ABSTRACTS
31st Annual Meeting • American Society of Preventive Oncology, Houston, Texas • March 2–4, 2007

The following are the 20 highest-scoring abstracts of those submitted for presentation at the 31st Annual ASPO meeting to be held March 2–4, 2007 in Houston, Texas.

Cytokine Polymorphisms and Pain in Lung Cancer

Reyes-Gibby C, Spitz M, Wu X, Merriman K, Etzel C, Kurzrock R, Shete S

Purpose: Cytokines, aberrantly produced by cancer cells, have recently been implicated in the severity of cancer-related pain. We hypothesize that functional variations in cytokine genes could explain the variability in cancer-related pain.

Methods: Pain, clinical and demographic variables were assessed at presentation and prior to initiating any cancer treatment in 514 patients with non–small cell lung cancer. Using the TaqMan method, we genotyped single nucleotide polymorphisms in interleukin (IL)-6 (−174GC), IL-8 (−251TA), and tumor necrosis factor-α (TNF-α; −308 GA), and determined their associations with pain severity in newly diagnosed early and advanced stage lung cancer.

Results: White Caucasians with early (n = 252) and advanced stage (n = 262) non–small cell lung cancer comprised the sample. Pain severity predictably varied by stage of disease, sex, depressed mood, age, and genotype groups. Linear regression analyses showed TNF- −308GA (coeff = 0.16; P = 0.008); sex (coeff = 0.19; P = 0.001), and age (coeff = −0.16; P = 0.002) as significant predictors for pain severity in early stage lung cancer. Among those with advanced stage lung cancer, we observed statistically significant main effects for IL-8 −251 TA (coeff = 0.221; P < 0.001) and significant joint effects of IL-8 −251 TA and age (coeff = −0.0256; P < 0.001) and TNF- −308GA and age (coeff = 0.160; P < 0.016) on pain severity. Classification and Regression Tree analyses showed the same distinct patterns for early and advanced stage lung cancer.

Conclusion: Variations in individual inflammatory responses could partly explain the variability in cancer-related pain among patients with early and advanced stage lung cancer.

Long-term Follow-up of Women's Decisions to Share BRCA1/2 Test Results with First-Degree Relatives

Tercyak KP, Graves KD, Peshkin BN, Gell CE, Hecker SL, Schwartz MD

Purpose: We investigated the prevalence of disclosure of genetic test results to first-degree relatives among women who had participated in BRCA1/2 testing 4 to 5+ years previously. We also assessed women's closeness to each of these relatives at the time they underwent testing, and examined disclosure-closeness relationships.

Methods: Interviews were conducted by telephone with 265 women—all of whom were the first members of their families to be tested for BRCA1/2 mutations. Respondents were asked if they had disclosed (yes/no) to their mothers, fathers, sisters, brothers, spouses, and children (as applicable).

Results: The frequency of disclosure was 94.4% to mothers, 87.1% to fathers, 97.1% to sisters, 84.2% to brothers, 98.1% to spouses, and 82.0% to children (reported as a percentage of those who disclosed/presence of that relative category in the family). After controlling for the effect of positive genetic test results, women who felt more personally connected to their adult relatives were more likely to have disclosed to their mothers (r = 0.30, P = 0.007), fathers (r = 0.41, P = 0.00), brothers (r = 0.38, P = 0.001), and spouses (r = 0.22, P = 0.001); closeness was unrelated to disclosure to sisters and children, although older children (age >18) were more likely to be informed than younger children (r = 0.49, P = 0.00).

Summary: These data suggest that the majority of first-degree relatives were informed of women's test results. In addition to age and gender, family dynamics seem to be related to disclosure decisions. To promote cascade testing, open communication, and social support, novel counseling strategies may be warranted.

Antioxidant Nutrients and Oxidative DNA Damage in Healthy African-American and White Adults

Watters JL, Satia JA

Purpose: To examine potential racial differences in: (*a*) dietary intakes and plasma concentrations of vitamin C, vitamin E, and carotenoid and oxidative DNA damage (ODD) levels, and (*b*) associations between plasma antioxidants and ODD.

