

March 19–21,
1990

AS
PO

*American Society of
Preventive Oncology*

14th Annual Meeting

Hyatt Regency-Bethesda
Bethesda, MD

PROGRAM AND
SELECTED PAPERS

14th Annual Meeting of the
American Society of Preventive Oncology
March 19-21, 1990

Hyatt Regency
Bethesda, Maryland

Program Chairpersons:

Thomas Moon, PhD
Ross Prentice, PhD
Margaret Spitz, MD

Sponsored by:

American Society of Preventive Oncology, a
conference grant from National Institute of
Health/National Cancer Institute, Coca-Cola
Company, Hoffmann-LaRoche, Inc., Merrell
Dow Research Institute, Shell Oil Company
and Wyeth-Ayerst Research

MASTER AGENDA

Monday, March 19

MORNING

Registration

7:30 am - 6:00 pm

Welcome

8:15 am - 9:00 am

Poster session

9:00 am - 5:00 pm

**Symposium: Hormones
and Cancer**

9:00 am - 11:30 am

Presented Papers

11:30 am - 12:30 pm

AFTERNOON

Round-table Luncheon

12:30 pm - 2:00 pm

**Symposium: Squamous
Cell Cancers :
Similarities and
Contrasts of Etiology
and Prevention**

2:15 pm - 5:00 pm

EVENING

Business Meeting

5:00 pm - 6:00 pm

Reception

6:30 pm - 7:30 pm

Banquet:

**Speaker: Samuel Broder,
Director, National
Cancer Institute**

7:30 pm - 10:00 pm

Tuesday, March 20

MORNING

Registration

7:30 am - 5:30 pm

Poster Session

9:00 am - 5:00 pm

Distinguished

Achievement Award:

Saxon Graham, PhD

**"Nutrition in the
Prevention of Cancer"**

8:00 am - 8:30 am

Symposium: U.S.

**Tobacco Products: An
International Perspective**

8:45 am - 11:30 am

Presented Papers

11:30 am - 12:30 pm

AFTERNOON

Round-table Luncheon

12:30 - 2:00

**Symposium: Barriers to
Primary Care Physicians
and Cancer Prevention**

2:15 pm - 5:00 pm

Wednesday, March 21

MORNING

Registration

7:30 am - 8:00

Welcome

8:00 am

**Symposium: Status
Report on Cancer
Prevention Research**

8:45 am - 12:00 pm

AFTERNOON

**Roundtable Lunch
Discussion**

12:00 pm - 1:30 pm

Presented Papers

1:30 pm - 5:00 pm

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 and Council members listed below are interested in hearing from prospective and current members.

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ASPO

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David Schottenfeld, M.D., 1988-89
W. Thomas London, M.D., 1989-90

The **ASPO National Office** is located at the University of Wisconsin. For information or assistance contact Carrie Fassil, Executive Secretary, 1300 University Avenue, Room 7645, Madison, WI 53706, (608)263-6919.

ANNOUNCEMENTS

MESSAGES

Contact Carrie Fassil at the ASPO registration desk if you expect or wish to leave a message.

BANQUET

If you plan to attend the banquet and have not pre-registered, contact Carrie Fassil at the ASPO registration desk as soon as possible.

SPECIAL ACKNOWLEDGEMENT

The ASPO Executive Committee offers special thanks to Drs. Thomas Moon, Margaret Spitz and Ross Prentice, program chairpersons, for their tireless efforts in arranging this meeting.

CONTINUING MEDICAL EDUCATION 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.

This program meets the criteria for 23 hours in Category 1 of the Physician's Recognition Award of the AMA.

Sponsored by: University of Arizona College of Medicine

AGENDA

Monday, March 19

7:30 am - 5:00 pm
Ballroom Foyer

REGISTRATION

9:00 am - 5:00 pm
Cartier/
Tiffany Room

POSTER SESSION

8:15 - 8:30 am
Haverford/
Baccarat Room

WELCOME

Thomas London, M.D., President, ASPO
Fox Chase Cancer Center, Philadelphia, PA

8:30 - 9:00 am

PRESIDENT'S ADDRESS: "Primary and Secondary
Prevention of Hepatocellular Carcinoma"
W. Thomas London, M.D.

9:00 - 11:45 am

SYMPOSIUM: Hormones and Cancer

Moderator: Maureen Henderson

**Reduced Serum Estrogen Levels in China and Japan: Is
this a Complete Explanation for their Low Breast Cancer
Rates?**

Malcolm Pike

**Exogenous Steroid Hormones in Relation to Cancers of
the Breast, Ovary and Endometrium**

David Thomas

AGENDA

Monday, March 19

10:00-10:15 am
(continued)

REFRESHMENT BREAK

Hormonal Changes induced by a low-fat or high fiber diet among women with cystic breast disease

David Rose

Dietary fat reduction and plasma estradiol concentration among healthy postmenopausal women

Ross Prentice

Relationships of Diet, Hormones and Cancer

Lewis Kuller, Discussant

11:30 am-12:30 pm
Haverford/
Baccarat Room

PRESENTED PAPERS

12:30 - 2:00 pm
Cabinet/
Judiciary Rooms

ROUNDTABLE LUNCH DISCUSSION

Cancers of the Female Reproductive Organs
or
Diet and Cancer

2:15 - 5:00 pm
Haverford/
Baccarat Room

SYMPOSIUM: Squamous Cell Cancers: Similarities and Contrasts of Etiology and Prevention

Moderator: Thomas Moon

Cervical Cancer and Smoking

Warren Winkelstein

Carcinogenesis in Squamous Epithelia

Pelayo Correa

AGENDA

Monday, March 19

(continued)

**Transformation of Human Epithelial Cells by
Recombinant Human Papillomavirus DNA Associated
with Cervical Cancer**

Joseph A. DiPaolo

3:30 - 3:45 pm

REFRESHMENT BREAK

Chemoprevention of Head and Neck Cancer

Waun Ki Hong

Discussion

Thomas Moon

5:00 - 6:00 pm

**Haverford/
Baccarat Room**

BUSINESS MEETING

6:30 - 7:30 pm

Ballroom Foyer

RECEPTION

7:30 - 10:00 pm

**Waterford/
Lalique Room**

BANQUET

Speaker: Samuel Broder, Director, National Cancer Institute

AGENDA

Tuesday, March 20

7:30 am - 5:00 pm
Ballroom Foyer

REGISTRATION

9:00 am - 5:00 pm
**Cartier/
Tiffany Room**

POSTER SESSION

8:00 - 8:30 am
**Haverford/
Baccarat Room**

DISTINGUISHED ACHIEVEMENT AWARD

Presentation: *W. Thomas London*

Awardee Address: *Saxon Graham*

"Nutrition in the Prevention of Cancer"

8:45 - 11:30 am
**Haverford/
Baccarat Room**

**SYMPOSIUM: U.S. Tobacco Products: An
International Perspective**

**Introduction: Worldwide Trends in Lung Cancer
Mortality**

Moderator: *Virginia Ernster*

International Advertising of U.S. Cigarettes
Ronald M. Davis

U.S. Trade Policy and Related Congressional Activities
Chet Atkins

**The American Cancer Society's Global Plan and Global
Link**
Michael Pertschuk

10:00 - 10:15 am

REFRESHMENT BREAK

**China and Tobacco: Present Consumption and Predicted
Mortality**
Richard Bumgarner

Discussant
William Tipping

AGENDA

Tuesday, March 20

11:30 am-12:30 pm

PRESENTED PAPERS

12:30 - 2:00 pm

Cabinet/

Judiciary Room

ROUNDTABLE LUNCH DISCUSSION

Tobacco-related Cancers

(12:30 - 1:30 pm)

or

Chemoprevention Trials

(1:00 - 2:00 pm)

2:30 - 5:00 pm

Haverford/

Baccarat Room

SYMPOSIUM: Barriers to Primary Care Physicians and Cancer Prevention

Moderator: James E. Davis

Predictors of Physician Prevention Activity

Daniel E. Montano

Assessing Preventive Services Provided in Primary Care: Evaluation Lessons from the Cancer Prevention in Community Practice Project

Allen J. Dietrich

Measurement of Physician Performance: Validity and Reliability Using Multiple Methods

James E. Davis

3:30 - 3:45 pm

REFRESHMENT BREAK

Reminder Interventions to Improve Delivery of Prevention Services

Stephen J. McPhee

Summary Reaction and Discussion

Robert A. Fried

AGENDA

Wednesday, March 21

8:00 am-8:30 am

WELCOME AND INTRODUCTORY COMMENTS

8:45 am- 12:00 pm
Haverford/
Baccarat Room

**Symposium: Status Report on Cancer Prevention
Research**

Progress in Cancer Prevention Research
Peter Greenwald

Cooperative Group Studies
E. Robert Greenberg

**Population Based Cancer Prevention Research Units in
Academia: The Yale Experience**
Dwight T. Janerich

**Local Community Studies of Cancer Prevention and
Control**
Ellen Gritz

Discussant
Maureen Henderson

12:00 - 1:30 pm

ROUNDTABLE LUNCH DISCUSSION

1:30 - 4:30

CONTRIBUTED PAPERS SESSION

4:30 PM

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Primary And Secondary Prevention Of Hepatocellular Carcinoma.
W. Thomas London, M.D.

Worldwide, primary hepatocellular carcinoma (PHC) is one of the three most common causes of cancer mortality. In large parts of Asia and Africa PHC has the highest incidence of all tumors. Chronic infection with the hepatitis B virus (HBV) is associated with, and probably the cause of, 80% of these cancers. Assuming that prevention of infection with HBV will prevent PHC, immunization of populations against HBV should, eventually, greatly reduce the incidence of PHC. This hypothesis is being tested in a randomized, clinical trial in The Gambia.

