



## RESEARCH UPDATES SEPTEMBER 2012

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### FOR THE LATEST IN WORLDWIDE INTEGRATIVE CANCER CARE

**IN THIS ISSUE:** Shui et al. found that higher plasma levels of vitamin D reduced the risk of lethal prostate cancer. Oz and colleagues reported that a group therapy intervention was helpful for women with breast cancer. Zhu and associates found that high soy intake may reduce the risk of breast cancer, depending on hormone receptor status. Carnaby-Mann et al. found that patients with head and neck cancer who completed a program of swallowing exercises did better than those who did not. Hansen et al. reported that high fiber cereal can help protect against colon cancer. Pullar and colleagues reported that colorectal cancer survivors were prepared to change their diets, but needed more information about how to do so. Sun and associates concluded that high energy intake may increase the risk of colorectal cancer, but that diets high in protein, carbohydrate and fiber may reduce the risk. Wu et al. found that fish consumption may decrease the risk of colorectal cancer. Noble and colleagues found that exercise improved the physical function and quality of life of cancer patients undergoing treatment. Sturgeon and associates reported that sleep duration is related to endometrial cancer risk. In our study of the month, Peppone et al. reported that breast cancer patients with lower levels of vitamin D had more advanced and aggressive disease.

## PROSTATE CANCER

Shui, IM, L. A. Mucci, P. Kraft, et al.

### Vitamin D-Related Genetic Variation, Plasma Vitamin D, and Risk of Lethal Prostate Cancer: A Prospective Nested Case-Control Study.

*J Natl Cancer Inst.* 2012 02 May 2012; 104(9): 690-699.

**BACKGROUND:** The association of vitamin D status with prostate cancer is controversial; no association has been observed for overall incidence, but there is a potential link with lethal disease. **METHODS:** We assessed prediagnostic 25-hydroxyvitamin D [25(OH)D] levels in plasma, variation in vitamin D-related genes, and risk of lethal prostate cancer using a prospective case-control study nested within the Health Professionals Follow-up Study. We included 1260 men who were diagnosed with prostate cancer after providing a blood sample in 1993-1995 and 1331 control subjects. Men with prostate cancer were followed through March 2011 for lethal outcomes (n = 114). We selected 97 single-nucleotide polymorphisms (SNPs) in genomic regions with high linkage disequilibrium (tagSNPs) to represent common genetic variation among seven vitamin D-related genes (CYP27A1, CYP2R1, CYP27B1, GC, CYP24A1, RXRA, and VDR). We used a logistic kernel machine test to assess whether multimarker SNP sets in seven vitamin D pathway-related genes were collectively associated with prostate cancer. Tests for statistical significance were two-sided. **RESULTS:** Higher 25(OH)D levels were associated with a 57% reduction in the risk of lethal prostate cancer (highest vs lowest quartile: odds ratio = 0.43, 95% confidence interval = 0.24 to 0.76). This finding did not vary by time from blood collection to diagnosis. We found no statistically significant association of plasma 25(OH)D levels with overall prostate cancer. Pathway analyses found that the set of SNPs that included all seven genes (P = .008) as well as sets of SNPs that included VDR (P = .01) and CYP27A1 (P = .02) were associated with risk of lethal prostate cancer. **CONCLUSION:** In this prospective study, plasma 25(OH)D levels and common variation among several vitamin D-related genes were associated with lethal prostate cancer risk, suggesting that vitamin D is relevant for lethal prostate cancer. **INSPIREHEALTH'S INTERPRETATION:** Higher vitamin D levels reduce the risk of lethal prostate cancer.

## BREAST CANCER

Oz, F, S. Dil, F. Inci and S. Kamisli.

### Evaluation of Group Counseling for Women with Breast Cancer in Turkey.

*Cancer Nurs.* 2012 July-August 2012; 354: E27-E34.