Methods: Data were from the DIet, Supplements, and Health Study, a cross-sectional study of 164 generally healthy nonsmoking African-Americans and Whites in North Carolina ages 20 to 45. Participants completed a demographic and health questionnaire, a newly developed antioxidant food frequency questionnaire, four 24-h dietary recalls, and a dietary supplement inventory, had height and weight measured, and provided a semifasting blood sample.

Results: African-Americans had statistically significantly lower plasma concentrations of vitamin A, vitamin E, α- and β-carotene, and lutein + zeaxanthin than Whites, as well as lower self-reported intake of most antioxidants. Levels of ODD, measured using the alkaline Comet assay, were lower in African-Americans than Whites. An inverse association between lycopene and ODD (Pearson's r = −0.20, P = 0.03) was found in the combined study population after controlling for sex, age, body mass index, passive smoke exposure, physical activity, education, income, and alcohol intake. There was also a significant positive association of α-tocopherol with ODD in the total population (r = 0.21, P = 0.02) and in African-American men (r = 0.63, P = 0.01) after adjusting for covariates.

Conclusions: This study is among the first to examine the associations of antioxidants and ODD in a sample of healthy adults with an adequate representation of African-Americans. Given the higher cancer burden among African-Americans, identifying modifiable factors, such as diet, and possible mechanisms of carcinogenesis, are critical components of cancer prevention initiatives.

Physical Activity Levels among the Amish and Non-Amish Living in Ohio Appalachia

ML Katz, A Ferketich, ED Paskett, A Harley, S Lemeshow, S Clinton, Bloomfield CD

Purpose: We hypothesize that a lower cancer incidence among Amish adults is possibly due to diet and lifestyle factors. This study examines the physical activity (PA) levels between Amish and non-Amish adults living in Ohio Appalachia.

Methods: Amish (n = 134) and non-Amish (n = 154) adults completed interviews as part of a lifestyle study. Self-report of PA level was measured by the International Physical Activity Questionnaire (IPAQ) and by a diary of steps per day (pedometer: Digi-Walker SW-200). Total metabolic equivalent tasks minutes were calculated from the IPAQ and average number of steps per day from the pedometer diary.

Results: The Amish men walked more steps per day (11,447 + 611 versus 7,605 + 643; $P < 0.001$) and had a higher IPAQ score (metabolic equivalent tasks min/wk; 8,354 + 701 versus 5,547 + 690; $P = 0.006$) than non-Amish men. In addition, Amish farmers walked more steps per day than Amish non-farmers (15,278 + 1,297 versus 10,742 + 671; $P = 0.0026$). Amish women walked more steps per day (7,750 + 477 versus 6,547 + 437; $P = 0.066$) and had higher IPAQ scores (4,966 + 503 versus 3,702 + 450; $P = 0.064$) compared with non-Amish women.

Conclusions: Two measures of PA showed a higher PA level among Amish men, especially farmers, and a trend for higher PA level among Amish women. Higher levels of PA warrants further investigation as one factor contributing to reduced cancer incidence rates among the Amish.

Undertreatment of Breast Cancer in Older Women Increases Risk of Death from Breast Cancer

Ulcickas Yood M, Owusu C, Buist D, Geiger A, Field T, Silliman RA, for BOW Investigators

Background: Older women with breast cancer (65+) are underrepresented in clinical trials and bear the breast cancer mortality burden. We compared survival in older women receiving mastectomy, and breast-conserving surgery (BCS) with/without radiation therapy (RT), and the effect of tamoxifen exposure duration.

Methods: Six Cancer Research Network sites participated: Group Health, Kaiser Permanente (Southern California), Lovelace, Henry Ford, HealthPartners, and Fallon. Sites identified women 65+ years receiving mastectomy or BCS for stage I/II breast cancer (1990-1994), used medical record review to obtain clinical data, and National Death Index for mortality (10 years follow-up). Cox proportional hazards models estimated hazard ratios (HR) and 95% confidence intervals (CI) comparing the effect of treatment on mortality.

