PROGRAM AND ABSTRACTS

17th Annual Meeting

AMERICAN SOCIETY of PREVENTIVE ONCOLOGY

March 20 - 23, 1993
Doubletree Hotel
Tucson, Arizona

Program Chair: **Barbara Rimer, Dr. PH**
Duke University Comprehensive Cancer Center

Sponsored by:

American Society of Preventive Oncology, a conference grant from National Institutes of Health/National Cancer Institute, and The University of Arizona College of Medicine. The Joseph W. Cullen Memorial Lectureship is sponsored by Marion, Merrell Dow, Inc. Tobacco-related symposium is sponsored in part by Lederle Laboratories.

THE UNIVERSITY OF
ARIZONA
HEALTH SCIENCES CENTER

The University of Arizona College of Medicine is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

ASPO

The **American Society of Preventive Oncology** is an active and growing organization that is striving to:

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

The Executive Committee members listed below are interested in hearing from prospective and current members.

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W. Thomas London, MD

ANNOUNCEMENTS

MESSAGES

Contact Judy Bowser at the ASPO registration desk if you are expecting a message or wish to leave one.

CATERED MEALS

We have attempted to include a variety of items at each meal function so those of you preferring vegetarian fare may be easily accommodated. For this reason we have chosen the buffet method of serving whenever possible.

SPECIAL ACKNOWLEDGEMENT

The ASPO Executive Committee offers special thanks to Program Chair, Dr. Barbara Rimer, for her diligence and extraordinary commitment in arranging this meeting.

CME CREDIT

The University of Arizona College of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

The University of Arizona College of Medicine designates this continuing medical education activity for 20.5 Hours in Category 1 of the Physician's Recognition Award of the American Medical Association.

The 17th Annual Meeting in Tucson, Arizona, is sponsored by:

Office of Continuing Medical Education
University of Arizona College of Medicine
Arizona Health Sciences Center
Tucson, AZ 85724
Director: Michele Burpeau-DiGregorio, PhD
Phone: (800) 328-5868 or (602) 626-7832

The evaluation form at the back of this program must be completed in order to receive CME credits. Please turn it in to Judy Bowser before leaving.

Saturday, March 20

8:30 am - 1:00 pm
Basswood Room
(Second Floor)

New Investigator Workshop (notified participants only)
Organizer: **Alfred Neugut**, MD, PhD
Columbia University Comprehensive Cancer Center

1:00 - 5:00 pm
Ironwood Room
(Second Floor)

Joint Meeting of NCI Cancer Prevention Fellows and Preventive Oncology Awardees
Organizer: **Douglas Weed**, MD, PhD
Chief, Preventive Oncology Branch, NCI

3:00 - 6:00 pm
Living Room Foyer

REGISTRATION

6:00 - 8:00 pm

BUFFET SUPPER STUDY GROUP MEETINGS (choose one)

Palo Verde Room

- **Tobacco Study Group**
  Chair: **C. Tracy Orleans**, PhD
  Fox Chase Cancer Center

  Workshop on innovative motivational interviewing techniques
  Presenter: **William Miller**, PhD
  University of New Mexico

Boojum Room

- **Diet Study Group**
  Co-Chairs: **Larry Kushi**, MD
  University of Minnesota School of Public Health
  and
  Gladys Block, PhD
  University of California, Berkeley

Bonsai Room

- **Cancer Risk Algorithm Study Group**
  Chair: **George Roush**, MD
  Cancer Prevention Research Institute

8:00 - 10:00 pm
Board Room

ASPO Executive Committee and 1994 Program Committee Meeting

Sunday, March 21

BREAKFAST ON YOUR OWN -- Coffee and tea only will be served at 8:30 am.

7:30 am - 5:00 pm
Bonsai/Boojum Foyer

REGISTRATION

8:30-10:30 am
Bonsai/Boojum Rooms

SYMPOSIUM: A Breast Cancer Prevention Trial: Conduct, Concerns, and Alternate Strategies

Chair: **Victor Vogel**, MD, MHS
M D Anderson Cancer Center

Design and Conduct of the NSABP Breast Cancer Prevention Trial;
Carol Redmond, ScD, Director of the Biostatistics Center
NSABP

Design, Recruitment and Adherence Issues
Victor Vogel, MD, MHS

Multiple Endpoints in Pre- and Post-menopausal Women Treated With Tamoxifen
Richard Love, MD, MS, University of Wisconsin

Quality of Life Among Women Using Tamoxifen for Primary Prevention
Patricia Ganz, MD, UCLA School of Medicine

Alternative Preventive Strategies
Leslie Bernstein, PhD, USC School of Medicine

10:30-10:45 am **REFRESHMENT BREAK**

10:45-11:00 am **WELCOME -- Thomas Moon, PhD, President**

Presentation of
DISTINGUISHED ACHIEVEMENT AWARD

Sunday, March 21 cont.

11:00-11:30 am

Distinguished Achievement Awardee Address
Joseph F. Fraumeni, Jr., MD
National Cancer Institute

11:30-12:15 pm
Bonsai/Boojum

BUSINESS MEETING

POSTER PRESENTERS: Please check at the Registration Desk to determine when you may assemble your poster in the ballroom. The Poster Session Directory will list your space number.

LUNCH ON YOUR OWN

1:30-3:15 pm
Bonsai/Boojum Rooms

SYMPOSIUM: Issues in Endpoint Ascertainment in Cancer Prevention Trials

Co-Chairs: **Dennis Ahnen**, MD
Denver VA Hospital

and

Richard Sampliner, MD
University Medical Hospital
Tucson, AZ

Determination of ODC and Polyamines in Colorectal tissues: Variability Due to Bowel Preparation, Biopsy Technique and Location
Gene Gerner, PhD, University of Arizona Cancer Center

Rectal Mucosa Proliferative Labeling Index-interlaboratory Variability
David Alberts, MD, University of Arizona Cancer Center

Impact of the Miss Rate of Adenomatous Polyps in Colonoscopy on Polyp Prevention Trials
Lee Hixson, MD, University of Arizona Cancer Center

Sunday, March 21 cont.

SYMPOSIUM continued

Assessing the Growth and Occurrence of Adenomatous Polyps, Design Implications for Polyp Prevention Trials
Brian Fennerty, MD, University of Arizona Cancer Center

Discussant: **Dennis Ahnen**, MD
Denver VA Hospital

3:15 - 3:30 pm — **REFRESHMENT BREAK**

3:30 - 5:10 pm — **PRESENTED PAPERS** (2 concurrent sessions)
Boojum Room

Session I — Chair: **Bruce Trock**, PhD
Lombardi Cancer Center,
Georgetown University

3:30 pm — ***Personal Contact From Friends to Increase Mammography Usage***
Eugenia Calle, PhD, American Cancer Society

3:50 pm — ***Analyses of Diagnostic Follow-up Outcomes Among Women Screened for Breast Cancer***
Carole Chrvala, PhD
Colorado Department of Health, Cancer Control Program

4:10 pm — ***Screening Mammography in Primary Care Group Practice***
Richard Love, MD, MS
University of Wisconsin Comprehensive Cancer Center
Cancer Prevention Program

4:30 pm — ***Cost-Effectiveness Analysis of Screening Mammography: A Comparison of Mobile and Stationary Settings***
Jerrold Hill, PhD, Mathematica Policy Research

4:50 pm — ***Psychological Distress Interferes with Mammography Adherence Among High Risk Women***
Caryn Lerman, PhD, Fox Chase Cancer Center

Sunday, March 21 cont.

3:30 - 4:50 pm
Bonsai Room

Session II Chair: **Roshan Bastani**, PhD
Associate Director for Evaluation,
UCLA Division of Cancer Control

3:30 pm — ***Geographic Trends in U.S.Prostate Cancer Mortality***
Karen Kafadar, PhD, National Cancer Institute

3:50 pm — ***Adipose Tissue Fatty Acid Composition and Risk of Prostate Cancer***
Paul Godley, MD
University of North Carolina at Chapel Hill

4:10 pm — ***Body Iron Stores and the Prognosis of Cancer***
Katherine A. McGlynn, PhD, Fox Chase Cancer Center

4:30 pm — ***Family History, Age, and Risk of Fatal Breast Cancer***
Eugenia Calle, PhD, American Cancer Society

5:15 - 7:15 pm
Ballroom
Salons ABCD

POSTER SESSION

and

RECEPTION
Hosted by the Arizona Disease Prevention Center

BEST POSTER AWARD to be presented at 7:15 pm

7:30 - 9:00 pm
Salon E

DINNER
Speaker: **Natalie Angier,**
New York Times Science Writer
and author of Natural Obsessions

Science and the Press: From Star-Struck Lovers to Uneasy Bedfellows

Monday, March 22

7:30 am - 5:00 pm
Bonsai/Boojum Foyer

REGISTRATION

7:30 - 9:00 am

BREAKFAST STUDY GROUP MEETINGS (choose one)

Salon E

- **Chemoprevention Study Group**
  Chair: **Rodger Winn**, MD,
  M D Anderson Cancer Center
  Featuring: Discussion of PROSCAR Prostate Prevention Study

Salons F,G,H

- **Women's Cancers Study Group**
  Chair: **Lewis Kuller**, MD,
  University of Pittsburgh

9:00 - 11:00 am
Bonsai/Boojum Rooms

SYMPOSIUM: The First Generation of Cancer Prevention Trials: Lessons, Results and Directions for the Future

Chair: **Larry Clark**, PhD
University of Arizona Cancer Center-Epidemiology

Chemoprevention of Lung Cancer with Retinol and Beta Carotene, an Intermediate Marker Trial
Jerry McLarty, PhD
University of Texas Health Center at Tyler, TX

The Evaluation of Topically-Applied Retinoic (Vitamin A) Acid in the Regression of Cervical Intraepithelial Neoplasia
Tom Moon, PhD, University of Arizona Cancer Center

The Nutritional Prevention of Skin Cancer with Selenium
Larry Clark, PhD, University of Arizona Cancer Center

Directions for the Future
Robert Greenberg, MD
Dartmouth Medical School

Monday, March 22 cont.

11:00 am — Beverages will be available to pick up on your way to paper sessions

11:00 - 12:20 pm — **PRESENTED PAPERS** (2 concurrent sessions)

Boojum Room

Session III — Chair: **Al Neugut**, MD, PhD
Columbia University
Comprehensive Cancer Center

11:00 am — ***Cigarette Smoking and p53 Over-expressions in Bladder Cancer***
Zuo-Feng Zhang, MD, PhD
Memorial Sloan-Kettering Cancer Center

11:20 am — ***Absolute and Relative Risk of Death from Tobacco Smoking***
Michael Thun, MD, American Cancer Society

11:40 am — ***Impact Evaluation of a Self-Help, Minimal Contact Smoking Cessation Program for Minority Pregnant Women***
Linda Lillington, RN, MN, Harbor-UCLA Medical Center

12:00 pm — ***Cigarette Smoking, Menopausal Status and Large Bowel Cancer Incidence in Women***
Polly Newcomb, PhD
University of Wisconsin Comprehensive Cancer Center

11:00 - 12:20 pm
Bonsai Room

Session IV — Chair: **Barbara Rimer**, Dr.PH
Duke University Comprehensive
Cancer Center

11:00 am — ***Reduced Risk of Colon Cancer with High Intake of Vitamin E: The Iowa Women's Health Study***
Roberd Bostick, MD, MPH
University of Minnesota, Division of Epidemiology

11:20 am — ***Vitamin Supplementation has a Protective Effect on Basal Cell Carcinoma***
Qingyi Wei, MD
Johns Hopkins School of Hygiene and Public Health

Monday, March 22 cont.

PRESENTED PAPERS (continued)

11:40 am

Long Term Evaluation of Side Effects of Beta-Carotene and Retinol: Smoker's Pilot to the Carotene and Retinol Efficacy Trial (CARET)
Gary Goodman, MD, MS
University of Washington School of Public Health

12:00 pm

Patterns of Subject Adherence in a Lung Cancer Chemoprevention Clinical Trial
Carolyn Harvey, RN, MSN
The University of Texas Health Center at Tyler Texas

12:30 - 1:45 pm
Salons E,F,G,H

LUNCHEON
Speaker: **Jeffrey Koplan**, MD, MPH
Director, National Center for Chronic Disease Prevention and Health Promotion; Centers for Disease Control

Prevention: The Bandwagon's Crowded, Will it move?

2:00 pm
Bonsai/Boojum Rooms

JOSEPH W. CULLEN AWARD

Introductory Remarks
C. Tracy Orleans, PhD

Introduction of 1993 Recipient
Ellen Gritz, PhD

Presentation of Award
Thomas Moon, PhD

Joseph W. Cullen Memorial Lecture
Thomas Glynn, PhD
National Cancer Institute

Monday, March 22 cont.

2:00 - 3:30 pm

SYMPOSIUM: Through the Crystal Ball: A Look at the Upcoming Large-Scale Prevention Trials

Chair: **Tom Glynn**, PhD
National Cancer Institute

ASSIST: Tom Glynn

Women's Health Trial: Individual Randomized Trial
Laurence Freedman, PhD, National Cancer Institute

Women's Health Trial: Community Health Trial
Suzanne Haynes, PhD, National Cancer Institute

3:30 - 3:45 pm **REFRESHMENT BREAK**

3:45 - 5:15 pm
Boojum Room

SYMPOSIUM (Concurrent):

Is There a Case for Prophylactic Mastectomy?

Chair: **Kathy Helzlsouer, MD**
Johns Hopkins University

To be announced
Douglas Weed, MD, PhD, National Cancer Institute

Prophylactic Mastectomy: Advise and Consent?
Kathy Helzlsouer, MD, Johns Hopkins

Use of Prophylactic Mastectomy in Maryland: A Survey
Florence Houn, MD, MPH, National Cancer Institute

Prophylactic Mastectomy: Are We Selling Women a Bill of Goods?
Susan Love, MD, UCLA School of Medicine

Monday, March 22 cont.

3:45 - 5:15 pm
Bonsai Room

SYMPOSIUM (Concurrent):

Tobaccco: From Biology to Community

Chair: **C. Tracy Orleans**, PhD
Fox Chase Cancer Center

Family Risk and Lung Cancer
Oliver Hankinson, PhD, UCLA Laboratory of Biomedical and Environmental Sciences

Treating Tobacco Dependence in the 1990s: The Nicotine Patch and Beyond
Michael Fiore, MD, MPH, Center for Tobacco Research and Intervention, University of Wisconsin

NCI Major League Baseball Initiative
C. Tracy Orleans, PhD, Fox Chase Cancer Center

and

Margaret Walsh, EdD, UC San Francisco
Dept. of Dental Public Health and Hygiene

Is Proposition 99 Working?
John Pierce, PhD, UC San Diego Cancer Center

5:15 - 6:45 pm
Bonsai/Boojum Rooms

SYMPOSIUM: The Completed Breast Cancer Consortium Trials

Chair: **Suzanne Haynes**, PhD
National Cancer Institute

A Comprehensive Breast Screening Program Improves Mammography Use
Barbara K. Rimer, Dr. PH
Duke University Comprehensive Cancer Center

Monday, March 22 cont.

SYMPOSIUM continued

The Costs and Effectiveness of Community Organization to Promote Breast Cancer Screening
Nicole Urban, PhD
Fred Hutchinson Cancer Research Center

The ABC's of Changing Breast Cancer Screening Practices
Dorothy Lane, MD
State University of New York at Stony Brook

Community-Based Trial in Breast Cancer Screening: Results of a Church Intervention
Sarah Fox, PhD, UCLA

Breast Cancer Screening in Two Northeast Industrial Communities: A Summary Report 1987 - 1990
Mary Costanza, MD
University of Massachusetts, Worcester

Results of the New Haven Breast Cancer Screening Trial
Jorge Gonzalez, MD
New Haven Memorial Hospital, Wilmington, NC

DINNER ON YOUR OWN

Tuesday, March 23

BREAKFAST ON YOUR OWN - Coffee and tea only will be available at 9:00 am.

9:00 - 10:00 am
Bonsai/Boojum Rooms

PRESIDENT'S ADDRESS

Chemoprevention and Etiology of Non-Melanoma Skin Cancers
Thomas Moon, PhD
University of Arizona Cancer Center

10:00 - 10:30 am

REFRESHMENT BREAK

10:30 am - 12:15 pm
Bonsai Room

SYMPOSIUM (concurrent):

Genotoxic Damage:
Causation, Detection and Prevention

Chair: **John Bertram**, PhD
University of Hawaii,
Cancer Research Center

Epidemiologic Evidence for Antioxidant Protection
Brian Henderson, MD
U S C/Norris Comprehensive Cancer Center

Second Messenger and Endogenous Mutagens
Robert Cooney, PhD, Cancer Research Center of Hawaii

Evaluating Antioxidant Actions of Vitamin E and Beta Carotene in Cancer Prevention
Daniel Liebler, PhD, University of Arizona

Cancer Prevention by Dietary Carotinoids: Experimental Studies
John Bertram, PhD, Cancer Research Center of Hawaii

Tuesday, March 23 cont.

10:30 - 12:10 pm
Boojum Room

PRESENTED PAPERS (concurrent with symposium)

Session V Chair: **Susan Gapstur**, PhD
University of Arizona

10:30 am
Prevalence of Primary Hepatocellular Carcinoma in Haimen County, China
W. Thomas London, MD, Fox Chase Cancer Center

10:50 am
Aflatoxin B_1, Corn Consumption, and Primary Hepatocellular Carcinoma in Haimen County, China
Alison Evans, ScD, Fox Chase Cancer Center

11:10 am
Lay Health Educators (Promotoras) Improve Cancer Awareness and Screening in Minority Populations: The Juntos Contra El Cancer Model
Manuel Modiano, MD, Arizona Cancer Center

11:30 am
Evaluating the Efficacy of Colorectal Cancer Screening in Pattern and Model Makers
Raymond Demers, MD, MPH
Michigan Cancer Foundation, Division of Epidemiology

11:50 am
Depression and Cancer
Gary Friedman, MD
Kaiser Permanente, Division of Research

12:15 pm
CONCLUSION

INVITED SPEAKERS

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ABSTRACTS

INVITED SPEAKERS

Saturday, March 20
6:00 pm

MOTIVATIONAL INTERVIEWING WORKSHOP
William R. Miller, Ph.D.
The University of New Mexico

Research on the efficacy of brief intervention for changing addictive behaviors raises questions on the mechanisms underlying behavior change. A motivational model for triggering change will be presented, with a clinical description of the process of motivational interviewing. Common elements of effective brief intervention will be discussed, and the results of four clinical trials of motivational interviewing with problem drinkers will be presented. The application of motivational interviewing with smokers will be considered during a final discussion.

for the Tobacco Study Group meeting

Sunday, March 21 Symposium
8:30 am - 10:30
Chair: Victor Vogel, MD, MHS

RECRUITMENT STRATEGY FOR A PRIMARY BREAST CANCER PREVENTION TRIAL.
Victor Vogel, MD, MHS, Diane Weber RN, BSN Wen Shui, MA
University of Texas M. D. Anderson Cancer Center (MDACC)

The Breast Cancer Prevention Trial (BCPT) is being conducted by the National Surgical Adjuvant Breast and Bowel Project with funding from NCI and other federal agencies. 16,000 women are to be enrolled at 270 clinical sites in 24 months. We report the recruitment experience of a large participating center. The trial was announced in national and local press releases. MDACC received requests from 900 women in response to local media publicity. Recruitment letters were sent to an additional 2,261 women who reported at least one first-degree relative with breast cancer in the American Cancer Society 1987 Texas Breast Screening Project. The MDACC tumor registry identified 53 women with a history of lobular carcinoma *in situ*. A total of 1,131 risk assessment forms were received from these sources, and 60% of these women were eligible for participation in the trial. Eligible women were invited to attend one of 18 informational evening meetings with the following results:

474 of 679 (69%) eligible women scheduled attendance at one of the meetings
313 of 474 (66%) attended a meeting
167 women (53% of the attenders, 24% of the eligible women) agreed to participate in BCPT
127 of 167 (76%) signed informed consent
18% of eligible women entered the trial (127 of 679)

Average attendance at the meetings was 17 women. At the informational meetings the design of the trial was explained including the technique for risk assessment, exclusion criteria, stratification and randomization techniques, clinic visit schedule, costs, and side effects of tamoxifen. The six-page informed consent document was reviewed in detail and 30 minutes were allotted for questions. Demographically, our participants are representative of all subjects in the trial. Unlike the experience in other trials, recruitment through the media was efficient at this center for BCPT, and subjects accepted this modification of the usual informed consent process.

