **Hot Topics Breakfast Sessions** (Two Concurrent Sessions)

"High Density Chips – a molecular epidemiologic delicacy?"

BEXAR-TRAVIS-NUECES ROOMS
> A joint presentation from
> The University of Texas M. D. Anderson Cancer Center
> Department of Epidemiology and Genometrix, Inc. of the Woodlands

Tobacco Study Group

"Hand Held Computers and Smoking Cessation"

BALLROOM "A"

Chair: **Paul M. Cinciripini, PhD**
The UT M. D. Anderson Cancer Center

8:45 – 9:30 am   **Presidential Address:**
BALLROOM "B"

Margaret R. Spitz, MD, ASPO President
The UT M. D. Anderson Cancer Center

"Genetic Susceptibility to Cancer: a Molecular Epidemiologic Approach"

9:30 am   **Break**

9:45 am   **Plenary Symposium:**
BALLROOM "B"

"A Molecular Approach to Cancer Detection & Prevention"

Chair: **Richard R. Love, MD, MS**
University of Wisconsin School of Medicine

Distinguished Achievement Award Lecture #2

"Molecular Targets for Chemoprevention"

Waun Ki Hong, MD (co-recipient)
The UT M. D. Anderson Cancer Center

"Molecular Approaches to Cancer Prevention and Detection"

David Sidransky, MD
Johns Hopkins University

11:30 – 12:45 pm   **Luncheon:**
   BALLROOM "C"

   <u>**Joseph W. Cullen Memorial Award and Lecture**</u>

   John P. Pierce, PhD
   University of California, San Diego

   "How Good is the Evidence that Tobacco Advertising Encourages Kids to Become Smokers?"

   The Joseph W. Cullen Award is given annually to memorialize the many contributions of Joe Cullen. Dr. Cullen was an active ASPO member and Program Coordinator for the National Cancer Institute's Smoking Tobacco and Cancer Program. ASPO is grateful to SmithKline Beecham for sponsoring this award.

12:45 – 2:30 pm   <u>**Two Concurrent Paper Sessions**</u>
   BALLROOM "A"

   SESSION D: <u>**Lung Cancer Research**</u>

   Chair: **Katherine A. McGlynn, PhD**
                   National Cancer Institute

   12:45 pm   **Melissa Belle Ford**
               The UT M. D. Anderson Cancer Center

               "Lung Cancer After Breast Cancer: The Role of Smoking and XRT"

   1:05 pm   **Ping Yang**
               The UT M. D. Anderson Cancer Center

               "Familial Cancer Risk Among Lung Cancer Patients Who Carry α_1 Antitrypsin Deficiency Alleles"

1:25 pm   **Lie Cheng**
The UT M. D. Anderson Cancer Center

*"Reduced Expression Level of ERCC5 and ERCC6 is
Associated with Increased Risk of Lung Cancer"*

1:45 pm   **Xifeng Wu**
The UT M. D. Anderson Cancer Center

*"Family History of Smoking-Related Cancer and D2
Dopamine Receptor Gene (DRD2) in Lung Cancer Patients"*

2:05 pm   **Min Wang**
The UT M. D. Anderson Cancer Center

*"N-Acetyltransferase 2 (NAT2) Genetic Polymorphisms,
Cigarette Smoking, and Lung Cancer Risk: A Case-
Control Study"*

(See abstracts on following pages)

Title: Lung Cancer after Breast Cancer: The Role of Smoking & XRT

Author(s): Ford MB, Sigurdson AJ, Stewart SE, Ng C, Cooksley C, Kemp B, Bhogte E, Benderly M, McNeese M, Bondy ML

Institution of 1ˢᵗ Author: The University Of Texas M. D. Anderson Cancer Center, Houston, TX

The joint effects of cigarette smoking and ionizing radiation in primary lung cancer following breast cancer remain unresolved. We conducted a case-control study to further examine lung cancer risk associated with radiation therapy (XRT) and smoking among breast cancer patients at M. D. Anderson Cancer Center (MDACC). Cases (n=296) were women diagnosed with primary lung cancer between 1960 and 1997, between 30 – 89 years of age, a prior history of breast cancer, and US residents. Controls were 1:1 frequency matched to cases on age at diagnosis (in 5 year strata), ethnicity, year of breast cancer diagnosis (in 5 year strata), and had survived at least as long as the latency of lung cancer diagnosis in the cases. We selected controls from 37,000 breast cancer patients evaluated at MDACC during the same time period as the cases. Medical record review yielded smoking information on 96% of cases and 88% of controls. We used multivariate logistic regression to evaluate the main effects of smoking and XRT on risk of lung cancer as well as comparing ipsilateral versus contralateral lung cancer risk. Among cases, 44% received XRT versus 39% of controls. Smoking increased the risk of lung cancer in women who did not receive radiation therapy (OR= 8.0, 95% CI, 4.1 – 15.9) whereas XRT was not associated with increased risk (OR= 0.6, 95% CI, 0.2 – 1.6) in women who did not smoke. Overall the odds ratio for both XRT and smoking compared with neither exposure was 8.2 (95% CI, 4.0 – 16.8) showing no multiplicative effect. Similarly, for the ipsilateral lung (OR= 7.3, 95% CI, 3.4 – 15.3) and contralateral lung (OR= 7.9, 95% CI, 3.3 – 18.8), there was no increased risk for the joint effect. In conclusion, smoking was a significant independent risk factor for lung cancer after breast cancer, with little additional risk associated with smoking and XRT combined.

Title: Familial Cancer Risk Among Lung Cancer Patients Who Carry α_1Antitrypsin Deficiency Alleles
Author(s): Yang P, Wentzlaff K, Marks R, Wiegert E, Lesnick T, Knutson A, Krowka M, Lindor L
Institution of 1st Author: Mayo Clinic and Foundation, Rochester, MN USA

We previously reported that lung cancer patients were more likely to carry α_1-antitrypsin deficiency (α_1AD) alleles than expected. In the present study, we are testing the hypothesis that lung and other cancers occur more frequently in first-degree relatives of lung cancer patients who are α_1AD carriers compared to lung cancer patients who are not carriers. From our ongoing comprehensive epidemiologic and genetic study of lung cancer, we have identified 41 lung cancer patients who are α_1AD carriers. There are 23 male and 18 female patients, for a male-to-female ratio of 1.3:1. This is in contrast to an overall gender ratio of over 2:1 in our study. In both men and women, the percentage of smokers (78%) is less than lung cancer patients in the general population (85-90%). So far, three deficient alleles for α_1AD (I, S, Z) have been identified. Among the 342 first-degree relatives of the 41 probands, 67 were diagnosed with cancer. Twenty to 40 were expected based on the age-adjusted cancer prevalence in the general population. Frequencies of the 67 cancer sites are as follows: 15 lung (22%), 10 breast (15%), 7 prostate (10%), 5 colorectal (8%), 5 brain (8%), and 3 leukemia (5%). Cancers of other sites account for less than 3% each. We then compared α_1AD carrier cases to the non-carrier cases with regard to the familial risk of lung cancer and other cancers. After adjusting for age of onset, gender, pack years of smoking, and history of chronic obstructive pulmonary disease of the probands, we found that the familial risk of both lung and other cancers is higher in α_1AD carrier cases than in the non-carrier cases. Our results may suggest a constellation of cancers in families that share a common mechanism leading to cancer, namely, α_1-antitrypsin deficiency or dysfunction. Further investigation is necessary.

Title: **Reduced Expression Level of *ERCC5* and *ERCC6***
Author(s):   **Is Associated with Increased Risk of Lung Cancer**
Cheng L, Guo Z, Honn S, Powell P, Hong WK, Spitz MR, Wei Q
Institution of 1st Author: The University of Texas MD Anderson Cancer Center, Houston, TX 77030

The nucleotide-excision repair (NER) system is the major pathway to repair DNA adducts induced by the smoking-related carcinogen, benzo[a]pyrene diol epoxide (BPDE). There are more than 12 genes participating in NER. We hypothesized that genetically determined alteration in the baseline expression level of genes involved in NER is associated with risk of lung cancer. In a pilot case-control study, we measured the relative expression levels of five NER genes (*ERCC1, ERCC3, ERCC5, ERCC6* and *XPC*) in phytohemagglutinin-stimulated peripheral lymphocytes of 75 cases and 95 controls by using a newly developed multiplex RT-PCR assay. Cases and controls were frequency-matched on age, sex, ethnicity and tobacco use. The expression level of β-actin was used as an internal control and for relative quantitation. We observed greater than 12.1% and 12.5% decreases in the baseline expression levels of *ERCC5* and *ERCC6* genes, respectively, in cases compared with controls. Using the median expression level of the controls as the cutoff point, the cases were significantly more likely than controls to have reduced expression levels of *ERCC5* (odds ratio, 2.40; 95% confidence interval, 1.38-4.61) and *ERCC6* (odds ratio; 2.60, 95% confidence interval, 1.34-5.03). There was a dose-response pattern observed between reduced expression levels and increased risk (trend test: $P<0.01$). Our results suggest that individuals with reduced expression levels of *ERCC5* and *ERCC6* may be at higher risk of developing lung cancer (Supported by CA55769, CA68437 and CA70334).

Family History of Smoking-Related Cancer and D2 Dopamine Receptor Gene (*DRD2*) in Lung Cancer Patients. Wu XF, Detry M, Chamberlain RM, and Spitz MR. The University of Texas M. D. Anderson Cancer Center and School of Public Health, Houston, TX 77030 (Supported by CA55769).

Purpose: Variant alleles of the *DRD2* gene may play a role in determining nicotine addiction, and therefore smoking status. This study evaluated the relationship between self-reported family history of smoking-related cancer and the polymorphisms. We hypothesized that individuals with the *DRD2* A1 and B1 alleles would be more likely to report a family history of smoking-related cancers, because of a predicted higher prevalence of smokers due to patterns of inheritance of addictive genotypes. This association might be also different in cases and controls due to the presence or absence of other inherited genetic defects that may interact with smoking. **Methods:** Genotyping was performed using the polymerase chain reaction on peripheral white blood cell DNA from 140 lung cancer patients (97 Mexican Americans and 43 African Americans) and 222 age, sex, and ethnicity matched controls (111 Mexican Americans and 111 African Americans). For each individual, a personal family history interview was conducted. **Results:** We found that there were no significant differences in the distribution of the *DRD2* genotypes between cases and controls. Among the controls, the cigarette packyears were 30.8, 21.9, and 18.6 for the A1A1, A1A2, and A2A2 genotypes, and 36.5, 20.8, and 18.5 for the B1B1, B1B2, and B2B2 genotypes, respectively. These trends were statistically significant. A similar result was found for the number of cigarettes smoked per day. Patients with the A1 allele had a significant 8.5-fold increased risk of smoking-related family history of cancers in first degree relatives compared with patients without A1 allele. Patients with the B1 allele also had a 2.1-fold elevated risk of family history of smoking-related cancer compared to patients without the B1 allele, but it was not statistically significant. This phenomenon was not observed in the controls. **Conclusion:** The findings suggest that *DRD2* genotypes may be associated with familial aggregation of smoking-related cancers in lung cancer patients. The relative interactive contributions of environmental and genetic determinants of smoking in the relatives has yet to be determined.

N-Acetyltransferase 2 (*NAT2*) Genetic Polymorphisms, Cigarette Smoking, and Lung Cancer Risk: A Case-Control Study. Wang M, Spitz MR, and Wu XF. The University of Texas M. D. Anderson Cancer Center and School of Public Health, Houston, TX 77030 (Supported by CA55769 and CA68437).

Purpose: *NAT2*, involved in the acetylation of arylamines, a carcinogen in tobacco smoke, is known to be polymorphic. Individuals inherit rapid (RR), intermediate (Rr), or slow (rr) acetylator phenotypes in a Mendelian fashion, correlated with ten genotypes, generated by combinations of 4 alleles. This study was performed to examine whether *NAT2* polymorphisms were associated with susceptibility to lung cancer in two ethnic populations. **Methods:** Genotyping of *NAT2* was performed using the PCR-based restriction fragment length polymorphism on peripheral white blood cell DNA from 88 patients with previously untreated lung cancer (27 Mexican Americans (MA), and 61 African American (AA)) and 143 controls (76 MA, and 67 AA). Mutagen sensitivity (a marker of cancer susceptibility reflecting DNA repair capacity) was an *in vitro* assay measured by counting the bleomycin-induced chromatid breaks in peripheral blood lymphocyte cultures. **Results:** The rr and Rr genotypes were found to be associated with a significantly higher risk of lung cancer with odds ratios (95% confedence interval) (ORs (95% C.I.)) of 8.53 (1.6, 45.2) and 5.41(1.0, 28.8) in AA ever smokers, but not in non-smokers. The association between smoking status and lung cancer risk was strongly modified by *NAT2* genotypes. As compared to non-smokers, the ORs for AA former smokers in individuals with RR, Rr, and rr genotype were 0.25 (0.0, 5.0), 5.25 (0.9, 32.0), and 28 (2.9, 266.5); the ORs for AA current smokers were 2 (0.1, 35.8), 10.67(1.9, 58.7), and 24 (2.7, 214.7). There was also evidence of interaction between the *NAT2* slow acetylator genotype and bleomycin sensitivity. The ORs for mutagen sensitivity, *NAT2* rr acetylator genotype and both factors combined were 1.5 (0.2, 11.9), 1.1 (0.2, 5.6), and 6.3 (1.2, 33.3), respectively. **Conclusion:** *NAT2* genotype was associated with lung cancer. This association is related to ethnicity, smoking, and DNA repair capacity.

12:45 – 2:30 pm   **SESSION E:**   <u>**Diet and Physical Activity**</u>
   BALLROOM "B"

               Chair: **Joanne Dorgan, PhD**
                             National Cancer Institute

12:45 pm   **Maria Elena Martinez**
                Arizona Cancer Center

                "Physical Activity, Body Mass Index, and PGE_2 Levels in Rectal Mucosa"

1:05 pm   **James R. Marshall**
                University of Arizona

                "Reliability and Validity of a Self-administered Food Frequency Questionnaire in a Chemoprevention Trial of Adenoma Recurrence"

1:25 pm   **Alan R. Kristal**
                Fred Hutchinson Cancer Research Center

                "Nutritional Supplement Use and Prostate Cancer Risk"

1:45 pm   **Stephanie A. Smith-Warner**
                Harvard School of Public Health

                "Types of Dietary Fat and Breast Cancer: A Pooled Analysis of Cohort Studies"

2:05 pm   **Diana Buist**
                Group Health Cooperative

                "Does Bone Mineral Density Predict Breast Cancer Risk in Postmenopausal Women?"