Results: Among 1,837 women, 20% were 80+ years, 12% received BCS only, 35% received BCS + RT, and 53% had undergone mastectomy. Adjusting for site, age, race, baseline Charlson comorbidity, tumor size, nodes, receptor status, and grade, compared with mastectomy, the chance of breast cancer death was two times greater in women receiving BCS only (HR, 2.23; 95% CI, 1.54-3.24) and was equivalent to mastectomy in those receiving BCS + RT (HR, 1.10; 95% CI, 0.80-1.51). Patients who underwent RT did not have elevated all-cause or other cause mortality. In tamoxifen-eligible women, decreasing exposure durations increased the chance of death, with the greatest risk for breast cancer mortality in those treated <2 years (HR, 6.70; 95% CI, 3.27-13.72 for <1 year and HR, 4.34; 95% CI, 1.98-9.51 for 1-2 years).

Conclusions: BCS without RT and <2 years tamoxifen were associated with an increased risk of breast cancer mortality. Provision of standard therapies to older women may reduce the disproportionate burden of breast cancer mortality.

Cervical Cancer Screening in the Time of the Human Papillomavirus Vaccine

Sheinfeld Gorin S, Franco R, Hajiani F, Westhoff C, NYPAC Study Group

Despite the effectiveness of the Pap smear, testing for human papillomavirus (HPV)-DNA, and the approval of the HPV vaccine, cervical cancer remains a major cause of mortality among Black and Hispanic women both in the U.S. and worldwide. Physician recommendation is key to the uptake of screening. No studies have yet examined physician cervical cancer screening in urban minority communities, alongside new screening protocols and the HPV vaccine. With the baseline findings from 235 primary care physicians who were enrolled in a three-arm randomized controlled trial of an educational intervention, we used multilevel structural equation modeling to identify screening predictors and mediators including: access, medical practice barriers, patient and provider sociodemographics, and attitudes and beliefs toward screening (measured as Pap smear and appropriate HPV-DNA testing). The model fit the data well [χ^2 (97), 107.46; P, 0.220; CFI, 0.972; and RMSEA, 0.020]. Structural equation modeling confirmed that practice barriers ($b = -0.17$) had a significant direct negative effect on screening. Practice barriers also had a strong positive effect ($b = 0.21$) on perceived behavioral control over uncertainty in patient care, and a strong negative effect on counseling self-efficacy ($b = -0.18$), although neither had significant direct effects on screening. Stage of change ($b = 0.10$) showed a trend toward direct effects on screening. Mutable office practice barriers, such as limited systems for tracking and reminding patients, and provider attitudes and beliefs may contribute to less effective cervical cancer screening, increasing morbidity and mortality.

Association of Dietary Magnesium and DNA Repair Capacity with Lung Cancer Risk

Mahabir S, Wei Q, Spitz MR, Forman M

Magnesium is an essential nutrient for humans because it is required for the maintenance of genomic stability and DNA repair. Because the associations between dietary magnesium (Mg) intake and lung cancer risk have not been reported, we examined the relationship of Mg intake and DNA repair capacity (DRC) on lung cancer risk in an ongoing case-control study. A total of 1,139 incident lung cancer cases and 1,210 matched healthy controls with data on DRC were used to achieve our objective. A modified National Cancer Institute-Block Food Frequency Questionnaire and a lifestyle questionnaire were interviewer-administered to each participant. Cellular DRC was assessed by the host-cell reactivation assay, which measured nucleotide excision repair capacity in peripheral blood lymphocyte cultures. Mg intake in our control population was comparable to Mg intake in the National Health and Nutrition Examination Survey (1999-2000). After adjustment for recognized confounding factors, the odds ratios (OR) and 95% confidence intervals (CI) of lung cancer according to increasing quartiles of dietary magnesium intake for all subjects were: 1.0, 0.8 (0.7-1.1), 0.6 (0.5-0.8), 0.5 (0.4-0.6), respectively (P trend < 0.0001). Similar ORs and trends were observed in men and women. In stratified analysis, using those with high dietary Mg and proficient DRC as the referent group, the OR for all subjects were: 1.0, 1.4 (1.0-1.8) for high dietary Mg and suboptimal DRC, 1.5 (1.2-2.0) for low dietary Mg and proficient DRC, and 2.4 (1.8-3.0) for low dietary Mg and suboptimal DRC, respectively (P trend < 0.0001). These associations were generally similar in men and women. Our results suggest that low dietary Mg intake was associated with increased risk of lung cancer, and there may be joint effects between Mg intake and DRC on lung cancer risk.