Secondary prevention requires detection of PHCs when they are small, asymptomatic tumors. Monitoring of HBV carriers at six month intervals for elevation of alpha-fetoprotein (AFP) levels or with ultrasonography of the liver may detect 75% of such tumors. Most metropolitan areas in the United States have significant sized migrant populations from east Asian countries. For example, about 150,000 Asians live in Philadelphia and its surroundings. About 10% of these people are chronic carriers of HBV. Four years ago I initiated a secondary prevention program of PHC in the Asian population of the Philadelphia region. Strategies for identifying, recruiting, and monitoring HBV carriers, as well as the overall success of the program, will be discussed.

Exogenous Steroid Hormones In Relation To Cancers Of The Breast,
Ovary, And Endometrium. D. B. Thomas, M.D., Dr. P.H.

Exogenous estrogens enhance mitotic activity in the endometrium, cause adenomatous endometrial hyperplasia, and increase a woman's risk of endometrial carcinoma. Exogenous progestogens reduce mitotic activity in the endometrium and endometrial hyperplasia, retard growth of pre-existing endometrial carcinomas, and reduce risk of endometrial cancer. Estrogen replacement therapy has not unequivocally been shown to enhance risk of breast cancer, although long-term use may result in a small increment in risk, and may eliminate the protective effect of a premenopausal oophorectomy. In contrast to the endometrium, mitotic activity in the breast is maximal during the luteal phase of the menstrual cycle; and exogenous progestogens with estrogens may therefore be more likely to promote the development of breast cancer than estrogens alone. No overall increase in risk of breast cancer has been demonstrated either in women who have ever used combined oral contraceptives, or in long-term users, but there may be a small increase in risk in some subgroups of users. The addition in progestogens to estrogen replacement therapy regimens may increase risk of breast cancer. Combined oral contraceptives reduce risk of epithelial ovarian cancers. The overall risk of ovarian cancer is not altered by use of menopausal estrogens, although these estrogens may increase risk of endometroid ovarian tumors.

Hormonal Changes Induced By A Low-Fat Or High Fiber Diet Among Women With Cystic Breast Disease. D. P. Rose, M.D., Ph.D., D.Sc., M. Goldman, M.S., R.D., J. M. Connolly, B.S., L. E. Strong, M.D., F.A.C.S.

Dietary interventions designed to influence breast cancer risk, or provide a therapeutic modality in the established disease derive biological plausibility from their putative effects on circulating hormone levels. We have performed studies to separate the potential effects of fat and fiber on circulating estrogens. Premenopausal cystic breast disease patients showed a reduction in luteal phase plasma estrogen levels after 3 months on a low-fat (20% total calories) diet without modification in fiber intake; changed. In a second study, fiber consumption is being doubled while maintaining a high (approximately 36% total calories) fat supplementary wheat, oat or corn bran-containing foods. After 2 months, plasma estrone levels are significantly reduced, but only in the wheat bran supplemented women. Consistent with this result, and an effect on estrogen entero-hepatic recirculation is the observation that only the wheat bran-fed group show a reduction in fecal bacterial B-glucuronidase activity. These results indicate that to optimize the desired hormonal changes dietary manipulation should include both a reduction in fat and an increase in specified dietary fibers.

Cervical Cancer And Smoking: A Review Of Recent Studies.
Warren Winkelstein, Jr., M.D., M.P.H.

Since 1966, 26 of 33 epidemiologic studies have demonstrated an association between smoking and cervical cancer. Many of these studies were specifically designed to test the smoking-cervical cancer hypothesis, controlled for major known confounders, and showed dose response relationships. In addition, a number of studies have examined the biological plausibility of the association, demonstrating concentration of carcinogenic chemicals from smoke in cervical mucous and cellular changes in the epithelium of smokers which do not occur in nonsmokers. Neither the International Agency for Cancer Research nor the Public Health Service include cervical cancer among their designated smoking related cancers¹. In this presentation, the most recent epidemiological data as well as new findings relating reductions in Langerhans' cells in the cervical epithelium of smokers will be reviewed. Also the evidence for a recent increase in cervical cancer incidence and mortality in young American women will be presented².

REFERENCES

1. Winkelstein, W. Jr., Smoking and Cervical Cancer - Current Status: A Review and Commentary. Am J Epidemiol 1989; (In Press).
2. Winkelstein, W. Jr., Selvin, S., "Cervical Cancer in Young Americans". Lancet, I, 1385, (June 17, 1989).

Carcinogenesis in Squamous Epithelia. P. Correa, M.D.

To illustrate the carcinogenic process in squamous epithelia, 3 models are chosen: a) skin carcinoma, preceded by actinic damage; b) experimental esophageal carcinoma in sub-human primates induced with methyl nitroso urea; c) cervical carcinoma associated with infection with human papilloma viruses.

In these tissues carcinogenesis by physical and chemical agents is first detectable by morphological abnormalities in the cell differentiation, followed by excessive replication of less differentiated cells. In the infections model such steps are not discernible. Viral DNA is integrated into undifferentiated cells and virions are expressed in differentiated cells and virions are expressed in differentiated keratinocytes.

Transformation Of Human Epithelial Cells By Recombinant Human Papillomavirus DNA Associated With Cervical Cancer. J. A. DiPaolo, Ph.D.

Experimental data indicates that integrated HPV DNAs are detected in up to 90% of cervical carcinomas. However, its function is unclear because of the high percentage of asymptomatic women with HPV infections. Therefore, an in vitro model has been developed to study the interaction between HPV and normal invasive cervical cancer (16,18,31,33) and immortalized cervical cells whereas those with low or no oncogene potential (1,5,6,11) induced only small colonies that senesced. HPV-immortalized lines had from 2 to 20 integrated copies of HPV DNA per cell and expressed 1.8 and 4.2KBP HPV mRNAs and various other HPV transcripts. In one HPV18 line only transcripts from the intact E6 and E7 genes were detected, suggesting that one or both genes are responsible for immortalization. Although HPV proteins observed in cervical cancer are produced, no tumor resulted after immortal line cells were transplanted into nude mice. In carcinomas and immortal lines HPV sequences were integrated in chromosomes at fragile sites and/or near sites of proto-oncogenes. HPV can have cis effect on proto-oncogene expression, and cause cellular DNA deletions, and amplification of viral transforming genes. Sequential transfection of a HPV16-immortalized line with v-Ha-ras (often found in invasive carcinoma) results in up-regulation of P21 and squamous cell carcinomas that mimic in vivo carcinomas. Although HPV integration and its expression are insufficient for malignancy, HPV does participate in the multistep development of cancer.

Chemoprevention Of Head And Neck Cancer. W. K. Hong, M.D.

Squamous carcinoma of the head and neck is a serious public health problem throughout the world due to its increasing incidence and the difficulty in treating the disease once the tumor has developed. The natural history of squamous carcinoma from the head and neck region is believed to be a multistep process in which the epithelium passes through a sequence of stages from normal to premalignant to malignant. Patients who are rendered disease-free after surgery and/or radiation therapy are still at high-risk for recurrence and the development of second malignant tumors. The incidence of second primary tumors has ranged from 10-40% in head and neck cancer patients. Primary and second cancers of the head and neck are presumed to develop from premalignant lesions, which usually exhibit aberrant expression of squamous differentiation markers. We established the efficacy of 13-cis retinoic acid for the treatment of oral premalignant lesions, and based on that study we designed a study for the prevention of second malignant tumors in head and neck cancer patients utilizing 13-cis retinoic acid in a placebo-controlled, double-blind randomized trial. In this symposium, ongoing clinical trials for oral leukoplakia, involving biomarker evaluations as intermediate endpoints, and 13-cis retinoic acid trial for the prevention of second malignant tumors will be presented.

REFERENCES

1. Hong, W., Endicott, J., Itri, L., et al. 13-cis retinoic acid in the treatment of oral leukoplakia. N Engl J Med 315:1501-1505, 1986.
2. Lippman, S., Hong, W. Second malignant tumors in head and neck squamous cell carcinoma: The overshadowing threat for patients with early stage disease. Int J Rad Oncol Biol Phys 17:691-694, 1989.

The American Cancer Society's Global Plan And GLOBALink. M. Pertschuk.

The Venezuelan Anti-Cancer Society wants international support for its campaign against the proposed rescission of a ban on tobacco advertising. At present, mobilizing that support requires a time-consuming process of telephone calls across different time zones, faxes, telefaxes.

New technologies offer a better way. The Venezuelan smoking control advocate could initiate a strategy conference with fellow members of the network - post details of the proposal, alert them to new developments, assign roles, propose international actions -- all with immediate feedback.

ACS GLOBALink will offer the necessary infrastructure. It will link smoking control advocates worldwide in a way that will, for the first time, enable them to match the global reach of the transnationals. With a computer, a modem and access to a phone line, instant world communication will be a button-push away.

The creation of GLOBALink is the centerpiece of the ACS Global Plan -- a strategy designed to change U.S. policy from promoting the trade in tobacco to furthering world tobacco control, and to give activists worldwide the resources they need to counter the transnationals and to secure implementation of effective tobacco control strategies.

China And Tobacco: Present Consumption And Predicted Mortality.
J. R. Bumgarner, M.I.P.A.