(See abstracts on following pages)

Physical activity, body mass index and PGE_2 levels in rectal mucosa

Martínez ME, Heddens D, Earnest DL, Bogert CL, Roe D, Einspahr J, Marshall JR, Alberts DS (Arizona Cancer Center, Tucson, AZ)

Physical inactivity and a higher body mass index (BMI) have consistently been shown to increase risk of colon cancer. Despite this consistency, the mechanisms responsible for these associations have not been elucidated. Among the various hypotheses, physical activity is thought to protect against the development of colon cancer through its effect on prostaglandin synthesis. The present study was undertaken to investigate whether higher levels of leisure-time physical activity or a lower BMI were related with lower concentrations of prostaglandin E_2 (PGE_2) in rectal mucosa. The study was conducted in 41 men and 22 women, 42 to 78 years of age, who participated in a randomized clinical trial testing the effects of piroxicam on rectal mucosal PGE_2 levels. Leisure-time physical activity was assessed through a self-administered questionnaire collected at baseline. The reported time spent in each activity was multiplied by its typical energy expenditure requirements to yield a MET-hour score. Two rectal biopsies taken eight weeks apart prior to randomization were used to determine the PGE_2 concentration using the $[^{125}I]$ PGE_2 RIA kit. A repeated measures model was used to assess the effect of BMI and physical activity as predictors of PGE_2. After adjustment for age, a higher BMI was associated with higher PGE_2 levels ($p<0.001$) and a higher level of leisure-time physical activity was inversely related to PGE_2 concentration ($p<0.03$). These results suggest that a potential biologic mechanism by which physical activity and obesity may alter the risk of colon cancer is through their effects on PGE_2 synthesis.

Reliability and validity of a self-administered food frequency
questionnaire in a chemoprevention trial of adenoma recurrence
Marshall JR, Martínez ME, Graver E, Whitacre R, Woolf K,
Ritenbaugh C, Alberts DS (Arizona Cancer Center, Tucson,
AZ)

We assessed the reliability and validity of the Arizona Food
Frequency Questionnaire (AFFQ) among 139 participants in a
randomized trial testing the effects of a high (13.5 g/day) versus
low (2 g/day) wheat bran fiber intervention on adenoma
recurrence. The AFFQ was administered at baseline and one
year thereafter and assessed dietary intake in the prior year.
Participants also provided four days of diet records (DRs)
collected prior to randomization. The mean daily intakes of
total energy, 16 macro- and micronutrients, and alcohol were
similar, whether the data were collected by the AFFQ or DRs.
The correlations of the AFFQs with the DRs were considered
unadjusted, adjusted for total energy, and de-attenuated for
within-person variation in intake, as estimated from the DRs.
The de-attenuated Pearson correlations of energy-adjusted
nutrients for the baseline AFFQ with DRs ranged from .28 for
vitamin E to .65 for alcohol and those for the 1-year AFFQ with
the DRs ranged from .25 for vitamin E to .67 for total fat. The
de-attenuated correlations of energy-adjusted nutrients of the
average of the baseline and 1-year AFFQs with the DRs were
slightly higher, ranging from .33 for phosphorous to .71 for
cholesterol. These data indicate that the AFFQ is
approximately as valid, compared to DRs, as most dietary
instruments based upon food frequency methodology.
Furthermore, the combination of two AFFQs instead of one did
not appreciably improve the correlations. Validation studies of
food frequency questionnaires are feasible and should be an
important component of chemoprevention trials whenever
dietary intake is being assessed by this methodology.

Title: Nutritional Supplement Use and Prostate Cancer Risk

Author(s):   Kristal A, Stanford L, Patterson R.

Institution of 1st Author: Fred Hutchinson Cancer Research Center

Little is known about the use of dietary supplements and prostate cancer (CaP) risk, though recent supplementation trials found unexpected protective effects for vitamin E and selenium. This population-based, case-control study in King County, WA examined supplement use in 697 incident CaP cases (ages 40-64) identified from the SEER registry, and 666 controls recruited using random-digit dial sampling. Average use of multivitamins, vitamins A, C and E, calcium, iron and zinc over the two years before diagnosis were classified as <1, 1-6, and 7+ times per week. Logistic regression analyses controlled for age, race, education, family history of CaP, body mass index, and number of PSA tests in the previous 5 years. Adjusted odds ratios [95% CI] for the contrast 7+/week vs <1/week were: multivitamins 0.94 [0.72,1.24]; vitamin A 0.54 [0.29,0.95]; vitamin C 0.76 [0.56,1.03]; vitamin E 0.71 [0.50,1.01]; calcium 0.97 [0.57,1.67]; iron 0.39 [0.09,1.48]; and zinc 0.54 [0.29,0.99]. Odds ratios differed little when cases were stratified by stage, with the exception of 0.65 [0.42,0.99] for multivitamins in cases with advanced (stages C and D) disease. Dose-response trends were consistent with protective effects for vitamins C and E and zinc, but not for iron, vitamin A or multivitamins. These results lend support to the experimental finding of a protective effect for supplemental vitamin E, and support further investigation of nutritional supplements as chemopreventive agents for prostate cancer.

Title: Types of dietary fat and breast cancer: a pooled analysis of cohort studies.
Author(s): S.A. Smith-Warner, D. Spiegelman and D.J. Hunter for the Pooling Project of Prospective Studies of Diet and Cancer Investigators
Institution of 1st Author: Harvard School of Public Health, Boston, MA.

Animal and ecological studies suggest that type of dietary fat may influence breast cancer risk. Associations between specific fat subtypes and breast cancer risk were evaluated using pooled data from 8 cohort studies conducted in Canada, the Netherlands, Sweden, and the U.S. All studies measured diet using food frequency questionnaires. In the pooled database, 6,681 invasive breast cancer cases occurred among 351,825 women. As reported previously, total fat intake was not associated with breast cancer risk in this updated dataset. Further, none of the fat subtypes was associated with breast cancer risk when each subtype was modeled individually. However, in the multivariate model including each fat subtype, protein, and alcohol expressed as percent energy, and total energy, the pooled relative risks (and 95% confidence intervals (CI)) for an increment of 5% of energy were 1.10 (1.00-1.21) for saturated, 0.92 (0.83-1.03) for monounsaturated, and 1.05 (0.96-1.15) for polyunsaturated fat compared to equivalent energy from carbohydrates (p for heterogeneity among studies $\geq$ 0.25). The relative risks were 1.19 (95% CI 0.98-1.45) for replacing 5% of energy from monounsaturated fat with saturated fat, 0.98 (95% CI 0.85-1.13) for replacing 5% of energy from polyunsaturated fat with saturated fat, and 0.87 (95% CI 0.74-1.03) for replacing 5% of energy from polyunsaturated fat with monounsaturated fat. No associations were observed for replacing equivalent energy intakes from animal fat and vegetable fat with carbohydrates. Associations were not modified by menopausal status. These data are compatible with the hypothesis that increasing saturated fat intake relative to carbohydrate or monounsaturated fat intake may modestly increase breast cancer risk.

Title: Does bone mineral density predict breast cancer risk in postmenopausal women?

Author(s): Buist DSM, LaCroix AZ, Barlow WE, White E, Weiss NS.

Institution of 1st Author: Center for Health Studies, Group Health Cooperative, Seattle, Washington

Several studies have observed an association between higher circulating levels of endogenous estrogens and risk of breast cancer and others have suggested that a woman's bone mineral density (BMD), a surrogate for lifetime exposure to endogenous estrogens, also predicts an elevated risk. In a retrospective cohort study, the authors examine whether BMD is associated with breast cancer risk among 8213 postmenopausal women who were screened for inclusion in the Fracture Intervention Trial in 1992 at four of the eleven clinical sites. After excluding incident breast cancer cases that occurred in the first six month of follow-up, 131 cases were identified during four years of follow-up. Estimates of the relative risk of breast cancer by BMD quartile were obtained using Cox proportional hazards models. The relative risks (95 % confidence intervals) by BMD quartile (lowest quartile = referent), independent of age, body mass index, family history of breast cancer, previous breast surgery, age at menopause and first birth, parity, bilateral oopherectomy, alcohol intake, calcium or vitamin D supplementation, and study center, are 1.9 (1.1, 3.3), 1.4 (0.8, 2.5), and 1.5 (0.8, 2.8). BMD is a composite measure of many factors such as endogenous hormones, genetics, and physical activity. The results of this study suggest a threshold of BMD above which breast cancer risk is elevated. An examination of other factors important in determining BMD may help explain the positive association between BMD and breast cancer.

2:30 pm   **Break**

2:45 – 4:15 pm   **Symposium:**
   BALLROOM "B"

   "Methodologic Issues in Chemoprevention Trials"

       Chair: **Gary Goodman, MD, MS**
                      Fred Hutchinson Cancer Research Center

   "When to do Phase III Trials"

       Gary Kelloff, MD
       National Cancer Institute

   "Statistical Issues of Phase III Trials"

       Mark Thornquist, PhD
       Fred Hutchinson Cancer Research Center

   "Completing Phase III Trials. What Have We Learned?"

       David S. Alberts, MD
       University of Arizona Cancer Center

   PANEL DISCUSSION

Conclusion of Program

Abstracts Accepted
for
Poster Presentation

Title: Sleep and Immunity in Women at Risk for Cervical Cancer
Author(s): Suzanne M. Miller, J. Savard, A. O'Leary, M. Mills,
S. Douglas, L. Ohls, V. Green, H. Harding, C. Fang
Institution of 1st Author: Fox Chase Cancer Center

1

Purpose: The purpose of the study was to investigate whether sleep quality more strongly predicts immunocompetence than depression among women at risk for cervical cancer. Methods: Participants were 91 low-income women referred for colposcopy after receiving an abnormal Pap smear. On the day of the colposcopy, each woman completed the Center for Epidemiological Studies Depression scale, two indices of sleep quality, and a health behaviors questionnaire. Peripheral blood lymphocyte sub-populations were also assessed at this time. Approximately ten days later, the presence of depressive disorders was assessed using the Structured Clinical Interview for DSM-III-R. Results: Analyses revealed that satisfaction with sleep amount significantly predicted the number and percentage of helper T cells and the percentage of suppressor/cytotoxic T cells (T_C), after controlling for confounder variables. Depression significantly predicted only the percentage of T_C cells. Satisfaction with sleep obtained remained a significant predictor of circulating number and percentage of helper, and percentage of T_C cells, after controlling for depression. Conclusions: Sleep quality may have an independent effect on immunity which is not accounted for by depression. The results suggest that it may be important to systematically screen for and manage sleep disturbance in women at high-risk for cervical cancer.

2

Title: Interest in genetic testing for prostate cancer

Authors: Suzanne M. Miller, Ph.D., Robert A. Schnoll, Ph.D., Michael A. Deifenbach, Ph.D., Lloyd M. Ohls, B.A.

Institution of 1st Author: Fox Chase Cancer Center

Purpose and Methods: With the likely development of a screening procedure for a genetic predisposition for prostate cancer, this study assessed: 1) the degree to which men with (n = 43) or without (n = 83) a family history of prostate cancer were interested in genetic testing for prostate cancer, and 2) the degree to which interest in testing was associated with demographic (i.e., age, ethnicity, education, employment and marital status), medical (i.e., family history of prostate cancer), and psychological (i.e., prostate cancer-related distress, perceived vulnerability, concern about treatment-related side effects) factors. Results: Seventy-one percent of men expressed a strong interest in testing. Though men with a family history would pay substantially more for testing than men without a family history (p < .05), demographic factors were not associated with interest. Hierarchical multiple regression showed that: 1) greater concern about treatment-related side effects (p < .05) and higher prostate cancer-related distress (p < .06) were related with greater levels of interest; and 2) a family history of prostate cancer (p < .01) and higher levels of concern for treatment side effects (p < .05) were associated with a willingness to pay more for a genetic test. Conclusions: These results underscore the link between psychological and medical factors and interest in genetic testing procedures and offer suggestions for the development of clinical interventions to promote the use of genetic testing technologies as part of a comprehensive detection and prevention program.

Title: Variables associated with screening for prostate cancer
Authors: Robert A. Schnoll, Ph.D., Michael A. Diefenbach, Ph.D., Suzanne M. Miller, Ph.D.
Affiliation: Fox Chase Cancer Center

Purpose and Methods: In this study, structural equation modeling examined variables related to frequency of digital rectal examinations (DREs) and prostate specific antigen tests (PSAs) reported by men (N = 126) during the past 5 years. Analyses indicated support for a prediction model in which older age (β = .54, $p < .05$), lower perceived disadvantages of screening (β = -.32, $p < .05$), and greater degree of knowledge about prostate cancer (β = .38, $p < .05$) were significantly related to a greater number of DREs and PSAs [$\chi^2 (8)$ = 8.5, $p < .05$, GFI = .98, RMSEA = .02]. Within this model, however, perceived benefits of screening and family history of prostate cancer were unrelated to screening history ($p > .05$). Results: Conclusions: These findings indicate that: 1) adherence to screening guidelines is likely to be lower among younger men, among men who are less informed about prostate cancer, and among men who are less informed about the disadvantages of less frequent screening; 2) awareness of the benefits of screening for prostate cancer may not be as influential in promoting screening compared to a greater awareness of the dangers of not screening; and 3) despite being at significantly greater risk for developing prostate cancer, men with a family history are no more likely to adhere to recommended screening guidelines than men without a family history. In sum, these findings suggest the need for interventions targeted at men with a family history of prostate cancer and at younger men which are designed to emphasize the potential dangers of poor adherence to recommended screening guidelines.

Title: Breast and Cervical Cancer Screening Practices
Author(s): Among American Indian Women in the U.S.
Coughlin S, Uhler R, Blackman D
Institution of 1st Author: Centers for Disease Control and Prevention, Atlanta, GA

Recent studies have suggested that American Indian women may have important barriers to cancer screening and that they may under-utilize cancer screening tests. We examined the breast and cervical cancer screening practices of 3,871 American Indian and Native Alaska women in 44 states over the period 1992 to 1996 using data from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS uses a random digit dialing technique and a multi-state sampling design to sample non-institutionalized adults who have telephones. About 65.7 percent (95% confidence interval (CI) = 60.5% to 70.9%) of women in this sample who were at least 50 years of age reported they had received a mammogram in the last two years. About 83.1 percent (95% CI = 80.3% to 85.9%) of women who were at least 18 years of age and who had not undergone a hysterectomy had received a Pap test in the last three years. Older women were less likely to be screened for breast and cervical cancer. Women with lower incomes and those with less education were also less likely to be screened. Women who had seen a physician in the last year were much more likely to have been screened for breast and cervical cancer. These results underscore the need for continued efforts to ensure that American Indian and Native Alaska women who are elderly or medically underserved have access to cancer screening services.

