

## Cancer Prevention Research Literatures

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**Abstract:** Cancer is the general name for a group of more than 100 diseases. Although there are many kinds of cancer, all cancers start because abnormal cells grow out of control. Untreated cancers can cause serious illness and death. The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries. This article introduces recent research reports as references in the cancer prevention related studies.

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### Introduction

Cancer is the general name for a group of more than 100 diseases. Although there are many kinds of cancer, all cancers start because abnormal cells grow out of control. Untreated cancers can cause serious illness and death. The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries.

The following introduces recent reports as references in the related studies.

Akhtari-Zavare, M., A. Ghanbari-Baghestan, et al. "Breast cancer prevention information seeking behavior and interest on cell phone and text use: a cross-sectional study in Malaysia." *Asian Pac J Cancer Prev*. 2015;16(4):1337-41.

**BACKGROUND:** Breast cancer is the most common cancer and the second principal cause of cancer deaths among women worldwide, including Malaysia. This study focused on media choice and attempted to determine the communication channels mostly used and preferred by women in seeking information and knowledge about breast cancer. **MATERIALS AND METHODS:** A cross sectional study was carried out to examine the breast cancer prevention information seeking behavior among 450 students at one private university in Malaysia. **RESULTS:** The mean age of respondents was 25+/-4.3 years. Common interpersonal information sources were doctors, friends, and nurses and common channel information sources were television, brochure, and internet. Overall, 89.9% used cell phones, 46.1% had an interest in receiving cell phone breast cancer prevention messages, 73.9% used text

messaging, and 36.7% had an interest in receiving text breast cancer prevention messages. Bivariate analysis revealed significant differences among age, education, nationality and use of cell phones. **CONCLUSIONS:** Assessment of health information seeking behavior is important for community health educators to target populations for program development.

Bartholomaeus, S., H. W. Hense, et al. "Blinded Anonymization: a method for evaluating cancer prevention programs under restrictive data protection regulations." *Stud Health Technol Inform*. 2015;210:424-8.

Evaluating cancer prevention programs requires collecting and linking data on a case specific level from multiple sources of the healthcare system. Therefore, one has to comply with data protection regulations which are restrictive in Germany and will likely become stricter in Europe in general. To facilitate the mortality evaluation of the German mammography screening program, with more than 10 Million eligible women, we developed a method that does not require written individual consent and is compliant to existing privacy regulations. Our setup is composed of different data owners, a data collection center (DCC) and an evaluation center (EC). Each data owner uses a dedicated software that preprocesses plain-text personal identifiers (IDAT) and plaintext evaluation data (EDAT) in such a way that only irreversibly encrypted record assignment numbers (RAN) and pre-aggregated, reversibly encrypted EDAT are transmitted to the DCC. The DCC uses the RANs to perform a probabilistic record linkage which is based on an established and evaluated algorithm. For potentially identifying attributes within the EDAT ('quasi-identifiers'), we developed a novel process, named 'blinded anonymization'. It allows selecting a specific

generalization from the pre-processed and encrypted attribute aggregations, to create a new data set with assured k-anonymity, without using any plain-text information. The anonymized data is transferred to the EC where the EDAT is decrypted and used for evaluation. Our concept was approved by German data protection authorities. We implemented a prototype and tested it with more than 1.5 Million simulated records, containing realistically distributed IDAT. The core processes worked well with regard to performance parameters. We created different generalizations and calculated the respective suppression rates. We discuss modalities, implications and limitations for large data sets in the cancer registry domain, as well as approaches for further improvements like l-diversity and automatic computation of 'optimal' generalizations.

Bellinger, J. D., W. Millegan, et al. "I'm not ashamed to talk on it!": African-American women's decisions about cervical cancer prevention and control in South Carolina." Womens Health Issues. 2015 Mar-Apr;25(2):120-7. doi: 10.1016/j.whi.2014.10.006. Epub 2014 Oct 31.

**BACKGROUND:** Cervical cancer disparities persist despite cervical cancer prevention advances and declining mortality rates, particularly among African-American women in the South. The purpose of this qualitative study was to explore behavior, knowledge, and attitudes as influences on health decisions and preferences for cervical cancer prevention and control among African-American women in South Carolina. **METHODS:** Data were collected from three focus groups conducted with 28 adult women aged 18 to 70 years in South Carolina. Purposive snowball sampling was employed. Data were coded using a content analysis approach in NVivo 10. Fleiss' kappa coefficient, a measure of interrater reliability, was 0.83. **FINDINGS:** Twenty-seven participants self-identified as African American. The mean age of focus group participants was 45.3 years. Knowledge of human papillomavirus (HPV) and cervical cancer risk was relatively low. Participants positively viewed cervical cancer screening and HPV vaccination. Lack of health insurance and costs were screening barriers. Providers were viewed as trusted health information sources, yet stigma and fear negatively influenced screening. Cultural identity served as a facilitator and barrier for screening. Motivated by strength, identified as a central to African-American womanhood, participants viewed cervical cancer prevention as an important responsibility. However, the "Strong Black Woman" script, which has been associated with self-care and coping strategies, was also a screening barrier owing to competing priorities. **CONCLUSIONS:** Study

findings provide insight into cervical cancer prevention decision making and support tailored interventions. Culturally relevant interventions may better convey evidence-based messages about advances in cervical cancer prevention and control.

Brenner, H., L. Altenhofen, et al. "Expected long-term impact of the German screening colonoscopy programme on colorectal cancer prevention: Analyses based on 4,407,971 screening colonoscopies." Eur J Cancer. 2015 Jul;51(10):1346-53. doi: 10.1016/j.ejca.2015.03.020. Epub 2015 Apr 20.

**AIM:** Endoscopy based screening programmes for colorectal cancer (CRC) are being implemented in an increasing number of countries. In Germany, screening colonoscopy at age 55 or older has been offered since the end of 2002. We aimed to estimate the long-term impact of this offer on CRC prevention. **METHODS:** We estimated numbers of prevented CRC cases by expected age and year of their (prevented) occurrence over four decades (2005-2045) by four state Markov models (non-advanced adenoma, advanced adenoma, preclinical CRC, clinically manifest CRC). Estimates are based on screening colonoscopies reported to the German screening colonoscopy registry in 2003-2012 (N=4,407,971), transition rates between the four states and general population mortality rates. **RESULTS:** Numbers of prevented clinically manifest CRC cases are projected to increase from <100 in 2005 to approximately 6500 in 2015, 12,600 in 2025, 15,400 in 2035 and 16,000 in 2045, compared to approximately 58,000 incident cases observed in 2003. The annual number of prevented cases is expected to be higher among men than among women and to strongly vary by age. The vast majority of prevented cases would have occurred at age 75 or older. **CONCLUSIONS:** Despite modest participation rates, the German screening colonoscopy programme will lead to substantial reductions in the CRC burden. The reductions will be fully disclosed in the long run only and predominantly affect numbers of incident cases above 75years of age. Screening offers would need to start at younger ages in order to achieve more effective CRC prevention at younger ages.