Multiple Endpoints in Pre- and Postmenopausal Women Treated with Tamoxifen. Richard R. Love, MD. University of Wisconsin, Madison, Wisconsin 53706.

The ultimate goal of the evaluation program of a preventive intervention such as tamoxifen is to define completely the benefits and costs of the intervention so that its place in routine clinical practice is well-defined. An absence of focus on this goal in the use of other hormone replacement therapies in postmenopausal women has created a situation wherein appropriate clinical practice is incompletely defined despite strong evidence of benefits because costs are poorly understood.

Tamoxifen has direct and indirect tissue effects, with major hormonal perturbations in premenopausal and not postmenopausal women. On this biological basis, different long-term effects on the breast, ovary, colon, liver, bone, and uterus might be expected. This situation suggests that a trial with both groups of women is unlikely to demonstrate definitively specific effects for some (?most, ?few) tissues.

If only postmenopausal women are focussed on how can multiple endpoints or effects be studied? If criteria for selection of subjects are carefully chosen, and state of the art endpoint determinations are employed, it appears possible to create a study with approximately equal power to demonstrate breast cancer incidence, coronary heart disease endpoint, and fracture reductions. While the demonstration of one favorable endpoint in the trial would preclude the possible attainment of others, continuation of the trial in the light of the ultimate public health goal or alternatively longer term follow up of the study cohort after completion of the trial, might allow specific definition of other effects.

MEASURING QUALITY OF LIFE (QL) IN THE BREAST CANCER PREVENTION TRIAL (BCPT)

P.A. Ganz, R. Day, J.E. Ware, Jr., C. Redmond, B. Fisher.
University of California, Los Angeles; University of Pittsburgh; New England Medical Center, Boston.

The BCPT is a randomized controlled trial evaluating the efficacy of tamoxifen in preventing breast cancer in 16,000 healthy women aged 35 years and older who are at increased risk of developing breast cancer. Although the toxicities of tamoxifen have been studied in women with breast cancer, the acceptability and safety of this agent in healthy women has not been previously evaluated. Therefore, the subjective evaluation of QL was identified as a critical component of this trial from its inception. The QL instruments selected for this study were chosen for their reliability, validity, as well as for the availability of normative data in healthy populations, and translation/validation in other languages (i.e., Spanish and French). In addition to the assessment of key dimensions of health related QL (physical, emotional and general well-being), subjective symptoms (e.g., hot flashes, vaginal symptoms, headaches, urinary symptoms, etc.), depression and sexual functioning are being assessed in all participants at each study visit during the course of the trial (5 years). This presentation will describe the baseline evaluation of QL prior to randomization in the first 2045 BCPT participants. Results from the MOS-SF36, CES-D, MOS sexual function scale, and a symptom check list will be presented.

Conclusion: QL data can be easily collected within a large clinical trial. Participant reports of subjective well-being are essential to evaluate the short and long-term effects of a chemopreventive agent in a healthy population.

Sunday, March 21 Symposium
1:30 pm - 3:15
Co-Chairs: Dennis Ahnen, MD
Richard Sampliner, MD

Factors Affecting the Measurement of ODC Activity and Polyamine Contents in Colorectal Tissues. Eugene W. Gerner, Lee Hixson, Scott Emerson and Rick Shassetz, The University of Arizona, Arizona Cancer Center, Tucson, AZ

The activity of ornithine decarboxylase (ODC), the first enzyme in polyamine synthesis, is elevated during cancer development in gastrointestinal (GI) tissues. The purpose of this study was to identify errors and factors affecting the measurement of these parameters in order to determine if ODC activity or polyamine contents could be useful markers of carcinogenesis in apparently normal GI mucosae. ODC activity was measured in tissue lysates using a standard CO_2 release assay. Polyamine levels were determined using high performance liquid chromatography (HPLC) methods. Multiple colorectal biopsies were obtained from 39 patients undergoing colonoscopy at the Tucson VA hospital. Biopsies were collected using specific protocols, and analyzed to assess the variability of the measurements of these two parameters as a function of 1) biopsy size, 2) bowel preparation regimen, 3) biopsy location, 4) laboratory methods, 5) inter-versus intra-patient variability, and 6) demographic and clinical variables. Biopsy size affected polyamine, but not ODC, values. The ratio of spermidine (spd):spermine (spm) varied less than the contents of the individual amines. No difference was observed in three different bowel preparation methods. ODC activities and spd:spm ratios were not different in rectum, transverse colon and caecum, while some differences in individual amines were noted. Lab assay methods contributed to sources of error, especially in individual polyamine content measurements. This variability was reduced when values were analyzed as spd:spm ratios. Intra-patient variability was as great or greater than inter-patient variability. When measured in apparently unaffected colorectal mucosa, neither of these two parameters was significantly correlated with prior polyp history, number of prevalent polyps found at current colonoscopy or polyp size. These results show that measurements of ODC activity and polyamine contents in apparently normal colorectal tissue are affected by a number of factors. ODC activity and spd:spm ratios show the least variability and are good candidates for measurement as markers of consequences of polyamine synthesis in human colorectal tissues.

Proliferation Markers in Rectal Mucosal Biopsies: Studies of Intra and Inter Laboratory Variability in [^{3}H]-Thymidine, BrdU and PCNA Labeling Indices.

D.S. Alberts, D. Roe, J. Einspahr, H. Garewal, L. Hixson, D. Earnest, J. Davidson, L. Ramsey, Univ. Arizona, Tucson, AZ, J. Potter, R. Bostick, Univ. Minnesota, Minneapolis, MN, M. Wargovich, MD Anderson Cancer Center, Houston, TX

Rectal mucosal proliferation rates as measured by [^{3}H]-Thymidine ([^{3}H]-T), BrdU and PCNA continue as the most commonly used intermediate markers of risk in studies of new chemopreventive agents in patients with resected adenomatous polyps and/or colon cancer. We have performed a series of studies to evaluate the reproducibility of these labeling indices.

- We have compared [^{3}H]-T, BrdU and PCNA labeling indices in rectal mucosal biopsies from 18 patients with resected colorectal cancer. Pearson correlation coefficients for [^{3}H]-T versus BrdU, [^{3}H]-T versus PCNA and BrdU versus PCNA (intensely stained nuclei only) labeling indices on paired samples were 0.79, 0.69 and 0.75 respectively. Most recently, we have performed double labeling index determinations with [^{3}H]-T/PCNA and [^{3}H]-T/BrdU. There were excellent correlations between [^{3}H]-T/PCNA (intensely stained nuclei only) and [^{3}H]-T/BrdU LIs.
- Studies also have targeted the reproducibility of the BrdU LIs with respect to quantitation by 4 different researchers in our laboratory. Pearson correlation coefficients were greater than .8 for LIs between certain pairs of these staff researchers. Correlation coefficients were the highest between the most experienced versus the second most experienced researcher, etc.
- Additionally, sets of 10 slides from ours and 3 other research laboratories were read by research assistants in all 4 programs. Interlaboratory variability in the quantitation of BrdU LIs from this round robin evaluation will be presented.

Impact Of Colonoscopic Polyp Miss Rate On Polyp Prevention Trials. Lee J Hixson, University of Arizona.

When utilizing recurrence of colon polyps (P) as an endpoint for intervention trials, the study design and statistical analysis of the intervention effect is influenced by two complicating factors: 1) the P detection miss rates for entry and followup colonoscopic exams and 2) incomplete excision of P at baseline colonoscopy (C). If any existing P are not detected or completely removed at initial C but are discovered at followup, a patient will be misclassified as having recurrent P (the non-resection rate, n, is the probability that a patient did not have all P completely removed at entry C). Similarly, recurrent P missed at followup C will misclassify the patient as not having recurrent P (the misdiagnosis rate, m, is the probability that all polyps go undetected in a patient at followup C). If P recurrence rates are rp and rt for placebo and treatment arms, the average difference in observed recurrences at followup C is $(rp - rt)(1 - n)(1 - m)$. Thus, misclassification will decrease the power of a clinical trial to detect a true Rx effect. Since the sample size required to obtain a fixed power is inversely proportional to the square of the treatment effect, misclassification will inflat required sample sizes by a factor of $1/((1 - n)(1 - m))^2$. A tandem C study performed in 69 patients with colorectal neoplasia demonstrated a minimal estimate of .29 for n, and the m rate was .09.

Monday, March 22 Symposium
9:00 am - 11:00
Chair: Larry Clark, PhD

Chemoprevention of Lung Cancer with Retinol and Beta-Carotene: an Intermediate Marker Study

An intermediate marker chemoprevention study currently in its ninth and final year will be discussed. More than 750 asbestos workers were recruited and placed on a randomized, double-blind, placebo controlled clinical trial using a combined regimen of retinol and beta carotene. Sputum atypia was used as an intermediate marker for lung cancer because of its non-invasive nature. Sputum atypia was found to be a highly specific marker, whose sensitivity could be enhanced with multiple repeated specimens. Further rationale for using this intermediate endpoint, the advantages and disadvantages will be discussed. Results from the recruitment and run-in phase of the study will be discussed, with respect to applications for future studies. It was found that the six-week run-in period was probably not adequate: most randomized patients who dropped out of the study did so within the first six months. Protocol adherence will be discussed, and an analysis of possible predictors of compliance presented. One unique feature of this study was the reimbursement of patients for time and travel, as a compliance enhancement measure. The safety of the regimen will also be discussed. It was found that the combination of beta-carotene and retinol was generally safe and tolerable by the participants, but there appeared to be a small sub-group of highly susceptible individuals for whom dose modification was required. Some of the operational and other problems encountered with this chemoprevention trial will be presented with recommendations for future studies.

Monday, March 22 Symposium
2:00 pm - 3:30
Chair: Tom Glynn, PhD

The Women's Health Initiative Clinical Trial will test the benefit and risk of hormone replacement therapy (HRT), dietary modification, and supplementation with calcium/vitamin D on the overall health of postmenopausal women. Health will be assessed on the basis of cause-specific morbidity, quality-of-life measurements, cause-specific mortality , and total mortality. An estimated total of 57,000 women, aged 50-79 years, from about 45 centers will be randomized in a partial 3x2x2 factional design and followed for an average of nine years. Women who are eligible and willing to participate in either the hormone replacement or the dietary modification component or both may enter the trial.

The hormone replacement therapy component will include randomization to estrogen therapy or estrogen plus progestin therapy (for non-hysterectomized women only) or placebo. Important hypotheses are that HRT will reduce coronary heart disease incidence and the incidence of osteoporotic fractures. The dietary modification is hypothesized to reduce the incidence of breast cancer, colorectal cancer and coronary heart disease. The calcium/vitamin D is hypothesized to reduce osteoporotic fractures and colorectal cancer.

Further details of the design of this trial will be presented.

THE EVALUATION OF TOPICALLY-APPLIED RETINOIC (VITAMIN A) ACID IN THE REGRESSION OF CERVICAL INTRAEPITHELIAL NEOPLASIA

T.E. Moon, E. Surwit, F.L. Meyskens, J. Davis, R. Dorr, D.S. Alberts. Arizona Cancer Center, Tucson, AZ, 85724

A series of pre-clinical, phase I and phase II chemo-prevention studies evaluating β-trans retinoic acid (RA) to reverse cervical intraepithelial neoplasia (CIN) have been completed. Between 1985 and 1990, 301 women 17 years of age and over were randomized to a phase III trial of placebo salve or RA salve applied topically for 4 days, and repeated 3 and 6 months later. Baseline studies included coloscopy, blind endocervical biopsy, and biopsy of the most extensive clinically involved area of the ectocervix. These outcome measures were repeated at intervals thereafter with complete histologic response by biopsy at 15 months the primary outcome measure. In the 141 participants with CIN II (moderate dysplasia), there was a significant difference in response (complete regression) using Fisher's Exact Test ($p=0.04$). There was no difference in response between the two study arms in 160 participants with CIN III (severe dysplasia). Side effects were mild and consisted of vaginal inflammation in less than 5% of the patients. These data indicate that locally applied RA can favorably alter the natural history of CIN II (moderate risk subjects).

Monday, March 22 Symposium
3:45 - 5:15 pm
Chair: Kathy Helzlsouer, MD

Prophylactic Mastectomy: Advise and Consent

Kathy J. Helzlsouer, M.D., M.H.S.
Johns Hopkins School of Hygiene and Public Health

Prophylactic removal of the breasts to prevent breast cancer among women at increased risk or who perceive their risk of breast cancer to be high appears to be considered and performed in increasing numbers. This procedure has recently received much attention by the media including newspaper and television coverage. The session will consider the case for and the case against prophylactic mastectomy; data regarding the performance of the procedure by physicians; and the ethics of prophylactic surgery.

Clinical risk assessment has assumed a greater role in advising women of their risk of breast cancer as well as in recommending prevention strategies. The availability of a clinical risk assessment and the advise and consent process for prophylactic mastectomy will be reviewed based on the experience of women attending a clinic to obtain breast cancer risk information.

Monday, March 22 Symposium
5:15 pm - 6:45
Chair: C. Tracy Orleans, PhD

Genetic Susceptibility to Lung Cancer

Many carcinogens in tobacco smoke are inactive *per se*, but are metabolized in the lung to active derivatives. Cytochrome P4501A1 is one of the most important enzymes involved. The activity of P4501A1 is greatly increased (i.e. induced) by compounds in cigarette smoke. Induction is mediated by the aryl hydrocarbon (Ah, or dioxin) receptor. Among Japanese, a genetic polymorphism occurs in the gene for P4501A1, and one allele at this site appears to dictate enhanced susceptibility to cigarette-induced lung cancer. (S. Hayashi *et al.*, J. Biochem., 110, 407-411, 1991). However, variation in susceptibility to lung cancer does not appear to be associated with this polymorphism among caucasians (T. Tefre *et al.*, Pharmacogenetics, 1, 20-25, 1991; A. Hirvonen *et al.*, Cancer Epid. Biomarkers & Prevent. 1, 485-489, 1992). Thus in the latter population, other genes regulating P4501A1 expression may be involved. We recently cloned the Ah receptor nuclear translocator (*ARNT*) gene, whose function is required for activity of the Ah receptor and for induction of P4501A1. We also identified a restriction fragment length polymorphism in this gene (B.S. Johnson *et al.*, Human Mol. Genet. 1, 351, 1992). We are now setting out to investigate whether allelic differences in the *ARNT* gene are associated with differences in susceptibility to cigarette-induced lung cancer within the caucasian and black populations. These investigations involve both an analysis of ARNT and P4501A1 expression in human lung cells, and also a case control study.

AMERICAN SOCIETY OF PREVENTIVE ONCOLOGY
17TH ANNUAL MEETING, TUCSON, ARIZONA
MARCH 20-23, 1993

Michael C. Fiore, M.D., M.P.H.
Director
Center for Tobacco Research and Intervention
University of Wisconsin Medical School

ABSTRACT

Despite an increasing body of scientific evidence implicating cigarettes as the chief avoidable health risk in our society today, 20 Surgeon General's Reports on the health consequences of smoking, and more than 400,000 deaths each year, tobacco continues to hold 25% of all adults in it's grasp, representing more than 45,000,000 smokers in the U.S.. Moreover, 1 million young people start to smoke every year, committing another generation of Americans to the ravages of tobacco use.

Recognizing the compelling health and economic costs, more than 80% of American smokers report that they would like to quit and more than two-thirds have already made at least one unsuccessful cessation attempt. The chief factor responsible for this inability to successfully quit is nicotine addiction and tobacco dependence. Surgeon General Koop, in his landmark report, concluded that nicotine is as addictive as heroin or cocaine.

Smoking cessation research and clinical efforts continue in the 1990s, with a particular focus on paring behavior interventions with nicotine replacement therapy. In this way, smokers can address the both the physiologic as well as the psychologically addictive components of tobacco use. A major advance in smoking cessation treatment over the last year was the release of the nicotine patch. In numerous clinical trials, the patch has been shown to about double the sustained efficacy of smoking cessation interventions.

State-of-the-art smoking cessation treatment interventions for the 1990s will require the effective paring of nicotine replacement therapy with simple counseling interventions. Health care providers in particular, need to emphasize tobacco cessation and prevention efforts as a required part of every clinical encounter. Recent findings have highlighted the role or the clinician in reducing the epidemic of tobacco use in our society. Finally, research challenges for the next decade include the need to individualize smoking cessation interventions, recognizing the heterogeneity of smokers today.

Smokeless Tobacco Control For College And Professional Athletes: A Promising, NCI-Major League Baseball Partnership. C. Tracy Orleans, PhD and Margaret Walsh, MS, EdD

A growing number of young American males are using oral smokeless/spit tobacco (ST) products, many believing them to be a safe alternative to cigarettes. The two most common forms of ST are chewing tobacco and most snuff. Between 1970 and 1985, use of moist snuff increased by 30% among Americans, with an eight-fold increase among 17-19 year-old males. A 1990 survey showed a 19% prevalence of ST use by high school males. An industry marketing campaign, involving the wide distribution of free samples and pervasive advertising associating ST use with sport, is largely responsible for this increase. In addition, several recent surveys have shown rates of ST use by professional and college baseball players (35-45%, major/minor league players; 58%, college players). These studies also found that most of today's baseball players are using moist snuff-the most harmful and addictive form of ST-and that substantial proportions of these players have medically confirmed or self-reported oral pathology (including pre-cancerous oral leukoplakia). Hence, smokeless tobacco control strategies aimed at professional athletes (powerful role models for the nation's youth) and at young males in sports from grade school through college have become an important part of the National Cancer Institute's (NCI) national tobacco control efforts.

