



# REsearch UPDATES

FOR THE LATEST IN WORLDWIDE INTEGRATED CANCER CARE

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**IN THIS ISSUE:** Hayes and colleagues found that active surveillance is a reasonable alternative to active treatment for low-risk prostate cancer. Matousek and associates found that Mindfulness-Based Stress Reduction was beneficial for women after breast cancer treatment and Oh et al. discovered a link between the change of season (spring and fall) and breast cancer incidence, which has implications for prevention. Arginine-enriched enteral nutrition significantly improved long-term survival in head and neck cancer patients, according to Buijs et al. and Kirkegaard and associates found that lifestyle factors such as diet, exercise and limiting alcohol consumption can significantly reduce the risk of colorectal cancer. Kienle and Kienle found that mistletoe extracts improve quality of life of cancer patients and can reduce side effects from conventional therapies. In our study of the month, Li et al. found that increasing fruit and vegetable consumption decreases the likelihood of premature death.

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## PROSTATE CANCER



Hayes JH, Ollendorf DA, Pearson SD, et al.

### Active Surveillance Compared with Initial Treatment for Men with Low-Risk Prostate Cancer: A Decision Analysis.

JAMA. 2010 : Dec 1; 304(21): 2411-2.

**CONTEXT:** In the United States, 192,000 men were diagnosed as having prostate cancer in 2009, the majority with low-risk, clinically localized disease. Treatment of these cancers is associated with substantial morbidity. Active surveillance is an alternative to initial treatment, but long-term outcomes and effect on quality of life have not been well characterized. **OBJECTIVE:** To examine the quality-of-life benefits and risks of active surveillance compared with initial treatment for men with low-risk, clinically localized prostate cancer. **DESIGN AND SETTING:** Decision analysis using a simulation model was performed: men were treated at diagnosis with brachytherapy, intensity-modulated radiation therapy (IMRT), or radical prostatectomy or followed up by active surveillance (a strategy of close monitoring of newly diagnosed patients with serial prostate-specific antigen measurements, digital rectal examinations, and biopsies, with treatment at disease progression or patient choice). Probabilities and utilities were derived from previous studies and literature review. In the base case, the relative risk of prostate cancer-specific death for initial treatment vs active surveillance was assumed to be 0.83. Men incurred short- and long-term adverse effects of treatment. **PATIENTS:** Hypothetical cohorts of 65-year-old men newly diagnosed as having clinically localized, low-risk prostate cancer (prostate-specific antigen level <10 ng/mL, stage T2a disease, and Gleason score 6). **MAIN OUTCOME MEASURE:** Quality-adjusted life expectancy (QALE).

**RESULTS:** Active surveillance was associated with the greatest QALE (11.07 quality-adjusted life-years [QALYs]), followed by brachytherapy (10.57 QALYs), IMRT (10.51 QALYs), and radical prostatectomy (10.23 QALYs). Active surveillance remained associated with the highest QALE even if the relative risk of prostate cancer-specific death for initial treatment vs active surveillance was as low as 0.6. However, the QALE gains and the optimal strategy were highly dependent on individual preferences for living under active surveillance and for having been treated.



**CONCLUSIONS:** Under a wide range of assumptions, for a 65-year-old man, active surveillance is a reasonable approach to low-risk prostate cancer based on QALE compared with initial treatment. However, individual preferences play a central role in the decision whether to treat or to pursue active surveillance.

Evans, R, N. Joseph-Williams, A. Edwards, et al.

### Supporting Informed Decision Making for Prostate Specific Antigen (PSA) Testing on the Web: An Online Randomized Controlled Trial.

*Journal of Medical Internet Research.* 2010 123: e27.

