of the difference in age-adjusted invasive epithelial ovarian cancer incidence rates (AAIR) between the two groups can be explained by differing oophorectomy rates and the prevalence of non-genetic risk and protective factors. Our purpose was to determine how much of the remaining difference in AAIRs could be explained by varying allele frequencies between NHWs and AAs for 18 genome-wide significant common susceptibility variants for ovarian cancer. Using data on 13,385 cases and 24,875 controls from the Ovarian Cancer Association Consortium, a genetic risk score (GRS) was created from 18 single nucleotide polymorphisms (SNPs) associated with ovarian cancer risk following the Collaborative Oncological Gene-environment Study (COGS) effort. Relative risks for each GRS quintile were estimated using conditional logistic regression, adjusting for genetic ancestry and conditioning on study site, age, and race. The population attributable risk percent (PAR) for GRS above the lowest quintile was calculated using the Bruzzi method. Previously reported oophorectomy and non-genetic risk factor (talc, oral contraceptive use, family history of ovarian cancer, endometriosis, parity and tubal ligation) adjusted incidence rates for ovarian cancer in NHWs and AA's were 7.2 and 5.8 per 100,000 respectively. These incidence rates were further adjusted for the contribution of the GRS from this analysis. The subsequent genetic PAR adjusted rate was 5.1 per 100,000 for the European ancestry group and 4.9 for the African ancestry group, after taking into account the different oophorectomy rates and prevalence of non-genetic risk factors. These incidence rates show the unexplained difference in incidence rates between NHWs and AAs is only 3.9%. Future efforts should focus on incorporating novel non-genetic and genetic factors into this analysis to determine whether essentially all of the difference in incidence between these groups can be explained.

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Pilot-Testing a Survivorship Needs Assessment Planning Tool for Head and Neck Cancer Survivors and Caregivers

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The purpose of this study was to develop and pilot-test a tablet-based survivorship needs assessment planning (SNAP) tool to assess head and neck cancer (HNC) survivor and caregiver needs after treatment and generate tailored care plans. We recruited survivors completing treatment <24 months ago, and their caregivers. Participants completed baseline surveys, a clinic session with SNAP assessments (symptoms, unmet needs, behaviors) and care plan delivery, and 6-week follow-up surveys. We tracked intervention delivery/acceptability and used paired t-tests to explore changes in psychosocial factors over time. We enrolled 25 survivors (65% male, mean age = 63, 65% stage IVA) and their caregivers (73% female, mean age = 56, 77% partners). The average time to complete SNAP assessments was 11 and 6 minutes for survivors and caregivers, respectively. Algorithm-driven care plans included messages (mean = 19), educational materials (mean = 13) and referrals (mean = 4.5). Top referrals included Behavioral Medicine, Nutrition and Physical Therapy (84, 77 and 65% flagged, respectively). In those declining referrals, main reasons included being overwhelmed, seeing local provider or lacking interest. Participants rated SNAP favorably with >80% reporting high comfort using tablets and navigating questions. Dyads strongly agreed that care plans were helpful emotionally (>75%) and provided practical information (>73%). After the session, both survivors and caregivers reported significantly fewer unmet needs (7.7 versus 2.9, $P = 0.001$ survivors; 7.0 versus 4.1, $P = 0.02$, caregivers) and higher survivorship preparedness (4.9 versus 5.2 in both, $P = 0.02$ and $P = 0.03$). While depression, symptom distress and symptom management abilities were stable in survivors, caregivers had significantly lower depression ($P = 0.01$) and symptom distress ($P = 0.03$), and higher ratings of perceived patient symptom management abilities ($P = 0.004$) at follow-up. Open-ended responses highlighted that SNAP visits helped pull together complex medical information and made families feel supported. Participants desired more information about cancer stage and caregivers preferred earlier intervention. Results support the feasibility of implementing SNAP in the HNC clinic and highlighted needed modifications for system improvement.

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Long-term Adherence to Colorectal Cancer Screening; 5-Year Results from the Systems of Support to Increase Colorectal Cancer Screening Trial

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Colorectal cancer (CRC) is the second-leading cause of cancer deaths. Mortality could be rapidly reduced through higher uptake and adherence to CRC screening. Information on long-term screening adherence comes from organized programs that lack a comparison group. Objective: Systems of Support to Increase Colorectal Cancer Screening is an ongoing trial testing a centralized mailed and phone-based program to increase long-term CRC screening adherence. We hypothesized that compared to usual care (UC) intervention-arm patients would have more time in compliance with CRC screening guidelines over 5 years. Methods: The setting was an integrated healthcare organization in Washington State. UC included patient-centered medical home with clinic-based strategies to increase screening. Participants included 4675 individuals initially aged 50–74, not current for CRC screening. Intervention arms combined were compared to UC. The primary outcome was the percent of time covered for CRC screening over 5 years of follow-up. Screening tests contributed covered time based on national guidelines for screening intervals. All participants contributed data, but were censored at disenrollment, death, age 76, or CRC diagnosis. Interventions: Patients were randomly assigned to receive UC, or one of three stepped care interventions: 1. Mailings including mailed fecal tests, a call-in number if colonoscopy or sigmoidoscopy was preferred; 2. Mailings plus brief telephone assistance; 3. Mailings and telephone assistance plus nurse navigation. In year 3, intervention group participants still CRC screening-eligible were randomized to stopped or continued mailed interventions only. Results: Compared to UC, intervention participants had 31% more time not in need of CRC testing (adjusted rate ratio, weighted for exposure time 1.31

[1.25–1.37], 47.2% vs. 62.0% covered time) over 5 years. Fecal testing was responsible for almost all additional covered time. Compared to intervention participants, UC individuals were more likely never to have completed any CRC testing over 5 years (17.4% vs. 10.3%, net difference 7.2%, $P < 0.001$) Conclusions: An organized mail and phone program led to increased CRC screening adherence over 5 years, mainly because of regular fecal testing uptake.