Long-term Prophylactic Surgery Outcomes Following BRCA1/2 Genetic Testing

Graves KD, Gell CE, Hecker SL, Peshkin BN, Taylor KL, Schwartz MD

Purpose: Women with a BRCA1/2 mutation may choose to reduce their breast and ovarian cancer risk through prophylactic mastectomy (PM) and/or prophylactic oophorectomy (PO). We assessed the long-term rates and predictors of PM and PO.

Methods: Participants were women with ≥10% probability of carrying a BRCA1/2 mutation who received genetic testing 4 to 8 years earlier. For PM analyses, women (*n* = 307) had no history of breast cancer or had unilateral breast cancer. For PO analyses, women (*n* = 342) had no history of ovarian cancer. Women completed assessments before and 4 to 8 years (*M* = 5.3 years) after testing.

Results: Among women without PM before testing (14% had prior PM), 35% with positive test results ultimately had PM. Among women without oophorectomy before testing (29% had prior PO), 46% of positives ultimately had PO. Most women opting for PM did so within 1 year of testing (72%), whereas only 39% of those with PO had it within a year. PM was predicted by positive test results [odds ratios (OR), 6.6; 95% confidence intervals (95% CI), 2.8-15.7] and being affected with unilateral breast cancer (OR, 4.4; 95% CI, 1.5-12.6). PO was predicted by age ≥40 (OR, 6.8; 95% CI, 2.0-23.1), positive test results (OR, 18.1; 95% CI, 7.8-41.9), and having PM (OR, 7.8; 95% CI, 2.8-21.6). At follow-up, women with prophylactic surgery did not differ from women without surgery on quality of life or distress.

Summary: Prophylactic surgery is being appropriately used by women at the highest risk of hereditary breast and ovarian cancer and does not seem to adversely affect long-term psychological outcomes.

Two-Modality Mammography May Confer an Advantage Over Either Full-Field Digital Mammography or Screen-Film Mammography

Glueck DH, Lamb MM, Lewin JM, Pisano ED

Purpose: To compare the cancer detection rate and receiver operating characteristics (ROC) area under the curve of full-field digital mammography, screen-film mammography, and a combined technique that allowed diagnosis if a finding was suspicious on film, on digital, or on both.

Methods: We used the data originally analyzed in Lewin et al.'s trial, in which 6,736 paired full-field and digital mammograms were done in 4,489 women. We used parametric and nonparametric tests to compare the area under the curve for ROC scores of film-screen only, digital mammography only, and the combined test. We used McNemar's test for paired proportions to compare the cancer detection rates.

Results: With the parametric test, neither the difference in the area under the curve between the film and combined, nor the difference between the digital and combined ROC curves was significant at the Bonferroni-corrected 0.025 α level (film versus combined difference = 0.06, $P = 0.07$; digital versus combined difference = 0.09, $P = 0.05$). The nonparametric test showed that there was a significant difference between both film and combined (difference = 0.07, $P = 0.01$) and digital versus combined ROC curves (difference = 0.12, $P = 0.001$). The continuity-corrected McNemar's test showed a significant increase in the proportion of cancers detected by the combined modality over film mammography ($\chi^2 = 7.1$, $df = 1$, $P = 0.01$), and over digital mammography ($\chi^2 = 12.07$, $df = 1$, $P = 0.001$).

Conclusions: Using two mammograms, one film and one digital, significantly increases the detection of breast cancer.

Exploring the Needs of Men in BRCA1/2 Families

Daly M

Male carriers of deleterious BRCA1/2 mutations have a 6% lifetime risk of male breast cancer, and a 6% to 14% lifetime risk of prostate cancer. Despite these health implications, we have found a lack of understanding of genetic test results among the men in these families. As part of a larger study to explore family communication patterns of genetic risk, we identified 24 male first-degree relatives whose proband received a true positive test result and reported telling the result to her male relatives. Six (25%) of these male relatives reported that they hadn't received the results or forgot it. Of the remaining 18 (75%) who did report receiving the result, two (11%) reported that it was a negative result. Only two (11%) reported any level of difficulty in understanding the test results, or indicated that they would like more information. However, only five (28%) could correctly identify their chance of being a mutation carrier. Seven (40%) did not believe that the test results increased their own risk for cancer, reflected in a relatively low level (33%) of interest in genetic testing. Of the six men who did express interest, half expressed interest primarily for their children's sake. And finally, of the 14 men who expressed any level of concern about the meaning of the test result, 11 (79%) directed their concern toward other family members, primarily daughters and sisters. This limited experience tends to confirm a level of cognitive and emotional distance that men experience from the genetic testing process as it applies to them.