**BACKGROUND:** Men considering the prostate specific antigen (PSA) test for prostate cancer, an increasingly common male cancer, are encouraged to make informed decisions, as the test is limited in its accuracy and the natural history of the condition is poorly understood. The Web-based PSA decision aid, Prosdex, was developed as part of the UK Prostate Cancer Risk Management Programme in order to help men make such informed decisions. **OBJECTIVES:** The aim of this study was to evaluate the effect of the Web-based PSA decision aid, Prosdex, on informed decision making. **METHODS:** A web-based randomized controlled trial was conducted in South Wales, United Kingdom. Men aged 50 to 75 who had not previously had a PSA test were randomly allocated to two intervention and two control groups. Participants in the intervention groups either viewed Prosdex or were given a paper version of the text. The main outcome measures were the three components of informed decision making: (1) knowledge of prostate cancer and PSA, (2) attitude toward PSA testing, (3) behavior using a proxy measure, intention to undergo PSA testing. Decisional conflict and anxiety were also measured as was uptake of the PSA test. Outcomes were measured by means of an online questionnaire for the Prosdex group, the paper version group, and one of two control groups. Six months later, PSA test uptake was ascertained from general practitioners' records, and the online questionnaire was repeated. Results are reported in terms of the Mann-Whitney U-statistic divided by the product of the two sample sizes (U/mm), line of no effect 0.50.

**RESULTS:** Participants were 514 men. Compared with the control group that completed the initial online questionnaire, men in the Prosdex group had increased knowledge about the PSA test and prostate cancer (U/mn 0.70; 95% CI 0.62 - 0.76); less favourable attitudes to PSA testing (U/mn 0.39, 95% CI 0.31 - 0.47); were less likely to undergo PSA testing (U/mn 0.40, 95% CI 0.32 - 0.48); and had less decisional conflict (U/mn 0.32, 95% CI 0.25 - 0.40); while anxiety level did not differ (U/mn 0.50, 95% CI 0.42 - 0.58). For these outcomes there were no significant differences between men in the Prosdex group and the paper version group. However, in the Prosdex group, increased knowledge was associated with a less favourable attitude toward testing (Spearman rank correlation [rho] = -0.49, P < .001) and lower intention to undergo testing (rho = -0.27, P = .02). After six months, PSA test uptake was lower in the Prosdex group than in the paper version and the questionnaire control group (P = .014). Test uptake was also lower in the control group that did not complete a questionnaire than in the control group that did, suggesting a possible Hawthorne effect of the questionnaire in favour of PSA testing.

**CONCLUSIONS:** Exposure to Prosdex was associated with improved knowledge about the PSA test and prostate cancer. Men who had a high level of knowledge had a less favourable attitude toward and were less likely to undergo PSA testing. Prosdex appears to promote informed decision making regarding the PSA test. TRIAL REGISTRATION: ISRCTN48473735

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## BREAST CANCER

Matousek, RH and P. L. Dobkin.

### Weathering Storms: A Cohort Study of how Participation in a Mindfulness-Based Stress Reduction Program Benefits Women After Breast Cancer Treatment.

*Current Oncology.* 2010 2010; 174: 62-70.

**BACKGROUND:** A growing number of psychosocial interventions are being offered to cancer patients during and after their medical treatment. Here, we examined whether Mindfulness-Based Stress Reduction





(MBSR), a stress management course, helps women to cope better with stress and illness once their breast cancer treatment is completed. Our aim was to understand how MBSR may benefit those who participate in the course. **METHODS:** Our cohort study enrolled 59 women in an 8-week MBSR program. They completed "before and after" questionnaires pertaining to outcomes (stress, depression, medical symptoms) and process variables (mindfulness, coping with illness, sense of coherence). Paired t-tests examined changes from before to after the MBSR course. Changes in mindfulness were correlated with changes in post-MBSR variables, and a regression analysis examined which variables contributed to a reduction in stress after program participation.

**RESULTS:** Adherence to the program was 91%. Participants reported significant reductions in stress ( $p < 0.0001$ ), depression ( $p < 0.0001$ ), and medical symptoms ( $p < 0.0001$ ), and significant improvements in mindfulness ( $p < 0.0001$ ), coping with illness ( $p < 0.0001$ ), and sense of coherence ( $p < 0.0001$ ). Changes in mindfulness were significantly related to changes in depression, stress, emotional coping, and sense of coherence. Increases in mindfulness and sense of coherence predicted reductions in stress.