Effectiveness of Interventions to Promote Mammography
Costanza, ME; Stoddard AM, Luckmann R, Clemow L, and MJ
White
University of Massachusetts Medical Center, Worcester, MA

5

Empowering Physicians to Increase Breast Cancer Screening
was designed to evaluate the effectiveness of increasing
utilization of screening mammography by women aged 50 and
over who have not had a mammogram every year or two. The
study included two interventions which compared client-based
barrier-specific telephone counseling and physician-based
educational courses and workshops for office staff, and a usual
care control group.

Women aged 50 and over who were randomized to one of three
study arms were identified as non-adherers to mammography
screening guidelines (one mammogram in the past 24 months
and one in the 24 months prior to that) in a baseline telephone
interview. A cohort of 1832 women responded to both the
baseline and final surveys.

Approximately 44% of women became regular mammogram
users, but this was highly dependent on prior utilization. Other
variables associated with regular utilization at final survey were
intention, age, income, education and marital status. The study
interventions were approximately equally effective in increasing
regular screening. Nevertheless, barrier specific telephone
counseling was more effective than usual care in the 65-80 age
group of former users (OR = 1.78). These results indicate those
women who never have had a mammogram and are not thinking
about having one require a more intensive and individualized
intervention to move them to action.

6

Predictors Of Colorectal Cancer Screening Compliance In High-
Risk Workers.

Institution of 1st Author: Thomas Jefferson University

Myers, R. Ph.D, Vernon, S. Ph.D, Tilley, B. Ph.D,
Li, S. M.S, Lu, M. Ph.D.

Background. Compliance with colorectal cancer screening for
pattern and model makers in the automobile industry, a group at
increased risk, is less than optimal. A randomized trial has
demonstrated that a tailored intervention can increase screening
compliance (i.e., having all recommended exams across two
consecutive screening rounds) in the group. Further analyses were
conducted to identify additional predictors of compliance among
survey respondents in the trial.
Methods.   Twenty-eight work sites were randomly assigned to
either a control condition (i.e., men received a routine screening
invitation) or intervention condition (i.e., men received a routine
screening invitation plus a personalized booklet/screening schedule
and scripted telephone call). Men at the work sites who did not have
a history of colorectal cancer (N=4,490) were targeted for two
rounds of screening invitation. Data on background variables (e.g.,
socio-demographic characteristics, screening history), psychosocial
perceptions of screening, and work site screening procedures were
collected via a mailed baseline survey for 2,693 (60%) men.
Logistic regression analyses of compliance were performed.
Results.   Positive predictors of compliance were: background
factors (i.e., being married, having a history of colorectal polyps,
being a non-smoker), psychosocial factors (i.e., belief in the
salience and coherence of screening, belief in self-efficacy, intention
to be screened), along with exposure to the intervention. Concern
about screening discomfort was negatively associated with
compliance.
Conclusions. In addition to background factors, psychosocial
factors are likely to influence compliance. Future studies should
assess the impact of intervention tailoring related to psychosocial
barriers to compliance in populations at increased risk.

Title: Tumor Characteristics as Predictors of Mammographic Sensitivity

Author(s): Porter PL, El-Bastawissi A, Lin MG, Mandelson M, Khalid N, Watney E, Taplin S, White E.
Institution of 1ˢᵗ Author: Fred Hutchinson Cancer Research Center, Seattle WA

The purpose of our study was to determine the predictive value of selected tumor characteristics on the sensitivity of mammography. Methods: We conducted a case-control study within a cohort of women participating in mammography screening within the defined population of an HMO, Group Health Cooperative in Seattle. Women were classified as "interval" cancers (case; n=150) if their diagnosis was made after a "negative" or "benign" screening mammogram, and "screen-detected" (control; n=279) if diagnosed within 90 days of an "intermediate" or "positive" assessment (based on the screening mammogram taken immediately prior to the diagnosis of cancer). Tumors in each group were evaluated for size, location, distribution, presence of necrosis, histological diagnosis, histologic grade, nuclear grade, mitotic count, microscopic margins, lymphatic/vascular invasion, % ductal carcinoma in situ (DCIS), stromal response, lymphocyte response. In addition, expression of estrogen receptor (ER), progesterone receptor (PR), c-erbB-2 oncogene product, p53 tumor suppressor protein, Ki-67 proliferation-related protein, bcl-2 cell death regulatory protein, and cell cycle regulatory proteins, cyclin E and p27 were evaluated by immunohistochemistry. Results: In unconditional logistic regression models adjusting for age and tumor size, tumors with lobular (OR 1.9; CI 0.9-4.2) or mucinous (OR 5.5; CI 1.5-19.4) histology, high proliferation (by either mitotic count (OR 2.9; CI 1.5-5.7) or Ki-67 (OR 2.6; CI 1.3-5.0)), high histologic grade (OR 2.1; CI 1.2-4.0), or high nuclear grade (OR 2.0; CI 1.0-3.7), were found to be associated with failure to detect cancer on mammography. Tumors of tubular histology and high % in-situ were associated with screen detection. Conclusions: Screening mammography is more likely to miss tumors of lobular or mucinous histology and high grade or fast growing tumors. These data support the hypothesis that a subset of rapidly proliferating, high grade tumors become clinically apparent in the interval between screening.

Title: SCREENING FOR OCCUPATIONAL BLADDER CANCER

Author(s): T.J. Mason, A.B. Anderson, K. Lee

Institution of 1ˢᵗ Author: FCX CHASE CANCER CENTER

This screening study has evaluated a home self-testing protocol for microscopic hematuria as a method of early detection of bladder cancer among workers who were exposed through the manufacture, packaging and/or formulation of a pesticide used on cotton crops. An impurity in and a metabolite of the pesticide in question has been recently classified in the 8ᵗʰ biennial report on carcinogens as "reasonably anticipated to be a human carcinogen." A total of approximately 1100 workers from manufacturing and formulation sites in 33 of the 48 continental states have been enrolled in the program. 85% of the total returned for the second annual screen and approximately 80% of the workers have been continuously enrolled for five years. Three incident cases and 2 recurrent cases of transitional cell carcinomas of the bladder have been detected by this screening program. Two individual persons have been diagnosed with "interval" bladder cancer. Other serious urologic conditions that have been diagnosed include BPH, calculi, renal cyst, urethral stricture, cystitis, prostatitis, and bladder outlet obstruction. Our proportions are consistent with available literature. Several unique features of the program have contributed to its success and transportability: 1) a special urine collection system which provides for improved cytologic diagnoses from a processed specimen stable at room temperature for 30 days; 2) a 24-hour informational hotline; 3) high compliance with 14-day dipstick self-testing. The program serves as a model for the American workforce whose employers do not have medical personnel on site, and for those whose retired/former employees are scattered nationwide and are in need of medical monitoring. The potential U.S. target population is approximately 100,000 persons.

Institution of 1ˢᵗ Author: University of Kansas Medical Center

9

In July 1995 we initiated a mobile outreach screening and risk assessment program to determine if a one-time intervention with free mammography, clinical breast examination, breast health education and risk assessment improved future screening compliance. Screening services were provided from 7/95 to 10/98 using a mobile medical unit equipped with a mammography machine. Appointments were scheduled and ~90% of these appointments were kept.

We have screened a total of 1085 women in the past 43 months, of which 351(32%) of the women over 40 were eligible for 2-year follow-up and 265(75%) were contacted. The median age is 48.1, the median household income is <$25,000, the median education level is high school, and 38% were minority. 85% had some type of insurance, 81% had ever had a mammogram and only 52% of the women over 40 had received a mammogram in the past 2 years.

We were able to contact 265 (75%), of which 127 (47%) had not a mammogram within 2 years prior to the intervention. Approximately 135 (51)% obtained a mammogram within the 2 years subsequent to the intervention. There is no increase in future screening compliance after participation in a one-time mobile screening outreach intervention. The next step is to test compliance in women who are offered the opportunity for a repeat mobile screening at the same site as their initial participation in the program.

10

Profile of Men Who Participate in Prostate Cancer Screening at a Comprehensive Cancer Center. P.E. Driggers*, R.J. Babaian, E. Ramirez, F. Jularbal, V. Bhadkamar, S. S. Strom. U.T.- M.D. Anderson Cancer Center, Houston, TX 77030.

The purpose of this study was to characterize men who participated in a free, bi-weekly prostate cancer screening program at a comprehensive cancer center. Six hundred and forty seven men participated in MDACC's prostate screening program between July, 1997 and July, 1998. Socio-demographic characteristics, family history of prostate cancer, and previous prostate screening behavior were analyzed. Most of the participants were from Texas (97%), 74.2% live in the Houston metropolitan area. Most men were White (65%), 19% were African American (AA), 9% were Hispanic and 6% were Asian. The mean age was 58 years (from 33 to 80 years) and varying by ethnicity (White, 60 years; AA, 54 years; Hispanic 55 years; and Asian 59 years). Overall, seventy-six percent of these participants reported have had prostate cancer screening at the same institution (40%) or elsewhere (36%). A family history of prostate cancer was reported by 21% of participants (20.4% White, 26.5 % AA, 21.8 % Hispanic, and 8.6 % Asian). Most of the screening participants (58%) reported urological symptoms at the time of screening. Forty three percent of participants reported learning about MDACC's screening through personal contact (wife, relative, friend/co-worker), 35% from the media (newspaper, radio, television, internet), 7% through their doctor, 2% through church or community centers, and 15% through other means or a combination of sources. When asked about their willingness to participate in cancer prevention studies, 46% of the African Americans, 42% of Whites, and 56% of Hispanic patients indicated their willingness to participate in future studies. Our data show that a screening program at a large, metropolitan cancer center attracts a diverse ethnic population, most of whom (94%) meet the race and family history-specific guidelines of the American Cancer Society. Future efforts to increase community participation should target churches and community centers. Supported by MDA Prostate Cancer Research Program.

Title: Interferon α2a in the chemoprevention of cutaneous
Author(s): squamous cell carcinoma.
Clifford, J.L., Yang, X., Zou, C.C., Wang, M., Jain, S., Lotan, R. Lippman, S.M.
Institution of 1ˢᵗ Author:

M.D. Anderson Cancer Center, Houston, TX 77030

Interferon α2a (IFNα)-based therapy is active in the treatment of squamous cell carcinoma (SCC) of the skin and cervix and has promise for the prevention and treatment of several other cancers. We have determined the expression pattern of several of the protein mediators of IFNα signaling (STAT1α/β, STAT2, p48, JAK1, Tyk2, IFNAR1, IFNAR2 and STAT3α/β) in normal skin, cutaneous SCC and SCC metastases from patient biopsies from an ongoing chemoprevention trial (Grant # 1PO1 CA88233-01A1). For the majority of patient samples tested to date (n=15), the expression of most of these proteins was reduced in SCCs compared to normal skin from the same tissue sections. Additionally, SCC metastases had dramatically reduced levels of STAT1α/β, JAK1 and Tyk2. We have also determined the expression levels of these proteins in vitro in skin-derived normal, preneoplastic and SCC cells. Neither IFNα nor RA treatment had any effect on the expression of STAT1 or any other IFN signal mediators. However IFNα caused a rapid phosphorylation of STAT1 on tyrosine 701 in all of the cell lines. The amount of STAT1 phosphorylation in a given cell line correlated with the growth inhibitory GI effect. Finally, IFNα-induced phosphorylation of STAT3 was observed only in SCC and preneoplastic cells and the amount of constitutively phosphorylated STAT3 correlated with the transformed state of the cells.

Title: DFMO in Oral Dysplastic Leukoplakia
Author(s): Sauter ER, Klein-Szanto AJP, Engstrom PF, Feldman R, Levin L, Clapper ML
Institution of 1ˢᵗ Author: Fox Chase Cancer Center

The purpose of this Phase II randomized, double blinded, placebo controlled study is to evaluate the efficacy of a 6 month course of the antiproliferative difluoromethylornithine (DFMO-0.5 g/m²/d) followed by 6 month follow-up in subjects with dysplasia of the oral cavity. Subjects receiving placebo can cross over to DFMO after 12 months on study. The primary endpoints are changes in lesion size and/or histology. Secondary endpoints include changes in biomarkers (proliferation, ploidy, p53), toxicity evaluation, and associating response with DFMO levels. We have thus far screened 247 subjects, and 25 have enrolled. Four subjects are receiving DFMO or placebo, 2 are in 6-month follow-up. Two subjects have dropped out prior to completion, neither due to drug toxicity. Three subjects have elected to receive DFMO after being informed they received placebo for the first 6 months of the trial. Accrual has averaged 0.7 subjects per month. There have been 22 reports of toxicity in 10 subjects, 6 of which were possibly related to DFMO. There were two subjective reports of decreased hearing, although in neither case did the follow-up audiogram demonstrate a change from baseline. All toxicities resolved without altering the drug regimen. As this study is still recruiting subjects, it remains blinded and therefore the primary endpoints cannot be evaluated. In conclusion, recruitment to this chemoprevention trial has required that we screen 10 subjects for every one that has enrolled. DFMO has been well tolerated, with no one requiring dose alteration or dropping out due to toxicity. Subjective changes in hearing acuity have not been confirmed with objective measures. (Supported by NCI N01-CN-25436-02.)

Title: β-Catenin/NFκB Convergent Signaling and Cell Contact
Author(s):   Salas, T., Lippman, S. M., and Menter, D G.

Institution of 1ˢᵗ Author: Department of Clinical Cancer Prevention,
U.T.M. D. Anderson Cancer Center, Houston, TX 77030.

13

We observed that survival responses to TNF-α involve interaction between β-Catenin and NFκB signaling pathways. We also discovered that TNF-α caused β-catenin redistridution to perinuclear/nuclear sites only in cells with E-cadherin stabilized contacts. Squamous cell carcinoma (SCC), prostate carcinioma and breast carcinoma cells were compared with primary cultures of keratinocytes, prostate and breast epithelia. Significant differences were observed in functional localization of β-catenin and NFκB when primary cultures and tumor cells were compared by immunoflourescence. Protein levels of E-cadherin, α-catenin, and plakoglobin did not change significantly in response to TNF-α stimulation. In a homotypic cell adhesion assay, SCC and prostate cell lines exhibited E-cadherin dependent adhesion. Surprisingly, treatment with TNF-α caused a rapid increase in E-cadherin dependent adhesion, NFκB nuclear import and IκB degradation. These events were blocked by the antioxidant, N-acetyl-cysteine, while adhesion was blocked by anti-E-cadherin monoclonal antibody. Many antioxidants that inhibit IκB activation/NFκB nuclear import are thought to have chemopreventive effects. Importantly, IκB has activational sequence homology with β-catenin. Since IκB depends on reactive oxygen species formation-phosphorylation-ubiquitination to occur at these homologous sites during processing, profound effects may also occur via the β-catenin pathway. Our results demonstrate that a fuctional cadherin pathway helps regulate the NFκB/IκB pathway. Since antioxidants may effect cadherin function relative to NFκB activation, these findings are important for chemoprevention and antioxidant drug development.

