

among eligible female patients for the HPV vaccine. USIIS is a free, confidential, web-based information system that contains immunization histories for Utah residents of all ages. Records of all persons born in Utah since 1998 are in USIIS. USIIS is designed to help enrolled healthcare providers track immunization records for patient care by consolidating immunizations from enrolled providers into one centralized record. Vaccine administration from 86% of healthcare providers in Utah is reported to USIIS. USIIS data used for the study include date of birth, age, gender, ethnicity and race, zip code, and date and type of vaccine received. Descriptive statistics and chi-square tests were used to assess rate of missed opportunities for the HPV vaccine and associated demographic factors. Results: Approximately 65% of preteens (ages 11–12;  $N = 2,593$ ) and 32% of female teens (ages 13–18;  $N = 4,937$ ) had a missed opportunity for the HPV vaccine between years 2008–2012 in Utah ( $P < 0.001$ ). Race and ethnicity related to rates of missed opportunities for the HPV vaccine among all girls ages 11–18 (Whites = 36%,  $N = 2,454$ ; Hispanics = 21%,  $N = 254$ ) ( $P < 0.001$ ). Rural and urban locations were also associated with rates of missed opportunities for the HPV vaccine (urban = 31%,  $N = 4,448$ ; large rural town = 42%,  $N = 202$ ) ( $P < 0.001$ ). Conclusions: For more than eight years, a vaccine to prevent cervical and other HPV-related cancers has been available, yet receipt of the 3-dose HPV vaccine in the United States is far below national goals for girls (33% vs. 80%; actual vs. target). Using statewide vaccine registry data, our study demonstrates that administering the HPV vaccine when providing other recommended adolescent vaccinations may dramatically improve rates of HPV vaccination among girls in a state with low HPV vaccine uptake. In addition, targeting rural communities and non-Hispanic White patients may further reduce missed opportunities.

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### Effects of a 16-week Resistance and Aerobic Exercise Intervention on Metabolic Syndrome in Overweight/Obese Latina Breast Cancer Survivors

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This randomized controlled trial was designed to assess the effects of a 16-week combined (aerobic and resistance) exercise intervention on metabolic syndrome (MetS) in overweight and obese Latina breast cancer survivors (LBCS). MetS is associated with increased risk of cardiovascular diseases, type 2 diabetes, and possibly cancer recurrence, and is defined by increased waist circumference (WC), elevated blood glucose (BG), high triglycerides (TG), low high-density lipoprotein cholesterol (HDL), and elevated blood pressure (BP). Methods. Forty LBCS (BMI  $\geq 25$  kg/m<sup>2</sup>) were recruited from the USC Lee Breast Clinic and Los Angeles County Hospitals. Participants were randomized to either the Control (CON;  $n = 20$ ) or the Exercise (EX;  $n = 20$ ) groups. Participants were tested for MetS outcomes including BP, WC, fasting levels of FBG, HDL, and TG at baseline, post-intervention, and 12-weeks post-intervention (EX group only). The EX group participated in aerobic and resistance exercise sessions 3 times a

week for 16 weeks, supervised by an exercise specialist at the WHEL. Aerobic exercise included cycling, walking, or jogging at 65–85% heart rate maximum. Resistance exercise was performed in circuit-fashion with 3 sets of 10–15 repetitions including upper and lower body exercises at 65–70% 1-repetition maximum. The CON group was asked to maintain less than 120 min/week of exercise during the study period. Repeated measures ANOVA was used to test for statistically significant between-group differences in MetS. Results. There were no significant group differences in MetS between the EX and CON groups at baseline ( $P > 0.01$ ). However, post-intervention, all MetS components were significantly lower in the EX group than the CON group ( $P < 0.01$ ). Further, in the EX group, MetS at 12-week post-intervention was not statistically different from post-intervention ( $P > 0.01$ ). Conclusions. A 16-week supervised resistance and aerobic exercise intervention attenuated MetS in overweight and obese LBCS. Further, reductions in MetS components were maintained following the completion of the intervention, suggesting that the benefits of the intervention on MetS were sustainable in the absence of a supervised intervention.

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### Symptoms, Weight Loss and Physical Function in a Lifestyle Intervention Study of Older Cancer Survivors

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Cancer is most often a disease of aging, and frequently, a disease for which obesity serves as a risk factor. Thus, many cancer survivors are older, overweight or obese, with higher illness burden, symptoms, and comorbidities. Against this backdrop, survivors are at increased risk for functional decline. The question is whether lifestyle interventions can still benefit older, sicker survivors? The purpose of this study was to examine how overweight long-term survivors' symptom severity prior to a diet and exercise intervention is associated with post-intervention function and to determine symptoms' effects on function through change in physical activity, diet quality, and weight status. Methods This is a secondary data analysis of 514 breast, prostate, and colorectal cancer survivors who participated in the one-year home-based diet and exercise intervention, Reach-Out to Enhance Wellness (RENEW) trial. Pre- and post-intervention data were analyzed. Measures of this study included pre-intervention symptoms, changes in weight, physical activity, diet quality, and post-intervention overall physical function (PF), and basic and advanced lower extremity function (BLEF and ALEF). Simple and serial mediation analyses were conducted to examine direct effects of symptom severity on BLEF and ALEF and the indirect effects of symptom severity through changes in diet quality, physical activity, and weight status. Results Increased symptom severity was directly associated with lower functioning scores for PF ( $b = -0.63$   $P < 0.001$ ), BLEF ( $b = -0.33$ ,  $P < 0.001$ ) and ALEF ( $b = -0.22$ ,  $P < 0.001$ ). Indirect effects of symptom severity through weight loss, physical activity and diet were not significant. Weight loss and increased physical activity were significantly associated with higher

PF and ALEF and higher diet quality was associated with higher BLEF. Conclusion Symptom severity of older, overweight cancer survivors negatively affects physical function. However, greater weight loss and physical activity were associated with higher functioning scores, regardless of symptom severity. Findings build from the recent emphasis on the negative effects of obesity on survivor outcomes to highlight weight loss as an important factor in maintaining function in older cancer survivors.