**CONCLUSIONS:** It appears that learning how to be mindful is beneficial for women after their treatment for breast cancer.

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Oh, EY, C. Ansell, H. Nawaz, et al.

### Global Breast Cancer Seasonality.

*Breast Cancer Research & Treatment.* 2010 Aug; 123(1): 233-243.

**BACKGROUND:** Human breast cancer incidence has seasonal patterns that seem to vary among global populations. **METHODS:** The aggregate monthly frequency of breast cancer diagnosis was collected and examined for 2,921,714 breast cancer cases diagnosed across 64 global regions over spans from 2 to 53 years.

**RESULTS:** Breast cancer is consistently diagnosed more often in spring and fall, both in the Northern and Southern Hemispheres, regardless of presumable menopausal status (50). This seasonality is increasingly more prominent as population distance from the equator increases and this latitude dependence is most pronounced among women living in rural areas. Moreover, the overall annual incidence (2005-2006), per 100,000 population, of breast cancer increased as the latitude of population residence increased.

**CONCLUSION:** These data make it clear that human breast cancer discovery occurs non-randomly throughout each year with peaks near both equinoxes and valleys near both solstices. This stable global breast cancer seasonality has implications for better prevention, more accurate screening, earlier diagnosis, and more effective treatment. This complex latitude-dependent breast cancer seasonality is clearly related to predictable local day/night length changes which occur seasonally. Its mechanism may depend upon seasonal sunlight mediation of vitamin D and seasonal mediation of nocturnal melatonin peak level and duration.

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De Valois, BA, T. E. Young, N. Robinson, et al.

### Using Traditional Acupuncture for Breast Cancer-Related Hot Flashes and Night Sweats.

*Journal of Alternative and Complementary Medicine.* 2010 Oct 2010; 16(10): 1047-1057.

**OBJECTIVES:** Women taking tamoxifen experience hot flashes and night sweats (HF&NS); acupuncture may offer a nonpharmaceutical method of management. This study explored whether traditional acupuncture (TA) could reduce HF&NS frequency, improve physical and emotional well-being, and improve perceptions of HF&NS. **DESIGN/SETTINGS/LOCATION:** This was a single-arm observational study using before and after measurements, located in a National Health Service cancer treatment center in southern England. **SUBJECTS:** Fifty (50) participants with early breast cancer completed eight TA treatments. Eligible women were  $\geq 35$  years old,  $\geq 6$  months post active cancer treatment, taking tamoxifen  $\geq 6$  months, and self-reporting  $\geq 4$  HF&NS incidents/24 hours for  $\geq 3$  months. **INTERVENTIONS:** Participants received





weekly individualized TA treatment using a core standardized protocol for treating HF&NS in natural menopause. **OUTCOME MEASURES:** Hot Flash Diaries recorded HF&NS frequency over 14-day periods; the Women's Health Questionnaire (WHQ) assessed physical and emotional well-being; the Hot Flashes and Night Sweats Questionnaire (HFNSQ) assessed HF&NS as a problem. Measurements taken at five points over 30 weeks included baseline, midtreatment, end of treatment (EOT), and 4 and 18 weeks after EOT.

**RESULTS FOR THE PRIMARY OUTCOME:** Mean frequency reduced by 49.8% (95% confidence interval 40.5-56.5,  $p < 0.0001$ ,  $n = 48$ ) at EOT over baseline. Trends indicated longer-term effects at 4 and 18 weeks after EOT. At EOT, seven WHQ domains showed significant statistical and clinical improvements, including Anxiety/Fears, Memory/Concentration, Menstrual Problems, Sexual Behavior, Sleep Problems, Somatic Symptoms, and Vasomotor Symptoms. Perceptions of HF&NS as a problem reduced by 2.2 points (standard deviation = 2.15,  $n = 48$ ,  $t = 7.16$ ,  $p < 0.0001$ ).

**CONCLUSIONS:** These results compare favorably with other studies using acupuncture to manage HF&NS, as well as research on nonhormonal pharmaceutical treatments. In addition to reduced HF&NS frequency, women enjoyed improved physical and emotional well-being, and few side-effects were reported. Further research is warranted into this approach, which offers breast cancer survivors choice in managing a chronic condition.