14

Title: The p75 Neurotrophin Receptor Mediates Selective
Author(s): Activation of CREB by Nerve Growth Factor in
            Melanoma Cells.
Institution of 1ˢᵗ Author: K.W. Sherrill, S.M. Lippman, and D.G.
            Menter

M.D. Anderson Cancer Center, Dept. of Clinical Cancer
Prevention, Box 236, 1515 Holcombe Blvd. Houston TX
77030

Overexpression of the p75 neurotrophin receptor (p75^NTR) is associated with advanced malignant melanoma and correlates with both increased growth and invasiveness. However, little is currently known about p75^NTR-mediated intracellular signaling. Recently, p75^NTR was observed to mediate NGF-stimulated activation of the transcription factor NF-κB in Schwann cells. We investigated p75^NTR-mediated signaling in brain-invasive melanoma cell lines that do not express other members of the neurotrophin receptor family. NGF stimulation of these cells results in only a weak transient activation of NF-κB. In contrast, the transcription factor CREB (cyclic AMP response element binding protein) was strongly activated, as observed using both gel supershift analysis and whole cell immunofluorescent staining. This response was specific for NGF, as other neurotrophins had no effect. In several different cell lines that express varying levels of p75^NTR, the expression level of p75^NTR correlates directly with the ability of NGF to activate CREB. CREB activation has recently been linked to increased growth and invasion in melanoma. Our findings suggest that the p75^NTR may signal increased growth and invasiveness of melanoma cells via the activation of CREB.

15

Title: Factors affecting enrollment in the BCPT
Author(s): Vogel VG, Kinney AY, Vernon SW, Weber DM, Frankowski RF
Institution of 1st Author: University of Pittsburgh Cancer Institute

Purpose: To determine factors leading to participation in the Breast Cancer Prevention Trial (BCPT) among women attending informational meetings. **Methods:** The principal investigator of the Houston, TX, BCPT site presented information in 90-minute sessions after which women completed a 90-item questionnaire about trial participation. Responses were indicated on a 4-point scale (strongly disagree to strongly agree) or were multiple choice. Respondents were divided into two groups: those who enrolled in BCPT (n=105) and those who did not (n=127). **Results:** Women enrolling were younger than non-participants (p=0.007) but did not differ in other characteristics. In logistic regression analysis, non-participants were more likely than participants to identify barriers to participation: not being able to take hormone replacement therapy (HRT) was the strongest predictor of non-participation (p<0.001). Other factors associated with non-participation included side effects of tamoxifen, getting a placebo, costs of the trial, and an absence of concern that others would be reassured if the respondent were taking tamoxifen. This model, developed during the first year to trial, accurately predicted enrollment status of 72% of women recruited in the second year at another site. Factors predicting non-enrollment in year 2 included age ≥50 years, not being able to take HRT, concern about significant others not being reassured by the respondent taking tamoxifen, and concern about out-of-pocket expenses. In a separate analysis, physician recommendation to enroll in the trial was highly associated with trial participation (OR=13.09, 95% CI=2.6-64.8). **Conclusions:** Women taking HRT are unlikely participants in chemoprevention trials using SERMs, and physician advice to enroll has larger significance than previously recognized. Future prevention trial recruitment efforts should focus on both participants and their physicians.

Title: Altered Subcellular Localization of Suppressin in Human Lung Squamous Cell Carcinoma.
Author(s): Piyathilake CJ, Manne U, Frost AR, Grizzle WE, Weiss H, Heimburger DC and LeBoeuf RD.
Institution of 1st Author: The University of Alabama at Birmingham.

16

We evaluated the subcellular localization of suppressin (SPN), a novel suppressor of cell cycle entry, immunohistochemically using an anti-SPN monoclonal antibody (3F10) in uninvolved bronchial mucosa, epithelial hyperplasia, metaplasia, dysplasia/carcinoma in situ (CIS) and squamous cell lung carcinomas (SCC) occurring in the same subjects (n=60). Cytoplasmic SPN immunostaining was scored by three observers, each of whom estimated the intensity of the immunostaining on a scale of 0 (no staining) to 4+ (strongest staining) and the percentage of cells stained at each intensity to obtain a weighted average of the intensity score. SPN was demonstrated not only in SCC, but also in associated uninvolved bronchial mucosa, epithelial hyperplasia, metaplasia and dysplasia/CIS. The intensity score of cytoplasmic SPN, however, was significantly higher in SCC (mean = 1.41 ± 0.34, median = 1.40) compared to either uninvolved mucosa (mean = 0.9 ± 0.29, median = 0.9) or epithelial hyperplasia, metaplasia and dysplasia/CIS combined (mean = 1.03 ± 0.37, median = 1.04), p = 0.0001 and 0.0001 respectively. The localization of SPN was also significantly higher in epithelial hyperplasia, metaplasia and dysplasia/CIS combined compared to uninvolved mucosa, p = 0.02. These changes in subcellular localization of SPN mirror malignant transformation of SCC. To our knowledge, this is the first description of the subcellular localization of SPN in human lung uninvolved bronchial mucosa, epithelial hyperplasia, metaplasia, dysplasia/CIS and SCC and its possible involvement in malignant transformation.

Title: Methylenetetrahydrofolate Reductase (MTHFR) Polymorphism Increases the Risk of Cervical Intraepithelial Neoplasia.

Author(s): Piyathilake CJ, Macaluso M, Johanning GL, Whiteside M, Heimburger DC and Giuliano A.
Institution of 1ˢᵗ Author: The University of Alabama at Birmingham.

17

The present case-control study was undertaken to examine MTHFR polymorphism as a potential molecular marker of cervical intraepithelial neoplasia (CIN) susceptibility. The homozygous normal (Ala/Ala), homozygous mutant (Val/Val), and heterozygous mutant (Ala/Val) genotypes for the MTHFR gene were determined in cervical tissues of 64 cases of CIN lesions and 31 controls. The frequencies of both Val/Val (17%) and Ala/Val (56%) were significantly higher in subjects with CIN lesions compared to controls with Val/Val (10%) and Ala/Val (39%), (trend $p = 0.03$). The results suggested a significantly increased CIN risk with an alanine to valine substitution at nucleotide 677 of MTHFR gene with an odds ratio of 2.9 (95% confidence interval: 1.2 - 7.9, $p = 0.02$). Age, ethnicity, smoking and oral contraceptive use were not significantly associated with CIN risk. HPV infection was associated with a statistically nonsignificant threefold increase in CIN risk. Parity and MTHFR genotype displayed a strong interaction. Neither nulliparous women with MTHFR mutation nor parous women without the mutation were at higher risk than women who did not have children and were MTHFR homozygous normal (the reference category). Women with mutant MTHFR genotype who had children showed a significantly higher risk of CIN, with an odds ratio of 23 (95% confidence interval: 2.3 - 225) as compared to the reference category. Since parity is associated with poor folate status, our findings could reflect the inadequate response of mutant MTHFR genotype carriers to the increased demand for folate imposed by a pregnancy. Tissue folate deficiency, in turn, would increase the risk of CIN in the affected women. Replication of this study in other populations is necessary to increase the scientific credibility of the observed association.

18

Title: A case-control study of home pesticide use and breast cancer

Author(s): Alberg AJ, Helzlsouer KJ, Sato R, Hoffman SC, Comstock GW
Institution of 1ˢᵗ Author:
Department of Epidemiology, The Johns Hopkins School of Hygiene and Public Health

A community-based case-control study was carried out in Washington County, Maryland to investigate the possible association between pesticide use and breast cancer. The study included 221 breast cancer cases and 192 controls. The study participants, or their next-of-kin, completed a mailed, self-administered questionnaire in 1995 concerning breast cancer risk factors and lifetime use of insecticides, herbicides, and rodenticides. Information was also collected concerning the use of professional yard treatment and home extermination services and spouses' history of pesticide use. The results did not reveal any substantial differences between the cases and the controls, either with respect to ever-versus-never use of pesticides or to lifetime use. The use of pesticides was not associated with significantly increased risk of breast cancer regardless of whether the pesticides were applied by the women themselves, their spouses, or professional services. This study provides evidence that domestic pesticide use is not associated with the risk of breast cancer.

Title: Prostate Cancer Risk: Body Size and Age at Shaving
Author(s): Habel LA, Van Den Eeden SK, Friedman GD

Institution of 1ˢᵗ Author: Kaiser Permanente Medical Care Program

The purpose of this study was to examine the potential relationship between body size, self-reported age at initiation of shaving, and subsequent risk of prostate cancer in a large, racially diverse cohort of men followed for up to 32 years.

The study population included 70,712 men who were subscribers to the Kaiser Permanente Medical Care Program and who had received a multiphasic health checkup between 1964 and 1972. The health checkup consisted of a number of laboratory tests and physical measurements. Patients were asked to complete a questionnaire that requested information on several health-related factors. Men also were asked to estimate the age when they began shaving. Subjects were followed for the development of prostate cancer using the local tumor registry. Cox regression was used to estimate relative risks (RRs) and 95% confidence intervals (CI).

A total of 2,079 men in the study cohort were diagnosed with prostate cancer. Risk of prostate cancer increased with successive birth cohort. After adjusting for birth cohort, there was no association between height, weight, body mass index, or several other anthropometric measures and prostate cancer risk. There was no overall association between age at shaving initiation and prostate cancer risk, although non-white men who started shaving at a young age ($\leq$ 14 years) appeared to be at somewhat increased risk (RR= 1.49; 95% CI 1.01-2.22). Relative risks associated with anthropometry and age at shaving did not vary consistently by decade of life, age at health checkup, or stage of prostate cancer.

Results from our large, multi-racial cohort study do not support a relationship between body size and prostate cancer risk. There was a suggestion of a modest association between age at shaving initiation and prostate cancer risk, but only among non-white men. The possible association between prostate cancer risk and pubertal events deserves further study.

Title: Spousal Concordance for Cancer Incidence
Author(s): Friedman GD, Quesenberry CP Jr

Institution of 1ˢᵗ Author:

Division of Research
Kaiser Permanente Medical Care Program

Because married couples share at least their home environment, spousal aggregation of cancer, little studied to date, might provide clues to unsuspected etiological factors. We measured and sought to explain concordance of cancer occurrence in spouse pairs. 25,670 cancer-free married couples in northern California who had received multiphasic health checkups were followed for up to 31 years for the occurrence of cancer. Relative risk of developing cancer after one's spouse developed it vs. before or never in the spouse, was determined by Cox proportional hazards regression, controlling for age and sex. There was no concordance of all cancers combined; the spouse-with/spouse-without risk ratio was 0.97 (95% confidence interval, 0.90-1.05). Statistically significant husband-wife associations were found only for cancer of the tongue and stomach and for lymphoma. With two exceptions-- penis/endometrium and testis/vulva, based on one couple with each--sex-specific cancers did not aggregate within married couples. Established and suspected risk factors, not necessarily related to the marriage, were found for some members of concordant couples. Since little spousal concordance was found, the study of it does not appear to be a promising way to identify unsuspected environmental causes of cancer in settings similar to ours.

Title: Race and Surgical Management of Breast Cancer
Author(s): in a Health System Setting
Bawle U. Ulcickas Yood M. Velanovich V.
Institution of 1ˢᵗ Author: Josephine Ford Cancer Center,
Henry Ford Health System, MI, USA

Some studies have shown that African American and Caucasian women with breast cancer receive different treatments after adjustment for tumor stage at diagnosis, and this difference may contribute to lower survival rates for African Americans compared to Caucasians. This study sought to measure surgical treatment differences by race within a health system population in which racial differences in survival have been previously noted. Through a breast cancer registry maintained in the Department of Surgery, we identified 416 African American and 834 Caucasian women with newly diagnosed with breast cancer between 1990 and 1997 for whom data on tumor characteristics and treatment were available. Socioeconomic information was collected using 1990 census block data. We fit multiple logistic regression models comparing treatment for African Americans with reference to Caucasians, adjusting for age, tumor stage, marital status, median income and type of insurance. Late stage disease (stage III or IV) was found in 8.7% of African American women, and 7.9% of Caucasian women. After dichotomizing treatment into conservative surgery (local excision and lumpectomy with axillary dissection) and non-conservative surgery (simple mastectomy and modified radical mastectomy), the adjusted relative risk (RR) was 0.97 (95% confidence interval (CI) 0.72, 1.31). Looking at the four treatment types individually, the adjusted RR for local excision was 1.39 (95% CI 0.78, 2.49); for lumpectomy and axillary dissection, RR=0.92 (95% CI 0.66, 1.29); for simple mastectomy, RR=0.84 (95% CI 0.41, 1.72); for modified radical mastectomy, RR=1.00 (95% CI 0.73, 1.36). After controlling for socioeconomic variables and stage at diagnosis, we found no material difference by race in the surgical management of breast cancer. Thus, the survival difference observed within this health system population is unlikely to be explained by differences in treatment.

Title: Ethnicity and Survival from Lung Cancer in a Managed Care Organization
Author(s): Johnson CC. Coates R. Lamerato L. Abrams J. Blount A Ulcickas-Yood M

Institution of 1ˢᵗ Author: Josephine Ford Cancer Center
Henry Ford Health System

Studies indicate African Americans (AA) have poorer survival for most cancers, including lung. We evaluated lung cancer survival in a Detroit area managed care organization (HAP) in a health system setting, in which many potential barriers related to insurance are removed and diagnosis and treatment are relatively standardized. All lung cancer cases occurring from 1/86-12/96 among HAP members continuously enrolled for at least one year formed the survival cohort. Baseline data included race, date of birth, sex, marital status, and stage. Address was geocoded to census block group to obtain a variable for income.

The cohort consisted of 827 patients, 280 AA and 547 non-AA. Mean ages and stage at diagnosis were similar. Median income was substantially different at $18,200 for AA and $35,600 for non-AA. Overall, AA had poorer survival compared to non-AA (rate ratio (RR)=1.2, 95% CI 1.02-1.42). Adjusting for income, the RR decreased to 1.05 (95% CI 0.85-1.31). Adjusting for stage, income, age, sex and marital status, the RR was 1.00 (95% CI of 0.80-1.27). In a setting that removes a number of health care barriers and potential treatment differences, and after adjustment for stage and other socio-demographic variables, the survival differential on-AA disappears.