In 1991, the NCI and Major League Baseball (MLB) have joined forces to develop strategies and resources for curbing ST use among young athletes and professional baseball players. In 1991, a 16-page ST prevention and cessation guide, *Beat The Smokeless Habit*, developed at the FCCC, was distributed to all major and minor league players and their trainers. In August, 1991, players on 62 minor league teams were surveyed to assess reactions to a new MLB ban on spit tobacco and the guide. A total of 911 surveys were returned from 45 teams (8 to 29 returns per team). Results showed high rates of current ST use (47%), with two-thirds of players using moist snuff-either alone or in combination with chewing tobacco. Overall, 23% of current users reported mouth sores, white patches or gum problems where they held the tobacco. The vast majority (80%) of ST users reported that the ban had no affect on their performance as athletes. However, significant numbers reported cutting down ST use (40%) and/or quitting in response to the ban. Most players (83%) had received the guide *Beat the Smokeless Habit*, and most current users (63%) said they found it helpful. Almost two-thirds of current users said they wanted to stop using ST (64%), and nearly one-half said they were seriously planning to quit in the coming year (46%).

These findings and other survey results have guided the development of new programs and policies aimed at college and professional baseball players-with athletic trainers and coaches as key intermediaries. These developments have included a follow-on epidemiologic study of the oral and general health effects of ST use among professional baseball players conducted at the University of California at San Francisco. Highlights of this survey will be presented along with preliminary findings of two studies to test the efficacy of a smokeless tobacco cessation intervention for professional and college athletes.

Is Proposition 99 working?

John P. Pierce PhD

By voter initiative (Proposition 99), the tobacco tax was raised by 25 cents in California in 1989 with a portion of the monies used to fund a campaign to reduce the prevalence of smoking. The enabling legislation to this Proposition set a target for the campaign of a 75% reduction in the prevalence of smoking by the year 1999.

The California Tobacco Surveys are the major evaluative instrument for the California campaign which has a major mass media component as well as significant interventions at the local community and school level. Using a random digit dialled telephone methodology, we surveyed over 32,000 households in California in 1990 and conducted extensive interviews with over 26,000 adults and almost 8,000 teenagers. We used a similar methodology to survey 10,000 new households in 1992 and also re-interviewed a sample of 4,500 adults from the 1990 survey. We are currently in the field with the 1993 survey of 32,000 households from which we will be able to identify changes at the County/Regional level.

As of 1992, the Tobacco Tax Initiative was on target with smoking prevalence estimated at 20% for adults aged 18 years and older. This large decline in prevalence was associated with a major decline in consumption as estimated by the excise tax receipts. Change in smoking by teenagers did not produce as clear a picture. However, we have identified stronger evidence that tobacco advertising is a major impediment to successful prevention of adolescent smoking.

Monday, March 22 Symposium
5:15 pm - 6:45
Chair: Suzanne Haynes, PhD

Results of the Breast Cancer Screening Consortium Studies

Mary Costanza, M.D., Sarah Fox, Ph.D., Russell Harris, M.D., Suzanne Haynes, Ph.D., Dorothy Lane, M.D., Barbara K. Rimer, Dr. P.H., Nicole Urban, Ph.D.

Six different awards were made to organizations across the U.S. to increase the use of mammography and clinical breast exams. These included Fox Chase Cancer Center (Philadelphia, PA), Fred Hutchinson Cancer Center (Seattle, WA), Lineberger Cancer Center (NC), State University NY at Stonybrook, University of California at Los Angeles and University of Massachusetts.

Each implemented a different combination of breast cancer screening interventions designed to meet the unique needs of their communities. These included the "Game of Life", free screening days, office-based interventions, interventions in community health centers and telephone counseling and other individualized interventions.

Evaluation occurred through two or more survey waves of women and their physicians. For each group, a core set of items was developed to enable comparison across the consortium sites. Most of the consortium sites began with rates comparable to the 1987 NHIS. In spite of a strong similar trend, most also showed significant differences in mammography use between the experimental and control groups at the end of the study period.

The UCLA Mammography project was funded in 1987 to test community strategies to increase the utilization of screening mammography in underserved populations. The baseline needs assessment survey highlighted the groups most in need of focused intervention -- the Hispanic women residing in the less affluent community. This is a summary of those intervention results. Strategies to reach Hispanics consisted of presentations at ESL classes; the distribution of bilingual public education materials such as brochures, posters, pins and potholders; inserts in Latino newspapers; and a well-attended breast health day at the central large Catholic church where low-cost mammograms were performed. Both of the evaluation surveys, baseline and followup, were conducted as 30 minute bilingual telephone surveys in 1988 and 1990. Chi-square analyses showed that Hispanic women in the targeted community were significantly more likely than Hispanic women in the control community to have heard of mammography ($p < .007$), to have ever had a mammogram ($p < .026$), and, most importantly, to have had a mammogram in the last year, 1989 ($p < .013$). Using mammogram last year as the major outcome measure, logistic regression analyses showed that Hispanic women in the target community were 4-1/2 more likely than Hispanics in the control community to have had a mammogram during the year of intensive outreach ($p < .027$). These results demonstrate that a perceived hard-to-reach group such as mostly low-income unacculturated Hispanics can be responsive to intensive outreach. The church pilot was perceived to be especially effective with this group.

Tuesday, March 23 - President's Address
9:00 am
Thomas Moon, PhD

CHEMOPREVENTION AND ETIOLOGY OF NON-MELANOMA SKIN CANCERS

T.E. Moon, B. Cartmel, N. Levine, J. Bangert, Y.M. Peng, and the Arizona Skin Cancer Study Group.
Arizona Health Sciences Center, Tucson, AZ, 85724

Two chemoprevention trials were begun in 1984 to evaluate retinoids in the reduction of risk of non-melanoma skin cancers. Subjects with a history of ≥10 actinic keratoses (AK) and no prior skin cancer were enrolled in the SKICAP-AK trial and randomly assigned to 25,000 IU retinol (RET) or placebo (PL) daily for 5 years. Accrual of 2,800 AK subjects was completed in 1989. Subjects with a history of ≥4 prior skin cancers were enrolled in the SKICAP-S/B trial and randomly assigned to 25,000 IU RET, 5-10mg isotretinoin (ISO), or PL daily for 3 years. Accrual of 719 multiple prior skin cancer subjects was completed in 1990. Conduct of these two trials included recruitment, risk factor assessment and dietary intake by interview, biochemical and clinical safety monitoring, long term follow-up of free-living subjects, blood and tissue collection and analysis, and identification and centralized pathology review of skin lesions. The 1,157 SKICAP-AK subjects on RET compared to PL subjects had a significant reduction in squamous cell (SCC) incidence ($p=0.05$) but no reduction in basal cell cancers (BCC) ($p=0.53$). There was no reduction in skin cancer incidence for the SKICAP S/B subjects (173 on RET, 174 on ISO) compared to PL subjects. These data indicate that RET reduced the risk of SCC (but not BCC) in moderate risk subjects (with extensive AK) but neither RET or ISO reduced the risk of SCC or BCC in high risks subjects (≥4 BCC/SCC). We also conducted a population-based study of nutrition (diet, plasma and fatty acids) in relation to the incidence of BCC and SCC in 890 cases and 738 controls between 1986-1992. The concordance of nutritional markers between studies will be presented.

Tuesday, March 23 - Symposium
10:30 am - 12:15
Chair: John Bertram, PhD

OXIDANT STRESS AND GENOTOXICITY

Robert V. Cooney, Ph.D.
Cancer Research Center of Hawaii
1236 Lauhala Street
Honolulu, Hawaii 96813

Cancer incidence rates increase exponentially with age and a growing body of evidence suggests that endogenous formation of oxidative free radicals may play a significant role in the etiology of cancer as well as the more general process of aging. Our research has focused on the role of nitrogen oxides in these processes, specifically, mechanisms of nitrogen oxide mediated genotoxicity, and its prevention by dietary antioxidants. Nitric oxide (NO) is produced physiologically by a variety of cell types as an intercellular messenger and in response to infection. Our research has demonstrated that NO and/or its oxidation products are mutagenic in both bacterial and mammalian cells and that mutation is enhanced by cellular proliferation. Utilizing C3H/10T1/2 mouse fibroblasts we have demonstrated the endogenous production of NO in this cell line and have preliminary evidence suggesting that NO may play a key role in the promotional phase of neoplastic transformation. Cellular transformation is more effectively inhibited by γ-tocopherol than α-tocopherol. This is consistent with their unique chemical reactivities with nitrogen dioxide suggesting that the chemopreventive properties of γ-tocopherol may be independent of its Vitamin E activity. γ-Tocopherol is the primary tocopherol in the U.S. diet and further research into its use in the prevention of aging related diseases is suggested by the data. We conclude further that the widely used C3H/10T1/2 transformation assay may provide a useful model for studying the effects of endogenous mutagen formation on carcinogenesis.

ABSTRACTS

ORAL PRESENTERS

SESSION I
Sunday, March 21
3:30 - 5:10 pm
Chair: Bruce Trock, PhD

PERSONAL CONTACT FROM FRIENDS TO INCREASE MAMMOGRAPHY USAGE. EE Calle, HL Miracle, RE Moss, CW Heath

To increase the use of mammography among women 40 years of age and older, the American Cancer Society designed and tested a telephone intervention strategy that relied on ACS volunteers. During a one-half day training session, each volunteer provided a list of ten women they were willing to contact up to three times over a 6-month period and encourage to have a mammogram. Each list was randomized, and five names were returned to each volunteer for inclusion in the intervention. The other women served as controls and were not contacted by the volunteers. All women were subsequently interviewed at the end of the intervention period by an outside contractor. Forty-nine percent of the study women had received their most recent mammogram since the start of the intervention period versus 34 percent of the control women during the same time period, a 15 percent increase ($p <= 0.001$). The effectiveness of the intervention remained after controlling for demographic characteristics. The strategy was effective for both black and white women of all ages, but principally among women with annual household incomes of less than $40,000. We conclude that a telephone intervention strategy of personal contacts between acquainted women can significantly increase mammography use, particularly among women with low to moderate income.

ANALYSES OF DIAGNOSTIC FOLLOW-UP OUTCOMES AMONG WOMEN SCREENED FOR BREAST CANCER. Carole A. Chrvala, PhD; William W. Todd, MS; Keith R. Ksansnak, MA; Suzell A. Klein, MA

The Colorado Mammography Advocacy Project (CMAP) is a statewide breast cancer (BC) surveillance system operated by the Cancer Control Program of the Colorado Department of Health. Women enroll in CMAP when they have a mammogram (MM) at participating centers throughout Colorado; to date, over 70,000 screenings have been reported to CMAP. Standardized data on demographics, BC risk factors, MM results, rescreening recommendations and diagnostic follow-up (DXFU) are collected for each screening. A total of 949 women (out of 10,086 recommended for DXFU) received a radiologist recommendation for a surgical consult (SC), with 81.8% complying. Of these, 84.5% underwent biopsy (Bx), with a positive Bx rate of 31.3%. A total of 173 women failed to comply with a SC recommendation and were evaluated with alternate procedures including clinical breast exams (50.3%), repeat MM's (25.4%), diagnostic MM's (15.6%), and ultrasounds (15.0%). DXFU was not completed for 44 of these women. An additional 853 women underwent Bx that were not performed on the basis of MM findings, but rather on clinical findings and/or patient demand. The positive rate for these Bx's was 8.0%. These data emphasize the importance of conducting DXFU for suspicious MM findings in order to ensure that women are not lost to follow-up, as well as to determine the accuracy of MM interpretation. Results also confirm the efficacy of MM-driven recommendations for SC's and the contribution of MM to the detection of BC.

SCREENING MAMMOGRAPHY IN PRIMARY CARE GROUP PRACTICE

Richard R. Love, Roger L. Brown, James E. Davis, Susan A. Fontana, Louis A. Sanner and Linda J. Baumann.
University of Wisconsin, Madison, WI 53706

Many studies reporting the frequency of breast cancer screening have been based only on physician and patient surveys, or on data from quality assurance studies and do not assess the reliability of information obtained from these various sources. To obtain more complete data we studied mammography performed in a three-year period, 1988-91, in 24 non-academic primary care group practices by both auditing the medical records and obtaining questionnaire responses from 1819 women age 50-65 and from their 98 physicians in the non-metropolitan Midwest. Medical record data indicated that mammography was performed in all three years in 16.7%, in at least two of three years in 49.8% and in at least one of three years in 81.7% of women.

While patient reports of a family history of breast cancer, health insurance coverage for mammography and greater annual household income were each significant predictors of greater frequency of mammography, a patient report that a clinic staff member had discussed mammography was the strongest predictor.

In this study of self-selected physicians and their patients, record-documented mammographic examinations were considerably more frequent than has been reported in many studies, but at rates consistent with quality assurance data for the region. These data also suggest that clinic staff initiatives with screening mammography have a large impact.

(Supported by ACS Grant PBR-51)

COST-EFFECTIVENESS ANALYSIS OF SCREENING MAMMOGRAPHY: A COMPARISON OF MOBILE AND STATIONARY SETTINGS.

Jerrold Hill, Ph.D., Mathematica Policy Research, Karen Glanz, Ph.D., M.P.H., Temple University, and Barbara Rimer, Dr.P.H., Duke University Cancer Center

Because screening mammography is recommended for all women age 40 or older, an increasing amount of public and private health insurance dollars are being used for these procedures. This study evaluated the cost-effectiveness of a program of screening mammography provided on mobile units for women at the workplace compared to the use of stationary mammography screening units.

Data for the study came from two key sources: a survey of women at 48 companies participating in an evaluation of the impact of mobile mammography units with health education, and a sample survey of women in the same region not employed at those companies. Cost and fee data for mammography were obtained from facilities and insurers in the region. Dependent variables of interest included unit costs for mobile (MM) vs. stationary mammography (SM), time and travel costs for MM vs. SM, adherence to mammography guidelines for MM vs. SM, and marginal cost-effectiveness of MM.

Results indicated higher unit costs for MM than for SM. The **inclusive** costs, considering travel time and expense, and work release, were still higher for MM than for SM, but the difference was modest. MM increased adherence rates, especially among those without previous or recent mammograms. When analyzed in terms of increased life expectancy through use of mammography, marginal cost-effectiveness analysis indicates that additional lives (life years) saved justifies the additional costs incurred by use of mobile mammography units for working women.

* Support--NIH Grant #CA34856.

PSYCHOLOGICAL DISTRESS INTERFERES WITH MAMMOGRAPHY ADHERENCE AMONG HIGH RISK WOMEN

Caryn Lerman, PhD, Mary Daly, MD, PhD, Colleen Sands, BA, Andrew Balshem, BA, Ed Lustbader, PhD, Tracy Heggan, MPH, Joan James, PA, Lori Goldstein, MD, and Paul Engstrom, MD

This research aimed to identify demographic, medical, and psychological variables associated with mammography adherence in a population-based sample of first degree relatives (FDRs) of breast cancer patients. Subjects were 182 FDRs aged 30-65 who were recruited through index breast cancer patients at Fox Chase Cancer Center. All women participated in a telephone interview and completed validated measures of depression and breast cancer worries. The proportion of FDRs who had mammograms in the past year varied by age: 31% (age 30-34), 50% (35-39), 82% (40-49), and 63% (50+). Chi Square and Wilcoxon Tests indicated that nonadherence to age-specific screening guidelines was associated with: (1) demographic variables - nonwhite race, unemployment, and < high school education; (2) index patient variables - diagnosis < 1 yr. ago and younger age at diagnosis and (3) psychological variables - intrusive breast cancer worries and worry-related impairment in mood and functioning. Logistic regression analysis indicated that worry-related impairment and education were significant independent predictors of adherence. (OR=.37 and OR=4.3, respectively). These results suggest that breast cancer worries may interfere with adherence to mammography screening among FDRs of breast cancer patients. Behavioral interventions which promote adaptive coping and adherence to mammography should be targeted to these high risk women.

SESSION II
Sunday, March 21
3:30 - 4:50 pm
Chair: Roshan Bastani, PhD

GEOGRAPHIC TRENDS IN U.S. PROSTATE CANCER MORTALITY

Karen Kafadar, Ph.D., National Cancer Institute

Purpose: To better understand the effects of the two known risk factors for prostate cancer, namely age and race, as well as to identify other potential risk factors, this paper analyzes prostate cancer mortality rates in U.S. counties for geographic effects, particularly urbanicity, region, and local regional trends. *Data:* The data come from National Cancer Institute and cover the years 1953-1972 and 1973-1987, for whites and nonwhites. Deaths and estimated population counts are available in 18 five-year age groups. *Methods:* Counties in the continental U.S. are divided first among seven regions, and age-standardized region rates for the four sets of rates (whites/nonwhites x 1953-72/1973-87) are compared for effects of race and time periods. Counties within regions are then stratified according to a measure of county urbanization to determine the effect of urbanicity on the mortality rates. Finally, geographic trends within regions are investigated graphically by smoothing the rates with those in neighboring counties to better illustrate the nature of two-dimensional trends. *Results:* Urbanicity appears to affect only the rates for nonwhites and only in certain regions. Region rates among whites tend to be higher in the Northeast and Great Lakes regions and lower in the Southeast and South Central regions. Among nonwhites, the rates are higher in the Northeast and Southeast and lower in the West and Rockies regions, with rates in the North/South Central and Great Lakes regions falling somewhere in between. Local geographic trends within the regions strongly confirm these gradients apparent from the broad regional comparisons.

Body Iron Stores and the Prognosis of Cancer. Katherine A. McGlynn, PhD; Richard G. Stevens, PhD; Edward D. Lustbader, PhD; Baruch S. Blumberg, MD; W. Thomas London, MD; John Q. Zhang, M.S. Fox Chase Cancer Center, Philadelphia, PA

Recent evidence suggests that elevated body iron stores are associated with an increased risk of developing cancer. Whether iron stores are also associated with cancer progression has not been studied previously. In order to test this hypothesis, we conducted a historical prospective study among patients who were seen at the Hospital of the Fox Chase Cancer Center between 1976 and 1980. Frozen serum samples, collected at the time of diagnosis, were retrieved and tested for levels of ferritin and transferrin. Patients were followed up through the Tumor Registry to determine length of survival. A sufficient number of samples for statistical analysis were available from patients with four diagnoses; cancers of the lung (N=52), breast (N=56), colon (N=22) and melanoma (N=108). Each cancer was analyzed separately using Cox proportional hazards models. Other than ferritin and transferrin, covariates included were age, sex, tumor stage, grade and histology. Results indicated that survival of cancers of the lung, breast and colon was significantly related to iron stores. Increased iron stores were associated with the following dose-response decrease in survival: one year or less survival - mean ferritin of 345 ng/ml; 2 to 3 years survival - mean ferritin of 184 ng/ml; 4 to 5 years survival - mean ferritin of 85 ng/ml; greater than 5 years - mean ferritin of 66 ng/ml. The association of melanoma survival to iron stores was in the direction concordant with the other tumors, but not did not attain statistical significance (p=.06). While consistent with several interpretations, these results may indicate that tumor progression is enhanced in an iron rich environment. If confirmed, these findings may have widespread therapeutic application.