Casey, S. C., A. Amedei, et al. Cancer prevention and therapy through the modulation of the tumor microenvironment. Semin Cancer Biol. 2015 Apr 10. pii: S1044-579X(15)00015-2. doi: 10.1016/j.semcancer.2015.02.007.

Cancer arises in the context of an in vivo tumor microenvironment. This microenvironment is both a cause and consequence of tumorigenesis. Tumor and host cells co-evolve dynamically through indirect and direct cellular interactions, eliciting

multiscale effects on many biological programs, including cellular proliferation, growth, and metabolism, as well as angiogenesis and hypoxia and innate and adaptive immunity. Here we highlight specific biological processes that could be exploited as targets for the prevention and therapy of cancer. Specifically, we describe how inhibition of targets such as cholesterol synthesis and metabolites, reactive oxygen species and hypoxia, macrophage activation and conversion, indoleamine 2,3-dioxygenase regulation of dendritic cells, vascular endothelial growth factor regulation of angiogenesis, fibrosis inhibition, endoglin, and Janus kinase signaling emerge as examples of important potential nexuses in the regulation of tumorigenesis and the tumor microenvironment that can be targeted. We have also identified therapeutic agents as approaches, in particular natural products such as berberine, resveratrol, onionin A, epigallocatechin gallate, genistein, curcumin, naringenin, desoxyrhapontigenin, piperine, and zerumbone, that may warrant further investigation to target the tumor microenvironment for the treatment and/or prevention of cancer.

Chai, J., X. Shen, et al. "eCROPS-CA: a systematic approach toward effective and sustainable cancer prevention in rural China." *BMC Cancer*. 2015 Apr 8;15:233. doi: 10.1186/s12885-015-1253-6.

**BACKGROUND:** Effective prevention against cancers depends heavily on sustained individual efforts practicing protective behaviors and avoiding risk factors in a complex sociocultural context, which requires continuous and personalized supports. Contemporary prevention relies primarily on strategies targeting general population with limited attention being paid to individualized approaches. This study tests a novel package called, in acronym of core intervention components, eCROPS-CA that leverages protective behaviors against over 80% leading cancers among high risk individuals via continuous and tailored counseling by village doctors. **METHODS/DESIGN:** The study utilizes a quasi-RCT design involving 4320 high risk individuals selected, via rapid and detailed risk assessments, from about 72,000 farmers aged 35+ in 36 administrative villages randomized into equal intervention and delayed intervention arms. The intervention arm receives baseline and semiannual follow up evaluations plus eCROPS-CA for 5 years; while the control arm, only the baseline and follow-up evaluations for the first 5 years and eCROPS-CA starting from the 6(th) year if the intervention is proved effective. eCROPS-CA comprises electronic supports and supervision (e), counseling cancer prevention (C), recipe for objective behaviors (R), operational toolkit (O), performance-based incentives (P), and screening and assessment

(S). Evaluation measures include: incidence and stage of the leading cancers, cancer-related knowledge, attitudes and practices; easy biophysical indicators (e.g., body mass index, blood pressure); intervention compliance, acceptance of the package. **DISCUSSION:** The prevention package incorporates key success factors in a synergetic way toward cost-effectiveness and long-term sustainability. It targets a set rather than any single cancer; chooses village doctors as key solution to the widespread lack of professional manpower in implementing personalized and thus relatively sophisticated prevention; adopts real-time monitoring in reaching continuous improvement; utilizes smart web aids to enable prioritizing complex determinants of objective behaviors, linking counseling sessions happened at different time points and hence delivering highly coordinated prevention; uses 2-stage risk assessment models in identifying high risk individuals so as to focus on the most needed; applies standardized operation procedures in simplifying and smoothing behavior intervention yet ensuring delivery of essential steps and key elements. **TRIALS REGISTRY:** ISRCTN33269053.

Chau, C. H., D. K. Price, et al. "Finasteride concentrations and prostate cancer risk: results from the prostate cancer prevention trial." *PLoS One*. 2015 May 8;10(5):e0126672. doi: 10.1371/journal.pone.0126672. eCollection 2015.

**OBJECTIVE:** In the Prostate Cancer Prevention Trial (PCPT), finasteride reduced the risk of prostate cancer by 25%, even though high-grade prostate cancer was more common in the finasteride group. However, it remains to be determined whether finasteride concentrations may affect prostate cancer risk. In this study, we examined the association between serum finasteride concentrations and the risk of prostate cancer in the treatment arm of the PCPT and determined factors involved in modifying drug concentrations. **METHODS:** Data for this nested case-control study are from the PCPT. Cases were drawn from men with biopsy-proven prostate cancer and matched controls. Finasteride concentrations were measured using a liquid chromatography-mass spectrometry validated assay. The association of serum finasteride concentrations with prostate cancer risk was determined by logistic regression. We also examine whether polymorphisms in the enzyme target and metabolism genes of finasteride are related to drug concentrations using linear regression. **RESULTS AND CONCLUSIONS:** Among men with detectable finasteride concentrations, there was no association between finasteride concentrations and prostate cancer risk, low-grade or high-grade, when finasteride concentration was analyzed as a continuous

variable or categorized by cutoff points. Since there was no concentration-dependent effect on prostate cancer, any exposure to finasteride intake may reduce prostate cancer risk. Of the twenty-seven SNPs assessed in the enzyme target and metabolism pathway, five SNPs in two genes, CYP3A4 (rs2242480; rs4646437; rs4986910), and CYP3A5 (rs15524; rs776746) were significantly associated with modifying finasteride concentrations. These results suggest that finasteride exposure may reduce prostate cancer risk and finasteride concentrations are affected by genetic variations in genes responsible for altering its metabolism pathway. TRIAL REGISTRATION: ClinicalTrials.gov NCT00288106.

Chen, C. H., C. Y. Chung, et al. "Risk of cancer among HIV-infected patients from a population-based nested case-control study: implications for cancer prevention." *BMC Cancer*. 2015 Mar 16;15:133. doi: [10.1186/s12885-015-1099-y](https://doi.org/10.1186/s12885-015-1099-y).