23

Diet-Mutagen Sensitivity Interactions in Lung Cancer Risk.
Wu X, Detry M, Pillow P, Hursting S, Spitz M.
U.T.- M.D. Anderson Cancer Center, Houston, TX 77030.

Background: High consumption of fruits and vegetables has been associated with lowered risk of lung cancer, while high dietary fat intake has been linked with increased lung cancer risk. In the present study, we used a case-control study design to test the hypothesis that mutagen sensitivity (a cytogenetic marker of lung cancer risk reflecting inherited susceptibility to DNA damaging agents such as reactive oxygen) influences the association between dietary factors and lung cancer risk. **Methods:** Peripheral blood lymphocytes collected from 91 untreated lung cancer cases (62 African Americans and 29 Mexican Americans) and 148 matched controls (69 African Americans and 79 Mexican Americans) participating in a molecular epidemiology study of lung cancer were exposed to bleomycin in blood culture for 5 h. Mutagen sensitivity was measured by counting the chromatid break frequencies in Giemsa-stained slide preparations. Dietary data was collected using the food frequency portion of the NCI's Health Habits and History Questionnaire. **Results:** Mutagen sensitivity was associated with increased lung cancer risk (odds ratio {OR}=3.9; 95% confidence interval {CI})=2.2, 6.8). High intake of fat and low intake of dietary fiber, vegetables and various micronutrients were also associated with lung cancer risk and appeared to interact with mutagen sensitivity status. For example, among mutagen sensitive African Americans, lung cancer risk was associated with high fat intake (OR=10.4, CI=3.3, 32.9); low fiber intake (OR=21.8, CI=5.1, 93.2); low vegetable intake (OR=7.0, CI=2.3, 21.4); low fruit intake (OR=8.0, CI=2.5, 26.3); low vitamin E intake (OR=12.1, CI=3.5,41.5); and low lycopene intake (OR=7.4, CI=2.3, 23.5). However, in mutagen non-sensitive African Americans, low vitamin E intake was the only dietary variable significantly associated with lung cancer risk (OR=2.8, CI=1.0, 7.8). Age, sex, ethnicity, smoking status, consumption of dietary fat, protein, carbohydrate, fiber, vegetables, fruits and micronutrients such as vitamin E, vitamin A and lycopene, did not modulate mutagen sensitivity profiles in cases or controls. **Conclusion:** Mutagen sensitivity status appears to influence the association between dietary factors and lung cancer risk. Supported by NCI CA 55769.

24

A Case-Control Analysis of Leptin and Prostate Cancer. Chang S, Contois J, Strom S, Shen J, Spitz M, Hursting S. University of Texas M. D. Anderson Cancer Center, Houston, Texas 77030.

Obesity has been associated with increased risk and worse prognosis of several types of hormonally-responsive cancers. Among Caucasian participants of an ongoing molecular epidemiology case-control study of prostate cancer, we evaluated the role of leptin, an adiposity-related hormone recently shown to promote angiogenesis, in prostate cancer risk and progression. We measured leptin by radioimmunoassay (Linco, St. Louis, MO) in plasma samples collected from 114 controls (PSA<4μl/l), 108 high-volume cases (extracapsular but not metastatic) and 63 low-volume cases (tumor volume ≤ 0.5cc) matched by age (± 5 years) and date of diagnosis (± 1 year). Mean plasma concentrations did not differ between all cases (9.22 ng/ml) and controls (8.59 ng/ml; P=0.48). Furthermore, for each case group relative to the controls, the mean leptin concentrations also did not differ significantly. However, the low-volume cases (7.21 ng/ml) had significantly lower leptin levels than the high-volume cases (10.39 ng/ml; P=0.006). Using cut points from the leptin distribution among the controls, we conducted conditional logistic regression analysis comparing the higher tertiles of plasma leptin relative to the lowest tertile to estimate the relative risk (RR) of both prostate cancer and diagnosis of high-volume disease. Among cases and controls, no increased risk of prostate cancer was revealed for high plasma leptin (RR=0.91, 95% CI=0.49-1.68). However, comparing high-volume to low-volume cases, significantly increased risk of high-volume disease was associated with high plasma leptin (RR=3.21, 95% CI=1.37-7.49). In sum, plasma leptin concentrations were unrelated to prostate cancer risk, but among men with prostate cancer, those with high plasma leptin concentrations were more likely to be diagnosed with larger tumors, suggesting a relationship between leptin and prostate cancer progression. This research was supported by grants from NCI (CA 68578, CA 58204), the American Cancer Society (CRTG 98-281-01), and the Cancer Research Foundation of America.

Title: Vertex Baldness & Risk of Prostatic Carcinoma
Author(s): Demark-Wahnefried W, Schildkraut JM, Paulson DF, Robertson CN, Anderson EE, Walther PJ
Institution of 1st Author: Duke University Medical Center

Androgens are associated with both hair patterning & prostate cancer. In a recent case-control study of 50-70 year old men, we found significantly higher androgen levels among cases, as well as significantly higher androgen levels among men with vertex (crown) baldness. Despite these findings, we did not find hair patterning differences between cases & controls - suggesting that either no association exists or that the assessment of hair patterning among older men is not informative, & perhaps only of utility if assessed at younger ages. To determine if hair patterning during mid-adulthood serves as a potential risk factor for prostate cancer, a diagram of the Harrison Scale (HS) of Baldness was shown to a subset of men from the previous study, as well as a those participating in another prostate cancer case-control investigation. Men were asked to select the diagrams that best represented their hair patterning at age 30 & at age 40. Data were collapsed into major categories of "no baldness"(HS I/II), "frontal baldness" (HS IIa/III/IIIa/Iva) & "vertex baldness" (HS IIIv/I/Va/IV/VI/VII). Chi square analyses revealed significant differences in vertex baldness between cases & controls as assessed at age 30, but not at age 40. No differences were detected with respect to frontal baldness. Thus, vertex baldness in earlier adulthood may serve a novel risk factor for prostate cancer & one that requires further study.

Case-Control Status	No Baldness (%/N)	Vertex Baldness	OR (95% CI)	p-value
At Age 30:				
Cases (N=152)	81% (123)	14% (21)	2.4 (1.01-5.97)	p=.005
Controls (N=154)	83% (128)	5% (8)		
At Age 40:				
Cases (N=152)	58% (88)	29% (44)	1.5 (0.83-2.60)	p=.200
Controls (N=153)	63% (96)	21% (32)		

Title: Health Behavior & Receptivity Toward Health Promotion
Author(s): Among Early Stage Prostate & Breast Cancer Patients
Demark-Wahnefried W, McBride C, Clipp J, Peterson B, Lipkus
Institution of 1st Author: Duke University Medical Center, Durham, NC

Cancer survivors are at increased risk for developing secondary cancers, cardiovascular disease, osteoporosis & diabetes, thus making them a target for health-related interventions. However, little is known about health behavior among cancer survivors.

A 65-item survey was mailed to 1,667 patients diagnosed with early stage breast or prostate cancer. Items queried demographics; health behaviors; stage of readiness for smoking cessation, exercise, increased fruit & vegetable (F&V) consumption & decreased fat intake; & interest in health promotion programs.

There were 982 respondents (59% response rate). A majority reported their health as good to excellent (86%); routinely exercised (58%); ate a low fat diet (69%); & were non-smokers (92%). A minority ate 5 or more daily servings of F&V's (45%). Reported F&V consumption was greater (p=.001), & fat intakes less (p=.006) among breast cancer as compared to prostate cancer patients. However, significantly more breast cancer patients were current smokers (p=0.03). Significant associations also were found among F&V consumption, low fat diet, exercise & non-smoking behaviors (all p's <0.003). There was strong interest in health promotion programs (80%), especially with regard to diet & exercise. Preference for mailed literature rather than videotapes or telephone counseling was expressed, with 57% of respondents indicating that such programs should be initiated at diagnosis or soon after. Results suggest that although many cancer survivors already practice healthy lifestyle behaviors, there is a considerable proportion who do not. Interventions are especially needed to increase F&V intake, however health promotion efforts that target multiple behaviors may have the greatest impact, because of behavioral clustering. Among cancer survivors, receptivity is high for health promotion programs, especially those that can be delivered within 3 months of diagnosis &

Title: Recruiting Filipino Women for a Breast and Cervix Screening Study

Author(s): Maxwell A.E., Bastani R., Vida P., Warda U.
Institution of 1ˢᵗ Author: UCLA, School of Public Health and Jonsson Comprehensive Cancer Center

Recruitment of non-white populations into research projects is challenging. We employed several strategies to maximize recruitment of Filipino women into a study which included a short face-to-face entrance interview, a 60-90 minute group session with a Filipino health professional and 3 and 12 month follow-up telephone interviews. Initial publicity for the Filipino community in Los Angeles included press releases in 6 Filipino newspapers, presentations at the Philippine Medical and Nurses Association seminars, attendance at health fairs, and multiple contacts with Filipino community based organizations and churches. During the first 7 months of enrollment, 211 women were recruited at community organizations through presentations by the project director (21%), community liaisons (52%), or at churches (9%). Another 18% were friends or relatives of women who were previously recruited through these methods. Of the women enrolled, 76% attended the group sessions. Women were most concerned about the time committment required to participate in the study (40%) and revealing confidential information (17%). They were less concerned about signing consent forms (10%), their families' reaction (2%) or that their immigration status could be affected (3%). We will describe our recruitment methods and their relative effectiveness in terms of group attendance. We will also compare attendees of the group session to non-attendees with respect to demographics, and their concerns and opinions regarding recruitment strategies.

Title: Psychosocial Predictors of Fruit, Juice & Vegetable Consumption

Author(s): T Baranowski, PhD, KW Cullen, DrPH, RD, LD, J Baranowski, MPH, RD, LD, D Hebert, MS, C de Moor, PhD
Institution of 1ˢᵗ Author: The University of Texas M. D. Anderson Cancer Center, Houston, TX

Fruit, juice and vegetable (FJV) consumption has been demonstrated to be protective from cancer at most anatomic sites. Interventions to increase FJV consumption must be targeted at factors demonstrated to influence consumption. Thus, understanding correlates of consumption should lead to more effective interventions for primary prevention of cancer. One hundred and fifty-four (154) mostly African-American Boy Scouts from Urban (lower-income) and regular troops provided two days of 24-hour dietary recalls, and FJV preferences. Data from 100 of their parents included home availability and accessibility of FJV, environmental factors shown to be related to children's FJV consumption. Although a substantial number of bivariate relationships were detected, regression analysis with backward elimination of variables revealed that after controlling for the clustering by troop and treatment group differences, the primary predictor of juice consumption was juice preference (p=.05); of vegetable consumption was troop type (p=.022); of FJV consumption was FJV preference (p=.037). No other variable predicted fruit consumption. The primary role of preferences predicting FJV consumption among scouts is consistent with several published articles among children. Scouts in the more middle-class regular troops ate more FJV than those in the Urban Boy Scout troops, which is also consistent with other literature on socioeconomic status and consumption. The low predictiveness of other variables, especially FJV availability and accessibility, may have been due to the small sample or to the somewhat older age of these boys, than in other studies. Increasing FJV preferences appears to be the most important target for getting pre- and adolescent boys to eat more FJV.

Title: Ambivalent attitudes, smoking cessation and cancer screening

Author(s): Isaac M. Lipkus, J. Green, B. Rimer and A. Marcus

Institution of 1ˢᵗ Author: Duke University Medical Center

Most theories of health behavior suggest that attitudes affect behavior change. To date, attitudes have been measured using bipolar scales, which assume that a behavior or outcome cannot be evaluated simultaneously as both positive and negative. Thus, we explored how attitudinal ambivalence, defined as the extent to which one's reactions to an attitude object are evaluatively positive and negative, was related to: 1) college smokers' desire to quit smoking and their stage of change, 2) intentions to get mammograms, 2) and intentions to get screened for colorectal cancer (CRC).

College smokers (N=157) who felt more ambivalent towards smoking expressed a greater desire to quit (r =.28, p<.01) and were more likely to be contemplators (r = .22, p<.01). Ambivalence continued to predict desire to quit after controlling for overall positive and negative smoking attitudes, and negative smoking consequences. Among women 40 and older (N=241), those who felt more ambivalent towards mammography screening reported weaker intentions to get mammograms in the next year or two after controlling for positive/negative attitudes, and the pros and cons of mammography screening. Among men and women 50 and older (N=125), greater felt ambivalence towards CRC screening via FOBT was related negatively to intentions to be screened in the next six months using FOBT (r =-.26, p<.01). Similarly, greater felt ambivalence towards CRC screening using sigmoidoscopy (SIG) was related negatively to intentions to be screened in the next year or two using SIG (r=-.47, p<.001).

These results suggest that the attitudinal ambivalence should be explored further in relation to cancer screening and smoking cessation. Specifically, future research should explore how the nature of the relationship between positive and negative attitudes (e.g., are reciprocally, positively or independently related) affect cancer screening and smoking cessation.

Title: INCREASING BREAST CANCER DETECTION

Author(s): BEHAVIORS AMONG OLDER BLACK WOMEN

Institution of 1ˢᵗ Author: Sheinfeld Gorin, S & Northridge, M, Columbia U.

Older, underserved African American women often do not engage in effective surveillance behaviors, such as annual mammograms and clinical breast self exams (CBE). The purpose of this study is to assess the impact of the social support network on detection.

In-person interviews were conducted among 408 women aged 18-65 (86% African American, 24% over age 50) who were randomly selected from dwelling unit enumeration lists. Psychometrically sound measures were used.

Over the past year, 67% of women aged 50 and older had received a mammogram; 74% had had a CBE. Multiple linear regression analyses revealed that maintaining helpful ties to more individuals in the woman's social network significantly predicted her likelihood of obtaining a mammogram as generally recommended (beta,-.26, p<.05). Similarly, those women in this age group who were married or who lived with a partner were more likely to have received a recent clinical breast exam (beta, .23, p<.05) than those who were not.

These findings suggest that involving the older African American woman alongside the salient members of her social support network, especially her partner, in the surveillance decision can positively affect its outcome.