ADIPOSE TISSUE FATTY ACID COMPOSITION AND RISK OF PROSTATE CANCER . Paul A. Godley, M.D., M.P.P., Patricia Gallagher, Ph.D., Francis Martinson, MB.Ch.B, M.P.H., Bernadette Williams, R.N., Aristotle Domnas, Ph.D., James Mohler, M.D.

We performed a clinic-based unmatched case control study of the effect of fatty acid consumption on prostate cancer risk as measured by adipose tissue fatty acid composition. The 89 incident prostate cancer cases and the 38 benign prostatic hyperplasia controls were histologically confirmed. The fatty acid profiles were determined from subcutaneous fat samples using gas chromatography. Multiple logistic regression was used to determine odds ratios.

Crude Odds Ratios of Prostate Cancer and 95% Confidence Intervals (CI) by Tertile (T) of Adipose Tissue Fatty Acid Composition

Fatty Acid	T2 vs. T1	95% CI	T3 vs. T1	95% CI
Eicosapentaenoic	0.87	(0.28-2.29)	0.379	(0.14-1.00)
Docosahexanoic	1.733	(0.64-4.72)	0.763	(0.29-1.95)
Arachidonic	1.000	(0.35-2.88)	0.310	(0.12-0.83)
Linoleic	2.727	(0.99-7.49)	1.399	(0.55-3.54)
Total Omega-6	2.952	(1.07-8.13)	1.587	(0.62-4.09)

The subjects in the second tertile of total omega-6 fatty acids (arachidonic plus linoleic) had a significant 3-fold increase in prostate cancer risk compared to those in the lowest tertile. In contrast, the fatty acid composition of the omega-3 fatty acid (O-3FA) eicosapentaenoic acid demonstrated a trend toward a protective effect. A protective effect was also seen in the highest tertile of arachidonic acid, which contrasts with the increase in risk with linoleic and with total omega-6 fatty acids (O-6FAs). Adipose tissue fatty acid profiles reflect long-term consumption of essential fatty acids. Since arachidonic acid indicates both consumption and linoleic acid metabolism, O-6FA intake may be best estimated by linoleic or total O-6FAs. The results demonstrate a permissive effect of O-6FAs from vegetable oils on prostate cancer risk, and suggest a protective effect of O-3FA consumption from fish oils.

FAMILY HISTORY, AGE, AND RISK OF FATAL BREAST CANCER. EE Calle, LM Martin, MJ Thun, HL Miracle, CW Heath

A family history of breast cancer potentially identifies women at high risk for whom mammography may be especially valuable. We examined the association of fatal breast cancer and family history in a large, prospective study of U.S. adults. After six years of follow-up, 880 cases of fatal breast cancer were observed in a cohort of 604,412 women who were cancer-free at interview in 1982. Cox proportional hazards modelling found that a family history of breast cancer in a mother or sister was significantly related to fatal breast cancer risk (rate ratio (RR) = 1.59, 95% confidence interval (CI) 1.29-1.95). The association was greatly modified by age; the RR was 4.91 (95% CI 1.39-17.3) in women under age 40 at enrollment compared to 1.28 (95% CI 0.78-2.11) in women age 70 or over. Among young (less than age 50) women, the risk associated with a positive family history was greatest if the relative was also young at the time of diagnosis (RR = 5.22, 95% CI 3.00-9.11). These associations were not altered in multivariate analyses controlling for known breast cancer risk factors. In our data, family history is strongly predictive of early fatal breast cancer, particularly when disease is diagnosed before age 50 in the relative. Women with a family history of early breast cancer should receive special instructions regarding mammography and early detection.

SESSION III
Monday, March 22
11:00 - 12:20 pm
Chair: Al Neugut, MD, PhD

Cigarette Smoking and p53 Over-expressions in Bladder Cancer. Zuo-feng Zhang, MD, PhD, Alvaro S. Sarkis, MD, Guido Dalbagni, MD, Victor E. Reuter, MD, Carlos Cordon-Cardo, MD, PhD, William R Fair, MD, Colin Begg, PhD. Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021.

P53 gene is considered a common target in human tumorigenesis. Few studies have evaluated the associations between cigarette smoking and p53 over-expressions in bladder carcinoma. Two hundred and twenty-nine patients with bladder carcinomas seen at Memorial Sloan-Kettering Cancer Center from 1972 to 1980 have been included in this study. P53 over expression in paraffin-embedded tumor tissue specimens was detected by antibody Pab1801 and immuno-histochemical methods. The medical charts were reviewed and information on cigarette smoking, alcohol consumption, occupational exposures, and family history of cancer was abstracted. The association between smoking and p53 over-expression has been evaluated by the Mantel-Haenszel Methods. A total of 102 patients (44.5%) showed p53 over-expressions. The odds ratios for p53 over-expressions were 1.57 (95%CI: 0.79-3.10) for ever smoker, 2.33 (0.34-16.18) for those who stopped smoking, 8.3 (1.19-58.05) for current smokers after adjusting for age, sex, and race. A dose-response relationship has been shown between daily consumption of cigarettes and p53 over-expressions. The OR for p53 over-expressions was 3.30 (1.26-8.62) for those who smoked 40 cigarettes per day. The results of this study suggest that p53 over-expressions in bladder cancer may be related to patients' previous exposure to cigarette smoking.

ABSOLUTE AND RELATIVE RISK OF DEATH FROM TOBACCO SMOKING. MJ Thun, MM Namboodiri, EE Calle, WD Flanders, CW Heath

Current antismoking programs are appropriately aimed at the young. However, the absolute risk of mortality from smoking is contributed largely by older smokers. We examined age-specific rate differences (absolute risk) and rate ratios (relative risk) for lung cancer, coronary heart disease (CHD), stroke, and death from all causes in current (N=228,680), former (262,457), and never (482,679) smokers in Cancer Prevention Study II.

Among male current smokers age 35-54, CHD contributed the most smoking-related deaths (absolute risk); in men over 60 and women of all ages, lung cancer predominated. The rate difference for fatal CHD, stroke, and death from all causes was ten- to thirty-fold higher among older current smokers, than in the young, whereas the relative risks decreased with age. In contrast, both the absolute and relative risks of lung cancer, CHD, and stroke decrease markedly in persons of all ages who stop smoking, compared to those who continue. While long-term efforts to end the tobacco epidemic must focus upon the young, large and immediate gains in preventing deaths from smoking can be achieved by improving the rates of quitting among current smokers of age 50 and above.

IMPACT EVALUATION OF A SELF-HELP, MINIMAL CONTACT SMOKING CESSATION PROGRAM FOR MINORITY PREGNANT WOMEN

Linda M. Lillington,RN,MN, Jacqueline Royce,PhD, Rowan T. Chlebowski,MD,PhD

A minimal-contact smoking cessation program for pregnant, low-income, minority women was developed and evaluated for impact on smoking cessation during pregnancy and relapse prevention postpartum (PP). Current and former smokers were recruited from four Women Infant and Children (WIC) sites in the Los Angeles area. The intervention consisted of a one-time 5-10 minute contact which included a brief discussion of the harmful effects of smoking during pregnancy and benefits of quitting; distribution and explanation of a self-help guide, and an incentive program. Smoking behavior was evaluated at 9 months and PP. Quit behavior was verified by saliva cotinine sampling. Follow-up evaluation is available for 803 women (555 control, 248 intervention). Findings identified differences in smoking behavior among Hispanic and African-American pregnant women. More African-American women were current smokers compared to Hispanic women (57% vs 17%). Significant differences in smoking cessation behavior for the intervention vs the control group were noted at 9 months and PP in current and former African-American smokers and at PP in Hispanic former smokers.

	Percent of Non-Smokers at:				
	9 months		Postpartum		
Groups	AAF	AAC	AAF	AAC	HF
Intervention	97*	40**	72**	23**	91*
Control	80	21	42	8	74

*p<.05, **P<.01

AAF-African-American Former, HF-Hispanic Former, AAC-African-American Current. Results support the use of a self-help, self-monitoring approach for smoking cessation and relapse prevention for low-income minority pregnant women. The difference in program effectiveness among the Hispanic and African-American women suggests cultural background influences smoking cessation behavior.

CIGARETTE SMOKING, MENOPAUSAL STATUS AND LARGE BOWEL CANCER INCIDENCE IN WOMEN. PA Newcomb, PM Marcus, BE Storer. University of Wisconsin Comprehensive Cancer Center, Madison, WI 53706

History of cigarette smoking and menopausal status was assessed in 774 Wisconsin women with newly reported diagnoses of cancer of the colon and rectum. For comparison, 2277 population based controls (from driver's license lists if under 65 years and from HCFA files if over 65 years) were also interviewed. The age adjusted prevalence of ever smoking was 42% among premenopausal case subjects and 51% among premenopausal controls. Among post-menopausal cases, history of ever smoking was 53% for cases and 37% for controls. After adjusting for age, family history of colorectal cancer, and screening history, the odds ratio among ever smokers for colon cancer was 1.28 (95% CI 1.03-1.59), for rectal cancer the odds ratio was 1.31 (0.97-1.76). The effect of smoking very much depended upon menopausal status: smoking was associated with a decreased risk of premenopausal disease (for both sites) and significantly increased risk of disease for postmenopausal disease. The effects of smoking were stronger among current than former smokers: the odds ratio for current smoking among premenopausal women was .71 (95% CI 0.36-1.41). For current postmenopausal women the odds ratio was 1.44 (95% CI 1.11-1.87). For both menopausal groups and subsites, the association was stronger with increasing duration and numbers of cigarettes smoked.

SESSION IV
Monday, March 22
11:00 - 12:20 pm
Chair: Barbara Rimer, Dr.PH

REDUCED RISK OF COLON CANCER WITH HIGH INTAKE OF VITAMIN E: THE IOWA WOMEN'S HEALTH STUDY. Roberd Bostick, MD, MPH, John Potter, MD, PhD, David McKenzie, MS, Thomas Sellers, PhD, Lawrence Kushi, ScD, Kristie Steinmetz, PhD, Aaron Folsom, MD, MPH

Antioxidant micronutrients, including vitamin E, vitamin C, the carotenoids, and selenium, defend the body against free radicals and reactive oxygen molecules suggesting a potential for these dietary components in cancer prevention. To investigate whether high intakes of antioxidant micronutrients protect against colon cancer, we analyzed data from a prospective cohort study of 35,215 Iowa women aged 55 - 69 years and without a history of cancer who completed a dietary questionnaire in 1986. Through 1990, 212 incident cases of colon cancer were documented. Mean total daily intake of vitamin E in women who developed colon cancer was 36 I.U. compared to 66 I.U. in women who did not ($p = .004$). Adjusted for age, vitamin E intake was negatively associated with the risk of colon cancer (p for trend < .0001); the relative risk (RR) for the highest compared to the lowest quintile was 0.32 (95% confidence interval [95% CI] 0.19, 0.54). Further adjustment for total energy intake, height, parity, and intake of low fat meat in proportional hazards regression had little effect on these estimates. Covariates that did not confound associations or did not fit the final models at the 0.10 level of significance included selenium supplement use, intakes of any of the other antioxidants, education, occupation, BMI, waist-to-hip ratio, physical activity, any type of vitamin or mineral supplement use combined, and intakes of fat, fiber, vegetables and fruit, red meat, alcohol, calcium, and vitamin D. The association was not uniform across age groups: the multivariate RR of colon cancer for the highest compared to the lowest quintile of vitamin E intake was 0.14 (95% CI 0.03, 0.61) for those 55 - 59 years old, 0.36 (95% CI 0.14, 0.96) for those 60 - 64 years old, and 1.01 (95% CI 0.49, 2.11) for those 65 - 69 years old. These prospective data provide evidence that a high intake of vitamin E may decrease the risk of colon cancer, especially in persons under 65 years of age.

LONG TERM EVALUATION OF SIDE EFFECTS OF BETA-CAROTENE AND RETINOL: SMOKER'S PILOT TO THE CAROTENE AND RETINOL EFFICACY TRIAL (CARET). Goodman GE, Omenn GS, Lund B, Thornquist M, Metch B, Gylys-Colwell I. Swedish Medical Center Tumor Institute and Fred Hutchinson Cancer Research Center, University of Washington School of Public Health, Seattle, WA.

Chemoprevention agents targeted for use in "healthy" populations must be relatively safe. Pilot trials help define side effects and allow better planning of side effect monitoring and management in an efficacy trial. Between July 1985-88, in a pilot for the lung cancer chemoprevention trial, CARET, we randomized 1,029 heavy smokers to 1) placebo, 2) retinol 25,000 IU/day, 3) beta-carotene 30 mg/day, or 4) the combination. 17 potential side effects were graded on a standardized scale at two month intervals by questionnaire, physical examination and serum analysis. Participants who developed an increase in any symptom above a pre-determined "threshold" had vitamins stopped and were rechallenged in a standardized fashion. With a median follow-up of 1.5 years (maximum 3.3 years), 239 participants developed threshold symptoms. The most common symptoms were anxiety and depression (68), skin reddening and dryness (61), bone pain (often arthritis) (49), fatigue (52), and headaches (41). The mean grade for each symptom did not change over time; there were no statistically significant differences between study arms except for yellowing of the skin (higher in the beta-carotene containing arms). 67 participants went off-study because of the symptom management procedures and 58 because of symptoms which were self-perceived as related to the study vitamins. There was no difference between arms. The lessons learned from this pilot resulted in modifications of side effect monitoring for CARET. Some monitoring was dropped and the symptom grading scale was better defined for a multi-institutional trial. Participants of this pilot trial continue to be evaluated every three months while those enrolled on CARET are evaluated every four months. These modifications allow for a more cost effective trial to test the efficacy of beta-carotene and retinol in reducing lung cancer incidence.
Supported by PHSA Grant CA #34847

Vitamin supplementation has a protective effect on basal cell carcinoma. Qingyi Wei*, M.D., Ph.D., Genevieve Matanoski, M.D., Dr.P.H., Evan Farmer, M.D., and Lawrence Grossman. Ph.D.

So far, the findings from studies on the role of dietary vitamin intake in reducing skin cancer risk are inconsistent. A clinic-based case-control study was conducted to determine the association between vitamin supplementation and risk of basal cell carcinoma (BCC). Caucasian subjects consisted of 131 primary BCC cases and 200 cancer-free controls with mild skin disorders. Detailed information regarding vitamin use (mainly multivitamins, vitamins A, C, and E) was obtained. After controlling for age, sex, cigarette smoking, historical severe sunburns, skin complexion, current skin actinic lesions and family history of skin cancer, a significantly reduced odds ratio (OR) was associated with any vitamin supplement use (OR=0.4; 95% CI, 0.2-0.7). A significant trend in reduced ORs was observed for increasing daily dose of vitamin A ($p<0.001$), vitamin C ($p<0.05$) or vitamin E ($p<0.001$). A daily use of >5000 IU vitamin A was associated with an OR of 0.1 (95% CI, 0.0-0.5); greater than 100 IU vitamin E with an OR of 0.3 (95% CI, 0.1-0.7). These findings suggest that vitamin supplementation, particularly vitamin A and E, has a protective effect on the risk of BCC.

PATTERNS OF SUBJECT ADHERENCE IN A LUNG CANCER CHEMOPREVENTION CLINICAL TRIAL. Carolyn Harvey, RN, MSN, David Holiday, PhD, Jerry McLarty, PhD, Asbestos Workers Program Staff, University of Texas Health Center at Tyler.

Data from former asbestos workers in a randomized controlled double-blind clinical trial was used to evaluate a health belief model for subject adherence using both factor analytic methods and correlation analysis. This chemoprevention study measures the effect of beta-carotene/retinol vs. placebo on sputum atypia, an intermediate lung cancer marker. Most patients are seen every 6 months for 3 years and are reimbursed at minimum wage for time and travel expenses. A 27-item self-administered exit questionnaire, based on concepts from Barofsky (1984), included 10 functional and 16 structural statements, each coded with a 5-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. *Functional* determinants are defined by Barofsky as patient values, interactions with health care providers, and family social support; *structural* determinants include patient access, economic factors, treatment side effects, health status, and clinic accessibility.

Factor analysis (n=385) yielded four independent factors explaining 86% of the total variability. It suggested that, in similar cohorts, adherence will be better served by emphasizing functional over structural attributes. The correlation analysis, comparing seven additional assessments of adherence with each of the 27 questions, suggested better pill-taking is expected for those with higher income, less work stress, and the perception of health benefits, especially if health status is currently poor or at increased risk. Pill dumping, as indicated by significantly more absent pill packet blisters than expected, appears greater if reimbursement is a factor for participation, and may also be related to satisfaction with the clinical staff.

SESSION V
Tuesday, March 23
10:30 am - 12:10 pm
Chair: Susan Gapstur, PhD

Prevalence of Primary Hepatocellular Carcinoma in Haimen County, China. Gong-cao Chen, Tianlun Zhou, Alison A. Evans, Fumin Shen, W. Thomas London.

To initiate a randomized clinical trial of methods for secondary prevention of primary hepatocellular carcinoma (PHC), 26,109 adult male residents of Haimen County (Jiangsu Province, China) were screened from February 15 to May 20, 1992, for hepatitis B surface antigen (HBsAg) to detect carriers of hepatitis B virus (HBV) and alphafetoprotein (AFP) > 500 ng/ml to detect prevalent PHCs. 3049 men were HBsAg(+); among these, 35 (1.1%) had an elevated AFP. There were 23,060 HBsAg(-) men, and 14 (0.1%) had elevated AFP. Of the 49 subjects with AFP elevations, 22 were diagnosed with PHC by ultrasound (with additional verification by other methods, as appropriate). 14 PHC cases were HBsAg(+). None were deemed resectable; all but 1 were greater than 2 cm in diameter.

AFP was detected by hemagglutination--an insensitive method, and these results can be used to calculate only the minimum prevalence of PHC in the population. Among HBsAg(+)s, the prevalence was 459 per 100,000 men at the time of the screening. Among HBsAg(-)s, the prevalence was 35 per 100,000. Because PHC is rapidly fatal, these prevalences, with incidence data from the Haimen County cancer registry, indicate the feasibility of a clinical trial restricted to HBV carriers.