**BACKGROUND:** The burden of cancer is likely to increase among the human immunodeficiency virus (HIV)-positive population as it ages due to successful antiretroviral therapy (ART). The purpose of this study was to determine the risk of cancer in HIV-infected patients. **METHODS:** This study was a matched nested case-control study. It was performed using the National Health Insurance Research Database of Taiwan. The control group included non-HIV-infected patients matched by sex, age, and year of enrollment. Logistic regression analyses were performed and simultaneously adjusted for potential confounders (income, urbanization, and Charlson index of comorbidity to evaluate HIV infection as an independent risk of cancer. We calculated the overall and sex-specific standardized incidence ratios (SIR) to investigate the pattern of cancer risk and overall cancer risk in the patients with HIV infection. **RESULTS:** Of the 1,115 HIV-infected patients, 104 (9.33%) developed cancer during the 11-year follow-up period. The risk of cancer for patients with HIV infection was significant (adjusted odds ratio = 3.89, 95% confidence interval [CI] = 2.92-5.19) after adjustment for potential confounders. There was a significantly increased risk of developing non-Hodgkin lymphoma (SIR = 25.73, 95% CI = 6.83-90.85), cervical cancer (SIR = 4.01, 95% CI = 1.0-16.06), lymphoma (SIR = 20.26, 95% CI = 5.86-70.10), and respiratory and intrathoracic cancer (SIR = 20.09, 95% CI = 2.34-172.09) compared with the control group. In addition, HIV-infected patients were at significant risk for renal, oral, breast, liver, skin, and colorectal cancer. **CONCLUSIONS:** Patients with HIV infection are at increased risk for several specific cancers. Our results support the implementation of an

active and accelerated cancer screening schedule for patients with HIV infection to increase their life span.

Chene, G., G. Lamblin, et al. "[Prophylactic salpingectomy or salpingo-oophorectomy as an ovarian cancer prevention?]." *Presse Med*. 2015 Mar;44(3):317-23. doi: [10.1016/j.lpm.2014.07.024](https://doi.org/10.1016/j.lpm.2014.07.024). Epub 2015 Jan 8.

A recent hypothesis has stated that many ovarian cancers (especially high-grade serous histotype) could arise from the distal part of the fallopian tube. On one hand we know that risk-reducing salpingo-oophorectomy is the most effective prevention for ovarian cancer among BRCA mutation carriers. On the other, oophorectomy increases the relative risk for cardiovascular, osteoporotic psychosexual and cognitive dysfunctions in premenopausal women. This raises the question whether bilateral salpingectomy could be an effective strategy in the prevention of ovarian cancer in case of hereditary predisposition and in the general population. Here we discuss origin of ovarian cancer in the light of the latest molecular studies and the relative risks and benefits of a strategy of exclusive salpingectomy in comparison with the classical adnexectomy.

Chirumbolo, S. "Vitamin D3 in cancer prevention and therapy: the nutritional issue." *Horm Mol Biol Clin Investig*. 2015 Jun 9. pii: [/j/hmbci.ahead-of-print/hmbci-2015-0011/hmbci-2015-0011.xml](https://doi.org/10.1515/hmbci-2015-0011). doi: [10.1515/hmbci-2015-0011](https://doi.org/10.1515/hmbci-2015-0011).

The action of vitamin D3, in its biological form 1alpha,25(OH)2vitD3 or calcitriol, may be summarized as a steroid-like hormone able to modulate basic functions of cell encompassing energy balance, stress response, mitochondria biogenesis, intracellular calcium oscillations, and replication/apoptosis mechanisms leading to cell survival. Moreover, calcitriol exerts a potent role as an innate and adaptive immune cytokine as immunity is closely related to self-maintenance through its energetic/metabolic balance and homeostasis of cell turnover. Therefore, vitamin D might be the ancestral form of survival hormones developed with calcified vertebrate bearing skeleton in order to survive far from water. This characteristic may suggest that the role of dietary vitamin D in preventing cancer is simply ancillary to the many factors playing a major role in contrasting impairment in energy balance and cell survival. Most probably, the immune role of calcitriol might be included in the maintenance, mostly by adipose tissue, of an anti-inflammatory, tolerant immune status, depending on the immune tolerance and modulation from the gut. A balance closely modulated by the leptin axis, which when



impairments in metabolism occur, such as in insulin resistance or obesity, calcitriol is unable to face at this imbalance, while leptin plays a major role and cancer progression may be promoted. Furthermore, this mechanism promotes epithelial/mesenchymal transition-mediated fibrosis, leading to cancer resistance to immune control and drug action. Interestingly, this pathologic picture is triggered by deficiency in vitamin D from the diet. Therefore, a dietary habit including vitamin D sources, besides flavonoids, may ameliorate lifestyle and health span in most individuals, depending on their genetic background.

Chowdhury, S., L. Henneman, et al. "Do Health Professionals Need Additional Competencies for Stratified Cancer Prevention Based on Genetic Risk Profiling?" *J Pers Med.* 2015 Jun 9;5(2):191-212. doi: [10.3390/jpm5020191](https://doi.org/10.3390/jpm5020191).

There is growing evidence that inclusion of genetic information about known common susceptibility variants may enable population risk-stratification and personalized prevention for common diseases including cancer. This would require the inclusion of genetic testing as an integral part of individual risk assessment of an asymptomatic individual. Front line health professionals would be expected to interact with and assist asymptomatic individuals through the risk stratification process. In that case, additional knowledge and skills may be needed. Current guidelines and frameworks for genetic competencies of non-specialist health professionals place an emphasis on rare inherited genetic diseases. For common diseases, health professionals do use risk assessment tools but such tools currently do not assess genetic susceptibility of individuals. In this article, we compare the skills and knowledge needed by non-genetic health professionals, if risk-stratified prevention is implemented, with existing competence recommendations from the UK, USA and Europe, in order to assess the gaps in current competences. We found that health professionals would benefit from understanding the contribution of common genetic variations in disease risk, the rationale for a risk-stratified prevention pathway, and the implications of using genomic information in risk-assessment and risk management of asymptomatic individuals for common disease prevention.

Cloud, A. J., A. Thai, et al. "The impact of cancer prevention guideline adherence on overall mortality in a high-risk cohort of women from the New York site of the Breast Cancer Family Registry." *Breast Cancer Res Treat.* 2015 Jan;149(2):537-46. doi: [10.1007/s10549-014-3234-x](https://doi.org/10.1007/s10549-014-3234-x). Epub 2015 Jan 21.

The American Cancer Society (ACS) recommends at least 150 min of moderate intensity physical activity per week, alcohol intake of  $\leq 1$  drink per day, and maintaining a body mass index (BMI) of  $<25$  kg/m<sup>2</sup> for breast cancer prevention. Adherence to these guidelines has been linked to lower overall mortality in average-risk populations, it is not known if mortality reduction extends to women at higher risk given their family history of breast cancer. We followed 2,905 women from a high-risk Breast Cancer Family Registry in New York, of which 77 % were white non-Hispanic and 23 % were Hispanic. We collected information on BMI, physical activity, and alcohol intake at baseline and prospectively followed our cohort for outcomes based on questionnaires and National Death Index linkage. We used Cox regression to examine the relation between adherence to ACS guidelines and overall mortality and examined effect modification by race, age, and BRCA status. There were 312 deaths after an average of 9.2  $\pm$  4.1 years of follow-up. Adherence to all three ACS recommendations was associated with 44-53 % lower mortality in women unaffected with breast cancer at baseline [Hazard Ratio (HR) 0.56, 95 % CI (0.33-0.93)] and in women affected with breast cancer at baseline [HR 0.47, 95 % CI (0.30-0.74)]. These associations remained after stratification by age, race, and BRCA status {e.g., BRCA1 and/or BRCA2 carriers [HR 0.39, 95 % CI (0.16-0.97)]}. These results support that women at high risk, similar to women at average risk, may also have substantial benefits from maintaining the ACS guidelines.