**BACKGROUND:** Breast cancer is one of the most commonly diagnosed cancers among women. Health services for breast cancer patients should give high priority to the social and psychological realities experienced by those dealing with the ramifications of their illness. Psychosocial interventions and group counseling for patients have been shown to be highly effective in the care of breast cancer patients. **OBJECTIVE:** This study was conducted to determine the effects of group counseling on the adaptation of breast cancer patients to their illness. **METHODS:** Sessions are made weekly, and each session lasted about 1.5 to 2 hours, and the researchers attended all sessions together. Pretests were administered to the patients at the first of the 10 group sessions, and posttests were administered at the last group session. Pretest/posttest pattern data were collected from 56 breast cancer patients using the Ways of Coping Inventory, the Psychosocial Adjustment to Illness Scale-Self-report, and the Multidimensional Scale of Perceived Social Support. These were evaluated using the SPSS 9.0 statistical package. **RESULTS:** After group counseling, patients showed an increase in their positive perceptions of social support, psychosocial adaptation, and in their abilities to cope with breast cancer. **CONCLUSIONS:** The findings indicate that this group-counseling program positively affected patients' perceived social support and enhanced their abilities to effectively cope with stress. **IMPLICATIONS FOR PRACTICE:** Cancer patients can have various problems in the adaptation process to cancer. Therefore, oncology nurses should be actively involved in working with patients to find solutions and ways of coping with the issues they face. **INSPIREHEALTH'S INTERPRETATION:** Group counseling can help breast cancer patients cope with stress.

Zhu, Y., L. Zhou, S. -C Jiao and L. -Z Xu.

### Relationship between Soy Food Intake and Breast Cancer in China.

*Asian Pacific Journal of Cancer Prevention.* 2012 2012; 1211: 2837-2840.

**AIMS:** Soy food intake may be associated with reduced risk of breast cancer, by far the most frequent cancer among women, but the results are inconsistent. We aimed to investigate the relationship further in Chinese population and to assess the importance of hormone receptor status. **METHODS:** A case-control study was conducted with totals of 183 cases and 192 controls recruited from January 2008 to January 2011 among patients admitted to the General Hospital of PLA and the Second Affiliated Hospital of Guangzhou Medical University, China. Trained interviewers conducted face-to-face interviews using a structured questionnaire to collect information on dietary habits and potential confounding factors. **RESULTS:** The highest relative to lowest soy isoflavone intake was associated with a 58% decrease risk of breast cancer (OR=0.42, 95% CI=0.22-0.80). Higher consumption of soy protein also decreased breast cancer risk, and the highest consumption reduced 54% cancer risk compared with the lowest (OR=0.46, 95%CI=0.24-0.88). The inverse association between highest intake of soy isoflavone and soy protein with the risk of breast cancer was statistically in postmenopausal women (OR=0.57, 95%CI=0.29-0.83; OR=0.50, 95%CI=0.38-0.95). In the ER/PR status stratified analysis, a significantly reduced risk was observed for ER+/PR+ breast cancer among highest intake of soy isoflavone and soy protein, with ORs of 0.47 and 0.63, respectively. **CONCLUSION:** Our study suggested that a high intake of soy food is inversely associated with breast cancer risk, the effect depending to some extent on the hormone receptor status. **INSPIREHEALTH'S INTERPRETATION:** Soy foods might protect against breast cancer, depending on hormone receptor status.

## HEAD AND NECK CANCER

Carnaby-Mann, G, M. A. Crary, I. Schmalfluss and R. Amdur.

### "Pharyngocise": Randomized Controlled Trial of Preventative Exercises to Maintain Muscle Structure and Swallowing Function during Head-and-Neck Chemoradiotherapy.

*Int J Radiat Oncol Biol Phys.* 2012 May 1; 831: 210-219.

**PURPOSE:** Dysphagia after chemoradiotherapy is common. The present randomized clinical trial studied the effectiveness of preventative behavioral intervention for dysphagia compared with the "usual care." **METHODS AND MATERIALS:** A total of 58 head-and-neck cancer patients treated with chemoradiotherapy were randomly assigned to usual care, sham swallowing intervention, or active swallowing exercises (pharyngocise). The intervention arms were treated daily during chemoradiotherapy. The primary outcome measure was muscle size and composition (determined by T(2)-weighted magnetic resonance imaging). The secondary outcomes included functional swallowing ability, dietary intake, chemosensory function, salivation, nutritional status, and the occurrence of dysphagia-related complications. **RESULTS:** The swallowing musculature (genioglossus, hyoglossus, and mylohyoid) demonstrated less structural deterioration in the active treatment arm. The functional swallowing, mouth opening, chemosensory acuity, and salivation rate deteriorated less in the pharyngocise group. **CONCLUSION:** Patients completing a program of swallowing exercises during cancer treatment demonstrated superior muscle maintenance and functional swallowing ability. **INSPIREHEALTH'S INTERPRETATION:** Swallowing exercises during cancer treatment can help patients with head and neck cancer.

## COLORECTAL CANCER

Hansen, L, G. Skeie, R. Landberg, et al.

### Intake of Dietary Fiber, especially from Cereal Foods, is Associated with Lower Incidence of Colon Cancer in the HELGA Cohort.