Title: Stages of Change and Cognitive Susceptibility as
          Predictors of Smoking Onset
Author(s): A. Prokhorov, C. de Moor, E. Gritz, & S. Kelder

Institution of 1st Author: UT M.D. Anderson Cancer Center

In order for primary or secondary prevention efforts to be successful, it is necessary to effectively identify adolescents who are likely to engage in smoking behavior. The transtheoretical model of change (TTM) and susceptibility to smoking (STS) have been recently promoted as alternative concepts predicting smoking acquisition among adolescents. The TTM postulates gradual progression through a series of discrete cognitive and behavioral stages of smoking acquisition, whereas the STS measures the intention to smoke defining "susceptible" adolescents as exhibiting a lack of firm commitment not to smoke in the future. We conducted two independent studies, one cross-sectional (N=4,656; 46.3% males; mean age 16.2 ± 1.2 years) and the other prospective (N=1,373; 41.1% males; mean age 13.9 ± 2.6 years), in which we evaluated the predictive capabilities of the TTM and STS in the same sample of adolescents. It was shown that adolescents in the *precontemplation* stage for smoking acquisition can be further refined using the STS concept. Specifically, we identified distinctly different subgroups of "susceptible" and "not susceptible" precontemplators. The combined stage-of-change/susceptibility continuum was validated using the decisional balance inventory and situational temptations to try smoking. The utility of this approach may be extended to the acquisition of other behaviors where situational social pressure may momentarily overcome intrapersonal motives and intentions.

Title: Psychological Outcomes of Jewish Women in A Cancer Risk Program
Author(s): Daly, M., Harrop-Stein, C., Malick, J., Godwin, A., Dangel, J., Costalas, J., Siemers, S.
Institution of 1st Author: Fox Chase Cancer Center, Philadelphia, PA

Among the factors associated with breast cancer, none, other than gender and age, alters the magnitude of risk more than a family history of the disease. Three mutations, 185delAG, 5382insC and 6174delT, predisposing to hereditary breast and ovarian cancer have been detected in Jews of Eastern European descent. Until recently, little research has been done to study the psychological sequelae of cancer genetic test results in this population. The Family Risk Assessment Program surveyed Jewish women about their perceptions of genetic testing and the psychological factors associated with potential gene carrier status. Women completed the Beck Depression Inventory (BDI) and the Revised Impact of Events Scale (RIES), at baseline, post counseling, and 1 and 4 months post disclosure. Additionally, women completed questionnaires about stigmatization and the causes of cancer. Overall, our sample scored at the normative population means for the BDI and RIES. There were no differences in mean scores over time for the BDI. Improvements were noted for both the RIES Avoidance and Intrusion subscales from baseline to 1 month (5-4) and baseline to 4 months (5- 3). Over half (53%) of the sample reported that they would feel less healthy if they learned they were a carrier of an alteration. However, 70% stated that they would not feel singled out. Interestingly, 72% of the sample agreed that the way stress is handled has a lot to do with getting cancer. Nearly everyone (97%) agreed that cancer could be explained by family heredity. These results suggest that the Jewish women seeking genetic testing are well adjusted and cope well with test results. These results also suggest that education needs to address the genetics of cancer and the mind-body connection in cancer causation.

Title: Coping and Social Support Predict Adjustment in Cancer Patients
Author(s):
Watts BG, Cohen L, Eton OE, de Moor C, Amato RJ, Murry LK, East MJ.

Institution of 1st Author:
University of Texas M. D. Anderson Cancer Center

Coping style and social support networks moderate individual adjustment to stressful events. These variables were measured in melanoma and renal cell carcinoma patients with advanced disease undergoing weekly, non-toxic active specific immunotherapy using an autologous tumor-derived heat-shock protein peptide complex-96 (HSPPC-96) vaccine. Patents were assessed at three time points: T_1 = baseline, day of the first injection; T_2 = day 22, the day of the fourth and last injection; T_3 = four weeks after the last injection. At T_1, the patients completed the Brief-COPE scale and the Interpersonal Support Evaluation List. At each time point, the patients completed the Brief Symptom Inventory, the Profile of Mood States, and the Impact of Events Scale to measure change in psychological distress, mood, and intrusive thoughts, respectively.

27 of 60 patients have completed the study. In a preliminary analysis, behavioral disengagement coping style was positively correlated with psychological distress ($r=0.56$) and total mood disturbance ($r=0.74$) at T_1 and increased intrusive thoughts at T_1 and T_2 ($r=0.50$). Emotional support coping style was negatively correlated with psychological distress and intrusive thoughts at each time point, and mood disturbance at T_2 and T_3 ($r=-0.43$ to -0.75). Self-esteem enhancing social support was negatively correlated with psychological distress, mood disturbance, and intrusive thoughts at each time point ($r=-0.43$ to -0.55). These results suggest behavioral disengagement coping style is a negative correlate of adjustment whereas use of emotional support and self-esteem enhancing social support are positive correlates of adjustment. Further analyses will determine whether coping and social support are associated with the clinical and immunological endpoints of this clinical trial. These findings may be used to guide future intervention programs to help prevent adjustment problems in cancer patients receiving vaccine treatment.

Title: Skin Cancer Prevention in Preschools: The S.P.F.™ Program
Author(s): Tripp M, Herrmann N, Parcel G, Chamberlain R, Gritz E

Institution of 1st Author: The University of Texas M. D. Anderson Cancer Center

It is estimated that almost one million cases of nonmelanoma skin cancer and 41,600 cases of melanoma will be diagnosed in 1998. Epidemiological studies suggest that a history of sunburns, during early childhood and adolescence in particular, and routine sun exposure are associated with an increased risk of developing melanoma and nonmelanoma skin cancer. Few skin cancer prevention intervention studies target early childhood populations and their caregivers, such as parents and teachers, and little emphasis is placed on the preschool environment. Consequently, the purpose of this study funded by the National Cancer Institute is to develop, implement, and evaluate a program designed to reduce sun exposure among preschool children. Evaluation of the S.P.F.™ program is currently underway in 20 Houston preschools using a randomized, controlled trial design. The intervention methods are grounded in Social Cognitive Theory and include modeling, reinforcement, and persuasion. Program components include newsletters, handbooks, videos, a curriculum and teacher's guide, training, group meetings, and sunscreen for the preschool. This presentation describes the development of this skin cancer prevention program as guided by Intervention Mapping, a systematic approach to program development that makes use of theory, empirical findings, and qualitative data from the target population.

Title: Design of *Active for Life:* QOL Interventions in Prostate Cancer
Author(s): Carmack CL, Gritz ER, Nielsen, IR, de Moor CA, Kohl HW, Dunn A, Pettaway C, Millikan R, Sellin R, Charnsangavej C, Gillis T.
Institution of 1st Author: U.T. M.D. Anderson Cancer Center

Prostate cancer patients with metastatic disease often receive androgen-ablation therapy, which may result in significant physical (fatigue, decreased functional status, fat accumulation, decline in bone mass) and psychological (depression, anxiety) morbidity. A physical activity intervention, which has been shown to positively affect both physical and psychological functioning in healthy adults, may serve as a tertiary preventive strategy to improve quality of life (QOL) outcomes in prostate cancer patients. *Active for Life* will adapt a tested Lifestyle Physical Activity program (developed at the Cooper Institute) for use as a QOL intervention. The Lifestyle program is based on the new SGR recommendations for physical activity and incorporates behavioral skills training using the Stages of Change model. Two-hundred fifty six patients will be recruited and randomly assigned to one of three treatment arms: Lifestyle program; Educational Support control group; or Usual Care control group. The Lifestyle group will be compared to the Educational Support and Usual Care groups on QOL measures including physical functioning and emotional well-being. Both the Lifestyle and Educational Support groups will last 6 months and are equivalent in terms of session frequency and duration. The Usual Care group will not attend any formal group sessions. Participants will be assessed at baseline, following the intervention, and at a 6 month follow-up. Pilot group data indicate that the majority of participants were sedentary and were interested in a physical activity program. Based on pilot data, the lifestyle curriculum has been adapted to a cancer population. Baseline data from the first cohort of participants will be presented. Primary outcome measures include QOL indices such as depression, anxiety, fatigue, and performance of ADLs. Secondary outcome measures include social support, self-efficacy, physical activity, physical fitness, and changes in body composition (BMI, percent body fat, and muscle to fat ratio as measured by computerized tomography scan).

Title: Changes in Rehabilitation Needs in Head and Neck Cancer
Author(s): Carmack, C.L., de Moor, C.A., & Gritz, E.R.
Institution of 1st Author: U.T. M.D. Anderson Cancer Center

Treatment regimens for head and neck cancer frequently affect several quality of life (QOL) domains. Rehabilitation needs typically are identified through cross-sectional analysis and focus on physical function domains. The purpose of the present study was to provide a comprehensive assessment of QOL concerns by evaluating psychosocial issues as well as physical functioning, and to identify how rehabilitation needs change in the year following diagnosis. A prospective assessment of 105 patients with newly diagnosed first primary squamous cell carcinoma of the oral cavity, pharynx, or larynx was conducted over the course of 1 year. Patients reported improvements in functional status (p=.006) and in eating, diet, and speech at 12 months; however, the latter three represent areas of continued dysfunction, and the changes were not statistically significant. Patients reported a significant decline in sexual (p=.017) and marital (p=.002) functioning as measured by the CARES. Individual item analyses indicated problems in sexual functioning were frequent and severe. Declines in specific areas of marital functioning included difficulty talking about feelings (p=.10), not getting along as well as usual (p=.001), and difficulty asking for care from partner (p=.066). Although patients reported no significant changes in the psychosocial domain as measured by the CARES, patients reported declines on items including friends/relatives do not visit enough (p=.016) and difficulty talking to friends/relatives about cancer (p=.079). Overall, results indicate frequent and severe problems in multiple QOL domains that would not have been identified in traditional QOL assessments. A common theme across several QOL domains is persisting and worsening communication problems with significant others, which may be related to continued dysfunction in the area of speech. Results reinforce the need for comprehensive rehabilitative efforts that integrate psychological interventions in conjunction with speech therapy.

Title: Methods of offering genetic counseling/testing to an African-American family with **Hereditary Non-Polyposis Colon Cancer**
Author(s): B Watts, S Peterson, P Lynch, P Ward, W Kohlmann, N Mann, J Sawyer, S Vernon, E Gritz
Institution of 1st Author: UT MD Anderson Cancer Center

Following the identification of a familial mutation in an **HNPCC** gene, we offered genetic counseling and testing to adult members of a low-income, African-American kindred dispersed throughout Texas. Specifically, we used two types of methods for inviting family members to genetic counseling and testing. **Phone/Mail Method:** Multiple phone calls were made to all reachable family members, and letters were sent from the study physician regarding the study and informed consent process. **Family Meeting/Field Visit Method:** Key matriarchs in the family issued invitations to other family members for two family sessions, which provided an educational discussion given by the study physician, individual counseling sessions, an informed consent, and an opportunity to donate samples. The Phone/Mail Method yielded acceptances to genetic counseling and testing from only 2 out of 45 eligible family members (4%). In the first Family Meeting/Field Visit, a key matriarch encouraged her children to attend, and five of her eight available adult children (63%) received counseling. One year later, key family members encouraged their families to attend. As a result, six of nine (67%) and three of six (50%) adult family members were counseled for genetic testing, respectively. As a result, over the course of 18 months of follow-up, 16 of 55 adults (29%) accepted genetic counseling and/or testing.
Summary: Factors contributing to the acceptance of an invitation to genetic counseling and testing by an African-American kindred include: A key matriarch's trust in the study physician and belief in the importance of testing for her family; adult members' willingness to comply with parental persuasion; and, concurring multiple adverse health events in the family. We conclude that the acceptance of an invitation to genetic counseling and testing by an African-American family can best be facilitated by the inclusion of a key family member into the recruitment process.

Title: High Risk Women's Perceptions of Breast Cancer Risk
Author(s): J.F. Houfek, J.R. Atwood, G.B. Schaefer, G.M. Reiser
Institution of 1st Author: University of Nebraska Medical Center

Perceived cancer risk is an important determinant of health-related behaviors, but little is known about women's perceptions of breast cancer risk after receiving genetic counseling for this disease. This report describes women's perceptions of breast cancer risk for the population and themselves, after genetic counseling for hereditary breast-ovarian cancer. These data are part of NIH KO1 study describing relationships among mental representations of breast cancer, coping strategies, and breast cancer surveillance. A purposive sample of 30 Caucasian women, ages 20 to 70 (X=45; SD=13.94), completed questionnaires after genetic counseling, but prior to receiving test results. Risk was judged on a scale of 0-100%. Their highly variable perceptions of risks without BRCA1/BRCA2 mutations were 8-90% (mode=10%) for the population and 8-55% (mode=50%) for themselves. With BRCA1/BRCA2 mutations, perceptions of risks were 10-95% (mode=50%) for the population and 9-100% (mode = 50%) for themselves. Perceived personal risk for breast cancer was related to perceived risk of having a BRCA1 ($r=.47$, $p=.01$) or BRCA2 ($r=.42$, $p=.02$) mutation. Findings suggest women used heredity as a factor in determining personal risk, but even with counseling, few women accurately reported population risks.

Title: Cervical Cancer Risk Among Young Clinic Patients
Author(s): Valdizan-Garcia, M.C., Basen-Engquist, K., Tortolero-Luna, G.

Institution of 1st Author: UT-MD Anderson Cancer Center

Purpose: To explore knowledge and risk behaviors for cervical cancer among young women.

Methods: We conducted a pilot study among a convenience sample of 40 women aged 15-20 attending two Health Department Clinics in Houston, Texas. Women were asked to complete a self-administered questionnaire of 82 items including demographic information, knowledge about cervical cancer etiology and screening, and risk behaviors such as sexual behavior, tobacco and alcohol use.

Results: Fifty-six percent were 15-18 and 44% were 19-20 years old. Fourty-nine percent were Hispanic, 28% were White, 18% were African American, and 5% were of other racial/ethnic groups. Seventy-two percent correctly identified the Pap smear as a test to screen for cervical cancer, 75% knew that screening for cervical cancer was important before age 40, and 93% knew that the Pap smear needed to be done annually. Only 30% identified human papillomavirus (HPV) as an etiologic factor for cervical cancer, and 52.5% thought that birth control pills protect against cervical cancer. Seventy-five percent reported having had a pelvic exam in the last 12 months and 89% of these had a Pap smear. Ninety-seven percent reported having sexual intercourse and 66% initiated sexual intercourse by age 15 . Sixty-three percent had sexual intercourse within the three months prior to the questionnaire.

Conclusion: Knowledge about the Pap smear was high, but few young women in this sample knew about HPV as a cause of cervical cancer, and many believe that birth control pills provide protection against cervical cancer. A high percentage of the sample has behavioral risk factors for HPV and cervical cancer.