In most parts of China and many other developing countries an "epidemiologic transition" from a pre-dominance of communicable and infective diseases to chronic, non-communicable diseases, is occurring. The processes, reasons and main risk factors are summarized. Except for cigarette smoking, China's epidemiological transition would mainly involve a growing middle aged and elderly population subject to age-specific mortality rates for chronic disease which slowly decline over time. However, present cigarette smoking patterns will induce future increases in age-specific mortality rates for a number of smoking related diseases. In addition, smoking's impact will be more severe in China, and perhaps in many other developing countries, than in the industrialized countries because prevalence and mortality rates for a number of chronic diseases adversely affected by smoking are already higher than rates in the West and are strongly associated with impoverished nutrition and living conditions. Smoking, as an added risk factor, will compound these current mortality rates to exacerbate the burden of chronic disease in the developing world. Information on Chinese smoking prevalence and cigarette production and trade are included. Age-specific projections of smoking related deaths with and without adoption of anti-smoking policies show that premature death attributable to tobacco will grow rapidly. Early adoption of preventive strategies can still avoid a substantial share of these future premature deaths.

Activities Of The American Cancer Society Related To International
Marketing Of Cigarettes. W. A. Tipping.

Changing public attitudes toward smoking have been a crucial part of the American Cancer Society's fight against tobacco use. We have long encouraged advocacy at every level of legislative and civic responsibility. Recent successes in prohibiting smoking in the workplace, public areas, eating places and on domestic airlines have caused transnational companies to increase their tobacco marketing abroad, especially in Third World countries. In a new program called Trade for Life, our goals are to counter aggressive marketing of tobacco, to end U.S. complicity in such marketing and to support anti-smoking measures in those countries. We must work to change U.S. trade export policies from promotion and subsidy, reform our aid policy to encourage farming other products and reshape health policies to include "exporting life" instead of a killing habit. We want to facilitate international information sharing through a computer network which will allow members instant access to lobbying efforts and support for leadership abroad under pressure to accept tobacco imports. We have just published a Third World Smoking Atlas with vital data on tobacco use which will be updated again next year.

Predictors Of Physician Cancer Prevention Activity. D. E. Montano, Ph.D., W. R. Phillips, M.D., M.P.H., T. DeHarport, B.S.

To improve cancer control procedure rates it is first necessary to understand physician and environmental characteristics associated with variation in rates at which primary care physicians provide cancer control procedures. An attitude-behavior model, the theory of reasoned action, was used as the theoretical framework for studying physician cancer control behavior rates. Interviews were conducted with 26 family physicians to identify beliefs, sources of influence, facilitating conditions, and critical events that may be important determinants of physicians' rates of providing 8 cancer control activities. A survey instrument was developed based upon those findings¹. That survey instrument was administered to 450 family physicians in Washington State. Sixty survey respondents were randomly selected and recruited for more intensive study involving: 1) survey of 350 patients in each physician's practice. Physician behavior rates for each cancer control activity are being computed based on physician survey self-report, patient surveys, and chart audits. Regression analyses are being conducted to identify key beliefs, attitudes, and practice characteristics that predict performance rates of each cancer control activity. Results from analysis of the physician survey will be presented as well as initial results from the patient survey and chart audit data.

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1. Montano, D. E., Manders, D. B., Phillips, W. R. "Family Physician Beliefs about Cancer Screening: Development of a Survey Instrument". Journal of Family Practice, (In Press).

Assessing Cancer Control Services Provided In Primary Care: Lessons From The Cancer Prevention In Community Practice Project. A. J. Dietrich, M.D., G. T. O'Connor, D.Sc., Ph.D., A. Keller, M.P.H., P. Carney-Gersten, M.S., R.N., D. Levy, M.P.H.

Primary care physicians contribute to the early detection and prevention of cancer¹, but rigorously assessing the frequency and quality of clinical preventive services remains a challenge. The conduct of a randomized trial of educational and operational interventions to improve the cancer control activities of 102 Vermont and New Hampshire general internists and family physicians² provided experience with multiple means of assessment including: record reviews (n=2400), patient exit questionnaires on cross-sectional random samples (n=7200), physician self-reports (n=100), and the use of standardized patient unknown to the physician (n=75 visits). Each method has strengths and limitations. For example, record review allows an accurate assessment of services that result in written reports, e.g., mammograms and Pap tests. Patient exit questionnaires determine frequency and content of patient counseling which is rarely documented in medical records. Physician self-report excels at determining opinions and perceptions of practitioners. Standardized patients³ offer the potential to collect detailed data on the clinical encounter which is unavailable by any other method, but the validity and reproducibility of this method requires further testing. Assessment of preventive services requires the optimal combination of methods based on the goals of the evaluation.

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Cancer Prevention Activities In Primary Care Practice: Physician Estimates, Patient Reports, And Reported Performance In The Medical Record. J. E. Davis, M.D., M.S., D. L. Meyer, Ph.D., J. Murray, M.S., J. Dean, B.S.N., S. E. Hamkins, M.D.

To assess the quality of cancer prevention services provided in primary care practices, we examined the validity and reliability of three methods of obtaining information on physician behavior. Physician questionnaires, medical record audits and patient questionnaires were used to determine performance of cancer screening and primary prevention activities of 17 physicians and 148 adult patients. Physician questionnaires indicated high estimates of performance, but physicians were poor estimators of their own performance for specific prevention activities based on medical record audit data. The content validity of the medical record for screening tests and procedures was reasonably good; however, primary prevention activities such as advice to quit smoking and recommendations for preventive activities were less well documented. Medical record audit and patient questionnaire data revealed both higher levels of convergent validity for tests and procedures (.74-.87 percent) than for primary prevention activities (.50-.71 percent) as well as higher reliability. Patients reported significantly more primary prevention activities than were documented in the medical record, but less than physician's self-reported behavior would indicate. These findings suggest that reliance on only one method may provide an inadequate picture of cancer prevention activities, and therefore, that a combination of methods should be used.

(Key Words: Quality of Care; Convergent Validity; Physician Behavior; Cancer Prevention and Control).

Reminder Interventions To Improve Delivery Of Prevention Services.
S. J. McPhee, M.D.

Forgetfulness is one of the major reasons that physicians perform cancer prevention activities less frequently than established guidelines recommend. To improve delivery of prevention services, reminder interventions of several types have been tested. These include approaches aimed at patients during the medical encounter ("inreach") and outside the medical setting ("outreach"). "Inreach" reminder interventions include medical record checklists and flow-sheets, nurse-initiated reminders, and mainframe- and microcomputer-generated reminders. "Inreach" reminders are directed at patients alone, at physicians alone, or at both simultaneously. "Outreach" reminder interventions include postcards and telephone calls. "Outreach" reminders are directed at patients alone. In this paper, we review the literature supporting the efficacy of such reminder strategies, including two randomized, controlled trials we have conducted. The first study tested the separate and combined effects of a physician "inreach" strategy (microcomputer-generated reminders for physicians at patients' visits) and a patient "outreach" strategy (mailed notices of overdue tests) among internal medicine residents in a university-based medical practice. The second study tested the effect of a combined "inreach" and "outreach" strategy (microcomputer-generated reminders for physicians and patients and mailed postcards for patients) among family physicians and general internists in community practice settings. The analyses suggest that physician and patient reminders are effective strategies in promoting cancer prevention activities.

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A Science Of Particulars: The Emergent Paradigm And Its Impact
On Prevention Research In Family Medicine. R. A. Fried, M.D.

Most current research on prevention in primary care conforms to Kuhn's definition¹ of normal science. A new paradigm is emerging, however, that ultimately will revolutionize society's fundamental beliefs, values, and world view.² In turn this paradigm will shape the questions scientists ask and the methods they use. Family medicine - a way of doctoring that emphasizes particulars over generalizations and context over isolation -- is an expression of that emergent paradigm,³ and clinical prevention demonstrates how changing patterns of thought and belief will transform medical practice. To understand prevention in family medicine, science must employ those methods best suited to the phenomenon under study and to the paradigm from which the behaviors of interest arise.

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a combination of methods should be used.

(Key Words: Quality of Care; Convergent Validity; Physician Behavior; Cancer Prevention and Control).

Progress In Cancer Prevention Research. P. Greenwald, M.D.,
Dr.P.H.

The National Cancer Institute's prevention research agenda for breast cancer, and the debates it has engendered, provides an important example of progress, barriers, and issues in cancer prevention research. Epidemiologic and carcinogenesis observations of the past one to two decades have led to the recognition of need for clinical trials in cancer prevention. Yet, it is difficult to achieve consensus on the appropriate mix of research approaches, and the criteria for starting expensive, large-scale intervention trials. In the diet area, epidemiologic cohort and case-control studies may be useful, but may do harm if they are not held to the same standards of quality and methodologic rigor as are clinical trials. In medical settings, work is in-progress to examine the potential benefits of 4-hydroxyphenyl retinamide in prevention of contra-lateral breast cancer, the role of anti-estrogens in breast cancer prevention, and the impact of a low fat diet on mammographic patterns. There is a strong case for including an intervention trial among healthy post menopausal women as a central element of an evaluation of the cancer prevention potential of a low fat diet. Consideration of these issues will help in the development and implementation of an intensive and balanced research program in cancer prevention.

Local Community Studies Of Cancer Prevention And Control. E. R. Gritz, M.D., M.P.H.

The Jonsson Comprehensive Cancer Center at UCLA has been conducting community-based studies in cancer prevention (smoking cessation, dietary modification) and control (cervical and breast cancer screening) since 1983. Wherever possible, a "community empowerment" model is employed, directly involving the agency, community leaders and other local institutions and professionals in the planning and development, implementation and evaluation of the intervention. Adherence has been a central research focus. Methods, difficulties and successes in developing community based studies will be identified. Smoking cessation interventions tailored to high risk groups (e.g., nurses, women, racial/ethnic minorities) have been tested, working with public and private hospitals and clinics, a large HMO, and a school district with both K-12 and adult schools.¹ Studies in cervical and breast cancer screening/early detection have been carried out: by utilizing the CIS; in a variety of public health settings; and with the Los Angeles County Department of Health Services.² The latter project, the Cancer Prevention Research Unit, seeks to mobilize resources for, and coordinate the delivery of, cancer screening services to low income women in Los Angeles County. Finally, a broad cancer prevention and control program targeted to low income Head Start families is being developed and evaluated.