Cueva, K., M. Cueva, et al. "Print Material in Cancer Prevention: an Evaluation of Three Booklets Designed with and for Alaska's Community Health Workers." *J Cancer Educ.* 2015 Apr 14.

With increased internet access in rural Alaska and subsequent shifts in access to health information, we sought to understand the current role of printed cancer education booklets focused on recommended cancer screening exams. This evaluation reviewed three cancer education booklets specifically created with and for Alaska's Community Health Workers (CHWs) and the people in their communities. The booklets were created in an adaptation of empowerment theory, focused on working within a community-based participatory framework, in a culturally respectful manner, to shift cancer prevention norms by empowering CHWs to catalyze health behavior change for both themselves and their communities. The booklets incorporated traditional Alaska Native values and were designed to connect with readers at an affective and informational place that emphasized relationships. Since 2010, over

20,000 booklets have been distributed. Between January 2013 and March 2014, CHWs from throughout Alaska were invited to complete a three-page anonymous written evaluation of the booklets during community health trainings in Anchorage, Alaska. A total of 102 CHWs completed evaluations, with the vast majority indicating that they liked (100 %), and learned (96 %) from, the booklets. The evaluation results suggest that printed booklets designed in a culturally responsive manner, which both communicate medically accurate information and reach readers at an affective place to inspire action through raising awareness in relationship with others, are a helpful way to receive, discuss, and disseminate cancer screening information among Alaska Native people.

Dunn, B. K., S. Ghosh, et al. "JNCI and cancer prevention." *J Natl Cancer Inst.* 2015 Feb 24;107(3). pii: djv021. doi: 10.1093/jnci/djv021. Print 2015 Mar.

The Journal of the National Cancer Institute (JNCI), with its broad coverage of bench research, epidemiologic studies, and clinical trials, has a long history of publishing practice-changing studies in cancer prevention and public health. These include studies of tobacco cessation, chemoprevention, and nutrition. The landmark Breast Cancer Prevention Trial (BCPT)-the first large trial to prove efficacy of a preventive medication for a major malignancy-was published in the Journal, as were key ancillary papers to the BCPT. Even when JNCI was not the publication venue for the main trial outcomes, conceptual and design discussions leading to the trial as well as critical follow-up analyses based on trial data from the Prostate Cancer Prevention Trial (PCPT) and the Selenium and Vitamin E Chemoprevention Trial (SELECT) were published in the Journal. The Journal has also published important evidence on very charged topics, such as the purported link between abortion and breast cancer risk. In summary, JNCI has been at the forefront of numerous major publications related to cancer prevention.

Fabian, C. J., B. F. Kimler, et al. "Omega-3 fatty acids for breast cancer prevention and survivorship." *Breast Cancer Res.* 2015 May 4;17:62. doi: 10.1186/s13058-015-0571-6.

Women with evidence of high intake ratios of the marine omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) relative to the omega-6 arachidonic acid have been found to have a reduced risk of breast cancer compared with those with low ratios in some but not all case-control and cohort studies. If increasing EPA and DHA relative to arachidonic acid is effective in reducing breast cancer risk, likely mechanisms include reduction in

proinflammatory lipid derivatives, inhibition of nuclear factor-kappaB-induced cytokine production, and decreased growth factor receptor signaling as a result of alteration in membrane lipid rafts. Primary prevention trials with either risk biomarkers or cancer incidence as endpoints are underway but final results of these trials are currently unavailable. EPA and DHA supplementation is also being explored in an effort to help prevent or alleviate common problems after a breast cancer diagnosis, including cardiac and cognitive dysfunction and chemotherapy-induced peripheral neuropathy. The insulin-sensitizing and anabolic properties of EPA and DHA also suggest supplementation studies to determine whether these omega-3 fatty acids might reduce chemotherapy-associated loss of muscle mass and weight gain. We will briefly review relevant omega-3 fatty acid metabolism, and early investigations in breast cancer prevention and survivorship.

Fanidi, A., P. Ferrari, et al. "Adherence to the World Cancer Research Fund/American Institute for Cancer Research cancer prevention recommendations and breast cancer risk in the Cancer de Mama (CAMA) study." *Public Health Nutr.* 2015 Mar 25;1-12.

**OBJECTIVE:** We investigated the association between adherence to the recommendations of the World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) and breast cancer (BC) risk in the Cancer de Mama (CAMA) study in a Mexican population. **DESIGN:** Population-based case-control study. **SUBJECTS:** Incident BC cases (n 1000) and controls (n 1074) matched on age, region and health-care system were recruited. **SETTING:** In-person interviews were conducted to assess BC risk factors and habitual diet was assessed with an FFQ. Conformity to the WCRF/AICR recommendations was evaluated through a score incorporating seven WCRF/AICR components (body fatness, physical activity, foods and drinks that promote weight gain, plant foods, animal foods, alcoholic drinks and breast-feeding), with high scores indicating adherence to the WCRF/AICR recommendations. **RESULTS:** No statistically significant associations between WCRF/AICR score and risk of BC were observed. After excluding BMI from the WCRF/AICR score, the top quartile was associated with a decreased BC risk overall, with OR<sub>Q4-Q1</sub>=0.68 (95 % CI 0.49, 0.92, P trend=0.03), and among postmenopausal women, with OR<sub>Q4-Q1</sub>=0.60 (95 % CI 0.39, 0.94, P trend=0.03). Inverse associations were observed between BMI and risk of BC overall and among premenopausal women, with OR=0.57 (95 % CI 0.42, 0.76, P trend<0.01) and 0.48 (95 % CI 0.31, 0.73, P trend<0.01), respectively. Physical activity level was inversely associated with

BC risk. CONCLUSIONS: The WCRF/AICR index was not related with BC risk in the CAMA study. A combination of six components excluding BMI showed strong protective associations, particularly in postmenopausal women. Further prospective studies are required to clarify the role of adherence to WCRF/AICR recommendations, particularly with respect to BMI, in the Mexican population.

Farang, M. "Can Aspirin and Cancer Prevention be Ageless Companions?" J Clin Diagn Res. 2015 Jan;9(1):XE01-XE03. doi: 10.7860/JCDR/2015/9375.5391. Epub 2015 Jan 1.