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Effect of Diindolylmethane on Estrogen-related Hormones, Metabolites and Tamoxifen Metabolism: Results of a Randomized, Placebo-controlled Trial

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Dietary supplement use is high among breast cancer survivors. One compound natural to cruciferous vegetables, diindolylmethane (DIM), is among the supplements commonly used. This bioactive compound has significant experimental evidence for bioactivity in breast chemoprevention. Sparse evidence in the form of well-designed human clinical trials exist to test its efficacy or safety. Methods: In this double-blind placebo-controlled study women taking tamoxifen for breast cancer primary or tertiary prevention were randomly assigned to receive 150 mg DIM (BioResponse(BR)-DIM) twice daily or a placebo for a minimum period of 12 months. Primary outcome was change in urinary estrogen metabolites 2-hydroxyestrone and 16α-hydroxyestrone (baseline to 6 weeks, 6 and 12 months). Secondary endpoints included breast density by mammogram and fat:water ratio MRI (baseline to 12 months) and serum estrogens (baseline to 6, 12 months). Safety data were also evaluated, including tamoxifen metabolites. Results: Adherence to study pills was >91% by pill count and urinary DIM metabolite assessment. In participants assigned DIM there was a significant and sustained shift in urinary estrogen metabolism favoring a higher 2-OH:16α-OH ratio; sex hormone binding globulin (SHBG) was also increased. No change in breast density was demonstrated. Safety analysis showed no appreciable differences in adverse events by treatment arm; however, tamoxifen metabolism for the parent compound as well as endoxifen and 4-OH endoxifen were appreciably reduced in women assigned to the DIM arm. Conclusions In this first large study of DIM in the setting of breast cancer chemoprevention, a favorable shift in estrogen metabolism and SHBG was demonstrated. However, the reduction in tamoxifen metabolites raises concern regarding the potential interaction between DIM and tamoxifen, an area in need of continued research. Impact Given the widespread and generally unsupported use of dietary supplementation by breast cancer survivors, these data will help to inform the use of DIM as a dietary supplement for breast cancer patients receiving tamoxifen.

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Health System-Based HPV Vaccine Reminders: Randomized Trial Results

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Purpose: Evaluate the impact of health system-based outreach and reminders on human papillomavirus (HPV) vaccine series initiation and completion. Methods: We conducted a 12-month randomized trial at an integrated care system in the Pacific Northwest in 2015–2016. Parents of 10–12 year olds who had not received any doses of HPV vaccine were randomized to an intervention group (mailed letter and brochure followed by an interactive voice recognition (IVR) reminder call encouraging HPV vaccine initiation) or usual care control group. Parents could opt in to receive future messages via SMS text message on all calls. Parents of intervention group children who initiated vaccination were re-randomized to receive either no further reminders or reminders for doses 2/3. We interviewed a subset of 50 parents to assess acceptability of the program. Outcomes were HPV vaccine initiation (within 12 months or 120 days of the initial letter), on-time series completion (within 210 days of initiation), and time to vaccination, assessed with Kaplan-Meier survival analyses. Results: 1624 children were eligible for randomization (46% age 10, 32.9% age 11, 20.4% age 12). The sample was 48.3% female and 64.6% white. Rates of overall HPV vaccine initiation were similar between the intervention and control groups (49.0% and 45.8%, $P = 0.26$), but initiation within 120 days of outreach was higher in the intervention group (23.6% and 18.8%, $P = 0.04$). This effect continued through to completion within 12 months (10.3% vs. 6.8%, $P = 0.04$). Opt-in rates to SMS were low: 24 people completed the opt-in process. Rates of on-time series completion were similar in those who received dose 1 reminders only compared to those who received reminders for all vaccine doses (12.1% and 19.7%, $P = 0.10$); time-to-completion results were similar. Parent interviews suggested reminders were acceptable and useful. Conclusion: Reminder calls after an outreach letter led to more timely vaccine initiation and overall completion. Reminders beyond the initial letter and reminder call did not appear to impact vaccine series completion. The program was acceptable to parents, though there was low uptake of SMS reminders.

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Decreasing Trends in Cervical Cancer Incidence among Young Women (15–34 Years) in the United States during the Human Papillomavirus (HPV) Vaccine Era

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Human papillomavirus (HPV) vaccine has been recommended for girls 11–12 years of age since 2006, with catch-up vaccination up to 26 years, to protect against most common types of HPV that cause cervical cancer. Cervical cancer incidence stabilized in women <50 years during 2008–2012. Comparing trends and incidence of cervical cancer before and during the vaccine era among vaccine-eligible young women (15–34 years) may