## HEAD AND NECK CANCER

Buijs, N, van Bokhorst-de van der Schueren, M.A., J. A. Langius, et al.

### Perioperative Arginine-Supplemented Nutrition in Malnourished Patients with Head and Neck Cancer Improves Long-Term Survival.

*Am J Clin Nutr.* 2010 Nov; 925: 1151-1156.

**BACKGROUND:** Plasma arginine concentrations are lower in patients with cancer, which indicates that arginine metabolism may be disturbed in these patients. Arginine supplementation has been associated with positive effects on antitumor mechanisms and has been shown to reduce tumor growth and to prolong survival. Furthermore, the prognosis of patients with head and neck cancer remains disappointing. Insufficient intake frequently leads to malnutrition, which contributes to high morbidity and mortality rates. **OBJECTIVE:** The aim of this study was to assess the long-term effects of perioperative arginine supplementation in severely malnourished patients with head and neck cancer. **DESIGN:** In this double-blind, randomized, controlled trial, we randomly assigned 32 severely malnourished patients with head and neck cancer to receive 1) standard perioperative enteral nutrition ( $n = 15$ ) or 2) arginine-supplemented perioperative enteral nutrition ( $n = 17$ ). The primary outcome was long-term ( $\geq 10$  y) survival. Secondary outcomes included the long-term appearance of locoregional recurrence, distant metastases, and second primary tumors.

**RESULTS:** No significant differences in baseline characteristics were observed between groups. The group receiving arginine-enriched nutrition had a significantly better overall survival ( $P = 0.019$ ) and better disease-specific survival ( $P = 0.022$ ). Furthermore, the arginine-supplemented group had a significantly better locoregional recurrence-free survival ( $P = 0.027$ ). No significant difference in the occurrence of distant metastases or occurrence of a second primary tumor was observed between the groups.

**CONCLUSION:** Perioperative arginine-enriched enteral nutrition significantly improved the long-term overall survival and long-term disease-specific survival in malnourished patients with head and neck cancer.



## COLORECTAL CANCER

Kirkegaard, H, N. F. Johnsen, J. Christensen, et al.

### Association of Adherence to Lifestyle Recommendations and Risk of Colorectal Cancer: A Prospective Danish Cohort Study.

*BMJ.* 2010 06 Nov 2010; 3417780: 978.

**OBJECTIVES:** To evaluate the association between a simple lifestyle index based on the recommendations for five lifestyle factors and the incidence of colorectal cancer, and to estimate the proportion of colorectal cancer cases attributable to lack of adherence to the recommendations. **DESIGN:** Prospective cohort study. **SETTING:** General population of Copenhagen and Aarhus, Denmark. Participants: 55,487 men and women aged 50-64 years at baseline (1993-7), not previously diagnosed with cancer. **MAIN OUTCOME MEASURE:** Risk of colorectal cancer in relation to points achieved in the lifestyle index (based on physical activity, waist circumference, smoking, alcohol intake, and diet (dietary fibre, energy percentage from fat, red and processed meat, and fruits and vegetables)) modelled through Cox regression.

**RESULTS:** During a median follow-up of 9.9 years, 678 men and women had colorectal cancer diagnosed. After adjustment for potential confounders, each additional point achieved on the lifestyle index, corresponding to one additional recommendation that was met, was associated with a lower risk of colorectal cancer (incidence rate ratio 0.89 (95% confidence interval 0.82 to 0.96). In this population an estimated total of 13% (95% CI 4% to 22%) of the colorectal cancer cases were attributable to lack of adherence to merely one additional recommendation among all participants except the healthiest. If all participants had followed the five recommendations 23% (9% to 37%) of the colorectal cancer cases might have been prevented. Results were similar for colon and rectal cancer, but only statistically significant for colon cancer.