The predictive value of the AFP test (using the cutoff of 500 ng/ml) was 40% in the HBV carriers and 57% in the non-carriers. AFP screening with more sensitive methods using a cutoff of 20 ng/ml should be more effective in detecting small PHCs that may be resectable. The effect of such early detection on PHC mortality will be evaluated by the randomized clinical trial.

AFLATOXIN B_1, CORN CONSUMPTION, AND PRIMARY HEPATOCELLULAR CARCINOMA IN HAIMEN COUNTY, CHINA. Alison A. Evans, ScD, Tianlun Zhou, MD, Gong-chao Chen, MD, Fu-min Shen, MD and W. Thomas London, MD

Aflatoxin B_1 (AFB_1) is thought to be a significant cause of primary hepatocellular carcinoma (PHC) in geographic areas where PHC is endemic. In rural China, the major source of AFB_1 exposure in the diet has been shown to be corn contaminated with *Aspergillus*. In Haimen County, China, an agricultural area in Jiangsu Province, public health officials undertook a campaign -- beginning in the 1970's -- to convert the populace from a corn-staple to a rice-staple diet in order to reduce exposure to AFB_1 and, presumably, to lower incidence of PHC.

In the spring of 1992, 18,540 men between the ages of 30 and 65 were surveyed in Haimen County as part of an epidemiologic study of PHC. Retrospective information about the percent of staple diet coming from corn, rice, and wheat during the 1960's, 70's, 80's, and 90's was elicited by interview. Analysis of preliminary data shows that corn consumption accounted for 51.9% of staple diet in the 1960's. This dropped to 45.7% in the 1970's, 14.5% in the 1980's and stands at 0.3% in the 1990's.

Haimen County has had a population-based cancer registry since 1972. Age-standardized PHC incidence rates have remained relatively constant at approximately 60 cases/100,000 person-years among males in the two decades for which registry data are available, suggesting that there may have been little, if any, effect of the reduction in corn consumption on PHC incidence.

These results suggest three possible interpretations of the relationship between AFB_1 and PHC in this region: 1) corn may not be the major dietary source of AFB_1; 2) AFB_1 exposure is not a major risk factor for PHC; or 3) the effects of AFB_1 consumption at younger ages are not ameliorated by reduced consumption at older ages.

Lay Health Educators (Promotoras) Improve Cancer Awareness and Screening in Minority Populations: The Juntos Contra El Cancer Model. Manuel Modiano, Dave Buller, Joel Meister, Jill de Zapien, Sallie Lash, Paola Villar-Werstler, Victoria Santa Cruz.

Utilization and access to cancer prevention services is extremely low among Hispanic women. Among potential barriers are education, culture, and income. Baseline data on the target Hispanic community were determined through a bilingual KAP survey conducted by interviewers from the same community. From this survey's findings, we designed a pilot program to determine the benefits of a culturally-sensitive approach to cervical and breast cancer education. Six Promotoras were trained in a 17 week cancer control curriculum. The Promotoras have been instrumental in finding and educating women not in compliance with cancer screening recommendations and helping them obtain low cost screening and referrals for cancer treatment. Between July 1, 1992 and October 15, 1992, four Promotoras working 10 paid hours each (including training), have contacted 187 women. Fifty-two percent have been in compliance with ACS guidelines for cancer screening and have received no further instruction. The remainder 87 women (48%) have received cancer prevention and control instruction and have been referred for screening. Most (86%) women receiving instruction have been Hispanic, and 83% are between 18-40 years old. Forty-one percent have made appointments for pap screening following the Promotora's visit. Of these, 42% have actually attended a screening clinic. This represents an initial step in improving cancer screening in a group traditionally thought of as "hard-to-reach".

Evaluating the Efficacy of Colorectal Cancer Screening in Pattern and Model Makers

Raymond Demers, M.D, MPH

Automotive pattern and model makers are at high risk for colorectal neoplasia. This investigation evaluates the impact of a colorectal cancer screening program. White males numbering 1641 were eligible for periodic screening beginning in 1981; 60% were screened at least once. Examination included digital rectal examination, stool occult blood tests, and 60-cm flexible sigmoidoscopy. Positive screens were actively referred for biopsy and management. Follow-up of study subjects was accomplished through linkage with the Detroit SEER Cancer Registry and the Michigan Death Tape. Expected cancers were stratified by age and screening participation using southeast Michigan population-based invasive cancer incidence rates. Rates were also compared between screening participants and non-participants. Sixty-eight invasive primary incident cancer cases were identified, including eight invasive colorectal cancers. Seven invasive colorectal cancers were diagnosed in the unscreened cohort vs. 4.3 expected (SIR-1.62), and one case in the screened cohort vs. 4.7 expected (SIR=0.21). The unscreened cohort showed a statistically significant excess rate of colorectal cancer compared to those screened (RR=10.4, $p < 0.01$). This investigation is quantifiable evidence supporting periodic colorectal cancer screening toward the reduction of colorectal cancer incidence.

DEPRESSION AND CANCER. Gary D. Friedman, M.D.

Uncertainty persists concerning whether emotional depression predisposes to the occurrence of cancer. Previous cohort studies in our department revealed no elevation of cancer risk for persons who reported depression on self-administered questionnaires, who were diagnosed as depressed by nonpsychiatric clinicians, or who took antidepressive drugs. In this study, cancer incidence was assessed in 923 persons who were diagnosed with some form of depressive illness in a psychiatry clinic between 1969-1973, all part of a larger cohort study of possible carcinogenic effects of pharmaceuticals with follow-up as long as 19.5 years. Expected numbers of cases were based on the entire pharmacy-user cohort of 143,574 persons. Initial analysis revealed a slight, nonsignificant increase in all cancers combined (70 observed vs 57.7 expected cases) with standardized morbidity ratio (SMR) and 95% confidence interval (CI) of 1.21 (0.95-1.53). The dominant diagnosis (858 persons) was "depressive neurosis" with similar SMR and CI:1.21 (0.93-1.55) for subsequent cancer. Lagged analyses to rule out depression associated with prediagnostic cancer symptoms yielded slightly higher SMRs which were nominally significant. For example, ignoring the 7 cancer cases diagnosed during the first 2 years after the diagnosis of depression led to an SMR and CI of 1.38 (1.06-1.76). The individual cancer sites with elevated risks were not predominantly tobacco- or alcohol-related. There may be a small elevation of cancer risk in persons whose depression is more severe or more accurately diagnosed.

ABSTRACTS

POSTERS

1

Protective effect of different sources of wheat bran fiber on the formation of colon tumors in rats on high fat, low calcium diets. Shivapurkar, N. Tang, Z.C. and Alabaster,O. Inst. for Disease Prevention, George Washington Univ. Washington D.C. 20037. In order to determine the relative effects of different preparations of wheat bran, we designed experiments to study the effect of low (1% w/w), medium (4% w/w) and high (8% w/w) levels of wheat bran(WB), All Bran(AB) and Bran Flakes(BF) on the formation of aberrant crypts and colon tumors in Fischer-344 rats, following injections with azoxymethane(AOM) in the presence of high fat (20% w/w), low calcium (0.18% w/w) diets. The rats were fed the experimental diets for 2 weeks, at which time they were given two s.c.injections of AOM (15mg/kg body weight/week). Eight weeks following the first injection of AOM, 5 rats/group were sacrificed and the formation of aberrant crypt foci (AC) was measured. Twenty three weeks following the first injection of AOM, 12 rats/group were sacrificed and the colon tumor incidence in the different dietary groups was measured. The results clearly showed that increasing the dietary concentration of fiber from 1% to 8% using WB, AB and BF reduced the number of foci of aberrant crypts/cm^2 of colon mucosa from 6.53 ±0.1 to 2.17 ±0.26 for WB; from 6.57 ±0.21 to 3.52 ±0.28 for AB; and from 6.70±0.3 to 3.59 ±0.26 for BF. The number of colon tumors/group was reduced from 11 to 7 for WB; 9 to 5 for AB; and 11 to 5 for BF. None of the diets showed any significant effect on the normal growth of rats. No significant differences among the protective effects of WB, AB and BF were observed. The results indicate that wheat bran fiber from WB, AB and BF reduces the formation of precursor aberrant crypts and colon tumors promoted by high fat, low calcium diets. Different preparations of wheat bran should be equally effective as sources of fiber for preventing colon cancer among populations consuming high risk Western diets. (Partly supported by the Cancer Research Foundation of America)

2

CERVICAL CANCER AMONG URBAN AMERICAN INDIAN WOMEN: FINDINGS IN THE DEVELOPMENT OF A CULTURALLY SENSITIVE EPIDEMIOLOGICAL SURVEY INSTRUMENT.

Gail C. Farmer, Dr.PH., Peggy Barnett, M.S*, Rick Bouchard, B.A.* American Indian Clinic*

This study surveyed 500 American Indian Women in Southern California to: 1) assess the need for cervical cancer control interventions, and 2) determine the barriers to cancer control programs. The objective of this three year study is the development of a culturally sensitive interview to measure: a) the prevalence of cervical cancer symptomology; b) risk factors associated with cervical cancer; c) knowledge, attitudes, cultural and religious beliefs regarding the etiology of cervical cancer and its control; and d) issues of accessibility and acceptability of cervical cancer screening and treatment programs. Over 65 tribes are represented which permit intra-and inter-tribal comparisons. Preliminary findings will be presented and the implications for health service utilization discussed.

Document available upon request.

3

A CANADIAN CERVICAL CANCER CONTROL SURVEILLANCE SYSTEM. Carol S. Haines, MD, MPH and Christina Mills, MD, FRCPC

Purpose: To plan a national system which can assess cancer control progress over time and across geopolitical jurisdictions and is acceptable to provinces by virtue of minimal requirements for new resources.

Methods: The deliberation processes of a national committee will be described. Prime considerations were: 1-that indicators must be nearer to control efforts than traditional endpoint data 2-that parity with other provinces is a reliable prompt to action in health politics and 3-that requested data be economical for the provinces to collect.

Results: (1) An indicator to monitor only unequivocal screening failures was selected; the use of radiation therapy log books is under investigation as a data source which is economical and is of roughly equivalent quality nationwide is under consideration (2) A sentinel age group with low participation rates was selected to monitor progress in bringing unscreened women into the system; brief telephone interviews to collect self-reported 3-year pap histories is an economical though short-run solution being developed to assure comparable nation-wide measurement.

Conclusions: Pilot collection of these indicators will take place early in 1993, to document feasibility and economy of collection. It is hoped that once provinces are routinely collecting these indicators, it will create awareness of the need for state-of-the-art cervical cytology registration and surveillance procedures.

4

THE USE OF COMPUTERIZED DEVICES TO REDUCE HUMAN ERROR IN SCREENING. Carol S. Haines, MD, MPH

Purposes: To review the evidence that irreducible human error factors will result in false negative pap smears and mammograms. To forecast the opportunities for improving this aspect of cancer control through the use of automated screening devices.

Context: Rapid reading of many samples for which remarkable findings are uncommon is the only way screening can be accomplished. Momentary lack of vigilance, intrinsic ability factors, and physiologic necessities such as blinking all play a role in producing human errors. The promise of computerized devices lies in their ability to perform some tasks better than humans, reserving human scrutiny for a smaller subset of cases; with more findings and smaller case loads humans would likely perform better.

Methods: A summary review of several hundred published reports regarding the quality control of pap smears and mammograms will be presented to estimate the extent of the problem and the unresolved research questions about false negative screening. From the perspective of public health policy and planning, the technical, organizational, and operational implications of automated pre-reading as a strategy to reduce human error for these two tests will be discussed.

Conclusions: Automated screening devices hold important potential for cancer control progress.

5

Factors Affecting Recruitment to the CARET Chemoprevention Trial. Valanis B, Blank J, Glass AG, Center for Health Research, Kaiser Permanente,(KP) Portland, OR 97227

Almost 4000 participants were recruited into CARET (Carotene and Retinol Efficacy Trial), a randomized vitamin A chemoprevention trial to prevent lung cancer in high risk populations. Mailings screened for key eligibility criteria (smoking and asbestos exposure). Eligible respondents were booked for a screening visit, enrolled, and followed during a 3-month run-in prior to randomization. A computerized tracking system documented response and participation rates by recruitment source and mailing strategy. Responses to the first mailings ranged from 5.8% (DMV lists) to 63.3% (KP members). Eligibility rates among respondents ranged from 1.3% (DMV) to 13.2% (subjects in prior smoking studies). Of the eligibles, 70-78% booked a screening visit, 43-62% actually completed the visit, and 33-44% of eligible respondents were eventually randomized. As a fraction of mailings, this represented a low of 0.4% (DMV) and a high of 4.3% (subjects in prior studies). The main determinant of randomization was entry into the process--once seen for the first visit, all subgroups tended to be randomized at about the same rate. Repeat mailings resulted in markedly fewer potential eligibles. Use of an advance postcard and first class postage increased responses but had little effect on randomization yields.

6

DNA CELL CYCLE ANALYSIS IN STAGE I BREAST CARCINOMA. Myong Nam, M.D., Kathleen A. Jablonski, Ph.D., Michelle Lifton, M.T. (ASCP), Ghiath Hamed, M.D., Abid Fazil, MT (ASCP), John Rees, Ph.D., Lesley Frazier, M.D., Marc Boisvert, M.D.

Stage I breast cancer continues to challenge clinicians and researchers in prognosis and treatment. The lack of reliable prognostic indicators and disagreement over administration of adjuvant therapy has resulted in speculative, and sometimes overaggressive treatment of the disease. To establish reliable markers for carcinomas at high risk for late local recurrence and distant metastases, 235 cases of Stage I mammary carcinomas were analyzed. Using flow cytometry, the proliferative index (percentage of cells in S phase), as well as DNA ploidy levels within formalin-fixed paraffin-embedded tumors were measured. Log-rank tests were used to compare the survival experience between groups of patients stratified by these biochemical markers and other clinical data. The results indicate that formalin-fixed paraffin-embedded tissue can be used to determine the S-phase cell fraction. The S-phase fraction combined with DNA ploidy is an independent prognostic factor in stage I breast cancers ($p=.008$). This result is consistent with previous studies using fresh tissue. Negative ERPR tumors have a lower survival than positive ERPR tumors ($p=.0366$). Five year survival for whites is 86% while that of blacks is 69% ($p=.04$). It is concluded that the S-phase fraction combined with DNA ploidy is an independent prognostic factor in stage I breast cancers.

8

ELEVATED LEVELS OF C-MYC ONCOPROTEIN IN SERA AND TUMORS OF WOMEN WITH BREAST CANCER. Brenda Breuer, PhD, MPH; Richard Minick, MD; Immaculata DeVivo; Steven Smith; John Dauscher, MS; Daniel G. Miller, MD; Michael Osborne, MD; Matthew Pincus, MD, PhD; Art Tatum, MD, PhD; Eugene Nowak, MD; Hiram Cody, MD; Paul Brandt-Rauf, MD, ScD

As c-*myc* protein has been detected in tumors of women with early stages of breast carcinoma[1], we investigated the possibility that this protein can serve as a screening marker of breast cancer. As a preliminary study, the pre-operative levels of c-*myc* protein were assayed in the sera of 24 women whose subsequent biopsies indicated breast carcinoma. Matching breast tumor specimens were obtained from 10 of these patients. Second serum specimens have been collected thus far from four patients approximately nine months after tumor resection. Elevated levels of c-*myc* protein were detected in the pre-operative sera of 7 of the 24 women. The oncoprotein was elevated in the tumor samples of 5 women, 2 of whom also had elevated blood levels. Tumor specimens that could be obtained from women who had elevated serological levels of c-*myc* also had high levels of that oncoprotein. There was no detectable c-*myc* protein in a blood sample taken from one of these women 9 months after tumor resection. These data indicate that c-*myc* can be detected in the sera of a proportion of women who have breast cancer, and that the source of the protein is the tumor.

[1] Spandidos, DA; et al: Anticancer Research 1989;9:821-826

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VALIDATION OF REPORTS OF BILATERAL BREAST CANCER IN FIRST DEGREE RELATIVES.

Brenda Breuer, PhD, MPH, Kathryn Kash, PhD, Gladys Rosenthal, MS, Karen Diemer, MPH, Daniel G. Miller, MD.

The objective of this study was to validate reports of bilateral breast cancer in first degree relatives. Hospital records were obtained for 94 affected relatives of participants in a program for women with a family history of breast cancer. Inconsistencies between reports from participants and reports from hospitals which may have been attributed to receipt of incomplete medical records were resolved by personal interviews with the participant. Overall, 89.4% of the participant reports were accurate. Ninety-four percent were correct when the patient reported unilateral breast cancer, however, participants who reported bilateral breast cancer in deceased relatives were correct only 61.5% of the time. These incorrect accounts were associated with: 1) confusion regarding terminology of gynecological body parts, often compounded by the young age of the participant at the time her relative became affected; and 2) misunderstanding of medical diagnoses, especially when the affected relative had widespread metastatic disease and/or prophylactic mastectomy. Thus, medical counsellors, psychologists, and researchers must be cautious when their assessment for risk levels and recommendations for surveillance are based on reports of bilateral breast cancer in deceased relatives.

9

RECRUITMENT TO A SMOKING CESSATION PROGRAM USING ELECTRONIC MESSAGE STRIPS. Frank E. Johnson MD, Terence P. Wade MD, Kathy S. Virgo PhD, Margaret Katranides PhD, James L. Daly MS, William G. Kraybill MD. St. Louis Department of Veterans Affairs (DVA) Medical Center, St. Louis, MO 63106

We use electronic message strips to promote smoking cessation at our DVA hospital. In order to assess the effectiveness of this method, we displayed a single message: "SMOKERS, JOIN THE 1.5 MILLION PEOPLE . WHO WILL QUIT SMOKING THIS YEAR. CALL (a 4-digit telephone number)" at 14 locations throughout the hospital for a defined number of showings. The outcome to be measured was the number of calls to the designated telephone number for further information regarding the smoking cessation program. The message was shown for 150 days. Each strip displayed the message at least 480 times/day for an overall total of over 1,000,000 showings. Eight responses were obtained. We then changed the message to: "SMOKING CAUSES CANCER. TO QUIT SMOKING, CALL (the same 4-digit number)." This message was shown in the same way and for the same length of time. 30 responses were recorded. Conclusions: This method of outcome analysis facilitates quantitative assessment of response. The electronic message strip is a relatively inexpensive, but inefficient, approach to augment recruitment to a smoking cessation program. A shorter, more negative message yielded a higher response rate than a longer, more positive message.