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1. The Relationship of Obesity to Breast Cancer Early Detection Behaviors, Stage at Diagnosis and Disease Free Survival at Ten Years. Senie RT, PP Rosen. Centers for Disease Control, Memorial Sloan Kettering Cancer Center, 100 Clifton Road, Bldg. 1, Room 4044 C06, Atlanta, GA 30333.
2. Lipid and Lipoprotein Changes with Tamoxifen Therapy in Postmenopausal Women. Love RR, Wiebe DL, DeMets DL. University of Wisconsin Clinical Cancer Center, 1300 University Avenue - 7C, Madison, WI 53706.
3. Recent Trends in Salivary Gland Cancer: An Analysis of Registry Data. Horn PL. Northern California Cancer Center, 1420 Harbor Pkwy, Suite 260, Alameda, CA 94501.
4. Estimates of Risk for Colorectal Cancer in Those with Abnormal Measures of DNA Repair and Oxidative Stress. Roush GC, Pero RW. NYU Institute of Environmental Medicine, Laboratory of Biostatistics & Epidemiology, 341 East 25th Street, New York, NY 10016.
5. Risk Factors for Ewing's Bone Sarcoma. Holly EA, Aston DA, Ahn DK, Kristiansen JJ. Northern California Cancer Center, 1301 Soreway Road, Suite 425, Belmont, CA 94002.
6. Prospective Trial of the Miss Rate of Colonic Neoplasia During Endoscopic Examination. Fennerty MB, Hixson L, Sampliner RE, McGee D, Garewal H. VA Medical Center, 3601 S. 6th Avenue, Tucson, AZ 85723.
7. Mammography Experiences Among Whites, Blacks, and Hispanics in Los Angeles: The Importance of the Physician's Role in Understanding. Fox SA, Stein JA, Murata PJ. UCLA Division of Family Medicine, 50-071 CHS, 10833 LeConte Avenue, Los Angeles, CA 90024.
8. Implications of Abnormal Screening Mammograms. Lerman C, Rimer B, Trock B, Jepson C, Boyce A, Engstrom P.

These abstracts will be published in the journal
Preventive Medicine

The Relationship Of Obesity To Breast Cancer Early Detection Behaviors, Stage At Diagnosis And Disease Free Survival At 10 Years. R. T. Senie, Ph.D.*, P. P. Rosen, M.D.** *Centers for Disease Control **Memorial Sloan Kettering Cancer Center

Early detection, the primary strategy for reducing breast cancer mortality, has been extensively promoted. In a 10 year follow-up study of 928 breast cancer patients treated at Memorial Hospital the frequency of early detection behaviors, stage at diagnosis and disease free survival at 10 years were studied in relation to relative body weight. Compared to non-obese women (N=723), obese women (25% over optimum weight for height, N=205) were 15% less likely to report annual clinical breast exams (CBE) and periodic mammography. Obese women had a significantly greater mean tumor size than non-obese women. However, obese women with annual CBE had a mean size (2.4 cm, SD=1.5), similar to non-obese patients and significantly smaller than obese patients without yearly examinations (3.2 cm, SD=2.2). Univariate analyses indicated that obesity at diagnosis was associated with lower disease free survival (58% vs. 68%). After controlling for tumor size, obese women had a 35% greater risk of recurrence after controlling for stage of disease. Laboratory findings indicate this effect may be mediated through elevated endogenous hormone levels associated with obesity in women.

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Lipid And Lipid Protein Changes With Tamoxifen Therapy In Postmenopausal Women. R. R. Love, M.D., D. L. Wiebe, Ph.D., D. L. DeMets, Ph.D. University of Wisconsin Clinical Cancer Center, Madison, WI 53706.

Tamoxifen, the most widely used antiestrogen, can suppress the appearance of mammary carcinomas in rodent model systems, and second primary breast cancers in women. Cardiovascular disease however, is the major cause of morbidity and mortality in postmenopausal women, and therefore to pursue the possibility of giving tamoxifen to healthy women to prevent breast cancer, we have investigated effects of this agent on lipids and lipoproteins, in a double-blind placebo-controlled toxicity trial in 140 breast cancer, disease-free, postmenopausal women. By three months and continuing through one year significant falls in total and LDL cholesterol occurred (-27 mg/DL for tamoxifen-treated; $p=0.0001$ for differences between groups). Triglycerides and HDL cholesterol levels showed minor changes of borderline statistical significance. We conclude that tamoxifen exerts a favorable change at the lipid/lipoprotein profile in postmenopausal women. Whether any measurable impact on rates of cardiovascular disease might follow with longer term therapy is unknown and controversial because of limited data about benefits of such changes in women into "normal" lipid levels. These data suggest, however, that further consideration be given to testing the hypothesis that tamoxifen can prevent clinical breast cancer in postmenopausal women.

Recent Trends In Salivary Gland Cancer: An Analysis Of Registry Data. P. L. Horn, Ph.D.

The only established risk factors for salivary gland cancer are radiation exposure and a history of prior cancer, otherwise the etiology of this tumor is speculative (1-2). Beginning in 1985, a sudden and sustained increase in the incidence of salivary gland cancer was observed in the San Francisco-Oakland Area. Registry data was examined to help identify the nature of this elevated incidence and its possible association with the AIDS epidemic. Changes in the patients' characteristics were assessed by comparing recently diagnosed cases (1985-88) to an expectation based on patients diagnosed earlier (1973-84). The increased incidence was found to be confined to older males, particularly those over age 74 ($O/E=2.6$, $p<.0001$). A substantial increase was also observed among Hispanic men ($O/E=12.9$, $p<.0001$). In the recent period, several of the histologic types of salivary gland cancer occurred more frequently than expected, including non-Hodgkin's lymphomas, squamous cell and mucoepidermoid cancers. A prior history of cancer was also observed at a significantly higher than expected rate. The increased incidence was not differential by geography or marital status. Based on the observed patterns, it is unlikely that the temporal increase in these tumors is a direct result of the AIDS epidemic.

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Estimates Of Risk For Colorectal Cancer In Those With Abnormal Measures Of DNA Repair And Oxidative Stress. G. C. Roush, M.D., R. W. Pero. NYU Institute of Environmental Medicine, Laboratory of Biostatistics & Epidemiology, New York, NY 10016.

Pero and colleagues have published data on the response of mononuclear leukocytes obtained from venous blood to in vitro exposures, using an index of DNA repair, NA-AAF UDS (1-3), and a related measure involving oxidative stress, ADPRT (4,5). In this study, data were re-analyzed to compare these measures with more traditional epidemiologic risk factors for colorectal cancer. In 4 case-control comparisons (N=33+), values in the lower 10 to 15% of control ranges gave relative risks for colorectal polyps of 7 to 9+, with population attributable risks of 41% to 61% for both NA-AAF UDS and ADPRT. These values are generally higher than availability, because there is: a) elevation of risk in precursors; b) no detectable relationship to stage or presence or absence of tumor; c) abnormal NA-AAF UDS in familial polyposis coli in white cells and in cultured skin fibroblasts. After adjustment for available co-variables (e.g., age, month of phlebotomy), associations are maintained or strengthened. These measures represent important tools in research on cancer etiology and prevention.

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Risk Factors For Wing's Bone Sarcoma. E. A. Holly, Ph.D., M.P.H.,
D. A. Aston, V.M.D., M.P.H., D. K Ahn, Ph.D., J.J. Kristiansen,
M.A.

Ewing's bone sarcoma is a round cell tumor more common in males than females with a peak incidence between the ages of 10 and 20.¹ We conducted a study of 43 patients with Ewing's bone sarcoma and 193 randomly selected control subjects to determine risk factors for this disease. Mothers of subjects were interviewed regarding factors related to the immediate family, in particular medical and occupational history. Univariate results suggest that the estimated risk of Ewing's bone tumor is increased for children whose fathers worked in agricultural occupations (relative risk (RR)=7.3, $p=.001$) or construction work (RR=2.7, $p=.03$), and whose mothers took thyroid during their pregnancy with the subject (RR=4.3, $p=.04$). Additional risks were associated with the subjects' history of mumps (RR=3.0, $p=.03$) and poisoning or overdose of medication (RR=3.4, $p=.01$). Relative risk equals 2.4 ($p=.07$) for subjects who lived on or next to a farm or ranch. Multivariate analyses are currently in progress.

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Prospective Trial Of The Miss Rate Of Colonic Neoplasia During Endoscopic Examination. H. Garewal, M. B. Fennerty, L. Hixson, R. E. Sampliner, D. McGee.

The frequency with which colon polyps are missed at colonoscopy greatly influences the design and interpretation of cancer prevention studies aimed at reducing polyp occurrence and recurrence. There is little data in the literature on the miss rate of polyps with previously reported information based on retrospective trials suggesting that 10 to 30% of polyps greater than 10mm in size may be missed at a single examination. However, the clinical impression in the modern endoscopic era is that such large lesions are rarely missed. In order to better determine the miss rate in a prospective manner, a novel design involving tandem colonoscopy procedures at a single setting was employed in the present study. Endoscopies were performed by two experienced faculty gastroenterologists who alternated between first and second exams. The second examiner was blinded to the results of the first and performed the second colonoscopy immediately after completion of the first procedure.