**CONCLUSIONS:** Adherence to the recommendations for physical activity, waist circumference, smoking, alcohol intake, and diet may reduce colorectal cancer risk considerably, and in this population 23% of the cases might be attributable to lack of adherence to the five lifestyle recommendations. The simple structure of the lifestyle index facilitates its use in public health practice.

## MISTLETOE

Kienle, GS and H. Kiene.

### Review Article: Influence of *Viscum Album L* (European Mistletoe) Extracts on Quality of Life in Cancer Patients: A Systematic Review of Controlled Clinical Studies.

*Integrative Cancer Therapies.* 2010 Jun; 92: 142-157.

**OBJECTIVE:** To evaluate controlled clinical studies on the efficacy and effectiveness of *Viscum album* for quality of life (QoL) in cancer. **MATERIALS AND METHODS:** The authors conducted a search of 7 electronic databases and reference lists and had extensive consultations with experts. They carried out a criteria-based assessment of methodological study quality.

**RESULTS:** The authors identified 26 randomized controlled trials (RCTs) and 10 non-RCTs that investigated the influence of *V album* extracts (VAEs) on QoL in malignant diseases; 26 studies assessed patient-reported QoL. Questionnaires were mostly well established and validated. Half of the studies investigated VAEs concomitant with chemotherapy, radiotherapy, or surgery. Some studies were well designed, whereas others had minor or major methodological weaknesses. Among the 26 RCTs, 22 reported a QoL benefit, 3 indicated no difference, and 1 did not report any result. All the non-RCTs reported a QoL benefit. Of the studies with higher methodological quality, most reported a benefit, whereas 1 found no difference. Improvements were mainly in regard to coping, fatigue, sleep, exhaustion, energy, nausea, vomiting, appetite, depression, anxiety, ability to work, and emotional and functional well-being in general and, less consistently, in regard to pain, diarrhea, general performance, and side effects of conventional treatments. VAEs were well tolerated.



**CONCLUSIONS:** VAEs seem to have an impact on QoL and reduction of side effects of conventional therapies (chemotherapy, radiation) in experimental trials as well as in routine daily application. The influence on fatigue especially should be investigated further.

## STUDY OF THE MONTH

Li C, Ford ES, Zhao G, et al.

### Serum $\alpha$ -Carotene Concentrations and Risk of Death among US Adults: The Third National Health and Nutrition Examination Survey Follow-Up Study.

*Arch Intern Med.* 2010 Nov 22; [Epub ahead of print].

**BACKGROUND:** Much research has been conducted relating total carotenoids and  $\beta$ -carotene in particular to risk of cancer and cardiovascular disease (CVD). Limited data are emerging to implicate the important role of  $\alpha$ -carotene in the development of CVD or cancer. **METHODS:** We assessed the direct relationship between  $\alpha$ -carotene concentrations and risk of death among 15,318 US adults 20 years and older who participated in the Third National Health and Nutrition Examination Survey Follow-up Study. We used Cox proportional hazard regression analyses to estimate the relative risk for death from all causes and selected causes associated with serum  $\alpha$ -carotene concentrations.

**RESULTS:** Compared with participants with serum  $\alpha$ -carotene concentrations of 0 to 1  $\mu\text{g}/\text{dL}$  (to convert to micromoles per liter, multiply by 0.01863), those with higher serum levels had a lower risk of death from all causes ( $P < .001$  for linear trend): the relative risk for death was 0.77 (95% confidence interval, 0.68-0.87) among those with  $\alpha$ -carotene concentrations of 2 to 3  $\mu\text{g}/\text{dL}$ , 0.73 (0.65-0.83) among those with concentrations of 4 to 5  $\mu\text{g}/\text{dL}$ , 0.66 (0.55-0.79) among those with concentrations of 6 to 8  $\mu\text{g}/\text{dL}$ , and 0.61 (0.51-0.73) among those with concentrations of 9  $\mu\text{g}/\text{dL}$  or higher after adjustment for potential confounding variables. We also found significant associations between serum  $\alpha$ -carotene concentrations and risk of death from CVD ( $P = .007$ ), cancer ( $P = .02$ ), and all other causes ( $P < .001$ ). The association between serum  $\alpha$ -carotene concentrations and risk of death from all causes was significant in most subgroups stratified by demographic characteristics, lifestyle habits, and health risk factors.