*International Journal of Cancer.* 2012 15 Jul 2012; 1312: 469-478.

**BACKGROUND:** The role of dietary fiber on the risk of colon and rectal cancer has been investigated in numerous studies, but findings have been inconsistent. The purpose of this study was to examine associations between intake of dietary fiber and risk of incident colon (including distal and proximal colon) and rectal cancer in the prospective Scandinavian HELGA cohort and to determine if fiber source (vegetables, fruits, potatoes, cereals) impacted the association. **METHODS:** We included 1,168 incident cases (691 colon, 477 rectal cancer), diagnosed during a median of 11.3 years, among 108,081 cohort members. Sex-specific incidence rate ratios (IRRs) of colon and rectal cancer were related to intake of total or specific fiber source using Cox proportional hazards models. **RESULTS:** For men, an inverse association was observed between intake of total fiber and the risk of colon cancer per an incremental increase of 10 g day<sup>-1</sup>, IRR (95% CI): 0.74 (0.64-0.86). Intake of cereal fiber per 2 g day<sup>-1</sup> was associated with an IRR of 0.94 (0.91-0.98), which was also seen for intake of cereal fiber from foods with high fiber content ( $\geq 5$  g per 100 g product), where the IRR per 2 g day<sup>-1</sup> was 0.94 (0.90-0.98). In women, intake of cereal fiber per 2 g day<sup>-1</sup> was also associated with lower risk of colon cancer, 0.97 (0.93-1.00). No clear associations were seen for rectal cancer. **CONCLUSION:** Our data indicate a protective role of total and cereal fiber intake, particularly from cereal foods with high fiber content, in the prevention of colon cancer. **INSPIREHEALTH'S INTERPRETATION:** High fiber cereal can decrease the risk of colon cancer.

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Pullar, JM, A. Chisholm and C. Jackson.

### Dietary Information for Colorectal Cancer Survivors: An Unmet Need.

*N Z Med J.* 2012 08 Jun 2012; 1251356: 27-37.

**AIM:** Observational studies have highlighted the association between diet and the risk of colorectal cancer (CRC) recurrence. We aimed to identify the dietary patterns of CRC patients in our region, the level of dietary advice currently received and its impact on behaviour. **METHODS:** A survey was taken of an opportunistic sample of CRC patients at Dunedin and Invercargill Hospitals, New Zealand. Dietary patterns were classified according to previously utilised criteria and the level of information they had received was established. **RESULTS:** Forty patients were recruited. No patients reported receiving dietary information from their doctor or nurse. Sixty-one percent of patients felt they received too little information. Obese patients were less likely to consider that diet was important in cancer recurrence, but were more likely to be interested in receiving dietary information than normal weight individuals. Ninety-eight percent wanted additional dietary information and 75% would consider changing their diet in response to such information. **CONCLUSIONS:** CRC survivors reported they were prepared to change their diet following diagnosis and treatment, however they report receiving insufficient information to meet their needs. An opportunity for dietary intervention that may improve patient outcome is presently being missed. As a result of this study a comprehensive information package tailored to colorectal cancer survivors has been developed. **INSPIREHEALTH'S INTERPRETATION:** Providing dietary advice would be helpful for colorectal cancer survivors.

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Sun, Z, L. Liu, P. P. Wang, et al.

### Association of Total Energy Intake and Macronutrient Consumption with Colorectal Cancer Risk: Results from a Large Population-Based Case-Control Study in Newfoundland and Labrador and Ontario, Canada.

*Nutr J.* 2012 Mar 26;11:18.

**BACKGROUND:** Diet is regarded as one of the most important environmental factors associated with colorectal cancer (CRC) risk. A recent report comprehensively concluded that total energy intake does not have a simple relationship with CRC risk, and that the data were inconsistent for carbohydrate, cholesterol and protein. The objective of this study was to identify the associations of CRC risk with dietary intakes of total energy, protein, fat, carbohydrate, fiber, and alcohol using data from a large case-control study conducted in Newfoundland and Labrador (NL) and Ontario (ON), Canada. **METHODS:** Incident colorectal cancer cases (n = 1760) were identified from population-based cancer registries in the provinces of ON (1997-2000) and NL (1999-2003). Controls (n = 2481) were a random sample of residents in each province, aged 20-74 years. Family history questionnaire (FHQ), personal history questionnaire (PHQ), and food frequency questionnaire (FFQ) were used to collect study data. Logistic regression was used to evaluate the association of intakes of total energy, macronutrients and alcohol with CRC risk. **RESULTS:** Total energy intake was associated with higher risk of CRC (OR: 1.56; 95% CI: 1.21-2.01, p-trend = 0.02, 5th versus 1st quintile), whereas inverse associations emerged for intakes of protein (OR: 0.85, 95%CI: 0.69-1.00, p-trend = 0.06, 5th versus 1st quintile), carbohydrate (OR: 0.81, 95%CI: 0.63-1.00, p-trend = 0.05, 5th versus 1st quintile) and total dietary fiber (OR: 0.84, 95% CI:0.67-0.99, p-trend = 0.04, 5th versus 1st quintile). Total fat, alcohol, saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids, and cholesterol were not associated with CRC risk. **CONCLUSION:** This study provides further evidence that high