Dietary Intake of γ- and α-Tocopherol Reduces Lung Cancer Risk

Schendel K, Mahabir S, Swartz M, Barrera S, Spitz MR, Forman MR

Because epidemiologic data on vitamin E and lung cancer risk is controversial and limited in terms of γ-tocopherol, we investigated the association between dietary intake of α- and γ-tocopherol and lung cancer risk in a case-control study. Cases were newly diagnosed, previously untreated, histologically confirmed lung cancer patients recruited from The University of Texas M.D. Anderson Cancer Center; controls were healthy patients from a health maintenance organization. α- and γ-Tocopherol values were updated using release 16 of the U.S. Department of Agriculture National Nutrient Database for Standard Reference. Compared with those in the lowest quartile of intake for α-tocopherol, the odds ratios (OR) for lung cancer decreased in a monotonic fashion [(Q2) OR, 0.87; 95% confidence intervals (95% CI), 0.71-1.08; (Q3) OR, 0.74; 95% CI, 0.60-0.91; and (Q4) OR, 0.55; 95% CI, 0.44-0.69]. The trend was significant ($P < 0.0001$) with limited variation by gender. Compared with those in the lowest quartile of intake for γ-tocopherol, individuals in the two highest quartiles had significantly reduced odds of lung cancer [(Q3) OR, 0.70; 95% CI, 0.56-0.87; and (Q4) OR, 0.73; 95% CI, 0.59-0.91, P trend = 0.004]. Similar associations became apparent in women, but not in men. We present, for the first time, an association of dietary intake of γ-tocopherol and lung cancer in the United States. Given the antioxidant and immune functions of tocopherols and the limitations of our study design, further research in the chemopreventive potential of both tocopherol metabolites is warranted.

Choice of Survey Completion Method Differs by Participant Characteristics in African-Americans

Satia J, Galanko J

Objective: To describe participant characteristics associated with choice of completion method of a 101-item cancer risk behavior survey in African-Americans.

Methods: African-Americans in North Carolina (*n* = 5,000), 18 to 70 years of age, were randomly selected from Department of Motor Vehicle rosters and given the choice of completing the survey by one of three methods: mail, Internet, or telephone. Everyone received the mailed survey and information on how to participate via Web or phone.

Results: Among 658 eligible respondents, completion rates were 86.3% by mail, 12.6% by Internet, and 1.1% by phone (*P* < 0.0001). The respondent mean age was 43.9 years, 41% were male, and 37% were college graduates. Choice of method differed by age, education, marital status, and Internet access (*P* < 0.0001). Respondents who completed mailed surveys were more often high school graduates and married, whereas Internet responders were younger, college graduates, and 99% had easy Web access; there were no differences according to sex, body mass index, physical activity, or rural versus urban residence. The median number of missing items was highest for telephone (6.0) relative to mail (3.0) and Web (2.0) surveys (*P* < 0.05), and for older compared with younger respondents (*P* < 0.0006).

Conclusions: Choice of completion method differed by participant characteristics, and telephone surveys had the highest number of missing responses. This information can be applied in the design of population-based cancer risk behavior surveillance for African-Americans.

Obesity Predicts Differential Response to a Cancer Prevention Intervention among African-Americans

Leone L, James A, Hudson M, Campbell M

Purpose: The purpose of this analysis was to determine if the effectiveness of a colorectal cancer (CRC) prevention intervention promoting screening and physical activity was affected by weight group (normal weight, overweight, obese I, obese II), and if certain weight groups responded better to certain interventions.