Over the past few decades, the rate of cancer diagnosis has increased worldwide due to the increase in population and average life expectancy, and also, due to the advances in diagnostic medical technology that facilitate early cancer detection and recognition. Nonetheless, the treatment options have not been developed proportional to this increase, with a huge number of patients frequently being diagnosed with different types of fatal cancer. This has prompted different health organizations to search for novel strategies to prevent cancer, or even halt its progression. Having failed to provide optimum vascular protection benefits, especially with the introduction of relatively superior antiplatelets, such as adenosine diphosphate (ADP) receptor inhibitors; clopidogrel and ticagrelor, regular aspirin use was proposed to reduce the risk of common cancers like colorectal cancer, gastric cancer, breast cancer, lung cancer, prostate cancer and haematological malignancies, as suggested by epidemiological studies. However, it is difficult to draw any firm conclusions on such weak data, as this could raise false hopes among patients and physicians and could potentially mislead scientific research. Clearly, current evidence highlights a gap in medical research and emphasizes the need to carry out interventional studies in high risk for cancer patients using specific aspirin doses in order to validate the data. This should also shed some light on the risk-benefit profile in view of the potential for bleeding complications, especially with the higher doses.

Finch, L., P. Youl, et al. "User preferences for text message-delivered skin cancer prevention and early detection." J Telemed Telecare. 2015 Jun;21(4):227-34. doi: 10.1177/1357633X15571652. Epub 2015 Feb 19.

Evidence is needed for the acceptability and user preferences of receiving skin cancer-related text messages. We prepared 27 questions to evaluate attitudes, satisfaction with program characteristics such as timing and spacing, and overall satisfaction with the Healthy Text program in young adults.

Within this randomised controlled trial (age 18-42 years), 546 participants were assigned to one of three Healthy Text message groups; sun protection, skin self-examination, or attention-control. Over a 12-month period, 21 behaviour-specific text messages were sent to each group. Participants' preferences were compared between the two interventions and control group at the 12-month follow-up telephone interview. In all three groups, participants reported the messages were easy to understand (98%), provided good suggestions or ideas (88%), and were encouraging (86%) and informative (85%) with little difference between the groups. The timing of the texts was received positively (92%); however, some suggestions for frequency or time of day the messages were received from 8% of participants. Participants in the two intervention groups found their messages more informative, and triggering behaviour change compared to control. Text messages about skin cancer prevention and early detection are novel and acceptable to induce behaviour change in young adults.

Foley, O. W., N. Birrer, et al. "Effect of Educational Intervention on Cervical Cancer Prevention and Screening in Hispanic Women." J Community Health. 2015 May 31.

To evaluate the effect of an educational intervention on four domains of health care utilization and cervical cancer prevention and screening in a Hispanic population. Data collected from a survey were used to design education strategies focused on four domains of interest. A second survey was conducted to measure the impact of the intervention. Following the intervention, respondents were more likely to have any knowledge of human papillomavirus (HPV). Respondents living in the United States (US) for <5 years were more likely to have had a Papanicolaou smear in the preceding 3 years ( $p = 0.0314$ ), to report knowledge of HPV vaccination ( $p = 0.0258$ ), and to be willing to vaccinate themselves ( $p = 0.0124$ ) and their children ( $p = 0.0341$ ) after the intervention. Educational interventions designed to meet the needs identified by the sample group led to an increase in HPV awareness throughout the entire population surveyed and an increase in health care service utilization and HPV vaccine acceptance for women living in the US for <5 years. These tools should be promoted to reduce the cervical cancer burden on vulnerable populations.

Fujiki, H., E. Sueoka, et al. "Primary cancer prevention by green tea, and tertiary cancer prevention by the combination of green tea catechins and anticancer compounds." J Cancer Prev. 2015 Mar;20(1):1-4. doi: 10.15430/JCP.2015.20.1.1.

Green tea is a daily beverage, a non-oxidized non-fermented product containing at least four green tea catechins. Considering our first results when repeated applications of (-)-epigallocatechin gallate (EGCG) prevented tumor promotion in mouse skin, we have continued to look at green tea as a possible cancer preventive agent. 1) The 10-year prospective cohort study by Drs. K. Nakachi and K. Imai revealed that drinking 10 Japanese-size cups (120 mL/cup) of green tea per day delayed cancer onset in humans by 7.3 years among females and by 3.2 years among males. The delay of cancer onset is of course significant evidence of primary cancer prevention in humans. 2) In collaboration with Dr. H. Moriwaki's group we successfully presented a prototype of tertiary cancer prevention showing that 10 Japanese-size cups of green tea daily, supplemented with tablets of green tea extract (G.T.E), reduced recurrence of colorectal adenomas in polypectomy patients by 51.6% (from 31% to 15%). 3) In 1999, we first reported that the combination of green tea catechins and non-steroidal anti-inflammatory drugs showed synergistic anticancer effects in both in vitro and in vivo experiments, along with elucidation of the mechanism. 4) Further studies by other investigators have revealed that various combinations of EGCG or green tea extract and anticancer compounds inhibit tumor volume in xenograft mouse models implanted with various human cancer cell lines. Green tea is a cancer preventive, and green tea catechins act as synergists with anticancer compounds.

Hardy, M. L. and K. Duvall "Multivitamin/multimineral supplements for cancer prevention: implications for primary care practice." *Postgrad Med.* 2015 Jan;127(1):107-16. doi: [10.1080/00325481.2015.993284](https://doi.org/10.1080/00325481.2015.993284).

**Abstract** There is a popular belief that multivitamin and mineral (MVM) supplements can help prevent cancer and other chronic diseases. Studies evaluating the effects of MVM supplements on cancer risk have largely been observational, with considerable methodologic limitations, and with conflicting results. We review evidence from the few available randomized, controlled trials that assessed the effects of supplements containing individual vitamins, a combination of a few select vitamins, or complete MVM supplements, with a focus on the recent Physicians' Health Study II (PHS II). PHS II is a landmark trial that followed generally healthy middle-aged and older men (mean age 64 years) who were randomized to daily MVM supplementation for a mean duration of 11 years. Men taking MVMs experienced a statistically significant 8% reduction in incidence of total cancer (hazard ratio [HR]: 0.92; 95% confidence interval [CI]: 0.86-0.998;  $p = 0.04$ ).

Men with a history of cancer derived an even greater benefit: cancer incidence was 27% lower with MVM supplementation versus placebo in this subgroup (HR: 0.73; 95% CI: 0.56-0.96;  $p = 0.02$ ). Positive results of PHS II contrast with randomized studies of individual vitamins or small combinations of vitamins, which have largely shown a neutral effect, and in some cases, an adverse effect, on cancer risk. The results of PHS II may have a considerable public health impact, potentially translating to prevention of approximately 68 000 cancers per year if all men were to use similar supplements, and to an even greater benefit with regard to secondary prevention of cancer.