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PERFORMANCE ANALYSIS OF A COLORECTAL CANCER SCREENING PROGRAM. Anthony Vernava III MD, Walter Longo MD, Donald Kaminski MD, Kathy Virgo PhD, Gayle Daniel RN, BSN, Frank Johnson, MD

Targeting populations at high risk and maximizing diagnostic yield are central issues for screening. We prospectively evaluated 203 consecutive patients in our cancer-detection program. Histories were obtained by questionnaire; all had digital exam and rigid sigmoidoscopy and were given 3 guaiac cards and a stamped envelope to mail back (all free). 116/203 had attended college; 71/203 had had a physical exam during the previous year. Colonoscopy (not free) was recommended in 89/203 based on the results. 49/89 were lost to follow-up; 40/89 were followed up. 15 of these 40 refused colonoscopy; 25/40 had colonoscopy. Adenomas or carcinomas were found in 11 of the 25 colonoscoped (44%). The cost per neoplasm-bearing patient detected was $7,648.

Association of risk factors with neoplasm

Risk factor on questionnaire	Sensitivity	Specificity
rectal bleeding	0.45	0.66
melena	0.09	0.86
changed bowel habits	0.18	0.47
+ family history	0.45	0.53
age > 50	0.81	0.27

CONCLUSIONS: Colonoscopy directed by screening has a high yield (44%). Using patient history as a basis to recommend colonoscopy does not predict colonoscopy result well. Though our screening strategy selects educated, motivated patients, many are lost to follow-up. The cost of colonoscopy deters compliance.

11

MAMMOGRAPHY USE IN WOMEN CONTACTED BY COMMUNITY HEALTH GUIDES. P. Lillquist, MSW; G. Harper, MD, PhD, M. Baptiste, PhD, J. Crucetti, MD, MPH. Urban neighborhoods are targeted to test health guide effectiveness in recruiting older (>40) and minority women to breast screening. Baseline information on mammography and factors affecting utilization was obtained by health guides in door to door canvass. Of 3439 domiciles contacted eligible women were present in 776 (22.5%); 587 (75.6%) agreed to baseline survey. Factors related to use or underuse of screening mammography were investigated. Unscreened women were more likely to use the emergency room for routine health care, and to report seeking care only when ill. Only 28% of unscreened women report ever talking about mammography with a health care provider, compared to 93% of screened women. Unscreened women were twice as likely as screened women to be uninsured, but 88% of them did have health insurance. Women in higher education and income groups were more likely to report screening. White women were more likely to be unscreened than were black women among all education levels, age groups, and among women with under $18000 in household income. Few women of either race with income over $18000 were unscreened. A family history of breast cancer was not related to mammography use, although a personal history of prior breast problems was. Women with low household incomes, low education levels, and no routine health care are not likely to seek screening mammography. Household incomes over $18000, higher levels of education, talking with a health care provider about mammography, and a history of breast problems predict best for seeking screening mammography. Insurance and a positive family history, however, do not appear to facilitate mammography utilization.

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INTRA-SPECIMEN, INTRA-INDIVIDUAL AND INTER-INDIVIDUAL VARIABILITY IN DNA REPAIR MEASURES.

George Roush, Su-Ting Luo, Marianne Berwick, Jennifer Hu. CPRI, 36 E 22nd St, NY, NY 10010

Intra-individual variability in DNA repair measures will affect the ability to test whether DNA repair deficiencies will elevate risk for cancer in the general population, when intra-individual differences are large relative to inter-individual differences. We developed DNA repair measures in human mononuclear leukocytes and examined their variability in the setting of randomized trial of vitamin E. Each individual (N=31) had 2 phlebotomies 2 to 7 days apart (permitting intra-individual variation), samples were transported to the laboratory and assay initiated within 1 to 2 hours. Assays were 3 involving excision repair as UDS (unscheduled DNA synthesis: constitutive, activated by NMNNG, and by UVC) and two as ADPRT (adenosine diphosphate ribosyl transferase: constitutive and activated by H_2O_2). Each assay was also run in parallel replicates for intra-specimen variation. We also assayed for cell replication after PHA stimulation. Results are given as co-efficients of variation (100%xMean/SD). For intra-individual as compared to inter-individual variation, relationships appeared to be particularly favorable for unstimulated UDS and for UVC activated. For example, For UVC-UDS intra-individual variation was 21.0% while inter-individual variation was 65.0%. The results demonstrate ability to detect substantial inter-individual variation in spite of intra-individual variation.

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THE IMPORTANCE OF OXIDANT/ANTIOXIDANT BALANCE ON DNA EXCISION REPAIR T. Holcombe, G. C. Roush, M. Berwick, and J. J. Hu, Cancer Prevention Research Institute.

The objective of this study is to evaluate the importance of oxidant/antioxidant balance in DNA excision repair processes. Oxidative free radical damage plays an important role in human carcinogenesis, at both initiation and promotion stages. The mechanism involved in the damage by oxygen radicals includes modification of membrane function, cellular metabolism and various gene expressions. Our preliminary data have shown that H_2O_2 can suppress DNA repair synthesis measured by unscheduled DNA synthesis (UDS) induced by *N*-methyl-*N*'-nitro-*N*-nitrosoguanidine (MNNG) and UV (254 nm). Three cell types were studied, including freshly isolated human mononuclear leukocytes (HMLs) and two human tumor cell lines, HT-29 (colon, adenocarcinoma) and MCF-7 (breast, carcinoma). Preexposure of all the three cell types to H_2O_2 significantly decreased the cellular DNA repair response to both MNNG and UV in a dose dependent manner. The hypothetical model is that hydrogen peroxide treatment can cause depletion of cellular glutathione (GSH), which plays an important role in thiol-dependent DNA repair enzyme system. Secondly, we have also observed that human plasma can stimulate DNA repair synthesis, preincubation of HMLs with 40% plasma can increase the incorporation of [^{3}H]-deoxycytidine into DNA about 10-fold. The interpretation is that the presence of clastogens in human plasma which might cause DNA damage and induce UDS. More evidence is required to substantiate such a possibility. Studies to evaluate the relationship between oxidant/antioxidant balance and DNA repair capacity is the direction for future investigation (supported by NCI grant CA01634).

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EFFECTS ON ADPRT IN HUMAN MONONUCLEAR LEUKOCYTES DUE TO VARIATIONS IN TEMPERATURE, LIGHT AND AGITATION BETWEEN PHLEBOTOMY AND ASSAY: A PROBLEM OF QUALITY CONTROL IN POPULATION STUDIES. J Tung, JJ Hu, N Dubin, GC Roush. Cancer Prevention Research Institute, 36 E22nd Street, NY, NY 10010.

Previous studies have inversely correlated adenosine diphosphate ribosyl transferase (ADPRT) activity in human mononuclear leukocytes with cancer. ADPRT is related to DNA repair and cell replication. Variability in light, temperature and specimen agitation in the interval between phlebotomy and isolation of the white cells raises the question of the reliability of the assay, particularly because such factors might alter the oxidant status, which is known to affect ADPRT activity. We studied ADPRT differences in constitutive and H_2O_2-activated values in three separate experiments: (1) blood samples exposed to fluorescent light versus no light exposure (n=40); (2) samples exposed to 4°C versus 30°C (n=22); and (3) samples undisturbed versus agitated (n=29). After three hours of each exposure, the HMLs were isolated and the constitutive and H_2O_2-activated ADPRT assays were then accomplished in the usual manner. None of the perturbations of the phlebotomy-to-assay effects approached statistical significance. For H_2O_2-activated ADPRT, the estimated increase due to fluorescent light exposure was +8.8% (with 95% confidence limits of -13.0%, +30.7%). The estimated increase due to tube agitation was -6.0% (95% confidence limits of -27.5%, +15.5%). The estimated increase due to a 26°C increase in temperature was +6.8% (95% confidence limits of -30.7%, +44.2%). For constitutive ADPRT values, the point estimates varied in the same respective directions and confidence limits were also of similar widths. It is possible that specimen handling after phlebotomy and prior to assay affects the ADPRT assay. However, we have excluded deviations from the true value of greater than about 1/8 to 1/3 of the true value.

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DISPENSING OF INTERVENTION AGENTS IN A MULTI-CENTER, DOUBLE-BLIND, PLACEBO-CONTROLLED CHEMOPREVENTION TRIAL: THE CARET EXPERIENCE. Laura Robins-Morris, Bernedine Lund, Jo Ann Hartline, and CARET Staff, Seattle, WA.

Efficient, accurate and cost-effective distribution of intervention agents is vital in chemoprevention trials. Important issues include: inventory control, storage requirements, chemical potency and expiration, maintaining the double-blind, unique identification of each bottle, timely distribution and tracking, and providing adherence data for analysis. An example of agent distribution is provided by the Carotene and Retinol Efficacy Trial (CARET) which will assess the efficacy and safety of vitamin A and beta-carotene in decreasing the incidence of lung cancer in persons at high risk. Participants are randomized to receive either a combination of 30 mg per day of beta-carotene and 25,000 IU per day of retinyl palmitate or daily placebos. Participants take their study vitamins for as long as 10 years. Over 210,000 bottles of study vitamins will have been distributed to 18,000 participants at 6 different sites by the study's completion in 1998. The Coordinating Center orders and receives the study vitamins from the vendor; performs Quality Control on shipments; labels each bottle for a specific participant; ships vitamins to the study centers for dispensing to participants; tracks all bottles through shipment, dispensing and adherence; and maintains inventory data. Special software has been developed to manage the inventory, labeling and shipment to the study centers while maintaining the blinding of intervention at the study centers. Internal management of these processes assures CARET of accurate dispensation of the assigned intervention, gives us the ability to handle special cases, and provides complete data history while keeping costs at a minimum.

16

DEVELOPMENT AND EVALUATION OF A NEWSLETTER FOR RETENTION IN A CANCER PREVENTION TRIAL

Newsletters are a common component of adherence packages in clinical and prevention trials. Newsletters are distributed to participants on the assumption that communication enhances participation. Despite their widespread use, little is published on the scientific and practical decisions made in the design and implementation of such newsletters or on evaluation of the acceptance of their content by participants.

This presentation details the steps taken in the design and development of the quarterly newsletter, *CARET Reporter*, for participants in the Carotene and Retinol Efficacy Trial (CARET). This presentation links the newsletter's messages with participant readership and liking of the contents via a survey on newsletter acceptance.

Four steps are involved: 1) identifying relevant messages from behavioral science literature, 2) conducting focus groups with CARET participants, 3) designing the newsletter as a systematic communication vehicle, and 4) evaluating participant readership and acceptance.

In June, 1992, as part of routine participant follow-up, a telephone survey of 400 CARET participants was conducted to evaluate the newsletter. Results indicated that of participants who received the newsletter, 98.9% read it, and 87.8% read all or most of it. The preferred sections were those about cancer research (91.1% like them a lot or a little) and health information (84.8% like them a lot or a little). These results led to conclusions of high levels of participant acceptance, readership and liking for the newsletter's message-specific content.

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Reduced Breast-Cancer Risk among
Vietnamese Immigrant Women:

Hoda Anton-Culver, PhD, Lynn Goldman, MD, Thomas H. Taylor, PhD

There is a rapid influx of Asians, especially Vietnamese, into California, resulting in sizable communities. Data from the Cancer Surveillance Program of Orange County and the California Tumor Registry were used to construct proportional incidence ratios (PIR) for many types of invasive cancer among Vietnamese women. In Orange County, Vietnamese women diagnosed between 1988 and 1990 showed a significant proportional deficit in Breast cancer cases, relative both to all women (PIR 95% confidence interval: 0.18 - 0.59) and to Asian/Pacific Islander women (PIR 95% confidence interval: 0.20 - 0.68). State-wide data for 1988-1989 showed that 68 percent of female Vietnamese incident cancer cases were born in South-East Asia while less than two percent were born in the USA. Among Vietnamese female cases born in South-East Asia, the PIRs for Breast cancer ranged from 0.00 to 0.81 across age groups, but had 95-percent confidence limits excluding one only for ages 50 and above, again, relative both to all women and to only Asian/Pacific Islander women. First-generation Vietnamese women seem protected from Breast cancer, even relative to other Asian women.

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COMPARISON OF BREAST AND CERVICAL CANCER SCREENING PRACTICES OF TRACKED AND NON-TRACKED SAMPLES OF COLORADO WOMEN.

Carole A. Chrvala, PhD; Suzell A. Klein, MA; Nathan J. Mondragon, MS

The Cancer Control Program (CCP) of the Colorado Department of Health conducted two telephone surveys of Colorado women to determine estimates of routine breast and cervical cancer screening rates. Study participants included a tracked group of 1202 women who are current participants in the Colorado Mammography Advocacy Project, which is a statewide breast cancer screening surveillance system operated by CCP. Women in this tracked group receive at least one letter reminding them of their recommended rescreening date. Random digit dialing procedures were used to select a non-tracked sample of 1000 women throughout Colorado. Eligibility criteria for the study participants required that women in both samples were 18 years or older and had no history of breast or cervical cancer. Inspection of the data indicated no differences between the tracked and non-tracked groups for age at first mammogram (44.1 and 43.3 years respectively). However, differences were noted between the two samples for time elapsed since last mammogram, clinical breast exam, and Pap smear, with shorter rescreening intervals observed in the tracked group. These results support the use of tracking and follow-up systems to promote timely rescreening compliance.

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PROFILE OF BREAST CANCER CASES IDENTIFIED IN A STATEWIDE SCREENING SURVEILLANCE SYSTEM. Mary Frances Crepeau, MA; Carole A. Chrvala, PhD; Nathan J. Mondragon, MS; William Todd, MS

The Colorado Mammography Advocacy Project (CMAP) is a statewide breast cancer (bc) screening surveillance system operated since November, 1989 by the Cancer Control Program and funded by the CDC. To date over 70,000 screenings have been reported to CMAP and more than 65,000 women are enrolled with 273 cases of detected bc. Most of the women with bc were married (62.7%), working at home (24.3%) or as a professional (24.3%), and had some post high school education (23%) or held a college degree (41.3%). Mammographic conclusions classified 40% of the cases as "abnormal indeterminate" and 52% as "suspicious for cancer". More than three-quarters of the women were recommended for a surgical consultation. Age of diagnosis ranged from 49 or younger (36.4%), 50 to 64 (31.3%), and 32.3% diagnosed at age 65 or older. Small percentages of these women had a personal history of bc (19.7%), or a first degree family history of bc (mother: 13.8%, sister: 12.6%, or daughter: 2.6%). In addition, some women reported a lump (43.4%), pain (24.8%), or nipple discharge (3.4%) as symptoms at the time of their initial screening. The treatment these women received included mastectomy (68.5%), lumpectomy (27.4%), chemotherapy (20.3%), radiation (28.6%), and hormones (21.7%). Establishing profiles of bc cases that are tracked by surveillance systems will allow researchers to assess possible relationships between screening compliance, demographic variables, risk factors, and standards of treatment for breast cancer patients.

20

VALIDATION OF MAMMOGRAPHY SELF-REPORTS. Nathan J. Mondragon, MS; Carole A. Chrvala, PhD; William Todd, MS

Estimates of mammography screening compliance rely primarily on self-report data. The accuracy of such data however, has not been thoroughly evaluated. Mammography self-report data were obtained from a telephone survey (N=1202) of participants in the Cancer Control Program's mammography surveillance system of the Colorado Department of Health. Self reports of time elapsed since last mammogram were compared to actual dates of last mammogram documented by the surveillance system. Most of the women (88%) correctly indicated the time since their last mammogram. Of the remaining 12% (N=142), 75% underestimated the amount of time since their last mammogram. Differences between women who correctly indicated the time since their last mammogram and those who incorrectly indicated this time period were analyzed. These differences included demographics, breast cancer risk factors, and screening results. This study makes a unique contribution to past validation studies of mammography self-report data by using interval scales of measurement, and a large sample of women who are participants in a statewide mammography surveillance system.

21

EFFECT OF "COACHING" ON ADAPTATION TO BREAST CANCER. Nelda Samarel, EdD, RN

The purpose of this pilot study was to test the efficacy of cancer support groups (CSGs) based on the concept of coaching on adaptation to breast cancer. It was hypothesized that the intervention would have a positive influence on adaptation, as measured by symptom distress, emotional distress, functional status, and interpersonal relationships. The sample included 64 women who were newly diagnosed with early stage breast cancer. The women were randomly assigned to a CSG with coaching, a similar CSG without coaching, and no CSG. Data were collected at the time of entry into the study (baseline) and eight weeks later, at the end of the CSGs. There were no differences among the three groups on baseline measures. MANOVA revealed an overall effect on adaptation to breast cancer, as measured by symptom distress, emotional distress, and functional status. Univariate tests indicated trends toward less symptom distress for the CSG with coaching group ($p = .09$) and greater functional status for the no CSG group ($p = .06$), but no differences in emotional distress among the groups. In addition, oneway ANOVA revealed no evidence of a difference in interpersonal relationships among the groups. A larger ($N=216$) randomized controlled clinical trial is currently in progress. It is possible that a larger sample could yield statistically significant differences among the groups. The present study findings may, however, indicate that the intervention was not sufficiently strong to produce significant differences among the groups, regardless of sample size. The information obtained will assist in planning future CSGs and other social supports for women with breast cancer. It is anticipated that a national model for breast cancer support will be generated.

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Breast Implant Follow-up Investigation. Elizabeth A. Coleman, R.N.P., Ph.D., Stephen J. Lemon, M.D., M.P.H., Brenda K. Edwards, Ph.D. National Cancer Institute, Bethesda, MD 20892.

The safety of silicone gel-filled breast implant prostheses is an urgent issue with great public interest, yet there is an incomplete description and documentation of the suspected problem. The purpose of our study is to describe the frequency of rheumatic disease symptoms and the reported diagnoses of systemic sclerosis (scleroderma), systemic lupus erythematosus, and rheumatoid arthritis in women who have had breast implant surgery and who have reported health problems to the Food and Drug Administration from 1973 to July of 1992 through the Problem Reporting Program. We conducted a telephone interview survey of this population from July through September of 1992. In addition to the rheumatic disease symptoms and diagnoses, the telephone interview elicited information regarding subject demographics, implant surgical history, local breast and implant symptoms, general medical history, medication use, confounding factors, and psychosocial history. Of 1160 eligible study subjects, 821 (71%) completed the interview. Data analysis will be finished by the end of 1992. Our study is an initial descriptive step in the evaluation of the potential adverse health effects of silicone breast implant prostheses, and it may help guide the direction of future case-control and cohort studies evaluating the safety of these medical devices.

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INTERVENTION TO DECREASE ANXIETY IN WOMEN WITH FAMILY HISTORIES OF BREAST CANCER.

Kathryn M. Kash, Ph.D., Jimmie C. Holland, M.D., Marilyn Halper, M.P.H., Gladys Rosenthal, M.S., Anthony Cahan, M.D., Lucinda Webb, A.N.P., Kathryn Hamilton, R.D.