Methods: The WATCH project, a randomized controlled trial in 12 African-American churches, tested the effects of a tailored print and video and/or a lay health advisor intervention to promote multiple behavior changes for CRC prevention. A telephone survey was given at baseline and 12 months. Recreational physical activity (RPA) was calculated as metabolic equivalent task hours per week. The CRC screening outcome was test completion (fecal occult blood test, flexible sigmoidoscopy, double contrast barium enema, or colonoscopy) within the past year and was limited to participants ages 50 and older. Analyses controlled for baseline levels of screening/RPA, age, education, gender, and church cluster.

Results: Analyses revealed a significant interaction effect (*P* = 0.02) of weight group and intervention condition on RPA metabolic equivalent tasks at follow-up, but not for weight or condition alone. Normal and overweight individuals receiving the lay health advisor intervention increased RPA more, whereas obese I and II responded more to the tailored print and video intervention. For CRC screening, the interaction was not significant; only weight remained related to past year of screening at follow-up (*n* = 266, *P* = 0.08), with obese individuals reporting fewer CRC screenings.

Conclusion: Results suggest that, at least for physical activity, interventions may be differentially effective based on obesity status. Targeting and tailoring of cancer prevention interventions based on weight may be a promising strategy for reaching out to risk groups.

Relative Weight at Age 12 and Risk of Postmenopausal Breast Cancer

Bardia A, Vierkant RA, Hartmann LC, Vachon CM, Wang AH, Olson JE, Sellers TA, Cerhan JR

Background: Early adolescent weight may affect the risk of postmenopausal breast cancer, however, this has not been well studied.

Methods: The Iowa Women's Health Study is a prospective cohort study of postmenopausal women. Relative weight at age 12 (above, below, or average weight compared with female peers) and family history of cancer were ascertained using a mailed questionnaire (1986). Breast cancer incidence were identified using the Iowa Surveillance, Epidemiology, and End Results Cancer Registry. Relative risks (RR) and 95% confidence intervals (95% CI), were estimated using Cox proportional hazards regression.

Results: Throughout 2003, 1,942 breast cancers were identified among 35,941 women. Compared with women with average weight at age 12, there was no association of below average weight with breast cancer risk (RR, 1.02; 95% CI, 0.92, 1.13), whereas women with above average weight had lower risk (RR, 0.85; 95% CI, 0.74, 0.98). The latter association was observed for all ER and PR subtypes, but was strongest for PR− tumors (RR, 0.62; 95% CI, 0.43-0.89). There was no evidence of an interaction between weight at age 12 and family history (*P* = 0.44).

Conclusion: Above average weight at age 12 was inversely associated with risk of postmenopausal breast cancer, and was similar in subtype analyses defined by ER/PR status, and family history. The study facilitates a mechanistic understanding of the effects of early adolescent weight on breast cancer risk and may help identify new prevention strategies.

Familial Aggregation of Cancer Among First-Degree Relatives of Brain Tumor Patients

Scheurer ME, Etzel CJ, Lu M, El-Zein R, Bondy ML

Purpose: Brain tumors affect members of the same family, but the specific cancer risk for relatives of patients with brain tumors has been inconclusive.

Methods: We obtained family history information on 8,858 first-degree relatives (FDR) from 1,492 White glioma patients registered at M.D. Anderson Cancer Center between June 1992 and June 2006. Standardized incidence ratios (SIR) were computed using the age, sex, and time period–specific rates from the Surveillance, Epidemiology, and End Results program.

Results: The mean age of the probands was 43.8 years, and 58% were male. Fifteen percent of probands had two or more FDRs with cancer, and 3% had one or more FDRs with a brain tumor. The SIR was significantly elevated for all malignancies (SIR = 1.22) and was higher for siblings (SIR = 1.31) and offspring (SIR = 1.42). SIRs were significantly higher for brain (SIR = 2.10) and bone (SIR = 3.69) cancer and melanoma (SIR = 2.63) among FDRs of male probands. SIRs were significantly higher for brain (SIR = 2.12) and bone (SIR = 4.24) cancer among FDRs of female probands. There was a trend of decreasing SIRs with increasing age of the proband. There was an increase in the SIR among FDRs who were <45 years old at diagnosis, suggesting a genetic component for cancer in these families.

Conclusions: We found a 2-fold increase in brain tumors and a 22% increase in expected cases of all cancers among the FDRs of glioma probands. The excess of brain tumor and melanoma cases supports previous reports; however, an increase in bone cancer has not been previously reported. We also found a borderline increase in pancreatic cancer, likely due to p16 mutations among these families.