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### **Racial Disparity in Receiving a Physician Recommendation for Human Papillomavirus Vaccine among US Adolescent Girls: Trend from 2008 to 2012**

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To examine the trend of racial disparity in receiving a physician recommendation for human papillomavirus (HPV) vaccine among US adolescent girls. Methods: We analyzed National Immunization Survey of Teens (NIS-Teen) 2008–2012 data and examined the trend of racial disparity in receiving a physician recommendation for HPV vaccine among 13–17 year old US adolescent girls. Results: Overall, the weighted proportion of girls who received a physician recommendation was 49.2%, 57.0%, 54.9%, 58.8% and 65.3% in 2008, 2009, 2010, 2011 and 2012, respectively ( $p$  for trend  $< 0.001$ ). The respective weighted proportion for non-Hispanic white, non-Hispanic black and Hispanic girls were: 53.6%, 60.7%, 59.0%, 63.4% and 70.2%; 42.7%, 50.0%, 46.3%, 52.5% and 62.8%; and 40.0%, 50.8%, 48.0%, 51.4% and 56.5% ( $P < 0.001$  for all 5 years). After adjusting for demographic characteristics, separate weighted analysis for each year of data showed that non-Hispanic black and Hispanic girls were less likely to receive a physician recommendation than non-Hispanic white girls ( $P < 0.01$  for all 5 years). However, there was no significant difference between Non-Hispanic black and Hispanic girls ( $P > 0.05$  for all 5 years). Conclusions: Reasons for racial disparity in receiving a physician recommendation need to be identified and addressed to achieve the desired level of HPV vaccine uptake among US adolescent girls, irrespective of race/ethnicity.

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### **Charitable Food Distribution Sites Offer Novel Opportunities for Cancer Prevention Research and Intervention Among Vulnerable, Hard-to-reach, and Underserved Populations**

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People who live in food-insecure households face significant unmet health needs. At the same time, this population may be under-represented in clinical research studies because of the population's limited and intermittent engagement with the

health care system. We describe preliminary results of a research partnership between UT Southwestern Medical Center (UTSW) and Crossroads Community Services (CCS), the largest charitable food distributor of the North Texas Food Bank. The goal of the study is to improve understanding of this population's health- and mammography-related needs, knowledge and service utilization. Eight structured focus groups were conducted in English ( $n = 4$ ) and Spanish ( $n = 4$ ) at CCS. Discussions focused on 13 open-ended questions designed to solicit group communication about members' health status, healthcare access, mammography awareness and utilization, and attitudes toward participation in future health research. Participants included 42 CCS clients, about 90% of whom were Hispanic or African-American women. Key findings include: (1) Participants reported multiple co-morbid conditions among themselves and household members, yet utilization of health services was cost-dependent and often limited to emergency triage. (2) Many participants did not know what a mammogram was and utilization was closely linked to having health insurance, which most did not. (3) Despite reporting numerous daily life challenges, the majority were interested in participating in future research-related focus groups as a means of communicating their health needs and obtaining information and emotional support from peers. Recruitment from charitable food distribution sites will target a high-need, underserved population. The community-academic partnership between CCS and UTSW has created a robust foundation for cancer prevention research that has already produced important insights about the population's needs and willingness to participate in research. Ongoing research is focused on implementing longitudinal health assessments of CCS clients. These data will be used to guide future interventions to increase awareness and utilization of cancer prevention services, e.g. mammography, in a population facing multiple barriers to care.

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### **Can the "Hispanic Paradox" Shed Light on Childhood Cancer Risk?**

Heck JE, Park AS, Cockburn M, Ritz B

The "Hispanic epidemiologic paradox" is the commonly observed phenomenon that foreign-born Hispanic mothers who emigrate to the United States have consistently good pregnancy outcomes, such as decreased rates of low birthweight, despite high levels of poverty. We examined whether this advantage extends to childhood cancer risk. Methods: The study included all children born in California from 1983–2007. Birthrolls were linked to California Cancer Registry records of children ages  $< 6$  who were diagnosed with cancer 1988–2007 ( $N = 8710$  cases, 9,519,438 controls). The mother's Hispanic origin, ethnic ancestry, and country of birth were ascertained from the birth certificate. We used Cox proportional hazard models to estimate the risk for cancer based upon maternal birthplace and ethnic ancestry. Models stratified by tumor subtype and adjusted for maternal and paternal age. Summary of results: The children of foreign-born Hispanic women had lower rates of several cancers [acute lymphoblastic leukemia (ALL; odds ratio (OR) = 1.05, 95% confidence interval (CI) = 0.96–1.14); glioma (OR = 0.51,