Anxiety interfered with surveillance behaviors in women with family histories of breast cancer (1). A randomized controlled trial of support groups was conducted to increase knowledge of breast cancer risk and decrease anxiety about breast cancer. Twenty highly anxious women (ages 34 to 65) attending a surveillance program for women with family histories were randomly assigned to either the experimental or control group. Group sessions met for one and a half hours each for six weeks and followed a structured format. Baseline data found that both groups significantly overestimated their risk for developing breast cancer ($p<.02$). A significant finding after six weeks was that perceived susceptibility for breast cancer decreased ($p<.001$) in the experimental group and was not significantly different from their objective medical risk status. Women reported feeling less anxious when they found their risk for breast cancer was lower than they believed. Other findings supporting the experimental group were: 1) knowledge about breast cancer increased ($p<.005$); 2) perceived barriers to surveillance decreased ($p<.002$); and 3) perceived benefits of surveillance increased ($p<.03$). We concluded that decreasing perceived susceptibility and improving knowledge of breast cancer and health beliefs relative to breast cancer would increase adherence to surveillance.

1.Kash, K.M., et al. (1992). Psychological distress and surveillance behaviors of women with a family history of breast cancer, J Natl Cancer Inst, 84: 24-30.

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BODY DIMENSION DIFFERENCES IN MEN WITH AND WITHOUT PROSTATE CANCER. W. Demark-Wahnefried, PhD, RD, D.F. Paulson, MD, C.N. Robertson, MD, E.E. Anderson, MD, M.R. Conaway, PhD and B.K. Rimer, DrPH.

Anthropometry has been identified as a promising technique for uncovering potential risk factors for prostate cancer, since fat distribution, skeletal structure and musculature may differ between men with disease vs those without. A census of 28 men participated in a Duke University study to explore potential anthropometric biomarkers for prostate cancer. The study was limited to mentally competent, weight-stable, 60-70 year old men, with clinically confirmed, localized prostate cancer (N=14) or those where such diagnosis was excluded (N=14). Men receiving hormonal therapy or orchiectomy were excluded. The following measures were taken: standing and sitting height; weight; elbow and biacromial breadth; midarm, midarm muscle, waist, hip, and thigh circumference; and triceps and subscapular skinfold thickness. Cases had significantly greater waist/thigh circumference ratios when compared to controls ($p=0.03$), indicating a propensity for upper body fat distribution. These findings support the hypothesis that android obesity may be a risk factor for prostate cancer, like hormone-related cancers of the breast and endometrium. A difference in the sitting/standing height ratio between cases and controls ($p=0.01$) was also apparent, with cases demonstrating greater trunkal to total height. This is noteworthy, since increased trunkal height has been associated with greater testosterone levels during puberty and may be a critical event in prostate cancer pathogenesis. The fact that hormonal events may impact on the skeleton and that these skeletal differences would remain throughout adulthood and serve as a biomarker for prostate cancer is surprising and an area deserving further study.

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MAMMOGRAPHY: AN ANALYSIS OF REIMBURSEMENT AND QUALITY ASSURANCE LEGISLATION INCLUDING ACCREDITATION AND DISTRIBUTION OF UNITS. Lou Fintor, MA, MPH; Marianne Haenlein, PhD; Ruth Fischer, MHSA; Joshua Udler

As of July 1992, 42 states and the District of Columbia have passed laws requiring third-party payers to either provide coverage for screening mammography or to offer coverage as an optional benefit; all but 6 states require screening mammography Medicaid reimbursement, and the federal Medicare program authorizes reimbursement for women 65 years of age and over. These laws, along with the explosive growth in the number of dedicated mammography units, make screening mammograms much more accessible to age-eligible women. However, the laws vary greatly in addressing the quality and safety of mammography and the qualifications of the personnel performing and interpreting mammograms. This study tracks the passage of mammography reimbursement legislation in the various states and compares state laws according to the number and types of quality assurance areas addressed. States are also compared with respect to the proportion of mammography units that have received American College of Radiology (ACR) accreditation as well as the ratio of age-eligible women to units and ACR-accredited units nationwide. The legislative and accreditation trends illustrate the dynamic nature of the mammography quality assurance and reimbursement legislative efforts. An analysis of state mammography laws indicates that equipment standards and radiation protection are the quality assurance areas most often addressed. About one-third of the nation's 13,505 mammography units currently have ACR accreditation. In the four U.S. Census regions, 33% of mammography units in the South are ACR-accredited; 35% in the West; and 40% in both the North Central and Northeast regions.

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RECRUITMENT STRATEGY FOR THE NATIONAL BREAST CANCER PREVENTION TRIAL OF TAMOXIFEN: RESPONSE FROM A COHORT WITH STRONG FAMILY HISTORIES OF THE DISEASE. Marilyn Halper, MPH, Kathryn Kash, PhD, Brenda Breuer, PhD, MPH, and Michael P. Osborne, MD.

Three hundred and thirty-one women at the Strang Cancer Prevention Center, representing two groups -- one with strong family histories of breast cancer and the other without such histories -- were recruited to participate in the Breast Cancer Prevention Trial. Both groups were eligible for the trial based on the Gail model (1) and were recruited by the same method.

One hundred and seventy-eight eligible women from the family history group and 153 eligible women from the non-family history group were selected in random order, sent a letter and a fact sheet and invited to call a special tamoxifen trial number. Twenty (11.2%) from the family history group responded to the mailing while only four (2.6%) from the non-family history group responded (p=.002). Fifteen (75%) of those who responded from the family history group attended enrollment meetings. Of those attending enrollment meetings, 8 (53%) are now participating, others are still deciding. In the non- family history group who responded, 2 attended enrollment meetings, and both are participating.

A significantly higher rate of women with family histories of breast cancer responded to the recruitment mailing. However, when an eligible Strang patient from either group attended an enrollment meeting, she was likely to participate in the trial.

We conclude that women with a family history are highly motivated (2) and a productive recruitment resource for chemoprevention trials.

(1) Gail, M.H., et. al. Projecting Individualized Probabilities of Developing Breast Cancer for White Females Who are being Examined Annually. J. Natl. Cancer Inst., 81:1879-1886, 1989.

(2) Kash, K.M., et. al. Psychological Distress and Surveillance Behaviors of Women with a Family History of Breast Cancer. J. Natl. Cancer Inst., 84:24-30, 1991.

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RISK OF SMALL CELL LUNG CANCER IN WOMEN ASSOCIATED WITH SPECIFIC SMOKING HABITS. Kathryn E. Osann, Ph.D., Jan Lowery, M.P.H.

Small cell lung cancer, which occurs almost exclusively in heavy smokers, appears to be increasing in women more rapidly than in men, and faster than other lung cancer cell types in women. We are conducting a case-control study to investigate factors which may be related to an increase in risk of small cell carcinoma in female smokers. To date, 86 cases (mean age 62.3) and 204 frequency matched controls (mean age 62.6) identified by random digit dialing have been interviewed. Data collected include demographic data, medical history, family history of cancer, residential history, and smoking habits including specific brands smoked. Preliminary analysis reveals that 98% of cases reported smoking at least one cigarette per day for a year compared to 48% of controls. The relative odds (OR) associated with current or former regular use of cigarettes (current or former) is 42.5 with a 95% lower confidence limit of 10.2. Cases smoked more cigarettes per day for more years and initiated smoking at an earlier age. Cases were more likely to report that their last brand was a "light" cigarette than were smoking controls (OR=2.6, 95% confidence interval 1.3-4.9). The increase in risk associated with recent use of "light" cigarettes was not entirely explained by differences between cases and controls with respect to amount or duration of smoking or years since quitting. While the amount and duration of smoking are the most important predictors of risk for small cell carcinoma of the lung, preliminary data analysis in this study suggests that type of cigarette smoked may also contribute to risk.

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PHYSICIAN STRESS AND WILLINGNESS TO REFER CANCER PATIENTS TO A TREATMENT OPTIONS EDUCATION SERVICE. Ronald E. Myers, PhD, DSW, Thomas A. Wolf, MA, Bruce Fried, PhD, Dennis Cronin, EdD

In 1991, a telephone survey was conducted with a stratified random sample of community physicians (N=147) concerning stress from uncertainty in cancer patient care and willingness to refer cancer patients to a treatment options education service (TOES). A total of 104 (71%) physicians completed the survey. The mean age of respondents was 47 years. Most were male (85%). Specialties represented among respondents included family practice (38%); internal medicine (27%); surgery (12%); obstetrics/gynecology (10%); radiology (5%); oncology (3%); gastroenterology (1%); other (6%). Physician stress from uncertainty was measured using a 6-item, 6-response category (Strongly Disagree to Strongly Agree) Likert-type scale. A low scale score indicates a low stress level. Respondent scale scores ranged from 6 to 36, with a mean of 23.6. Willingness to refer cancer patients to a TOES was measured by a "Yes" or "No" response to the following hypothetical situation, "If easy-to-use information about cancer treatment options were available and could be provided as a service in the form of printed materials plus a telephone call, would you be likely to refer your patients to receive this service?" Most respondents (76%) indicated that they would refer their cancer patients to a TOES. Physicians with a higher stress scale score were more likely to state that they would refer patients than those with a lower score (p=.021). Physician specialty was also significantly related to willingness to make the referral (p=.021). That is, willingness to refer patients varied as follows: radiology (100%), gastroenterology (100%), obstetrics/gynecology (90%), family practice medicine (89%); oncology (67%), surgery (67%), internal medicine (67%), and other (33%). These findings indicate that physicians are willing to refer cancer patients to a TOES, and that stress and specialty influence willingness to make this referral.

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CHARACTERISTICS OF WOMEN PARTICIPATING IN AN OVARIAN CANCER SCREENING PROGRAM.

Mary Daly, MD, PhD, Caryn Lerman, PhD, Tracy Heggan, MPH, Agnes Masny, RN, William Walsh, MA, Generosa Grana, MD, Kathleen Gillespie

Ovarian cancer accounts for approximately 12,500 deaths per year and two-thirds of new cases present with advanced disease. Women with a first-degree relative (FDR) with ovarian cancer have a 3 to 4-fold greater risk of developing this disease. Although ovarian cancer screening has yet to be validated, high risk women are being advised to undergo biennial screening using transvaginal/abdominal ultrasound, CA-125, and pelvic exam. We report on the baseline characteristics of 91 women who presented for ovarian cancer risk counseling. All had at least one FDR with ovarian cancer. We examined differences in screening participation, psychological status, attitudes about screening efficacy, perceived risk, anxiety and barriers. Ovarian cancer screening had already been initiated by 67%. Almost all, (92%) reported their perceived risk to be higher than that of the average woman and 86% worried within the past month about developing ovarian cancer. Women over age 40 were more likely to have begun screening (78% vs. 59%, $p = 0.06$). Perceived risk was high regardless of the number of affected FDR's, and was reflected by high screening rates for both women with one and women with >1 relative (66% vs. 70%). Only 30% believe that ovarian cancer can be cured if it is found early. The two most commonly reported barriers to screening were "not having it recommended by a physician" and "not sure if screening is effective". These data will guide the development of educational and psychosocial interventions for high risk women in ovarian cancer counseling and screening programs.

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Using a Train-the-Trainers Model: Predictors of Training and Fidelity by Trainers

Corinne Husten, MD, MPH; Marc Manley, MD, MPH

In 1989, NCI began a national program to train health care providers in a brief smoking intervention that had been shown in clinical trials to increase patient cessation rates. The goal was to train 2000 trainers who would each then teach 50 health professionals, resulting in 100,000 trained providers. Midway into the program, a CATI telephone survey of all trainers (N=1268) was conducted to determine the predictors of training, how closely the trainers adhered to the teaching protocol, and the trainers assessment of the program. The response rate was 80.6%. 525 trainers (51%) were physicians, 217 (21%) nurses, and 280 (27%) other health professionals. Physicians were significantly more likely to subsequently train other health care providers (45.9%) compared to nurses (30.0%). Trainers who had a potential target group of health professionals in mind at training were significantly more likely to conduct classes (50.8% vs 23.0%). Trainers who had a commitment from a sponsor to help them provide training were significantly more likely to teach a class (59.8% vs 32.5%). Finally, trainers who did no teaching as a part of their usual job were significantly less likely to conduct classes (26.5%) than those who taught even occasionally (44.4%), and higher teaching levels resulted in greater training rates (p for trend = .000005). Multivariate analysis suggests that having a target group and a commitment of help from a sponsor were the most significant factors in predicting subsequent training. Fidelity in the use of the training materials and teaching methods were different for physician trainers vs nurse trainers.

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RACIAL DIFFERENCES IN PROSTATE CANCER RISK AWARENESS AND SCREENING BEHAVIOR. Electra D. Paskett, Ph.D., Evan Sands, M.S., Cecilia DeGraffinreid, M.S.

Prostate cancer is the second leading incident cancer in men in the United States behind lung cancer. Effective screening modalities, digital rectal exams (DRE) and Prostate Specific Antigen (PSA) tests to screen for prostate cancer have not been validated; however, each year thousands of men receive screening exams either from physicians as a part of routine check-ups or yearly at nationally-sponsored prostate cancer screening clinics. In 1991, 910 men, 77%, (701) white and 23% (209) African-American, participated in a free prostate cancer screening clinic in Winston-Salem, NC. All men completed a short questionnaire about prostate cancer knowledge, attitudes and practices. African-American men were less likely to know that they were at increased risk for prostate cancer ($p < .001$) and less likely to have had a physician discuss prostate cancer screening ($p = .02$). After adjusting for knowledge and attitude variables, insurance status and demographic variables, no significant racial differences in having had a DRE in the last year were observed. In addition, no racial differences were observed in attitudes related to prostate cancer screening. Although this study was conducted in a highly motivated and self-selected population, these findings have implications for educational efforts about prostate cancer screening, especially among men at high risk for this cancer.

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MEASURING AND ENHANCING RECRUITMENT AND ADHERENCE IN CHEMOPREVENTION TRIALS.

Robert M. Chamberlain, Ph.D., The University of Texas M.D. Anderson Cancer Center

Because of the large number of subjects in chemoprevention trials, underaccrual and attrition can be extremely costly, both scientifically and monetarily. Strategies to maximize recruitment and adherence have been developed in a chemoprevention trial to prevent second primary tumors in the head and neck with low dose 13-cRA.* A recruitment algorithm provides a guideline for identifying potentially eligible former patients as well as current patients who may later qualify. A tracking method is used to follow eligibility and eventual accrual. This method will enable the investigators to estimate recruitment yield from various sources: tumor registries, current patient lists, and physician referrals. Recruitment tools include: recruitment letters and brochures for former patients, a letter to referring physicians, and a telephone script with guidelines for answering questions from potentially eligible former patients.

Once accrued to the trial, measurement of four aspects of performance is used to improve adherence. A five point rating scale of performance is used to measure: 1) pill-taking, 2) calendar keeping, 3) clinic appointment keeping and 4) lab samples. A low performance rating in any aspect of adherence indicates counseling by a nurse or physician. The counseling intervention is brief and directed at improving the specific deficiency, tempered with support for high performance of other adherence tasks.

*NCI grant CA52051
Waun Ki Hong, M.D., Principal Investigator

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THE DESIGN AND IMPLEMENTATION OF A COMPUTERIZED QUESTIONNAIRE FOR A MAMMOGRAPHY PROGRAM IN A LARGE MULTI-SPECIALTY PRACTICE. VM Heckel,MPH, GL Jackson,MD, PM Conoley, MD.

We describe our experience in the design and implementation of a questionnaire that can be electronically scanned. It is administered to all women undergoing mammography in the radiology department of a large multi-specialty clinic. The design phase included multiple pilot tests to determine the format which would provide the most accurate and reliable collection of data. Testing was done to ensure the accuracy of the data being scanned. Information collected includes patient demographics, personal risk factors for breast cancer including family history, parity, and menopause as well as current and past breast problem areas. The radiologist uses pertinent data to aid in the interpretation of the films. Additional data collected allows us to 1)provide an accurate description of the population receiving mammography and 2)identify individuals who may be appropriate for specific research protocols in the which we are participating. In the three and one-half years since implementation we have scanned 33,700 questionnaires. We recently used this data to aid us in responding to a request for proposals for a federally funded chemo-prevention trial by identifying women whose risk factors for breast cancer make them eligible for such a clinical trial. We have also identified women who do not practice BSE on a monthly basis (68% of those undergoing mammography) as a target for a BSE education campaign. We believe our experience can provide direction for other institutions undertaking similar computerization activities. We will share aggregate data from ~~our mammography database.~~

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PSYCHOSOCIAL AND FACILITATING FACTORS AS PREDICTORS FOR INTENTION TO OBTAIN AND OBTAINING COLORECTAL SCREENING. Susan A. Fontana, Linda J. Baumann, Roger L. Brown, Robin Bechhofer & Richard R. Love

Using logistic regression, we tested two models for sigmoidoscopy and fecal occult blood testing (FOBT): one predicting intention, the other predicting behavior. The variables entered into this model were derived from the Triandis Model of Choice. This model suggests that intention to act is comprised of social influences [SI], affect [A], perceived consequences [C] and facilitating factors [FC], operationalized as barriers such as transportation, cost, and knowing when to obtain screening. Sigmoidoscopy or FOBT behavior was based on self-report over a 3 year period. One item asked about intention to obtain screening in the next 2 years. The sample consisted of 3946 male and female patients 50-65 years old.

Findings show that 57% of sigmoidoscopy intention was predicted by SI and FC (-2 log likelihood ratio, X^2=153, df=2, p<.001) and 63% of FOBT intention was predicted by SI, FC, and C (-2 log likelihood ratio, X^2=415, df=3, p<.001). SI, intention, and FC correctly predicted persons who obtained sigmoidoscopy 70% of the time (-2 log likelihood ratio, X^2=.598, df=3, p<.001), while persons who obtained FOBT were predicted correctly 80% of the time by intention, SI, C, and FC (-2 log likelihood ratio, X^2=1223, df=3, p<.001). Results show the value of incorporating these factors into interventions designed to enhance colorectal screening in older persons.

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ADP-RIBOSYL TRANSFERASE (ADPRT) ACTIVITY, ACTINIC KERATOSIS (AK), AND NONMELANOMA SKIN CANCER (NMSC). Suzanne Narce-Valente, MD; Marianne B. Powell, PhD; Alison Culling-Berglund, MS; Brenda Cartmel, PhD; David S. Alberts, MD

UV light exposure and concomitant DNA damage are considered important events in the pathogenesis of NMSCs. Defective DNA repair has been implicated in other epithelial malignancies, with decreased ADPRT activity (a measure of DNA repair) in subjects with breast and lung cancer and with precancerous conditions such as adenomatous polyps. The present case-control study compared ADPRT activity in subjects with multiple NMSCs and age-matched AK subjects and controls (n=98). ADPRT activity in peripheral mononuclear leukocytes was compared at **baseline** and after stimulation (H_2O_2-induced DNA strand breaks, **activated**). The stimulation index **(SI)** was defined as activated/baseline activity.