Results: 90 unselected patients with satisfactory bowel preparations had complete colonoscopy to the cecum. 222 neoplastic polyps were detected in 69 (77%) patients. The miss rates by polyp size is shown:

<u>Polyp Size</u>	<u>#Polyps</u>	<u># Missed ("miss-rate")</u>
≤ 5mm	106	17 (16%)
6-9mm	57	7 (12%)
≥ 10mm	58	0(0%;95% C.I. 0-4.6%)

Conclusions: 1) Large (>10mm) polyps are rarely missed by experienced colonoscopists; 12-16% of smaller polyps may be missed. 2) The clinical significance of missed small polyps needs to be studied by prospective follow-up of their growth and/or regression.

Mammography Experiences Among Whites, Blacks, And Hispanics In Los Angeles: The Importance Of The Physician's Role In Underscreening. S. A. Fox, Ed.D., J. A. Stein, Ph.D., P. J. Murata, M.D.

One primary objective of this study of women aged 35+ was to identify baseline rates of mammography utilization by different ethnic/racial groups as part of a community needs assessment.¹ These data were collected as part of a 4-year NCI project to increase screening mammography rates. The design of this project is quasi-experimental pre and post with a matched comparison and two target communities. 1057 useable interviews were obtained with an 85% response rate. As expected, Whites had more mammography experience; 56% had one compared to 51% of Blacks and 27% of Hispanics.² Logistic regression analyses, performed using mammography experience as the outcome variable, determined what predicted each of the three groups getting mammograms. The most important predictor, by far, was the doctor mentioning mammography at the patient visit.³ It was concluded that although all groups had equal access to care, Whites were being screened twice as often as Hispanics because they did not receive comprehensive care in one primary setting. Physicians need to remember to provide comprehensive care for all patients regardless of the setting in which these physicians practice.

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Implications Of Abnormal Screening Mammograms. C. Lerman, Ph.D., B. Rimer, Dr.P.H., B. Trock, Ph.D., C. Jepson, Ph.D., A. Boyce, M.A., P. Engstrom, M.D.

As a consequence of more widespread use of mammography, there will be an increasing number of women who receive abnormal results on screening mammograms. The vast majority of these women will not have breast cancer.¹ This paper examines the psychological impact of abnormal screening mammograms and predictors of subsequent mammography intentions and practices. A telephone survey was conducted with 308 women aged 50 and older three months following screening mammograms. This sample included women with normal and abnormal mammograms; no respondents had breast cancer. There was a significant linear increase in psychological distress with increments in suspicion of the mammogram. Thirty percent of women with suspicious mammograms were extremely anxious; 25% of these women said that breast cancer worries affected their moods and 16% said their daily functioning was affected.

Logistic regression analyses indicated that motivation to get subsequent annual mammograms was influenced strongly by physician encouragement. Excessive breast cancer worry interfered with motivation. Preliminary prospective data indicated that 73% of women surveyed received their subsequent annual screening mammograms; 86% of abnormals and 64% of normals adhered. Multivariable models are being developed to explain mammography adherence in this population. This research has implications for the development of strategies to reduce the psychological costs of cancer screening and to promote adherence.

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2. Risk Knowledge and Perception: Relationships Over Time with Age, Health History and Mammogram Experience. Costanza ME, Zapka JG, Stoddard A, Maul L. University of Massachusetts Medical School, 55 Lake Avenue North, Worcester, MA 01655.
3. Variation of ADPRT with Physiologic Variables and Cancer Risk Factors. Roush GC, Pero RW. NYU Institute of Environmental Medicine, 341 East 25th Street, New York, NY 10016.
4. Effect of Low Dose N-3 Fatty Acids on a Pro-Oxidant Cancer Susceptibility Measure. Roush GC, Pero RW, Powell J, Halper M, Buraldi C, Webb LC, Rosenthal G, Miller DG. NYU Medical Center, Laboratory of Biostatistics & Epidemiology, 341 East 25th Street, New York, NY 10016.
5. A Computer-Generated Pedigree Plot: A Tool for Cancer Prevention Research and Cancer Control. Roush GC, Rozen R, Halper MH, Rosenthal G, Miller DG. PMI-Strang Clinic, 55 East 34th Street, New York, NY 10016.
6. Increasing Adherence in Colorectal Cancer Screening. Myers RE, Lerman C, Trock B, Wolf T. Fox Chase Cancer Center 430 (B) Rhawn Street, Philadelphia, PA 19111.
7. Tailoring a Community Intervention to the Needs of Older Adults in an Urban, Industrialized Community. Daly MB, Burke C, James J, Workman SW, Gillespie D, Balshem M, Engstrom PF. Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111.
8. Attitudes Toward Cancer Screening by Physicians in an Urban Industrial Population. Workman SW, James JM, Daly MB, Burke CA, Gillespie DE, Balshem M, Engstrom PF. Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111.
9. Determinants of Black-White Differences in Cancer-Preventive Behaviors. Jepson C, Kessler LG, Portnoy B, Gibbs T. Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111.
10. A Comparison of Serum Ferritin and Fecal Occult Blood Test for Colorectal Cancer Screening. Griffiths EK, Schapira DV. Dr. Edward K. Griffiths, 833 Milwaukee Avenue, Dunedin, FL 34698.
11. Attempts to Quit Smoking: A Comparison of Those Who Succeeded With Those Who Did Not. McGregor SE, Birdsell SE. Ms. Liz McGregor, Research Specialist, 1331 - 29th Street N.W., Calgary, Alberta T2N 4N2 CANADA.
12. Cancer Prevention Gets Connected: A Pilot Study of Cancer Risk Assessment and Advice Delivered via a Public Telecommunications System. Birdsell JM, Taenzer P, McGregor SE, Zendel I. Steve Fonyo Cancer Prevention Program, 1331 - 29th Street N.W., Calgary, Alberta T2N 4N2 CANADA.

SELECTED POSTERS

13. Does Social Network Predict Smoking Behavior? Birdsell JM, Stam HJ, McGregor SEM. Steve Fonyo Cancer Prevention Program, 1331 - 29th Street N.W., Calgary, Alberta T2N 4N2 CANADA.
14. Rural-Urban Differences in Cancer Screening Knowledge and Practices. McClish D, Nayfield SG, Desch CE. Dept. of Biostatistics, Box 32, Medical College of Virginia, Richmond, VA 23298-0032.
15. Cancer Treatment and Prevention in Rural Areas: Technology Transfer to Populations with Distance Barriers to Cancer Care. Desch CE, Smith TJ, Nayfield SG, Kane N, Simonson C. Division of Hematology/Oncology, Box 230, Medical College of Virginia, Richmond, VA 23298-0230.
16. Distance as a Barrier to Early Diagnosis and Treatment of Breast, Cervix and Colorectal Cancer. Nayfield SG, Dawson K, McClish D, Desch CE. Division of Hematology/Oncology, Box 230, Medical College of Virginia, Richmond, VA 23298-0230.
17. Developing Measures of Dietary Behaviors for Cancer Prevention. Ho EE, Lamborn K, Fujikawa M. Northern California Cancer Center, 1301 Shoreway Road, Suite 425, Belmont, CA 94002.
18. Influence of High and Low-Fat Diets on the Frequency of Menstrual Bleeding and Plasma Estrogen and Progesterone Levels of Old (13-18 Year) Female Non-Human Primates (*Macaca Nemestrina*). Cancer Prevention Research Program, 1124 Columbia Street, MP-702, Seattle, WA 98104.
19. Cancer in California. Moran EM. Long Beach V.A. Medical Center, 5901 East 7th Street, Long Beach, CA 90822.

Progress In Cancer Prevention Research. P. Greenwald, M.D.,
Dr.P.H.

The National Cancer Institute's prevention research agenda for breast cancer, and the debates it has engendered, provides an important example of progress, barriers, and issues in cancer prevention research. Epidemiologic and carcinogenesis observations of the past one to two decades have led to the recognition of need for clinical trials in cancer prevention. Yet, it is difficult to achieve consensus on the appropriate mix of research approaches, and the criteria for starting expensive, large-scale intervention trials. In the diet area, epidemiologic cohort and case-control held to the same standards of quality and methodologic rigor as are clinical trials. In medical settings, work is in-progress to examine the potential benefits of 4-hydroxyphenyl retinamide in prevention of contra-lateral breast cancer, the role of anti-estrogens in breast cancer prevention, and the impact of a low fat diet on mammographic patterns. There is a strong case for including an intervention trial among healthy postmenopausal women as a central element of an evaluation of the cancer prevention potential of a low fat diet. Consideration of these issues will help in the development and implementation of an intensive and balanced research program in cancer prevention.

A National High Risk Registry: A Model For A Collaborative Resource. D. G. Miller, M.D., M. P. Osborne, M.D.

Although several programs collect data on women at increased breast cancer risk, there is no central registry. A central or National High Risk Registry made up of women with increased breast cancer risk could be a powerful resource for genetic linkage and epidemiological studies, and chemointervention trials. PMI-Strang Clinic and Memorial Sloan Kettering Cancer Center have merged data on high risk women into a unified data base. Family history and selected risk factors are included. Criteria established for inclusion are: two first degree relatives, or one first degree, bilateral, premenopausal, or a mother, maternal grandmother with breast cancer. Genetic linkage studies have begun, selecting appropriate families from the registry, and a pilot chemointervention trial has been completed. Two more intervention trials are underway. To date, 871 women have been enrolled in the unified data base. Family history and self-reporting have been shown to be reliable through first degree relatives.¹ A validation study of enrollees is underway. Networking with other institutions is also commencing. At a time when the National Cancer Institute is increasing its emphasis on genetics and chemointervention, such a National Registry could serve cancer control goals.