energy intake may increase risk of incident CRC, whereas diets high in protein, fiber, and carbohydrate may reduce the risk of the disease. **INSPIREHEALTH'S INTERPRETATION:** Diets high in protein, fiber and carbohydrate may reduce the risk of colorectal cancer.

Wu, S, B. Feng, K. Li, et al.

### Fish Consumption and Colorectal Cancer Risk in Humans: A Systematic Review and Meta-Analysis.

*Am J Med.* 2012 Jun; 125(6): 551-559.

**BACKGROUND:** Fish consumption may protect against colorectal cancer, but results from observational studies are inconsistent; therefore, a systematic review with a meta-analysis was conducted. **METHODS:** Relevant studies were identified by a search of MEDLINE and EMBASE databases to May 2011, with no restrictions. Reference lists from retrieved articles also were reviewed. Studies that reported odds ratio (OR) or relative risk estimates with 95% confidence intervals (CIs) for the association between the consumption of fish and the risk of colorectal, colon, or rectal cancer were included. Two authors independently extracted data and assessed study quality. The risk estimate (hazard ratio, relative risk, or OR) of the highest and lowest reported categories of fish intake were extracted from each study and analyzed using a random-effects model. **RESULTS:** Twenty-two prospective cohort and 19 case-control studies on fish consumption and colorectal cancer risk met the inclusion criteria and were included in the meta-analysis. Our analysis found that fish consumption decreased the risk of colorectal cancer by 12% (summary OR, 0.88; 95% CI, 0.80-0.95). The pooled ORs of colorectal cancer for the highest versus lowest fish consumption in case-control studies and cohort studies were 0.83 (95% CI, 0.72-0.95) and 0.93 (95% CI, 0.86-1.01), respectively. There was heterogeneity among case-control studies ( $P < .001$ ) but not among cohort studies. A significant inverse association was found between fish intake and rectal cancer (summary OR, 0.79; 95% CI, 0.65-0.97), and there was a modest trend seen between fish consumption and colon cancer (summary OR, 0.96; 95% CI, 0.81-1.14). This study had no publication bias. **CONCLUSION:** Our findings from this meta-analysis suggest that fish consumption is inversely associated with colorectal cancer. **INSPIREHEALTH'S INTERPRETATION:** Fish consumption may decrease the risk of colorectal cancer.

## EXERCISE

Noble, M, C. Russell, L. Kraemer and M. Sharratt.

### UW WELL-FIT: The Impact of Supervised Exercise Programs on Physical Capacity and Quality of Life in Individuals Receiving Treatment for Cancer.

*Supportive Care in Cancer.* 2012 Apr; 20(4): 865-873.

**PURPOSE:** The purpose of this study is to report physical function and quality of life data collected from cancer patients who participated in a supervised exercise intervention at the UW WELL-FIT program over 5 years. **METHODS:** Five hundred seventy-five participants from 18 to 84 years of age (mean, 54 years) were assessed and enrolled in the 24-session program while currently receiving treatment for cancer. Twice weekly, they participated in aerobic exercise, resistance training and stretching exercises for 1 h each time. Pre- and post-assessments were performed to document changes in physical function, while the short form-36 (SF-36) survey assessed changes in quality of life. **RESULTS:** Three hundred eighty-six participants completed the program, while 171 withdrew at some point over the 24 sessions. Pre- and post-cardiovascular assessments were performed on 305 (78.4%) participants. There was a significant increase in the maximum work rate attained and significant decreases in heart rate response, systolic blood pressure and rate of perceived exertion at the submaximal level ( $p < 0.01$ ). The summary component scales of SF-36 (physical and mental) were significantly improved as well as all eight subscales ( $p < 0.01$ ). **CONCLUSIONS:** The data collected from this program indicate that a comprehensive physical activity program involving cardiovascular exercise, resistance training and flexibility can significantly improve physical function and various quality of life indices for individuals undergoing treatment for cancer. **INSPIREHEALTH'S INTERPRETATION:** Exercise can help improve the physical function and quality of life of cancer patients undergoing treatment.