Distress and Adjustment during Breast Cancer Treatment Decision Making

Michael A. Diefenbach, Suzanne M. Miller, Lori Goldstein, Irene Angel, Colleen Boyd, and Joan Herman
Fox Chase Cancer Center, Philadelphia

Purpose and Methods. This study surveyed patients (N=57) recently diagnosed with stage I or II breast cancer immediately following consultation with a multi-disciplinary team consisting of breast surgeons, medical and radiation oncologists, to determine treatment expectations, disease related distress and treatment decision variables. A subset (n=29) was re-interviewed four months later to assess symptom reporting and satisfaction with treatment.

Results. Lumpectomy was performed on 88% of patients, mastectomy on 12%. Mastecomy patients perceived lumpectomy and radiation as significantly less effective than mastectomy ($p < .02$). Regardless of chosen treatment a majority of women (87%) reported elevated levels of distress during the treatment decision. A majority (82%) of women also displayed high levels of confidence that they had made the right decision, and (66%) expected to live more than 10 years.

Results from the 4-month follow-up interview demonstrated that 78% of patients were "very" satisfied with their treatment (on a 5-point scale). However, there was a trend ($p < .10$) for mastectomy patients to be less confident that they made the right treatment decision, compared to lumpectomy patients. With regard to treatment side-effects mastectomy patients reported significantly more tight skin in the breast area ($p < .002$, more discomfort in the neck ($p < .005$), and much less sexual desire ($p < .001$) compared to lumpectomy patients.

Conclusion. Results point to the importance of designing interventions that reduce decision-related distress, and to prepare patients for the psychological and medical consequences of different treatment options.

Title: **Increasing Mammography Use Among Older,**
Author(s): **Rural, African-American Women**
JA Earp, NC Breast Cancer Screening Program
Institution of 1ˢᵗ Author: **UNC Lineberger Comp. Cancer Center,**
Univ. of North Carolina at Chapel Hill

41

Purpose: To determine if a lay health advisor intervention, supplemented by professional education and activities to improve access, has increased self-reported mammography use among rural, African-American women ages 50 years and older.

Methods: Beginning in 1994, 166 trained community lay health advisors have promoted breast cancer screening in five rural counties but not in five neighboring comparison counties. Prior to intervention, staff conducted in-home interviews with 993 women (494 intervention, 499 comparison; 87% interview response rate). At first follow-up in 1996-97, 91 women (9%) had died, moved, or otherwise become ineligible. Of the 902 remaining, 801 (89%) completed interviews (390 intervention, 411 comparison).

Results: Women's ages ranged from 50 to 99 years, with 45% aged 50-64 years. The majority reported annual family incomes < $12,000 (71%) and educational attainment < high school (68%). Self-reported mammography use in the past two years increased 17 percentage points (41% to 58%) in the intervention counties, compared to 11 points (56% to 67%) in the comparison counties. Among women with incomes < $12,000/year, use increased 20 points (38% to 58%) in the intervention counties, compared to 12 points (48% to 60%) in the comparison counties. Among women in the intervention counties, 61% reported seeing at least 1 project material; 38% had heard of the lay health advisor organization; and 24% reported contact by a group or an individual. Women reporting exposure to the intervention had greater increases in mammography use than did unexposed women.

Conclusion: Initial (unadjusted) results from first follow-up in this ongoing eight-year controlled trial suggested that a lay health advisor intervention may increase mammography use among older, rural, lower-income, African-American women.

Title: Monitoring Attentional Style and Interest in Prophylactic Oophorectomy

Author(s): Carolyn Fang, S. Miller, M. Daly, L. Ohls, & K. Hurley

Institution of 1ˢᵗ Author: Fox Chase Cancer Center

42

Purpose: The purpose of this study was to examine the impact of monitoring attentional style and health perceptions on women's intention to undergo prophylactic oophorectomy. Monitors, who typically attend to and amplify health threats, may be more likely to opt for procedures, such as preventive surgery in order to lessen the perceived health threat. **Methods:** Participants were 80 women enrolled in a family risk assessment program who were at increased risk for ovarian cancer. Program participation involved cancer education, genetic counseling, and follow-up recommendations. Attentional style and family history of cancer were obtained upon entry into the program. Following program participation, women were contacted by telephone to assess risk perceptions, perceived benefits of the procedure, and intentions to undergo surgery. **Results:** Results of hierarchical regression analyses showed that a monitoring attentional style was associated with greater intention to undergo prophylactic oophorectomy. In addition, perceived benefits of the procedure (e.g., reduce worry about cancer; prevent cancer) were positively associated with women's intentions to have surgery. **Conclusion:** The findings suggest that monitors are more likely to intend to undergo preventive surgery. They may therefore benefit from targeted counseling interventions to enable them to fully anticipate the consequences of their decision.

Title: Avoidance and Immune Function in Women at risk for Cervical Cancer

Author(s): Carolyn Fang, S. Miller, H. Harding, L. Ohls, A. O'Leary, M. Mills, and S. Douglas

Institution of 1st Author: Fox Chase Cancer Center

Purpose: The purpose of this study was to examine the relationship between avoidant and intrusive ideation about cancer risk and immune responses among women at risk for cervical cancer. **Methods:** Participants were 47 women undergoing diagnostic follow-up (i.e., colposcopy) after an abnormal Pap smear result. Baseline assessments, collected prior to the colposcopy appointment, included the intrusion and avoidance subscales of the Revised Impact of Events Scale, and demographic and medical history. To assess immunocompetence (i.e., helper T, cytotoxic T cells), a sample of blood was obtained at baseline and at a six-month follow-up. **Results:** Hierarchical regression analyses revealed that higher levels of cognitive and behavioral avoidance at baseline predicted significantly lower numbers of circulating cytotoxic T cells (CD3+/CD8+) at the time of the 6-month follow-up, after controlling for baseline levels of cytotoxic T cells and potential confounding variables (e.g., age, smoking status). Baseline intrusive ideation was unrelated to changes in any measured immune variables. **Conclusion:** Thus, avoidance appears to be associated with alterations in immunocompetence in cancer-risk patients. The findings suggest that it may be important to evaluate the impact of cognitive and behavioral avoidance on progression of precancerous cervical lesions.

Title: An Investigation of the Possible Factors involved in an Interaction of Abdominal Fat Distribution and Family History on risk of Breast Cancer.

Author(s): Olson JE, Cerhan JR, Anderson KE, Sellers TA.

Institution of 1st Author: University of Minnesota

Data from the Iowa Women's Health Study (IWHS) suggested that a high waist/hip ratio, reflecting abdominal adiposity, was associated with elevated risk of postmenopausal breast cancer (BC) only among women with a positive (+) family history (FHX) of the disease. This study explored whether differences in testosterone, sex hormone binding globulin (SHBG), or insulin levels underlie the interaction. Sisters were selected from IWHS, a prospective cohort study of 41,837 postmenopausal women established in 1986, if they were: 1) BCFHX negative (-) and ≥1 sister with a high waist/hip ratio (WHR); or 2) BCFHX(+) and ≥1 sister with a high WHR. Fasting blood samples were collected from 245 women, including sister pairs from 66 families. BCFHX(-) women had significantly higher multivariate-adjusted insulin than BCFHX(+) women, suggesting possibly higher insulin sensitivity in BCFHX(+) women (18.4 vs 16.1 µU/ml, p=0.03). Somewhat lower levels of SHBG were detected in BCFHX(+) women but only among those on exogenous estrogens or thyroid hormones (50.0 vs 63.5 nmol/L, p=0.08). No significant differences were noted in testosterone across FHX categories. Insulin and SHBG, but not testosterone, may partly explain the interaction between WHR and BCFHX among IWHS participants.

Title: E-cadherin expression is associated with squamous differentiation in normal squamous epithelia and their carcinomas

Authors: X-C Xu, H Wu, X-M Liu, SM Lippman, and R Lotan

Institution: UT MD Anderson Cancer Center, Houston TX 77030

Purpose of the Study: E-cadherin is a cell-cell adhesion molecule of normal epithelia and its expression is frequently lost in human epithelial cancers. This expression is also important during the transition from well-differentiated adenoma to invasive carcinoma. To evaluate whether E-cadherin may serve as an biomarker for squamous cell differentiation, we analyzed its expression in various types of normal squamous epithelia and their carcinomas.

Materials & Methods: Formalin-fixed, paraffin-embedded tissue sections from 7 patients with head and neck cancer, 19 lung cancer, 73 esophageal cancer, 19 skin cancer, and 18 cervical cancer were analyzed by immunohistochemistry with polyclonal anti-human E-cadherin antibody.

Results: Our data showed that E-cadherin was expressed at very high level (92-100%) in adjacent or distant normal squamous epithelia, while well-differentiated SCCs expressed also high level of E-cadherin (86-100%). In contrast, its expression was decreased to less than 40% in poorly differentiated SCCs. Interestingly, tumor cells expressed more E-cadherin in differentiated areas than in less differentiated areas even within same tissue section. Furthermore, differentiation induced agent, retinoid can up-regulated E-cadherin expression in esophageal cancer cell lines by 3 to 5-day treatment with 1 μm of all-*trans* retinoic acid.

Conclusion: Our data demonstrated that E-cadherin expression was associated with SCC differentiation. It may, therefore, serve as an biomarker for squamous differentiation.

Title: Facilitating Cancer Risk Counseling With Interactive Technology

Author(s): Montgomery, S., Daly, M., Malick, J., Balshem, A., Spoltore, J.

Institution of 1st Author: Fox Chase Cancer Center, Philadelphia, PA.

With funding from the NCI and the National Action Plan on Breast Cancer, the Family Risk Assessment Program at Fox Chase Cancer Center has developed an interactive multimedia program (IMP) to facilitate cancer risk counseling among individuals with a family history of breast and ovarian cancer. The program is designed to improve comprehension of personal cancer risk and knowledge of cancer genetics. The IMP requires active participation, facilitates repetition, and allows the participant to self-tailor the receipt of information to match her own learning needs. Preliminary research to test the efficacy of this approach was conducted with 71 at-risk women, with 45 completing both baseline and follow-up measures. We compared a standard group education format to the interactive multimedia program of the same information. Due to scheduling logistics, we recruited at a 3 to1 ratio. The control arm (n=33) received the standard format while the intervention arm (n=12) used the IMP. Both groups subsequently received individual cancer risk counseling. We measured genetics knowledge at baseline and knowledge and satisfaction post-education. We found that baseline knowledge was poor, with both groups correctly answering a mean of 6 out of 14 questions correctly. Genetic knowledge improved considerably post-education with a mean of 11.4 correct responses for the intervention and 10.16 correct responses for the control. Improvement in both groups was statistically significant (p < .002). The intervention arm scored better than the control arm on all but three questions. In terms of satisfaction, 100% of the intervention arm vs. 71% of the control arm reported they were "very satisfied" with the cancer risk counseling session and 100% of the intervention vs. 82% of the control reported that their educational format (IMP vs. group) was "very helpful" in understanding their genetic risk. As our numbers increase, we plan to apply more rigorous between group comparisons. However, this preliminary data seems to indicate that the IMP is as effective as the standard format in enhancing genetic knowledge and results in greater satisfaction with individual cancer risk counseling.

PRELIMINARY EVIDENCE THAT FOLATE MAY PLAY A ROLE IN THE SECONDARY PREVENTION OF NON-SMALL CELL LUNG CANCER (NSCLC). Jatoi A, Daly BDT, Kramer G, Mason JB. Tufts-New England Medical Center, Boston, MA

Background: Prior studies suggest folate may play a role in the prevention of NSCLC. However, none of these studies has examined folate's role in secondary prevention, or in the prevention of recurrent disease.

Methods: 46 cancer-free, non-smoking NSCLC patients were evaluated post-operatively. Serum folate, RBC folate, and total homocysteine were measured. Over two years, 6 developed recurrent cancer, as defined by either biopsy-proven disease or compelling radiologic evidence for it. The cancer-free folate status of these 6 patients was compared to that of 6 randomly selected, non-cancer patients, who were matched to cancer patients on gender and age.

Results: The groups' male:female ratio was 4:2. The mean age $\pm$ standard deviation (SD) in the NSCLC and non-cancer group was 61 ± 16 years and 59 ± 16 years, respectively.

	MEAN Δ* (SD)	P-VALUE (paired t-test)
serum folate (ng/mL)	- 0.78 (4.6)	0.69
RBC folate (ng/mL)	- 93 (75)	0.03
homocysteine(μmol/L)	0.47 (4.4)	0.81

* Δ = cancer- control values

Conclusions: Low RBC folate may predict NSCLC recurrence. Future studies should further explore the role of folate in the secondary prevention of NSCLC.

Title: Assessing Dietary d-Limonene Intake
Author(s):   Hakim I, Davis T and Garcia R.

Institution of 1st Author: Arizona Cancer Center, University of Arizona

PURPOSE: The purpose of the study is (1) to determine d-limonene levels in a variety of citrus foods in the forms in which they are commonly consumed and (2) to develop a citrus questionnaire (CQ) and a d-limonene database which can be used in analytic epidemiological studies to assess the relationship between dietary d-limonene and cancer risk. METHODS: Focus groups and semi-structured interviews were conducted with women and men from different ethnic background (1) to assess the consumption and the preparation techniques of citrus foods and (2) to develop and modify the CQ. Various brands and varieties of citrus juices are analyzed by gas chromatography to obtain quantitative levels of d-limonene. CQ was tested for short and long term reliability and is being tested for validity. RESULTS: Preliminary results suggest that source and preparation practices have a major influence on d-limonene level. Many commonly consumed citrus beverages contain no d-limonene. The largest sources of d-limonene identified to-date are fresh Mediterranean-style lemonade (1027 mg/L) and limeade (402 mg/L), followed by commercial orange juices in cans (77-116 mg/L), in carton boxes (35-59 mg/L), and commercial grapefruit juices in cans (21-50 mg/L). CONCLUSIONS: The availability of quantitative estimates of d-limonene will substantially enhance the scope of epidemiological studies by (1) allowing for the examination of the effects of dietary d-limonene and (2) minimizing the potential for uncontrolled confounding by unmeasured sources of d-limonene.