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The Effect Of A Motivational Intervention On Compliance Among Women With Abnormal Pap Smears. E. D. Paskett, Ph.D., E. White, Ph.D., W. B. Carter, Ph.D., J. Chu, M.D., M.P.H.

Cervical cancer is one of the most preventable and curable cancers when detected at an early stage, but the majority of women with preinvasive cervical abnormalities do not obtain proper surveillance and prompt treatment.¹ Previous tactics used to motivate these women to return for treatment have relied on intensive recall efforts, usually too costly to be employed in usual clinic settings.^{2,3}

Using a framework based on psychological value expectancy theory,⁴ a motivational pamphlet was designed to motivate women with abnormal Pap smears to return for a repeat Pap smear. The effect of this pamphlet was tested in a randomized controlled trial. A total of 161 eligible women were randomized and received either the pamphlet plus a notification letter or just the letter. Information on sociodemographic variables, medical history and Pap smear screening behavior were obtained from these women before notification of their abnormal smear. Compliance was defined as obtaining a repeat Pap smear by the date indicated in the notification letter.

The compliance rate was 64.2% in the intervention group and 51.3% in the comparison group ($p=.10$; two-tailed). In addition, the effect of the pamphlet appeared to be modified by regular Pap smear screening frequency, current smoking status, and seatbelt usage. These results have implications for clinics desiring convenient, low-cost approaches to recall women with abnormal cervical cytology.

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Strategies For Reaching Minority Women With Education For Cervical Cancer Prevention. M. Dignan, Ph.D., R. Michielutte, Ph.D., P. Sharp, M.Ed., L. Young, Ph.D.

Effective public health education must begin. The Forsyth County Cervical Cancer Prevention Project is an NCI-funded public health education project developed to reduce mortality from cervical cancer among black women by increasing the proportion who obtain Pap smears as recommended.¹ To reach these goals, public health education messages that would be noticed, attended to, and remembered by the target population were needed. Educational messages were introduced to the target population using a variety of print and electronic media. Strategies for gaining the attention of the target population included timing distribution of materials to grocery stores to coincide with distribution of AFDC and Social Security payments, using confederates such as beauty operators to promote the project, and providing materials for churches such as fans, bookmarks and custom-printed church bulletins. Data will be presented on community distribution methods, the impact of the messages on the target population, and the evolution of messages and methods of communication.

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Cancer Of The Breast Under Age 40-Challenge In Detection Especially In Minority Black Group. C. Grossi, M.D., J. Soltani, M.D., R. Sabet, M.D., M. Rossman, M.D., C. Capello, M.A., R. Gonzales. Dept. of Surgery, LaGuardia Hospital, Queens, NY.

Review of tumor registry records 1976-1989 revealed 95 females under age 40 with breast cancer out of a total of 770 patients. The demographic composition of this HMO hospital is 35% Black. In the younger group of breast cancer, 49 were Black (51%). Over the last 5 years with increased breast examination and screening mammography, there has been an increase AJC Stage I from 29% to 41%. In 1988, breast cancer stage was 41% Stage I, 33% Stage II, 18% Stage III, 10% Stage IV. In the last year, a dedicated breast cancer program has screened over 800 mammographies/month (a 50% increase over the past year). This has resulted in earlier detection of nonpalpable cancers. However, screening is rarely offered to patients under 35 years as per national guidelines.¹ There is a need for change in screening policy; 41 patients were under age 35 and 18 of these were Black. Patients with a family history and other risk factors deserve earlier periodic examination and mammography with follow-up in a dedicated breast screening unit.

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Risk Knowledge And Perception: Relationships Over Time With Age, Health History And Mammogram Experience. M. E. Costanza, M.D., J. G. Zapka, Sc.D., A. Stoddard, Sc.D., Leila Maul, B.A.

Recent reports provide evidence of increasing adoption of mammography screening.¹ This study investigates the relationship of risk knowledge and perception of susceptibility with mammography use and changes over time. Also considered are relationships of family breast cancer and personal breast problem history. Data is presented from 3 random digit dial surveys: 196 women in spring, 1987, 118 women in fall, 1987 and 903 women in spring of 1989. data are reported for three age groups (45-49, 50-64 and 65-75 year olds). While the number of women who never had a mammogram decreased substantially, a greater proportion of women over 65 have never had one. The proportion of women who correctly knew that higher age is a risk factor went down in the third survey with 60% of the sample reporting that age makes no difference. Correct knowledge of breast cancer incidence, knowledge of family history as a risk factor and perceived susceptibility stayed fairly constant over time but were significantly lower for women over 65 years. Significance of knowledge variables to screening was inconsistent among age groups and over time. In comparison, having ever had a breast symptom and/or having a mother/sister with breast cancer were significantly related to mammography experience in all groups, over time, although less consistently in the 65+ group. Multivariate comparisons over time will be reported.

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Variation Of ADPRT With Physiologic Variables And Cancer Risk Factors. G. C. Roush, R. W. Pero. NYU Institute of Environmental Medicine, New York, NY 10016.

Adenosine diphosphate ribosyl transferase (ADPRT), an enzymatic measure of oxidative stress, is inversely related to cancer risk^{1,2}. ADPRT was regressed against many independent variables in baseline data of 47 women in a chemoprevention trial:

<u>Independent Variable</u>	<u>Coefficient (SD, p-value)</u>
Exercise (3+times/wk, y/n)	+1,373.8 (\pm 487.7, 0.007)
Vitamin A use (y/n)	+2,322.8 (\pm 1,233.9, 0.066)
Obesity (Weight/Height ²)	-83.0 (\pm 34.4, 0.020)
White blood cell count	+159.5 (\pm 78.0, 0.047)
Time of phlebotomy (9AM-2PM)	+416.8 (\pm 189.0, 0.033)
Sunbathing, past week (y/n)	+2,847.6 (\pm 880.9, 0.002)
Frequent urination (y/n)	-1,793.1 (\pm 836.5, 0.038)
Diastolic blood pressure	-70.3 (\pm 22.1, 0.003)

Exercise and vitamin A (particularly beta carotene) have been inversely related to colorectal and lung cancer respectively, and obesity is directly related to postmenopausal breast cancer (3); the signs of the coefficients for these variables are consistent with the observation that lower ADPRT is related to cancer. The 5 remaining variables might be called "physiologic". These new observations suggest two hypotheses: a) the already strong ADPRT-cancer association might become stronger after adjustment for one or more of these sources of "noise", and b) manipulation of lifestyle factors (e.g., exercise) might elevate ADPRT and hence reduce risk for cancer.

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Effect Of Low Dose N-3 Fatty Acids On A Pro-Oxidant Cancer Susceptibility Measure. G. C. Roush, R. W. Pero, J. Powell, M. Halper, C. Buraldi, L. C. Webb, G. Rosenthal, D. G. Miller. Preventive Medicine Institute-Strang Clinic, New York, NY 10016.

Lower values of adenosine diphosphate ribosyl transferase (ADPRT) in peripheral mononuclear leukocytes indicate an apparent relative risk for common cancers of 4 to 12-fold or greater and are related to pro-oxidant status. Ordinarily, oxidants are generated intracellularly by lipoxygenase and cyclooxygenase via metabolism of N-6 fatty acids common in Western diets. However, N-3 fatty acids found in fish oils might limit oxidants via competitive inhibition of these enzymes and lead to competitive inhibition of these enzymes and lead to elevation in ADPRT. Hence, the present study. After 2 baseline measures, 47 women were asked to take 6 capsules daily of either 7.2 gm of lecithin (an N-6 fatty acid) or 1.5 gm of EPA-DHA (N-3 fatty acids) and to provide 2 more ADPRT measures after 4 and 5 weeks on capsules. 45 women completed all 4 visits, and 39 gave evidence of taking 64%+ of the requested dose. After 6 weeks, in comparing the N-3 fatty acid group relative to the N-6 fatty acid group, ADPRT increased by 6.2% (SD: $\pm 11.2\%$, not significant) among all 45 women. However, for the subset of 39 women with good compliance, ADPRT increased by 20.8% (SD: $\pm 11.1\%$, 1-sided $p=0.03$). The trial suggests a "normalizing" effect of low dose N-3 fatty acids on the ADPRT measure.

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A Computer-Generated Pedigree Plot: A Tool For Cancer Prevention Research And Cancer Control. G. C. Roush, R. Rozen, M. H. Halper, G. Rosenthal, D. G. Miller. Preventive Medicine Institute-Strang Clinic, New York, NY 10016.

Establishment and follow up of those with a family history of cancer has received much attention in genetic research and for cancer control. This program is written for family history of breast cancer in offspring, sibs, parents, grandparents, aunts and uncles. Other second degree relatives are output in text format, have minimal impact on cancer risk, but may be used for pedigree studies, family counseling, and could be plotted by program adaptation. The authors developed the program because other programs known to us required either a time delay with intervention of an outside datacenter and/or use of relatively expensive and uncommon packages. Our solution uses SAS (SAS Institute, Cary, NC) and Generic CADD 3.0 (Generic Software, Inc., Redmond, WA), on IBM-compatible desk to PC. The information from several pages of family history is converted to a standard ASCII file with standard data management, and this file is converted to a second ASCII file, which can be read by CADD. The latter software is adapted to read the file and converts the data into X,Y coordinates for plotting. This is a high precision diagram not subject to distortion. It has enhanced the collection of accurate family histories, the clinical screening program, and the program of etiologic (oncogenetic) research.

Increasing Adherence In Colorectal Cancer Screening. R. E. Myers, D.S.W., C. Lerman, Ph.D., B. Trock, Ph.D., T. Wolf, M.A.