Preliminary analysis revealed no significant differences in the mean values of ADPRT activity (baseline, activated, and SI activity) between the 3 subject groups. Multivariate analysis of personal factors thought to influence interindividual variation in the SI were examined including age, gender, height, weight, BMI, pulse, number and type of NMSC, estrogen use, and family history of cancer. Of these factors, only height showed an independent negative association with SI (p=.001). No significant associations were found with baseline and activated values. These results differ considerably from results of previous ADPRT studies on other epithelial cancers and indicate that ADPRT activity may not be a suitable measure of NMSC risk.

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DIET AND LEUKEMIA: AN ANALYSIS OF INTERNATIONAL DATA

Stephen Hursting, Barry Margolin and Boyd Switzer. NCI, Bethesda, MD 20892 and UNC, Chapel Hill, NC 27599.

Purpose: Statistical analyses of international food supply data and leukemia incidence data were performed to better define the diet-human leukemia relationship.
Methods: Incidence data for lymphoid, myeloid and total leukemia from 24 countries were regressed with estimates of per capita disappearance of macronutrients and alcohol, as well as gross national product (GNP) and average height.
Results: The strongest simple correlations were found between total calorie intake and both lymphoid and total leukemia. Fat, protein, alcohol and height also correlated with lymphoid and total leukemia incidence. Total calorie supply was the only significant explanatory variable for the international variation in lymphoid and total leukemia in multiple regression analyses, with all models adjusted for GNP, height, and dietary covariates. No significant association was observed between myeloid leukemia and any of the dietary variables studied, after adjusting for height and GNP.
Conclusion: The findings from this analysis of international data strengthen the hypothesis based on previous simple correlation analyses and animal experiments that an underlying biological relationship exists between diet, particularly energy intake, and international variations in the incidence of human leukemia.

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IS VIGOROUS PHYSICAL ACTIVITY IN YOUNG ADULTHOOD PROTECTIVE AGAINST COLON CANCER IN WOMEN? PM Marcus, PA Newcomb. (University of Wisconsin Comprehensive Cancer Center)

Frequency of vigorous activity during ages 14-22 was ascertained from 548 women with newly reported diagnoses of colon cancer and 2277 controls randomly selected from Wisconsin driver's license and Medicare beneficiary lists. Thirty-six percent of controls reported vigorous activity, as did 33% of cases. After adjusting for age, family history of large bowel cancer and history of screening sigmoidoscopy, no significant protective effect was observed for women with any physical activity during young adulthood vs. women with no activity (odds ratio (OR): 1.00, 95% confidence interval (CI): .77, 1.19); no effect was seen for women in the highest tertile of activity (OR: .94, CI: .69, 1.29) or for women who were active at least once a week for all eight years (OR: .70 CI: .38, 1.30). Risk did not decrease significantly with increased activity. These data suggest that vigorous activity during ages 14-22 does not confer the similar protective effect against colon cancer that is seen for recent vigorous activity.

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CHANGE IN SERUM CHOLESTEROL LEVEL WITH OCCULT CANCER IN AN ELDERLY POPULATION. Miriam Campbell, PhD, MPH, Trudy L. Bush, PhD, MHS, and William E. Hale, MD

Although higher cholesterol is expected to increase the risk of cardiovascular mortality linearly, research has shown a J-shaped curve of cholesterol and CVD mortality. It has been hypothesized that those at the lower tail reflect CVD decedents with occult cancer. This study examined the hypothesis that preclinical cancer is associated with a decline in serum cholesterol in a population of ambulatory, community-based elders aged 65 or older who participate in a program of free annual medical screenings. There were 25 cases of primary cancer reported in year 10 or 11 to the 896 individuals who were cancer-free through the ninth year of participation. Controls were 496 individuals who participated and were cancer-free through year 11. A simple autoregressive model was applied in which serum cholesterol measured in a single reading in year 5 was regressed on serum cholesterol measured in year 2, primary cancer diagnosed in year 9 or 10 (a surrogate for occult cancer at visit 2), and other covariates. Separate regressions for eight anatomical sites were highly negative throughout but did not attain statistical significance due to low numbers. The model suggests that preclinical cancer may reduce serum cholesterol levels by 8 to 38 mg/dL within three years.

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IMPROVED DETECTION OF HEMATURIA IN AN INDUSTRIAL POPULATION EXPOSED TO BLADDER CARCINOGENS.

Thomas J. Mason, Ph.D., William P. Walsh, M.A., William J. Vogler, P.A., Kathleen Lee, R.N., Clara Hwang, M.S.

This screening study has evaluated a home self-testing protocol for microscopic hematuria as a method for early detection of treatable urologic conditions among chemical workers potentially exposed to two known or two suspected bladder carcinogens.

A total of 939 employees of the DuPont Chambers Works has enrolled in this study. Every six months, subjects have tested their urine at home for the presence of blood for 14 consecutive days using the Ames Hemastix®. Self-testing was compared to standard laboratory urinalysis involving microscopic examination of the urinary sediment for erythrocytes and urine cytology testing. Compliance with this study has been high: over 92% complied with dipstick self-testing in any given screening period. Two hundred eighty subjects have been found to have hematuria or abnormal cytology following 9 screening periods. The Hemastix ® test has uncovered hematuria in almost twice as many subjects than has been found with laboratory urinalysis alone. Two new cases and one recurrent case of transitional cell carcinoma of the bladder have been discovered by this screening program. Other serious urologic conditions that have been found include: prostatitis/BPH (24 cases), cystitis (16), calculi (10), UTI (5), and dysplasia (2).

These results demonstrate that this self-testing screening protocol is acceptable to an industrial population and appears to be more effective in screening for serious urologic diseases than more costly laboratory urinalyses.

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COMPARISON OF BENIGN NEVI AS A RISK FACTOR FOR SQUAMOUS CELL CARCINOMA AND MELANOMA: SOUTHEASTERN ARIZONA HEALTH STUDY.

Robin B. Harris, Ph.D., Thomas E. Moon, Ph.D.

The Southeastern Arizona Health Study is a population-based case-control study to evaluate skin cancer risk factors. Studies show benign nevi or moles as a potent risk factor for malignant melanoma (MEL), with little known of the relationship between nevi count and other skin cancers. Cases were randomly selected, in 1987 -1992, from the Rapid Reporting System of residents with pathologically confirmed first diagnosis of squamous cell carcinoma (SCC) or MEL. Controls were selected by random digit dialing, frequency matched to cases by gender and age category. All were white, Anglo residents, between ages of 18-80 years,with in-person interview. Nevi frequency was determined by self-report and interviewer count of both arms for large (>5mm) and palpable nevi and freckles. There were 541 SCC cases, 232 MEL, and 737 controls. Adjusted for age, gender, skin type, eye and hair color, the odds ratio (OR) for self-report of >50 moles on the body compared to no moles for MEL was 7.1 (95% confidence limits, 2.9-17.1). The OR for SCC was 1.2 (.48-3.2). ORs for interviewer count were reduced for both SCC (OR=1.7) and MEL (OR= 1.9), perhaps due to the addition of large freckles into total arm count. These initial findings confirm that increased nevi count is associated with increased MEL risk. However, they suggest there is no relationship between nevi frequency and SCC.

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Evaluation of a Middle-School Curriculum for Improving Skin Cancer Prevention. Mary Buller, MA, David Buller, PhD, Lois Loescher, MS, RN. The Arizona Cancer Center.

U.S. skin cancer rates are increasing (1). Instilling preventive behavior in young children is essential to prevent overexposure during childhood. The effectiveness of a curriculum for increasing knowledge and skills, creating supportive attitudes, and engendering a supportive environment in order to enhance skin cancer prevention (2) was tested on one-hundred thirty-nine students in grades 4-6. One class in each grade was randomly assigned to treatment (curriculum) and another to control. The curriculum substantially increased knowledge of the relationship between sun exposure, skin cancer, and prevention immediately and eight weeks later, across all grade levels. It also cultivated less favorable attitudes toward tanning and, among fourth-graders, initially reduced unfavorable attitudes toward sunscreen use. Changes in preventive behavior were less consistently evident, with students reporting less frequently laying out in the sun to tan, fourth-graders more frequently using sunscreen, and fifth- and sixth-graders more frequently wearing sun-protective clothing during the summer compared to control students. The curriculum was most effective at influencing knowledge and attitudes and less effective at changing actual behavior, highlighting the need to include student- and parent-oriented cues to action.

1. Cancer facts and figures, 1992. Atlanta: American Cancer Society.
2. Buller DB, Buller MK. Approaches to communicating preventive behaviors. Sem Oncol Nurs 7:53-63, 1991.

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THE RELATIONSHIP BETWEEN DIET AND MELANOMA IN ARIZONA. Amr Soliman, Thomas Moon, Cheryl Ritenbaugh

Dietary intake for 261 cutaneous malignant melanoma cases were compared with 612 controls. Cases and controls were 18 to 80 years old at the time of the study. Cases were recruited from Pima, Santa Cruz, and Cochise, Arizona from December 1989 to January 1992. Controls were selected from the general population using the random digit dialing method from the same neighbourhoods of cases at the same time period. Average weekly consumption of 114 food items, during the year preceding the study, was estimated using semiquantitative food frequency questionnaire. Food groups that may relate to melanoma were created and examined. Unconditional logistic regression models revealed a positive trend toward increased risk of malignant melanoma with increased consumption of total meat, red meat, baked or broiled chicken and fish in males. Male cases also consumed more cruciferous vegetables, string beans, carrots, and broccoli than controls. Moderate alcohol intake was associated with increased risk of melanoma in males and females. No significant difference was observed for the consumption of pies, cakes, or foods rich in polyunsaturated fat. The characteristic diet shown for males, in this study, was not related to vitamin intake or the time period between diagnosis and enrollment into the study. No food items or groups could be concluded to be related to melanoma in this study.

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Breast and Cervical Cancer Screening Knowledge and Utilization as an Entry Point for a Community-Based Prevention Program Among Rural Arizonans.

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Prevention Centers provide a scientific basis for disease prevention and assure linkages to state and local health agencies in communities at risk. The knowledge, attitudes, risk factors and utilization of breast and cervical cancer screening was determined by in-person interview of women residents of Pinal County Arizona. The population-based random sample of 509 women, at least age 40, from Coolidge and Eloy, Arizona, included 51% Hispanic, 36% Anglo and 13% African American, Native American and other ethnic/ race groups. Community outreach included informing each City Council and community organizations of the goals and methods of study, providing new releases to print media, distribution of posters in key community location, and personal mailings to every randomly selected household. Women interviewed represented 89% of all eligible subjects identified, with a refusal rate of 11% in both study communities. The presentation will compare utilization of breast and cervical cancer screening among the rural population by sociodemographic, ethnic group, risk factor, knowledge and attitudes. A particularly significant finding was the fact that lack of knowledge, no need, and lack of physician referral were the most commonly mentioned reasons for not being screened. The process, impact and outcome evaluation plan for the development of curriculum to train community peer health educators who deliver a health education intervention will also be described.

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THE EFFECT OF LONG TERM VITAMIN A INTAKE ON BLOOD PARAMETERS.

Brenda Cartmel Ph.D., Norman Levine M.D. and Thomas E. Moon Ph.D.

In the testing of chemopreventive agents one facet which must be explored is the benefit to risk ratio of the agent. Chemopreventive agents may cause overt toxicities or subtle shifts in the blood chemistries in the population. Changes in blood parameters over time and between interventions (Vitamin A vs. placebo) over time were examined. In a study of the efficacy of vitamin A in the prevention of first skin cancer, blood samples were taken at accrual (3 months prior to randomization), 1 month following randomization and annually thereafter. Only subjects who had a blood parameter measured at each of the time points through 49 months after randomization are included in this analysis (n>1000). Analysis was by multiple regression. Hemoglobin (HGB), Cholesterol (CHOL), Red Blood Cells (RBC), White Blood Cells (WBC) and SGOT levels decreased significantly over time, in contrast SGPT and Alkaline Phosphatase levels increased significantly over time. HGB, CHOL, RBC and SGOT had a significantly greater decrease over time in the placebo compared to the retinol group. ALKP had a significantly greater increase over time in the retinol compared to the placebo group.

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DOES THE HEALTH BEHAVIOR QUESTIONNAIRE DISCRIMINATE BETWEEN ADHERERS AND NON-ADHERERS IN A CHEMOPREVENTION STUDY?

Lee Sennott-Miller, Ph.D., R.N. and Lisa Giordano, M.A.

The purpose of the study was to test the ability of the Health Behavior in Cancer Prevention Model (HBCP), as operationalized by the Health Behavior Questionnaire (HBQ), to discriminate between adherers and non-adherers in a large field colon cancer chemoprevention study. In this double-blind, randomized trial, participants consume either 13.5 grams of fiber supplement, or a placebo, daily for up to 5 years. Those whose adherence (consumption of the supplement) is marginal (<75%) or poor (<50%) are given a short-form HBQ and counseled on the variables that are identified as problematic. For this study, a nested case control design was incorporated into the larger trial. Cases were 42 marginal or poor adherers who had completed HBQs and received an intervention. Controls were 81 good adherers matched with cases on sex and time of entrance into the clinical trial who also completed HBQs. Preliminary analysis found no significant differences between adherers and non-adherers on any of the HBCP variables using one-tailed t tests of difference of means. Although further analyses are being conducted, it appears that the HBQ does not discriminate adequately between adherers and non-adherers to be useful as a predictive tool for non-adherence.

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CAN ATTITUDES AND BELIEFS BE USED TO TARGET ADHERENCE INTERVENTIONS IN CANCER PREVENTION TRIALS?

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This study sought to determine if psychosocial indicators could predict the actual reasons for non-adherence in chemoprevention trials. Participants in a large Colon Cancer Prevention field trial completed a Health Behavior Questionnaire (HBQ) if their adherence was less than 75% for the previous assessment, and there was no presence of physiological toxicities or medical conditions to explain the non-adherence. The purpose of the HBQ was to assess psychosocial variables predicted to affect adherence. A profile summarizing the results of the HBQ was generated immediately upon completion of the assessment. The nurse interveners used the profile as a "tool" for targeting the adherence interventions. Any variable scores greater than one standard deviation away from a normative score that was generated on a demographically similar population of healthy adults, were starred as being the ones that should be targeted for intervention. Nurses documented the interventions and indicated which HBQ variables were validated as being genuinely related to the reason for non-adherence as determined by in-depth interview with the participant. Data gathered on 52 subjects indicated that the HBQ variables were validated as being relevant in 53% of the cases. This result is not sufficient to recommend an approach for targeting adherence interventions based on assessing health related attitudes and beliefs. Alternatives for targeting interventions include using an approach that reduces difficulties, and identifying methods to increase personal efficacy.

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MAMMOGRAPHY QUALITY ASSURANCE ACTIVITIES IN THE CLINICAL SETTING

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From 1987 to 1990, the percentage of women over age 40 having screening mammograms rose from 17% to 33%. This increased utilization has been accompanied by governmental concerns over radiation exposure, public doubts about accuracy of x-ray interpretation, and medico-legal questions about follow-up and evaluation of positive and normal mammograms. Mammography quality assurance (QA) activities are examined using data from the NCI's 1992 National Survey of Mammography Facilities. This is the largest, nationally representative study of mamography facilities. Of the 1165 eligible facilities, 1057 (90.7%) completed the survey.

Results: As of 4/92, 492 (45.6%) facilities were accredited by the American College of Radiology. 3183 of 3330 radiation technologists (95.6%) were certified by the American Registry of Radiation Technologists. 4102 of 4211 radiologists (97.4%) were American Board of Radiology certified. Of the 1047 facilities with on-site film processors, 383 (36.6%) were dedicated. 975 (92.2%) reported at least annual inspection by radiation physicists; they inspected 88.8%-91.5% of 5 surveyed items. Mammograms were double read in 95 facilities(9%). 544 facilities (51.5%) had patient follow-up tracking systems. Clinical outcomes for abnormal mammograms were requested in 899 (85.1%) facilities, but only received consistently by 286 (31.8%).

Conclusions: Levels of QA activities are variable. Inspection and personnel credentialing are high. Processing, interpretation, and clinical outcomes QA activities are areas for improvement in order to attain total mammography quality assurance.

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PREVALENCE OF HPV AND CERVICAL DYSPLASIA (SIL) AMONG LOW INCOME HISPANIC WOMEN. A. Giuliano, A. Schneider, M. Abdel-Nour, H. Lee, M. Carillo, M. Silva, L. Aagarawal, K. Hatch. University of Arizona, Tucson, Az 85724. Despite the magnitude of the nationwide SIL problem and the disproportionately higher rates of cervical disease among Hispanics, the etiology of the disease remains unclear. We have screened 300 low income Hispanic women attending a free County Health Department Clinic for routine care, for presence of high risk type HPV (16, 18, 31, 33, 35, 45, 51, 52, 56) infection using the Hybrid Capture Vira Type Plus DNA Assay. Subjects' ages ranged from 18-45, with a mean age of 27.4. Abnormal cytology was present in 9% of these subjects, with 50% of these being Low Grade SIL. High risk HPV infection was observed in 22% screened, with 71% of women with abnormal cytology testing positive for HPV compared with 16% of women with normal cytology testing HPV positive. Virus load was higher in women with abnormal vs normal cytology and was positively related to SIL. Although >50% of subjects reported having only 1 sexual partner, risk to HPV infection was positively related to number of sexual partners.

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Current Non-Academic Primary Care Physician - Defined Guidelines for Cancer Prevention Counselling and Screening in 50-65 Year Old Adults. James E. Davis, Richard R. Love, Roger L. Brown, Robin Bechhofer, Susan A. Fontana, Louis A. Sanner, and Linda J. Baumann. University of Wisconsin, Madison, WI 53792.

National organizations and professional societies have promulgated conflicting guidelines or standards for periodic adult preventive services. Several authors suggest that such guidelines have limited roles in changing physician practices and that local non-academic primary physician definition of standards may better reflect true consensus of what is feasible and appropriate in routine medical practice. One hundred and sixty-seven primary physicians in 42 upper midwest group practices answered a questionnaire about their recommendations for health maintenance services for 50-65 year old patients. They were participating in a randomized clinical trial designed to improve preventive services as part of which summary patient reports and medical record audits of health maintenance services would be given to them.

Percentage of MD's recommending at frequency of

	annual	every 2 years	every 3-5 years
Periodic Health Exam	60%	14%	7%
Mammography	85%	8%	-
Breast Exam	93%	-	-
Pap Test	60%	18%	10%
"Hemoccult" test	90%	2%	1%
Sigmoidoscopy	-	5%	64%
Digital Rectal Exam	81%	4%	1%
Smoking Status	62%	8%	-

Because local consensus about standards of care is likely to most accurately reflect what is possible, these data can be interpreted to suggest the currently achievable optimal levels of performance for these services in routine medical practice.

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