**CONCLUSIONS:** Serum  $\alpha$ -carotene concentrations were inversely associated with risk of death from all causes, CVD, cancer, and all other causes. These findings support increasing fruit and vegetable consumption as a means of preventing premature death.



## ELECTRONIC RESEARCH UPDATES - BONUS ABSTRACTS

### BREAST CANCER

Shinde, SS, M. R. Forman, H. M. Kuerer, et al.

#### Higher Parity and Shorter Breastfeeding Duration.

*Cancer.* 2010 01 Nov 2010; 11621:4933-4943.

**BACKGROUND:** The combination of increased parity and shorter breastfeeding duration might increase the odds of the least differentiated triple-negative breast cancer (BC) phenotype, theoretically because an expanded progenitor cell population from each pregnancy would incompletely differentiate postpartum.

**METHODS:** Subjects consisted of a consecutive case series of 2473 women treated for invasive breast cancer between 2001 and 2006. Breast cancer phenotype (triple-negative BC, vs non-triple-negative BC) was compared with reproductive and demographic information. Odds ratios (OR) with 95% confidence intervals (CIs) for the association of breastfeeding duration (months per child) and parity with triple-negative BC were calculated after adjusting for ethnicity, age at menarche, family history, and age at diagnosis.

**RESULTS:** Compared with non-triple-negative BC, triple-negative BC was associated with shorter duration of breastfeeding per child (OR, 0.93; 95% CI, 0.90-0.97) and with higher parity (OR, 1.12; 95% CI, 1.06-1.20).

By using multivariate logistic regression, triple-negative BC was independently associated with higher parity (OR, 2.76 [95% CI, 1.86-4.08] if  $\geq 3$  live births; OR, 1.89 [95% CI, 1.30-2.74] if  $\geq 2$  live births vs nulliparae), breastfeeding duration (OR, 0.55 [95% CI, 0.41-0.74] if  $\geq 2$  mo/child and OR, 0.58 [95% CI, 0.42-0.82] if  $\geq 2$  mo/child vs none), African American ethnicity (OR, 2.10; 95% CI, 1.52-2.92), and younger age at diagnosis (OR, 3.02 [95% CI, 2.03-4.47] if  $\geq 40$  years vs  $\geq 60$  years).

**CONCLUSIONS:** Among women with invasive breast cancer, higher parity and the absence or short duration of breastfeeding were independently associated with triple-negative BC. Any duration of breastfeeding was found to be associated with lower probability of triple-negative BC, and the odds of this phenotype decreased with increasing duration of breastfeeding.

Eliassen, AH, S. E. Hankinson, B. Rosner, et al.

### Physical Activity and Risk of Breast Cancer among Postmenopausal Women.

*Arch Intern Med.* 2010 25 Oct 2010; 170(19): 1758-1764.

**BACKGROUND:** Physical activity has many health benefits. Although greater activity has been related to lower postmenopausal breast cancer risk, important details remain unclear, including type, intensity, and timing of activity and whether the association varies by subgroups. **METHODS:** Within the prospective Nurses' Health Study, we assessed the associations of specific and total activity, queried every 2 to 4 years since 1986, with breast cancer risk. Cox proportional hazards models were used to calculate hazard ratios (HRs) and 95% confidence intervals (CIs). Activity was measured as hours of metabolic equivalent task values (MET-h).

**RESULTS:** During 20 years of follow-up (1986-2006), 4782 invasive breast cancer cases were documented among 95 396 postmenopausal women. Compared with less than 3 MET-h/wk (=27 MET-h/wk [approximately 1 h/d of brisk walking]: HR, 0.85; 95% CI, 0.78-0.93; P =27 MET-h/wk [approximately 1 h/d of brisk walking]: HR, 0.85; 95% CI, 0.78-0.93; P =27 MET-h/wk [approximately 1 h/d of brisk walking]: HR, 0.85; 95% CI, 0.78-0.93; P =9 MET-h/wk during follow-up: HR, 0.90; 95% CI, 0.82-0.98). Among specific activities modeled simultaneously, brisk walking was associated with lower risk (per 20 MET-h/wk [5 h/wk]: HR, 0.91; 95% CI, 0.84-0.98). The association with total activity did not differ significantly between estrogen and progesterone receptor-positive and -negative tumors (P=.65 for heterogeneity).