Fecal occult blood test (FOBT) returns in "total mail-out" colorectal cancer screening efforts are low (13% to 15%).¹ This study was intended to determine if FOBT returns can be increased by telephone call reinforcement² and/or provision of self-held medical records.³ Study subjects included 2,422 men and women 50-74 years of age who were members of an IPA-type health maintenance organization. Subjects were selected and assigned randomly to a control group and one of three study groups. Study interventions were delivered from April through July 1989. The control group (n=656) received: (1) a letter announcing the subsequent mailing of a screening kit that included three FPBTs; (2) the screening kit; and (3) a mailed reminder for those who do not return tests in 15 days. The first study group (n=499) received the same treatment, plus a reminder telephone call at 30 days if no tests were returned. A self-held screening booklet (the COLO-RECORD) was added to this treatment for the second study group (n=508). The second group, with the addition of a telephone call within one week of screening kit mailing. The call provided instruction in FOB testing and education on colorectal cancer screening. An overall FOBT return rate of 38% was observed at 90 days following initial test mailing. Test returns by group were as follows: Control Group-28%; Study Group 1-38%; Study Group 2-38%; Study Group 3-49%. These results show that significant increases in testing can be achieved with an instruction telephone call paired with a self-held screening booklet and/or reinforcement telephone call to nonadherers.

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Tailoring A Community To The Needs Of Older Adults In An Urban, Industrialized Community. M. B. Daly, M.D., Ph.D., C. Burke, B.S., J. James, P.A.-C., W. Workman, M.P.H., D. Gillespie, M. Balshem, Ph.D., P. F. Engstrom.

Standard pretesting and pilot studies may not be sufficient for identifying problems specific to older adults targeted for community intervention programs. A multi-staged education program has been developed to promote cancer screening in older adults in three lower SES urban communities. The programs, conducted in a group setting, involve a self-administered survey which serves as a pretest of knowledge and attitudes about health issues, an audiovisual presentation and a discussion. As a result of pretesting with 317 participants, the survey was shortened from seven to four pages and the number of questions was reduced from 40 to 15. In many cases, wording was changed or brief definitions of medical terms were added for clarification.

Despite this preparation, several unanticipated problems became evident with actual implementation. Physical disabilities and cognitive impairments among a high proportion of participants were found to preclude completion of the survey without assistance. This increased the estimated amount of time required for survey completion, an impediment that has been noted elsewhere.¹ Staff prompting in these cases introduced the opportunity for interviewer bias. Many individuals had difficulty appreciating the nuances of an opinion scale. Those who maintain a strong ethnic identification (e.g., Italian) are confused by the standard census bureau type of race categories. In addition, each community groups size and setting provided its own form of distractions competing for the individual's attention, and amplifying an already labor intensive process.

The problems encountered in any survey setting can be gauged by the amount of missing data produced. Since implementation of the program, only 24% of the first 449 surveys returned were complete. Certain items were more consistently left unanswered or partially answered, with rates of missing data ranging from 0% to 40% of respondents. This presentation will focus on how this new information has led to adaptations in the field to assure the quality of the data obtained.

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Attitudes Toward Cancer Screening By Physicians In An Urban Industrial Population. S. W. Workman, M.P.H., J. M. James, P.A.-C., M. B. Daly, M.D., Ph.D., C. A. Burke, B.A., D. E. Gillespie, M. Balshem, Ph.D., P. F. Engstrom, M.D.

Although older adults face an elevated risk for cancer, most do not receive cancer screening exams as frequently as guidelines recommend.¹ To address this, a multi-staged research project has been developed to promote screening for older adults in three lower SES working-class communities. The program encourages community residents over age 50 to ask their doctors about cancer screening exams. To reinforce this message, program staff visit primary care physicians in the community to conduct a brief interview and to present a kit of materials designed to encourage discussion of cancer screening.

Interviews were completed with 94% of all primary care physicians (n=77) serving one study community. The 72 physicians visited were evenly divided between medical doctors and osteopaths. Nearly half (49%) describe themselves as general practitioners, while 25% specialize in family practice and 26% in internal medicine. Fifty-seven percent practice alone in private settings. The majority (75%) responded that at least half of their patients are over age 50. Studies show these patterns to be typical of medical practices in similar working-class communities.

With few exceptions, doctors agreed with NCI screening guidelines for patients over 50. They were significantly more likely to fault the patient (79% of responses) for non-adherence to the guidelines than they were to blame themselves. When asked what they consider major barriers to cancer screening, doctors cited "lack of patient interest," "fear of cancer diagnosis," and "resistance to cost." However, when describing their effectiveness in convincing patients to consent to cancer screening tests, 94% consider themselves "somewhat influential" or "very influential." This demonstrates that encouraging primary care physicians to exert their influence may increase adherence to cancer screening guidelines by older adults.

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Determinants Of Black-White Differences In Cancer-Preventive Behaviors. C. Jepson, Ph.D., L. G. Kessler, Sc.D., B. Portnoy, Ph.D., T. Gibbs, Ph.D.

Blacks are less likely than Whites to engage in cancer-preventive behaviors.¹ To determine the factors responsible for this discrepancy, we estimated multivariate logistic regression models of two behaviors related to cancer prevention--diet change and smoking. Predictors included standard demographic variables. In addition, because there is evidence that knowledge level influences cancer-preventive behaviors² and that Blacks are lower than Whites in cancer prevention knowledge³, we included three measures of cancer prevention knowledge as predictors. Data came from the 1987 National Health Interview Survey. The effect of race was significant only in a model of smoking status among women. Predictors with significant effects in all models included education, age, and knowledge of cigarette smoking risks. These results suggest that, in most cases, Black-White differences in cancer-preventive behaviors can be accounted for by differences in demographic and cognitive-psychological factors.

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A Comparison Of Serum Ferritin And Fecal Occult Blood Test For Colorectal Cancer Screening. E. K. Griffiths, M.D., D. V Schapira, M.D.

Five hundred and thirty one participants age 50 and over, were tested with serum ferritin and fecal occult blood test (FOBT) for blood loss from the colorectal area. Flexible fiberoptic sigmoidoscope (FFS) was performed to identify polyps and malignancies. Serum ferritin results between 10 and 30ng/ml indicated storage iron depletion (SID) and 9.9ng/ml or less indicated iron deficiency anemia (IDA). Subjects received a six card FOBT on a random basis. When high risk subjects were identified, colonoscopy was recommended, and 97 of 139 complied. FFS and colonoscopy identified 63 adenomas, four villous adenomas, two villous component, two malignant polyps, and one invasive malignancy. Serum ferritin was more sensitive than the FOBT. The two tests were complementary, increasing sensitivity from 10.3% FOBT alone to 25.9% by using both tests. The use of both tests would represent an improvement over current methods available for early detection of colorectal neoplasia.

Attempts To Quit Smoking: A Comparison Of Those Who Succeeded With Those Who Did Not. S. E. McGregor, J. M. Birdsell.

Information on persons successful in quitting smoking was sought to further understand those characteristics which facilitate smoking cessation. Self-reported smoking histories on a representative sample of adults aged 35 to 64 were obtained as part of a baseline survey prior to the implementation of a cancer prevention demonstration project in four mid-sized Alberta cities. Demographic, social support, attitude and knowledge variables were compared among current cigarette smokers who reported an unsuccessful attempt to quit smoking in the past year (n=517) and smokers who reported quitting within the last year (n=201) and more than one year ago (n=1151). Successful quitters, both recent and long-term, had higher levels of education and social support and were less likely to live and work with smokers than those who did not succeed. Those who were unsuccessful were more likely to indicate it would not be very difficult for them to control their weight and rated smoking as a less important cause of cancer than quitters. Stepwise discriminant analysis indicated that living with someone who smokes, knowledge of the importance of smoking as a cause of cancer and social support were the most important variables in distinguishing the three groups. Information which helps identify characteristics of successful attempts to quit smoking is important as the chances of long-term cessation increase with each attempt and can be incorporated into prevention activities aimed at smoking cessation.

Cancer Prevention Gets Connected: A Pilot Study Of Cancer Risk Assessment And Advice Delivered Via A Public Telecommunications System. J. M. Birdsell, P. Taenzer, S. E. McGregor, I Zendel.

From 1986 to 1989, as part of the Steve Fonyo Cancer Prevention Program in Alberta, Canada, 16,000 adults completed risk assessment questionnaires (RAQ) and received personalized advice through the mail about how to reduce their risk of cancer. All adults aged 35-64 in two cities were offered the RAQ and the response rate from those who received the questionnaires was 70%.

This advice system has been enhanced and transferred into an interactive program using the expert system shell EXP. This interactive program call Cancer Me?? is being tested on the ALEX network in Montreal from November 1989 to January 1990. ALEX is a public access telecommunications network, presented as a pilot program by Bell Canada. ALEX subscribers in Montreal access information services via their home computers or on specially designed terminals available through Bell Canada.

This pilot study is being done to determine the acceptability of this mode of delivery of cancer prevention information. A description of CANCER ME?? will be provided as well as results from the pilot test on the ALEX network.

Does Social Network Predict Smoking Behavior? J. M. Birdsell, H. J. Stam, S. E. McGregor.

Individuals with fewer close friends and relatives (i.e., fewer social networks) have a higher cancer mortality. Tobacco smoking is the best known risk factor for cancer and accounts for 30% of cancer deaths. As part of the Steve Fonyo Cancer Prevention Project (SFCPP), a survey of Albertans was done which facilitated the examination of the relationship between social networks and smoking behavior, after controlling for other well known predictors of tobacco use. In our sample of 3302 adults, we determined that, after accounting for demographic variables (age, sex, education) which are known to be associated with tobacco use, Berkman's Social Network Score¹ was associated with smoking. Forty-nine percent of those adults in the category of smallest social network were smokers, compared with 18% current smokers in the group with the largest social network. This relationship of increasing smoking rates with decreasing social networks was observed in all sex, educational and age groups with the exception of men aged 50-64.