Title: Differences in children's fruit & vegetable intakes and preferences
Author(s): KW Cullen, DrPH, RD, LD, L Rittenberry, MS, RD,
T Baranowski, PhD, D Hebert, MS, C de Moor, PhD
Institution of 1st Author: The University of Texas M. D. Anderson Cancer
Center, Houston, TX

49

The African-American (AA) mortality rate from all cancers is greater than that of Euro-Americans (EA) or Mexican-Americans (MA). Dietary factors are related to increased cancer risk, particularly low intakes of fruit and vegetables (F&V). This study investigated F&V consumption and preferences (the primary predictor of children's F&V consumption) among an ethnically diverse group of 4th-6th grade children. The final sample of 217 children included 59% girls, 25% AA, 29% EA, 36% MA, and 9% Asian/other (AO). Students completed two days of food records and preference questionnaires for 15 fruits and 19 vegetables. Mean daily F&V intake was 2.54 servings (svg) for EA, 2.04 svg for MA, 2.37 svg for AO, and 1.66 svg for AA (p=.008). AA total F&V intake was significantly lower than EA F&V intake (p=.011). AA daily fruit (.35 svg) intake was significantly lower than EA fruit (.89 svg) intake (p=.007), with MA reporting .53 svg and AO reporting .43 svg. Daily juice svg were .34 for AA to .61 for AO (p=.19). Vegetable intakes were .97 svg for AA, 1.15 svg for EA, .91 svg for MA, and 1.52 svg for AO. The preference data did not support these results. AA students reported significantly higher fruit preferences than EA (p=.027) or AO (p=.026) students, but consumed the lowest amount of fruit. MA students also reported significantly higher fruit preferences than EA (p=.005) or AO (p=.01) students. Vegetable preferences were marginally different across the four groups (p=.052). MA students reported the highest preferences for vegetables. These results indicate that other factors are related to and influence children's F&V intake. Identifying these factors is necessary for the design of effective nutrition behavior change programs for cancer prevention.

Title: Gender- and Age-Related Patterns of Food Consumption in U.S.
Author(s): CL Warneke, MS, KW Cullen, DrPH, RD, LD,
CA de Moor, PhD, T Baranowski, PhD
Institution of 1st Author: The University of Texas M. D. Anderson Cancer
Center, Houston, TX

50

Although males generally consume more calories than females, it is not clear whether males at all ages meet the dietary guidelines or whether females have better diets controlling for calories consumed. To determine gender differences in age-related food consumption patterns, data from the 1994-1996 Continuing Survey of Food Intake by Individuals was analyzed by Food Guide Pyramid food groups. The average of two 24-hour dietary recalls was examined for 7,182 males and 6,977 females aged 2 through 89 years. Cubic spline regression analysis showed that gender and age alone explained 25% of the variability in total energy intake and up to 15% of the variability in mean consumption by food group. Energy intake increased for both genders until age 20 and then decreased with age. Males consumed more calories and more servings of all food groups. Females fell below or at minimum dietary guidelines for servings of grain, vegetables, fruit, dairy, and meats; males fell below minimum guidelines for fruit servings alone. Adjusting for calorie consumption, females consumed more vegetables and fruit than males consumed, and males consumed more meat and total fat. Gender differences in adjusted food intake were significant primarily for persons 25 - 70 years of age. Female diets were more consistent with diets considered protective against certain cancers, while male diets were low in fruit and high in fat. Interventions should target the gender- and age-specific practices of the selected population.

51

Title: **Dietary Supplement Use Among High Risk Women**
Author(s): Harrop-Stein, C., Steinberg, S., Daly, M.

Institution of 1st Author: Fox Chase Cancer Center, Philadelphia, PA

Recently there has been a resurgence of interest in complimentary therapies. Consistent with this trend, participants in Fox Chase Cancer Center's Family Risk Assessment Program have expressed interest in diet, nutrition, exercise, and complementary therapies to enhance general health, prevent cancer and improve quality of life. In response, we developed a survey to ascertain what women at risk for breast and ovarian cancer are practicing. The Dietary Supplement Survey focused on (1) amount and reason for use of dietary supplements; (2) soy and tea products; (3) activity; and (4) sources of health information. The survey was piloted with 47 women from our high-risk clinic. Overall, 89% take some form of dietary supplement. The most commonly used are multivitamins (71%), vitamin E (58%), calcium (55%), vitamin C (48%), selenium (15%), ginkgo (6%), and St. John's Wort (6%). Soy products and teas were used by 17% of the sample. Women who used supplements stated that prevention of disease was the driving force behind their use. All but three women in our sample participate in some form of exercise (e.g., aerobic exercise, walking) or relaxation technique (e.g. prayer, yoga, meditation). The majority of our sample gets their information about nutrition and health from magazines (75%), books (45%), their doctor (43%), or health food stores (38%). Our data suggest that at risk women are turning to vitamin supplementation and other forms of complimentary medicine to maintain their health and gain control over their risk of disease. High risk programs should address not only the risk of disease, but prevention of disease. These programs should include information about the benefits and limitations of supplement use and also include the psycho-social-spiritual nature of health.

52

Title: Plasma Vitamin And Carotenoid Levels In African Americans After Wheat Bran Supplementation
Authors: Switzer, BR, Atwood, JR, Stark, AH, Hatch, JW, Travis, R, Ullrich, F, Singletary, G, Wu, X, Chiu, Y, Smith, J, Lyden, ER, Behr, G, Janhonen, S
Institution of 1st Author: Nutrition Department, School of Public Health, University of North Carolina at Chapel Hill

Since fiber-rich foods are associated with decreased cancer risks, this study explores the effects of wheat bran supplementation on plasma vitamins A, E, and carotenoids. Of the 44 African Americans in the church-based, volunteer sample, 40 - 70 year old ($57.4\pm$sd 8.7), 38 women and 6 men supplemented their daily diets with 1/2 cup of a riboflavin-spiked wheat bran cereal (11.6 g insoluble fiber + 28 mg B2). In a former inpatient study, the B2-spiked fiber was highly correlated with urinary B2 excretion ($r = 0.96$, $p < 0.01$) and served here as the primary biomarker of adherence. Urinary B2 levels increased from 0.8 ± 0.05 mg/day (mean $\pm$ se) at baseline to 7.3 ± 0.5 mg/day after supplementation, indicating good adherence ($p=.0001$). Pre and post plasma levels (μg/dl) were: retinol (56.4 ± 2.8 vs 59.2 ± 3.0), unsupplemented α-tocopherol (903 ± 52 vs 893 ± 56), γ-tocopherol (281 ± 21 vs 263 ± 20), α-carotene (11.8 ± 5.8 vs 9.3 ± 3.9), β-carotene (33.8 ± 9.1 vs 30.2 ± 5.9), lutein/zeaxanthin (33.1 ± 4.0 vs 30.9 ± 2.3), lycopene (25.3 ± 3.3 vs 24.2 ± 3.5), and β-cryptoxanthin (9.3 ± 1.9 vs 8.8 ± 0.9). The rise of retinol levels was more observable in persons over 55 years old (58.7 ± 3.9 vs. 64.1 ± 4.1, $p<0.19$). We conclude that plasma levels (with vitamin supplements) tended to decrease with bran supplementation except for retinol, though not significantly in the 6-week period.

Title: A Brief Smoking Cessation Intervention for
              Women in Low-Income Planned Parenthood
              Clinics

53

Author(s)   Glasgow, R.E., Eakin, E.G., Whitlock, E.P.,
              & Lichtenstein, E.L.

Institutions of 1ˢᵗ Author   AMC Cancer Research Center, Denver,
              Colorado

Purpose: Women of lower socioeconomic status have high smoking
rates, are less likely to frequent the settings in which smoking
cessation programs are offered, and often have multiple barriers to
participation. We evaluated the effectiveness of a brief smoking
cessation intervention for women age 15-35 conducted by clinic
staff during regular visits in Planned Parenthood clinics.
Methods: Women were randomly assigned to either clinician
Advice Only (AO) or to Enhanced Intervention (EI), which
involved a 9-min. video, 10-15 min. of behavioral counseling,
clinician advice to quit, and 2 follow-up, supportive phone calls.
Results: We were able to reach a large and representative
proportion of the eligible smokers, 70% of whom were approached
and 74% of these agreed to participate. Outcomes included
self-reported 7-day abstinence at the 6-week follow-up and 30-day,
biochemically validated abstinence at the 6-month follow-up. Data
from the first 1001 women randomized reveal a clear short-term
intervention effect at the 6-week follow-up (7% vs. 12% $p<.05$),
and a trend toward a significant intervention effect at the 6-month
follow-up (7% vs. 11%, $p<.10$).
Conclusion: This brief, clinic-based intervention appears effective
in reaching and enhancing cessation among this typically
underserved population. We did experience difficulty in completing
the follow-up calls (only 47% of participants were reached by
phone) and recommend other maintenance strategies. We will
discuss implementation challenges and future research directions.

Title: Characteristics Associated with Nicotine Replacement Therapy
Author(s):   Discussion in North Carolina Primary Care Practices
        Tahn C, Harris R, Kinsinger L, Lin Y
Institution of 1ˢᵗ Author: University of North Carolina at Chapel Hill

54

OBJECTIVES: To examine physician and patient characteristics
associated with nicotine replacement therapy (NRT) discussion in
community primary care practices in North Carolina and test the
hypothesis that patients with lower self-reported health status would
seek or receive more NRT discussion from their physicians.
DESIGN, SETTING & PARTICIPANTS: A descriptive analysis of
patient questionnaires and chart reviews from 62 family medicine
and internal medicine practices in two rural N.C. regions in 1994.
7305 patients, ages 18-84, in waiting rooms of practices completed
questionnaires. Charts of 4740 randomly selected clinic patients
age 50+ were reviewed.
RESULTS: 1584 (22%) current smokers were identified from
patient questionnaires. 1221 (77%) of these smokers recalled ever
being advised to quit smoking and 559 (35%) reported ever
discussing NRT with their physicians. 1012 (21%) smokers were
identified from chart reviews; of these, 189 (19%) had documented
NRT discussion.
        After adjusting for patient and physician characteristics
(patient race, gender, educational level, health insurance; MD race,
gender, specialty), patient age was associated with NRT discussion
in both patient questionnaires and chart reviews. Smokers in their
40's ($p<0.02$) and 50's ($p<0.001$) were more likely to have NRT
discussed compared to younger and older patients. The initial
hypothesis, patient self-reported health status, and other patient and
physician characteristics were not associated with NRT discussions.
CONCLUSION: Current smokers in their middle years (40-60's)
are more likely to have discussed NRT with their physicians
compared to other ages, regardless of health status. Whether
patients or physicians initiate these discussions and the reasons they
do remain unclear.

Title: Smoking and Adenomatous Polyp Characteristics
Author(s): ME Reid, ME Martinez, A Bhattacharyya, JR Marshall, D Roe, JB van Leeuwen, RE Sampliner, D Albert:
Institution of 1ᵗ Author: Arizona Cancer Ctr., Univ. of Arizona

We assessed the relationship of cigarette smoking to the location, size, and histology of prevalent adenomatous colorectal polyps detected among 1429 participants, all adenoma patients, in a randomized trial testing the effects of a high (13.5 g/day) versus low (2 g/day) wheat bran fiber intervention on adenoma recurrence. Participants had a complete qualifying colonoscopy with at least one histologically confirmed adenomatous polyp 3 mm or larger. Location, size and histology of the baseline adenoma(s) were recorded. Cigarette smoking was evaluated at baseline through a self-administered questionnaire. Among the study participants, 66% had a history of ever smoking and 14% were current smokers. Compared to never smokers, those in the upper tertile of pack-years of smoking had a lower, non-significant risk of having one or more of their adenomas in the proximal colon (OR=0.79; 95% CI=0.53-1.16) and a lower risk of having one or more of their adenomas of villous histology (OR=0.63; 95% CI=0.43-0.94). Individuals in the upper tertile of pack-years of smoking were more likely to have a large (>1 cm) adenoma (OR=1.27; 95% CI=0.91-1.76) but no dose-response was observed. These results suggest that among adenoma patients, those who are exposed to cigarette smoking are more likely to have distal adenomas versus adenomas found only in the proximal colon. Exposure to cigarette smoke is a predictor of non-villous as opposed to villous adenomas and is not associated with adenoma size. These data describe correlations of adenoma characteristics among adenoma patients; they do not refer to the probability of adenoma presence.

Title: Tobacco Intervention Protocol
Author(s): Dalla Palu, A., McGeehin, D.

Institution of 1ᵗ Author: Lehigh Valley Hospital

Purpose:
To institutinalize an office-wide system for physician practices within two managed care organizations that ensures patients are queried about tobacco use, patient charts are documented, and patients receive counseling and referral to appropriate community resources.

Process:
Three practices were recruited for piloting this process. Assessment of practice-specific educational needs lead to the development of a tailored education plan. The plan integrated a protocol for intervention and referral to a hospital-run tobacco cessation program which offers individual, group or phone counseling.

Implementation:
Training sessions were completed and covered the following areas: Overviews of health effects related to tobacco use, behavioral change theory (Prochaska and D'Clemente), nicotine addiction, counseling strategies, relapse, and pharmacologic modalities. A second session discussed implementation and referral process.

Evaluation:
Follow-up is planned for one, three, six, and twelve month intervals to track the following: 1) identification and referral of patients to a hospital-run tobacco cessation program; 2) increase in number of patients being referred for these services; 3) patient and provider satisfaction; 4) cost-effectiveness of the program.

Title: Factors Affecting Nutritional Status in Female Breast Cancer
Author(s): patients at Diagnosis, and at 6 and 12 Months Post DiagnosiS
Dixon SW, Rock CL, Ruffin MT 4th, Schottenfeld D.
Institution of 1st Author:

Josephine Ford Cancer Center
Henry Ford Health System

Studies indicate anthropometric measures and nutritional factors, may affect overall and disease free survival in women diagnosed with breast cancer. We investigated factors potentially associated with anthropometric and nutritional status in newly diagnosed female breast cancer patients at diagnosis and six and twelve months post-diagnosis. All cases were recruited between 1/95 and 1/96 among women attending the University of Michigan Breast Care Center in Ann Arbor. Fifty women were recruited. Data on disease stage, age, diet, body mass index (BMI), waist-to-hip ratio, family history of breast cancer, menopausal status, and type of treatment received were collected.

After controlling for age and stage of disease at diagnosis, BMI increased over time in this population. Stratification by receiving vs. not receiving adjuvant chemotherapy indicated that those receiving chemotherapy experienced a greater weight gain over the twelve months post-diagnosis than those not receiving chemotherapy ($p < 0.001$). There were significant increases in the whole population over time in plasma vitamin C and carotenoid concentrations ($p < 0.05$). Patterns of change varied by stratification variables including chemotherapy, radiation, baseline BMI, family history status, and menopausal status. These changes likely reflect changes in diet. This information may be useful in designing interventions to increase survival in breast cancer patients.