**CONCLUSION:** Our findings suggest that moderate physical activity, including brisk walking, may reduce postmenopausal breast cancer risk and that increases in activity after menopause may be beneficial.

## COLORECTAL CANCER

Hughes, LAE, P. A. van den Brandt, R. A. Goldbohm, et al.

### Childhood and Adolescent Energy Restriction and Subsequent Colorectal Cancer Risk: Results from the Netherlands Cohort Study.

*Int J Epidemiol.* 2010 39(5) (pp 1333-1344): Arte Number: yq062. ate of Pubaton: October 2010.

**BACKGROUND:** Energy restriction during childhood and adolescence is suggested to lower colorectal cancer (CRC) risk. We investigated this in the Netherlands Cohort Study. **METHODS:** Information on diet and other risk factors was collected by a baseline questionnaire in 1986 when cohort members were 55-69 years of age (n = 120 852). Three indicators of early life exposure to energy restriction were assessed: father's employment status during the Economic Depression (1932-40), place of residence during Second World War years (1940-44) and the 'Hunger Winter' (1944-45), a severe famine. Using the case-cohort approach, incidence rate ratios (RRs) and 95% confidence intervals (CIs) were calculated for total colorectal, proximal colon, distal colon, rectosigmoid and rectal cancers, according to the three time periods of energy restriction. After 16.3 years of follow-up, 2573 cases were available for multivariate analyses.

**RESULTS:** Men who lived in a western city during the Hunger Winter and therefore exposed to the highest degree of energy restriction, had a lower risk of developing CRC (RR: 0.81, 95% CI: 0.68-0.98), and tumours





of the proximal colon (RR: 0.72, 95% CI: 0.54-0.96) and rectum (RR: 0.71, 95% CI: 0.53-0.96). In women, non-statistically significant inverse associations were observed for tumours of the distal colon, rectosigmoid and rectum. Inverse associations were also observed between the other two exposure times and studied endpoints, though not statistically significant.

**CONCLUSIONS:** This unique observational evidence suggests that severe energy restriction during childhood and adolescence may lower CRC risk, especially in men, thus providing insight regarding the role of energy intake during early life in CRC development.

Bravi, F, V. Edefonti, C. Bosetti, et al.

### **Nutrient Dietary Patterns and the Risk of Colorectal Cancer: A Case-Control Study from Italy.**

*Cancer Causes and Control.* 2010 November 2010; 21(11): 1911-1918.

**OBJECTIVE:** The role of diet on colorectal cancer has been considered in terms of single foods and nutrients, but less frequently in terms of dietary patterns. **METHODS:** Data were derived from an Italian case-control study, including 1,225 subjects with cancer of the colon, 728 subjects with rectal cancer, and 4,154 hospital controls. We identified dietary patterns on a selected set of nutrients through principal component factor analysis. Odds ratios (OR) and 95% confidence intervals for both cancers were estimated using unconditional multiple logistic regression.

**RESULTS:** We identified 5 major dietary patterns. Direct associations were observed between the Starch-rich pattern and both cancer of the colon (OR = 1.68) and of the rectum (OR = 1.74). Inverse relationships were found between the Vitamins and fiber pattern and rectal cancer (OR = 0.61), between the Unsaturated fats (animal source) and the Unsaturated fats (vegetable source) and cancer of the colon (OR = 0.80 and OR = 0.79, respectively). No other significant association was found.

**CONCLUSIONS:** The Starch-rich pattern is potentially an unfavorable indicator of risk for both colon and rectal cancer, whereas the Vitamins and fiber pattern is associated with a reduced risk of rectal cancer and the Unsaturated fats patterns with a reduced risk of colon cancer.

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