Heaphy, C. M., G. Gaonkar, et al. "Prostate stromal cell telomere shortening is associated with risk of prostate cancer in the placebo arm of the Prostate Cancer Prevention Trial." *Prostate.* 2015 Aug;75(11):1160-6. doi: [10.1002/pros.22997](https://doi.org/10.1002/pros.22997). Epub 2015 Apr 20.

**BACKGROUND:** Telomeres are repetitive nucleoproteins that help maintain chromosomal stability by inhibiting exonucleolytic degradation, prohibiting inappropriate homologous recombination, and preventing chromosomal fusions by suppressing double-strand break signals. We recently observed that men treated for clinically localized prostate cancer with shorter telomeres in their cancer-associated stromal cells, in combination with greater variation in cancer cell telomere lengths, were significantly more likely to progress to distant metastases, and die from their disease. Here, we hypothesized that shorter stromal cell telomere length would be associated with prostate cancer risk at time of biopsy. **METHODS:** Telomere-specific fluorescence in situ hybridization (FISH) analysis was performed in normal-appearing stromal, basal epithelial, and luminal epithelial cells in biopsies from men randomized to the placebo arm of the Prostate Cancer Prevention Trial. Prostate cancer cases ( $N = 32$ ) were either detected on a biopsy performed for cause or at the end of the study per trial protocol, and controls ( $N = 50$ ), defined as negative for cancer on an end-of-study biopsy performed per trial protocol (e.g., irrespective of indication), were sampled. Logistic regression was used to estimate the association between mean telomere length of the particular cell populations, cell-to-cell telomere length variability, and risk of prostate cancer. **RESULTS:** Men with short stromal cell telomere lengths (below median) had 2.66 (95% CI 1.04-3.06;  $P = 0.04$ ) times the odds of prostate cancer compared with men who had longer lengths (at or above median). Conversely, we did not observe statistically significant associations for short telomere lengths in normal-appearing basal (OR = 2.15, 95% CI 0.86-5.39;  $P = 0.10$ ) or luminal (OR =



1.15, 95% CI 0.47-2.80; P = 0.77) cells. CONCLUSIONS: These findings suggest that telomere shortening in normal stromal cells is associated with prostate cancer risk. It is essential to extend and validate these findings, while also identifying the cellular milieu that comprises the subset of cells with short telomeres within the prostate tumor microenvironment. Prostate 75: 1160-1166, 2015. (c) 2015 Wiley Periodicals, Inc.

Hertrampf, K., N. Eisemann, et al. "Baseline data of oral and pharyngeal cancer before introducing an oral cancer prevention campaign in Germany." J Craniomaxillofac Surg. 2015 Apr;43(3):360-6. doi: 10.1016/j.jcms.2014.12.011. Epub 2015 Jan 7.

OBJECTIVES: Oral and pharyngeal cancer is still a serious health problem with an annual incidence of about 13,000 in Germany. This study aimed at describing trends of incidence and mortality in Germany by age, sex, and sub-site as a baseline for an oral cancer prevention campaign. METHODS: Using data from the National Association of Population-based Cancer Registries, incidence rates for oral and pharyngeal cancer (ICD-10, C00-C14) from 2003 to 2011 and mortality rates from 1990 to 2012 were analysed by age, sex, and sub-site (C00-C06, C07-C08, C09-C14). Trends were described by annual percentage changes. RESULTS: Men are 2.5-times more likely than women to be diagnosed and 3-times more likely to die from this tumour. Incidence and mortality in women increased slightly during the last decade, while incidence and mortality in men remained stable at a high level. While a decline was observed for younger age groups, an increase was seen in the elderly. For some sub-sites a deviation from this overall pattern was observed. CONCLUSIONS: The decrease in this tumour in younger age groups is pleasing and may be attributed to public efforts in non-smoker protection in recent years. Further efforts are needed to counteract the increasing burden of disease in older age groups and in men.

Holm, R. P. "Skin cancer prevention and screening." S D Med. 2015;Spec No:75-7, 79-81.

Skin cancer is the most common and recognizable of all cancers. The human dermis can turn malignant due to excessive solar exposure and chronic injury, with the influence of genetic risk and inherited pigmentation. Basal cell carcinoma, the most common skin cancer in lighter pigmented individuals, spreads locally, and usually appears pearly and often ulcerative. Squamous cell carcinoma, the most common skin cancer in darker pigmented people, metastasizes to lymph nodes 2-5 percent of the time, appears often scaly, smooth, nodular, ulcerative, or

even pigmented. Malignant melanoma accounts for 2 percent of skin cancers, but for the vast majority of skin cancer deaths. All three can mimic each other. Solar or ultraviolet (UV) light exposure is the most common carcinogen; however, any chronic irritant can increase the risk, and efforts to avoid such exposure is apropos. Though not yet absolutely proven, skin cancer research strongly supports the following statements: sunscreen is protective, tanning devices are causative, and the routine screening of high-risk individuals is preventative. Authorities strongly recommend avoiding excess sun and UV light, using sunscreen, and keeping a watchful eye for unusual skin lesions.

Hong, G., J. White, et al. "Survey of Policies and Guidelines on Antioxidant Use for Cancer Prevention, Treatment, and Survivorship in North American Cancer Centers: What Do Institutions Perceive as Evidence?" Integr Cancer Ther. 2015 Jul;14(4):305-17. doi: 10.1177/1534735415572884. Epub 2015 Feb 25.

BACKGROUND: Health care policies and guidelines that are clear and consistent with research evidence are important for maximizing clinical outcomes. To determine whether cancer centers in Canada and the United States had policies and/or guidelines about antioxidant use, and whether policies were aligned with the evidence base, we reviewed current research evidence in the field, and we undertook a survey of the policies and guidelines on antioxidant use at cancer institutions across North America. METHODS: A survey of policies and guidelines on antioxidant use and the development and communication of the policies and guidelines was conducted by contacting cancer institutions in North America. We also conducted a Website search for each institution to explore any online resources. RESULTS: Policies and guidelines on antioxidant use were collected from 78 cancer institutions. Few cancer institutions had policies (5%) but most provided guidelines (69%). Antioxidants from diet were generally encouraged at cancer institutions, consistent with the current research evidence. In contrast, specific antioxidant supplements were generally not recommended at cancer institutions. Policies and guidelines were developed using evidence-based methods (53%), by consulting another source (35%), or through discussions/conference (26%), and communicated mainly through online resources (65%) or written handouts (42%). For cancer institutions that had no policy or guideline on antioxidants, lack of information and lack of time were the most frequently cited reasons. CONCLUSIONS: Policies and guidelines on antioxidants from diet were largely consistent with the research evidence. Policies and

guidelines on antioxidant supplements during treatment were generally more restrictive than the research evidence might suggest, perhaps due to the specificity of results and the inability to generalize findings across antioxidants, adding to the complexity of their optimal and safe use. Improved communication of comprehensive research evidence to cancer institutions may aid in the development of more evidence-based policies and guidelines.