## ENDOMETRIAL CANCER

Sturgeon, SR, N. Luisi, R. Balasubramanian and K. W. Reeves.

### Sleep Duration and Endometrial Cancer Risk.

*Cancer Causes and Control.* 2012 April 2012; 23(4): 547-553.

**PURPOSE:** Recent data indicate that night shift work is associated with increased endometrial cancer risk, perhaps through a pathway involving lower melatonin production. Melatonin is an antiestrogenic hormone, with production in a circadian pattern that is dependent on presence of dark at night. Sleep duration is positively associated with melatonin production and may be an indicator of melatonin levels in epidemiologic studies. **METHODS:** We evaluated associations between self-reported sleep duration and endometrial cancer risk using publicly available prospective data on 48,725 participants

in the Women's Health Initiative Observational Study, among whom 452 adjudicated incident cases of endometrial cancer were diagnosed over approximately 7.5 years of follow-up. Sleep duration was self-reported at baseline. Cox proportional hazards regression was used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for endometrial cancer risk with adjustment for potential confounders. **RESULTS:** Most women reported sleeping  $\leq 6$  (33.3%) or 7 (38.5%) h each night; fewer reported sleeping 8 (23.4%) or  $\geq 9$  (4.8%) h each night. In adjusted analyses, there was an indication of reduced risk associated with longer sleep duration, though no statistically significant association was observed. Women who slept  $\geq 9$  h had a nonsignificant reduced risk of endometrial cancer compared with women who slept  $\leq 6$  h (HR = 0.87; 95% CI = 0.51-1.46). **CONCLUSIONS:** We found weak evidence of an association between sleep duration and endometrial cancer risk. Self-reported sleep duration may not adequately represent melatonin levels, thus further studies utilizing urinary melatonin levels are necessary to establish the mechanism by which night shift work increases endometrial cancer risk. **INSPIREHEALTH'S INTERPRETATION:** Sleeping longer may help reduce the risk of endometrial cancer.

## STUDY OF THE MONTH

Peppone, LJ, A. S. Rickles, M. C. Janelins, et al.

### The Association between Breast Cancer Prognostic Indicators and Serum 25-OH Vitamin D Levels.

*Ann Surg Oncol.* 2012 Aug 19; 198: 2590-2599.

**BACKGROUND:** Studies show that women with low vitamin D levels have an increased risk of breast cancer (BC) incidence and mortality, but there is a lack of research examining vitamin D levels and prognostic variables in BC patients. The aim of this study is to examine 25-OH vitamin D levels between BC cases and controls and by prognostic indicators among BC cases. **METHODS:** 25-OH vitamin D levels were collected from 194 women who underwent BC surgery and 194 cancer-free (CF) controls at the University of Rochester between January 2009 and October 2010. Mean 25-OH vitamin D levels and odds ratios (OR) were calculated by case/control status for the overall cohort and by prognostic indicators (invasiveness, ER status, triple-negative status, Oncotype DX score, molecular phenotype) for BC cases. **RESULTS:** BC cases had significantly lower 25-OH vitamin D levels than CF controls (BC: 32.7 ng/mL vs. CF: 37.4 ng/mL;  $P = .02$ ). In case-series analyses, women with suboptimal 25-OH vitamin D concentrations ( $<32$  ng/mL) had significantly higher odds of having ER- (OR = 2.59, 95% confidence interval [95% CI] = 1.08-6.23) and triple-negative cancer (OR = 3.15, 95% CI = 1.05-9.49) than those with optimal 25-OH D concentrations. Women with basal-like phenotype had lower 25-OH vitamin D levels than women luminal A phenotype (basal-like: 24.2 ng/mL vs. luminal A: 32.8 ng/mL;  $P = 0.04$ ). **CONCLUSIONS:** BC patients with a more aggressive molecular phenotype (basal-like) and worse prognostic indicators (ER- and triple-negative) had lower mean 25-OH vitamin D levels. Further research is needed to elucidate the biological relationship between vitamin D and BC progression. **INSPIREHEALTH'S INTERPRETATION:** Low levels of vitamin D are associated with breast cancer progression and aggressive disease. Getting adequate amounts of vitamin D may positively influence treatment outcomes.

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