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Rural-Urban Differences In Cancer Screening Knowledge And Practices. D. McClish, Ph.D., S. G. Nayfield, M.D., M.Sc., C. E. Desch, M.D.

Many rural areas are medically underserved, with poor physician distribution and limited access to medical technology. Data from the 1987 Cancer Risk Factor Supplement to the National Health Interview Survey was used to assess the impact of rural living on cancer screening knowledge and practices. 76% of 22,043 respondents lived in metropolitan statistical areas (MSA's) and were classified as "urban"; non-MSA residents were "rural". Multiple logistic regression was used to estimate odds ratios adjusting for age, race, sex, education, and family income. Rural women were more likely to have heard of Pap smear than urban women (OR 2.69, $P < 0.001$). Although difference in rural-urban residence among those who had ever had Pap smears was not significant, rural women were less likely to have had the test within the American Cancer Society (ACS) guidelines (OR 0.86, $P < 0.05$). No rural urban differences were found among women age > 40 who had heard of mammography, but rural women were less likely to be aware of breast physical exam (OR 0.75, $P < 0.05$). Rural women were less likely to have ever had a mammogram (OR 0.73, $P < 0.001$), but rural-urban differences in following ACS mammography guidelines were only marginally significant (OR 0.81, $P < 0.10$). Similarly, no rural-urban differences were found among persons age > 40 who had heard of blood stool tests or proctoscopic exam, but rural residents were less likely to have heard of rectal exam (OR 0.88, $P < 0.05$). Rural residents were also less likely to report having a blood stool test than urban residents (OR 0.78, $P < 0.001$) and to have had a rectal exam (OR 0.87, $P < 0.05$) or blood stool test (OR 0.84, $P < 0.05$) within ACS guidelines. Thus some rural-urban differences in screening knowledge and practices are not explained by socioeconomic factors and access to "high-tech" procedures. These differences must be considered in planning cancer prevention programs for rural areas.

Cancer Treatment And Prevention In Rural Areas: Technology Transfer To Populations With Distance Barriers To Cancer Care. C. E. Desch, M.D., T. J. Smith, M.D., S. G. Nayfield, M.D., M.Sc., N. Kane, R.N., M.S., C. Simonson, R.N., M.S.

Cancer mortality time trends in Virginia are increasing in rural areas with limited access to specialized oncology services. The Medical College of Virginia implemented a Cancer Outreach Program in March, 1989, to assist rural communities in developing effective cancer control programs at all levels of prevention. The initial focus of each Outreach Project is to provide state-of-the-art cancer treatment to patients within their own communities. Target communities are located over 80 miles from the closest comprehensive facility. A medical oncologist and an oncology nurse specialist travel to the local hospital in the target community to provide consultation and treatment, cancer education for primary care physicians and nurses, exposure to NCI-approved cooperative group protocols, and assistance in establishing an American College of Surgeons-approved cancer program. Local physicians, nurses, and other health care professionals interested in increasing their oncology expertise are trained to administer therapy and provide supportive care to patients in the absence of the outreach team. As community support gathers, programs in secondary and primary prevention are implemented through a steering group of community leaders. Results of the pilot program in a tri-county area of southern Virginia will be presented. The potential impact of cancer prevention strategies in this rural setting will be discussed, and economic implications of rural cancer care delivery will be introduced.

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Distance As A Barrier To Early Diagnosis And Treatment Of Breast, Cervix, And Colorectal Cancer. S. G. Nayfield, M.D., M.Sc., K. Dawson, M.S., D. McClish, Ph.D., C. E. Desch, M.D.

Increasing cancer mortality in rural areas has directed attention to barriers to health care delivery. Most residents of rural Virginia live within a few miles of general medical care, but rural cancer patients may travel up to 80 miles to an oncology specialist. To assess the impact of distance on early diagnosis, Virginia Tumor Registry records of each patient diagnosed with breast, cervix, or colorectal cancer from 1985-1987 who received care at an American College of Surgeons hospital cancer program were linked to distance from residence to treating hospital. Logistic regression was used to determine effects of age, race, sex, and distance from treating hospital on stage of disease at diagnosis. Among 6,525 women with breast cancer, 2,372 women with cervix cancer, and 5,151 men and women with colorectal neoplasms, blacks were more likely to be diagnosed at a later stage of disease than whites ($P < 0.001$). Patients at increasing distances from their treating hospitals were more likely to have advanced disease at diagnosis ($P < 0.05$). For cervical cancer, the distance effect was slightly diminished as age increased (age-distance interaction was marginally significant); a highly significant age-race interaction ($P < 0.001$) suggested that effects of age and race on stage at diagnosis were less pronounced for older patients. Women with colorectal cancer were more likely to be diagnosed at later stages than men ($P < 0.05$), and older patients were more likely to be diagnosed at earlier stages of disease ($P < 0.01$). Distance to the treating hospital did not influence time from diagnosis to treatment. Thus, distance to a hospital cancer program represents a barrier to early detection of screenable cancers in rural populations at the primary care level, but did not influence time to treatment once cancer was diagnosed. Cancer awareness in rural areas may contribute to these findings and requires further study.

Developing Measures Of Dietary Behaviors For Cancer Prevention.
E. E. Ho, Ph.D., R.D., K. Lamborn, Ph.D., M. Fujikawa, M.S., R.D.

Measures of dietary behaviors related to cancer prevention have been developed for community surveillance purposes.¹ This study presents results from a random digit dial telephone survey of 300 California residents. Nine measures were generated by combining items that address the same behavioral construct, including 3 measures of fat intake (9,17 and 18 items), 3 measures of fiber intake (13,7 and 7 items), and measures of norm (8 items), assertive eating skills (7 items), and environmental assessment (7 items). Education significantly affected individuals' scores for all measures except for fiber intake ($p < 0.005$). Fat intake differed between White and Hispanic subjects based on each of the three measures ($p < 0.01$). After stratifying for educational level, the 3 measures of fat were significantly correlated ($P < 0.05$), as were the 3 measures of fiber ($p < 0.001$). None of the measures of fat and fiber were correlated significantly, suggesting that they represent different parameters of dietary behavior. Some measures of fat and fiber were significantly associated with measures of norms, skills and environment. Results indicate that measures of a range of dietary behaviors for cancer control are achievable for population surveillance. This type of assessment tool will enable more sensitive measurement of dietary behavioral change over time at the community level.

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Influence Of High And Low-Fat Diets On The Frequency Of Menstrual Bleeding And Plasma Estrogen And Progesterone Levels of Old (13-18 year) Female Non-Human Primates (Macaca Nemestrina). M. Henderson, M.D., B. Toivola, Ph.D., R. D., Klein, M.S., T. Raghunathun, Ph.D.

There is disagreement about the impact of dietary fat composition per se on circulating levels of steroid hormones.¹ This study separated the effect of dietary composition from the effect of calories consumed. Fourteen female macaques (macaca nemestrina), 13 to 18 years of age, were housed in single cages and fed a high-fat (40% of total calories) diet for 9 weeks. The species of macaque used in this study is a particularly good model for reproductive studies.² At the end of 9 weeks, seven monkeys were assigned at random to a low-fat (20% of total calories) diet. Diets were custom-mixed and designed to be isocaloric and isonitrogenous. The feeding study was terminated at the end of 10 months. Body weight and food consumption were monitored throughout the study. Analyses to date have shown no differences in food consumption and the group of monkeys fed the high fat diet did not gain anymore weight than those fed the low fat diet. Animals fed the high fat throughout the study had a significantly higher average number of bleeding episodes (menses) than animals switched to the low-fat diet. Blood samples were collected at the end of the 9 weeks of high fat diet consumption when the animals were randomized (baseline), and every week thereafter. Weekly blood samples are being analyzed for estradiol and progesterone, and baseline and final samples for prolactin. Other researchers have shown that dietary fat can affect estradiol levels₃ in macaques, and based on our menstrual bleeding data we expect to report similar results.

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Cancer In California. E. M. Moran, M.D.

This is a review of the salient epidemiologic features of cancer in California such as incidence, and factors related to ethnicity, environment, and life-style. In 1988, California had 11.48% of the U.S. population. The cancer incidence was 9.9%, the highest compared with other states, and the yearly death toll was 10% of all U.S. cancer deaths. Incidence of major sites: 10.4% of breast, 9.8% of lung, 9.7% of prostate, and 9.1% of colorectal cancer cases in U.S. Ethnic factors: increased incidence of gallbladder cancer among Hispanic women (RR=4.9) and stomach and cervical cancer in the rural population (RR=2.2 and 2.3, respectively). In U.S.-born Chinese men, the most prevalent cancers are lung and colorectal as seen in American white men. In U.S.-born Chinese women there is an upward displacement of breast cancer incidence. In U.S.-born Japanese, the distribution and mortality ratio is closer to that of American whites. Environmental factors: the drinking water pool in Northern California is contaminated with asbestos of the serpentine type, which is associated with mesothelioma of peritoneum and carcinoma of lung, gallbladder, and pancreas. Air pollution: petrochemical fumes in the heavily industrialized Northern California do not show an association with increased occurrence of cancer. Nuclear energy: during an 18-year period of close observation, no significant incidence in cancer was noted in the counties surrounding the nuclear power plant at San Onofre. Lifestyle: members of the Mormon Church and the Seventh Day Adventists have only 50% of the U.S. standardized mortality ratios for cancers associated with smoking. The large AIDS population in San Francisco has a 144-fold increase in Kaposi's sarcoma and 5-fold increase in lymphomas as compared with the general U.S. population.