Hoque, A., S. Yao, et al. "Effect of finasteride on serum androstenedione and risk of prostate cancer within the prostate cancer prevention trial: differential effect on high- and low-grade disease." *Urology*. 2015 Mar;85(3):616-20. doi: 10.1016/j.urology.2014.11.024.

**OBJECTIVE:** To evaluate the effect of finasteride on serum androst-4-ene-3,17-dione (androstenedione) and its association with prostate cancer risk among subjects who participated in the Prostate Cancer Prevention Trial. **METHODS:** We analyzed serum androstenedione levels in 317 prostate cancer cases and 353 controls, nested in the Prostate Cancer Prevention Trial, a randomized placebo-controlled trial that found finasteride decreased prostate cancer risk. Androstenedione is the second most important circulating androgen in men besides testosterone and also a substrate for 5 $\alpha$ -reductase enzyme. **RESULTS:** We observed a 22% increase in androstenedione levels compared with the baseline values in subjects who were treated with finasteride for 3 years. This significant increase did not vary by case-control status. Adjusted odds ratio and 95% confidence interval for the third tertile of absolute change in androstenedione levels compared with the first tertile were 0.42 (95% confidence interval, 0.19-0.94) for low-grade (Gleason score <7) cases. Similar results were observed when analyzed using percent change. There were no significant associations between serum androstenedione levels and the risk of high-grade disease. **CONCLUSION:** The results of this nested case-control study confirm that finasteride blocks the conversion of testosterone to dihydrotestosterone (DHT) and of androstenedione to 5 $\alpha$ -androstenedione-3,17-dione, which also leads to the reduction of DHT formation. This decrease in DHT may help reduce the risk of low-grade prostate cancer in men. Our data on a differential effect of androstenedione also suggest that some high-grade prostate cancers may not require androgen for progression.

Kabat, G. C., C. E. Matthews, et al. "Adherence to cancer prevention guidelines and cancer incidence, cancer mortality, and total mortality: a prospective

cohort study." *Am J Clin Nutr*. 2015 Mar;101(3):558-69. doi: 10.3945/ajcn.114.094854. Epub 2015 Jan 7.

**BACKGROUND:** Several health agencies have issued guidelines promoting behaviors to reduce chronic disease risk; however, little is known about the impact of such guidelines, particularly on cancer incidence. **OBJECTIVE:** The objective was to determine whether greater adherence to the American Cancer Society (ACS) cancer prevention guidelines is associated with a reduction in cancer incidence, cancer mortality, and total mortality. **DESIGN:** The NIH-AARP Diet and Health Study, a prospective cohort study of 566,401 adults aged 50-71 y at recruitment in 1995-1996, was followed for a median of 10.5 y for cancer incidence, 12.6 y for cancer mortality, and 13.6 y for total mortality. Participants who reported a history of cancer or who had missing data were excluded, yielding 476,396 subjects for analysis. We constructed a 5-level score measuring adherence to ACS guidelines, which included baseline body mass index, physical activity, alcohol intake, and several aspects of diet. Cox proportional hazards models were used to compute HRs and 95% CIs for the association of the adherence score with cancer incidence, cancer mortality, and total mortality. All analyses included fine adjustment for cigarette smoking. **RESULTS:** Among 476,396 participants, 73,784 incident first cancers, 16,193 cancer deaths, and 81,433 deaths from all causes were identified in the cohort. Adherence to ACS guidelines was associated with reduced risk of all cancers combined: HRs (95% CIs) for the highest compared with the lowest level of adherence were 0.90 (0.87, 0.93) in men and 0.81 (0.77, 0.84) in women. Fourteen of 25 specific cancer sites showed a reduction in risk associated with increased adherence. Adherence was also associated with reduced cancer mortality [HRs (95% CIs) were 0.75 (0.70, 0.80) in men and 0.76 (0.70, 0.83) in women] and reduced all-cause mortality [HRs (95% CIs) were 0.74 (0.72, 0.76) in men and 0.67 (0.65, 0.70) in women]. **CONCLUSIONS:** In both men and women, adherence to the ACS guidelines was associated with reductions in all-cancer incidence and the incidence of cancer at specific sites, as well as with reductions in cancer mortality and total mortality. These data suggest that, after accounting for cigarette smoking, adherence to a set of healthy behaviors may have considerable health benefits.

Kabir, Y., R. Seidel, et al. "DNA repair enzymes: an important role in skin cancer prevention and reversal of photodamage--a review of the literature." *J Drugs Dermatol*. 2015 Mar;14(3):297-303.

The incidence of skin cancer continues to increase annually despite preventative measures. Non-melanoma skin cancer affects more than 1,000,000

people in the United States every year.<sup>1</sup> The current preventative measures, such as sunscreens and topical antioxidants, have not shown to be effective in blocking the effects of UV radiation based on these statistics. The level of antioxidants contained in the majority of skin creams is not sufficient to majorly impact free radical damage. Sunscreens absorb only a portion of UV radiation and often are not photostable. In this review article, we present the novel use of exogenous DNA repair enzymes and describe their role in combating photocarcinogenesis and photoaging. Topical application of these enzymes serves to supplement intrinsic DNA repair mechanisms. The direct repair of DNA damage by endogenous repair enzymes lessens rates of mutagenesis and strengthens the immune response to tumor cells. However, these innate mechanisms are not 100% efficient. The use of exogenous DNA repair enzymes presents a novel way to supplement intrinsic mechanisms and improve their efficacy. Several DNA repair enzymes critical to the prevention of cutaneous malignancies have been isolated and added to topical preparations designed for skin cancer prevention. These DNA repair enzymes maximize the rate of DNA repair and provide a more efficient response to carcinogenesis.

Kegler, M. C., M. L. Carvalho, et al. "Use of Mini-Grant to Disseminate Evidence-Based Interventions for Cancer Prevention and Control." *J Public Health Manag Pract.* 2015 Mar 2.

Mini-grants are an increasingly common tool for engaging communities in evidence-based interventions for promoting public health. This article describes efforts by 4 Centers for Disease Control and Prevention/National Cancer Institute-funded Cancer Prevention and Control Research Network centers to design and implement mini-grant programs to disseminate evidence-based interventions for cancer prevention and control. This article also describes source of evidence-based interventions, funding levels, selection criteria, time frame, number and size of grants, types of organizations funded, selected accomplishments, training and technical assistance, and evaluation topics/methods. Grant size ranged from \$1000 to \$10 000 (median = \$6250). This mini-grant opportunity was characterized by its emphasis on training and technical assistance for evidence-based programming and dissemination of interventions from National Cancer Institute's Research-Tested Intervention Programs and Centers for Disease Control and Prevention's Guide to Community Preventive Services. All projects had an evaluation component, although they varied in scope. Mini-grant processes described can serve as a model for organizations such as state health departments

working to bridge the gap between research and practice.