Time to Breast Cancer Diagnosis and Treatment in the National Breast and Cervical Cancer Early Detection Program

Richardson LC, Royalty J, Howe W, Helsel W, Kammerer W, Benard VB

Purpose: To examine the intervals between breast cancer screening, diagnosis, and treatment initiation among low-income and uninsured women screened in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) during two time periods.

Methods: We examined diagnostic and treatment intervals for the time periods 1996 to 2000 and 2001 to 2005. The intervals were defined as: (*a*) time between mammography and final diagnosis for all women receiving an abnormal mammogram result (including suspicious abnormality, highly suspicious for malignancy, and assessment is incomplete) or abnormal clinical breast exam result and; (*b*) time between diagnosis and treatment initiation among those diagnosed with cancer.

Results: For the study period, 369,557 women screened for breast cancer through the NBCCEDP had abnormal screen results. For 1995 to 2000 and 2001 to 2005, the median interval to diagnosis after screening was 25 and 23 days, respectively. For 22,302 women found to have cancer, the median interval from diagnosis to treatment increased from 12 to 14 days in the later time period. Overall, time to diagnosis improved in 2001 to 2005 compared with 1995 to 2000. In the second time period, 92% of women were treated within 120 days.

Summary: The goal of the NBCCEDP is to assure that women receive quality breast cancer screening and diagnostic services, and initiate treatment. Our data show that the program is meeting this goal. Disparities in breast cancer outcomes should diminish once all women have timely work-up and treatment of breast problems.

Postmenopausal Hormone Use and Mortality after Breast Cancer

Newcomb PA, Egan KM, Trentham Dietz A, Titus Ernstoff L, Baron JA, Hampton JM, Wong EY, Stampfer MJ, Willett WC

Some prior small studies have observed reduced breast cancer mortality in women who used postmenopausal hormones (PMH) prior to diagnosis. To evaluate the influence of PMH use on breast cancer mortality, we analyzed data from a prospective cohort of 12,269 women with incident invasive breast cancer at least 50 years of age and residents of Wisconsin, Massachusetts, or New Hampshire. Women were enrolled in three phases between 1988 and 2001, and followed for death until December 31, 2004 using the National Death Index. A total of 1,614 deaths from breast cancer were documented during an average 9.6 years of follow-up. Hazard rate ratios and 95% confidence intervals (CI) were estimated using Cox proportional hazards regression. Breast cancer survival varied by duration of hormone use prior to diagnosis, with the lowest cumulative mortality among PMH users. Compared with women who had never used PMH, we observed a reduced risk of death from breast cancer among users of estrogen-progestin preparations at the time of diagnosis (adjusted hazard rate ratio, 0.65; 95% CI, 0.51-0.84) and among users for $\geq$5 years (0.54; 95% CI, 0.38-0.76). No association was observed for women who had formerly used these preparations or for former or current users of estrogen-only preparations. However, among women with lobular breast cancer, those who were using estrogen-only preparations at diagnosis experienced a halving in breast cancer mortality (0.50; 95% CI, 0.27-0.94). In this large population-based cohort of women with breast cancer, recent use of PMH was associated with decreased breast cancer–specific mortality compared with never users of these preparations. Survival was best among current and long-term users of combined estrogen-progestin therapy.

Duration and Type of Postmenopausal Hormone Use and Ovarian Cancer

Wernli KJ, Newcomb PA, Trentham Dietz A, Hampton JM, Wong EY, Egan KM

Although long-term use of oral contraceptives is well-established to reduce ovarian cancer risk, the influence of postmenopausal hormones (PMH) is less clear. Long-term use or PMH preparation type may be of importance. We explored this association in a population-based case-control study of ovarian cancer conducted in Massachusetts and Wisconsin during 1993 to 1995 and 1998 to 2001. Information on PMH use and other potential risk factors for ovarian cancer were obtained via telephone interview. Exposures histories were compared in a total of 552 incident invasive epithelial ovarian cancers identified from statewide cancer registries and 4,337 similarly aged population controls randomly selected from lists of licensed drivers and Medicare beneficiaries. The relative risk and 95% confidence intervals (CI) for PMH use was estimated using multivariable logistic regression. Women that ever used PMH had a 1.39-fold increase in risk (95% CI, 1.14-1.70) when compared with never users of PMH. These elevated risk estimates were observed with use of estrogen-only preparations (1.94; 95% CI, 1.52-2.47) but not with combined estrogen-progestin preparations (0.78; 95% CI, 0.57-1.06), with evidence of significant heterogeneity by PMH type ($P < 0.0001$). Long-term users of estrogen-only preparations also experienced elevations in risk. These data suggest that use of estrogen-only PMH preparations may modestly increase ovarian cancer risk.

Genetic Variants in the Promoter Region of H2AX are Associated with Risk of Sporadic Breast Cancer in Non-Hispanic White Women Aged $\leq$55 Years

Lu J, Wei Q, Bondy ML, Brewster AM, Bevers TB, Yu TK, Buchholz TA, Meric-Bernstam F, Hunt KK, Singletary SE, Wang L-E

In this case-control study, we genotyped four common single nucleotide polymorphisms (i.e., −1654A>G, −1420G>A, and −1187T>C in the promoter and 1057C>T in the 3′ untranslated regions) in 421 non-Hispanic White patients with sporadic breast cancer and 423 cancer-free controls, all of whom were $\leq$55 years old and frequency-matched by age ($\pm$5 years). In the individual single nucleotide polymorphism analysis, only −1654A>G was significantly associated with increased risk of breast cancer [adjusted odds ratio (OR) 1.50; 95% confidence interval (CI), 1.12-2.02 for −1654AG; and OR, 2.29; 95% CI, 1.48-3.55 for −1654GG compared with the −1654AA genotype]; however, the number of variant (risk) alleles of −1654G, −1420A, and −1187C were associated with increased risk of breast cancer in a dose-response manner ($P_{trend} = 0.001$). There was evidence of an interaction between the number of variants and age ($P_{interaction} = 0.007$) and alcohol use ($P_{interaction} = 0.021$). Haplotypes derived from the observed genotypes were also significantly associated with risk in an allele dose-response manner compared with haplotypes with no variant allele (OR, 4.04; 95% CI, 2.11-7.74 for one variant allele; OR, 4.66; 95% CI, 2.55-8.51 for two variant alleles; and OR, 10.87; 95% CI, 1.51-78.44 for three variant alleles; $P_{trend} = 0.0001$). These findings suggest that H2AX promoter polymorphisms contribute to the etiology of sporadic breast cancer in young non-Hispanic White women. Larger studies are warranted to confirm these findings.

Susceptibility to Smoking in Mexican Origin Youth in Houston, Texas

Wilkinson A, Spelman A, Prokhorov A, Bondy M, Spitz M

Purpose: To examine the relationship between cognitive susceptibility to smoking and well-known risk factors for smoking initiation among 11- to 13-year-olds of Mexican origin.

Methods: Participants in this study were drawn from an infrastructure of population-based households created by the Department of Epidemiology at M.D. Anderson Cancer Center. Households with age-eligible participants were identified from the cohort database; >90% of all parents who were contacted agreed to enroll their child in the study. After obtaining informed consent, survey data were collected on smoking susceptibility and smoking status, acculturation, demographics, peer and family influences, school and neighborhood characteristics, and attitudes towards smoking.

Results: Bivariate associations between susceptibility and risk factors were predominantly significant and in the expected direction. Significant predictors were included in stepwise and additive effects logistic regression models. The stepwise model revealed that each additional positive smoking expectation was associated with a 5-fold increased chance of being susceptible. Susceptibles were more likely to report that most friends smoke, have a mother who smokes, believe that peer norms strongly support smoking, were 13 years old, male, perceived more temptations to smoke, have more acculturated parents, and report lower subjective social status than their nonsusceptible peers. The additive effects model noted increasing risk of susceptibility with increasing number of risk factors ($P_{trend} < 0.01$). Participants reporting three risk factors were 2.58 times and those with six or more risk factors were 22.12 times more likely to be susceptible to smoking, compared with participants reporting one or no risk factors.

Summary: Our findings suggest a need to develop both family- and school-based primary prevention programs.

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