Kim, H. W. and D. H. Kim "Awareness of cervical cancer prevention among mothers of adolescent daughters in Korea: qualitative research." *BMJ Open.* 2015 May 14;5(5):e006915. doi: 10.1136/bmjopen-2014-006915.

**OBJECTIVES:** Korean adolescent girls are unprepared for cervical cancer prevention due to the lack of a mandatory policy regarding human papilloma virus (HPV) vaccination and school health education regarding cervical cancer. The aim of this study was to determine how aware mothers are about cervical cancer prevention in their adolescent daughters, with a view to developing strategies for expanding primary cervical cancer prevention for adolescent girls through the mothers' involvement. **DESIGN:** A qualitative design was employed. Nine mothers with adolescent daughters participated in this study and were interviewed using open-ended questions. The themes were extracted by content analysis. **SETTING:** A general living area in Seoul, South Korea. **PARTICIPANTS:** The snowball method was used to select mothers. **RESULTS:** Five themes emerged. In general, the mothers' awareness of cervical cancer was not clear, and they exhibited a lack of awareness of the importance of having a regular Papanicolaou screening test. The mothers recognised that they were role models for their daughters, and realised and accepted the necessity of educating their daughters regarding cervical cancer; however, they perceived barriers related to the prevention of cervical cancer in their daughters. The mothers recommended enforcing sex education in schools and the provision of financial support for HPV vaccination. **CONCLUSIONS:** The mothers' awareness and preparedness with respect to the prevention of cervical cancer in their adolescent daughters were low and inadequate. Mothers should be informed and motivated to play a role in the education of their daughters regarding cervical cancer prevention. Strategies for disseminating information regarding early cervical cancer prevention for adolescent girls are recommended by communicating with both the girls and their mothers and providing them with education regarding cervical cancer prevention.

Kim, Y. S., T. J. Sayers, et al. "Impact of dietary components on NK and Treg cell function for cancer prevention." *Mol Carcinog.* 2015 Apr 1. doi: 10.1002/mc.22301.

An important characteristic of cancer is that the disease can overcome the surveillance of the immune system. A possible explanation for this

resistance arises from the ability of tumor cells to block the tumoricidal activity of host immune cells such as natural killer (NK) cells by inducing the localized accumulation of regulatory T (Treg) cells. Evidence exists that components in commonly consumed foods including vitamins A, D, and E, water-soluble constituents of mushrooms, polyphenolics in fruits and vegetables, and n-3 fatty acids in fish oil can modulate NK cell activities, Treg cell properties, and the interactions between those two cell types. Thus, it is extremely important for cancer prevention to understand the involvement of dietary components with the early stage dynamics of interactions among these immune cells. This review addresses the potential significance of diet in supporting the function of NK cells, Treg cells, and the balance between those two cell types, which ultimately results in decreased cancer risk. Published 2015. This article is a U.S. Government work and is in the public domain in the USA.

Klemp, J. R. "Breast cancer prevention across the cancer care continuum." *Semin Oncol Nurs.* 2015 May;31(2):89-99. doi: 10.1016/j.soncn.2015.03.002. Epub 2015 Mar 9.

**OBJECTIVES:** To review the current state of breast cancer prevention from primary prevention through survivorship, highlight cross-cutting issues, and discuss strategies for clinical integration and future research. **DATA SOURCES:** Published articles between 1985 and 2015 and original research. **CONCLUSION:** Cancer risk persists across the lifespan. Interprofessional strategies to reduce morbidity and mortality from cancer include primary, secondary, and tertiary prevention (survivorship). Prevention strategies across the cancer care continuum are cross-cutting and focus on measures to: prevent the onset of disease, identify and treat asymptomatic persons who have already developed risk factors or preclinical disease, and restore function, minimize the negative effects of disease, and prevent disease-related complications. **IMPLICATIONS FOR NURSING PRACTICE:** Oncology nurses and advanced practice nurses are vital in the delivery of breast cancer prevention strategies.

Knapp, D. W., D. Dhawan, et al. ""Lassie," "toto," and fellow pet dogs: poised to lead the way for advances in cancer prevention." *Am Soc Clin Oncol Educ Book.* 2015;35:e667-72. doi: 10.14694/EdBook\_AM.2015.35.e667.

Cancer causes substantial morbidity and takes the lives of over 8 million people worldwide each year. Advances in cancer prevention research are crucial, and animal models are key to this. There are many valuable experimentally induced cancer models,

but these do not fully meet the needs for cancer prevention studies. Pet dogs with risks for naturally occurring cancer can fill important gaps in cancer prevention research. Using invasive urothelial carcinoma (iUC) as an example, the advantages of utilizing pet dogs include: (1) close similarities between dogs and humans in carcinogenesis, molecular and cellular features, invasive and metastatic behavior, and response to treatment, thus providing high relevance for comparative studies, (2) shared environment between dogs and humans to help identify not-yet-known environmental iUC risks, (3) strong breed-associated risk (5- to 21-fold increased risk compared with mixed breeds) that facilitates investigation of gene-environment interactions, screening, and early intervention, (4) large size of dogs (versus rodents) that allows collection of fluids and tissues via cystoscopy, and detailed imaging at multiple time points, and (5) acceptance for studies in which each participating dog can benefit while enjoying life in their family environment, and in which findings will help other dogs and humans. An ongoing 3-year study in Scottish Terriers (comparable to a 15- to 20-year study in humans) is aimed at defining genetic and environmental risk factors for iUC, effective methods for screening/early detection, and a successful secondary cancer prevention approach with very promising results to date. Pet dogs can indeed propel cancer prevention research.

Kram, Y. A., T. H. Schmidt, et al. "Attitudes toward Human Papilloma Virus Vaccination and Head and Neck Cancer Prevention in a Diverse, Urban Population." *Otolaryngol Head Neck Surg.* 2015 Mar 16. pii: 0194599815574821.

**OBJECTIVE:** (1) To understand if awareness of the human papilloma virus (HPV) vaccination's potential to prevent head and neck cancer improves acceptability of the vaccine in a large urban population and (2) to identify characteristics of those in whom such discussions would have the greatest impact. **STUDY DESIGN:** In-person, anonymous survey. **SETTING:** Academic public hospital between March 2014 and June 2014. **SUBJECTS:** Patients aged 12 to 24 years and their parents or guardians awaiting scheduled outpatient pediatric appointments. **METHODS:** Demographics and modified Carolina HPV Immunization Attitudes and Beliefs Scales data were cross-analyzed, followed by univariate binomial logistic regression to identify predictors for major outcomes of interest. **RESULTS:** More than 78% of those surveyed indicated they would be more receptive to the HPV vaccine if given strong evidence that it prevented head and neck cancer. Respondents were more likely to increase receptivity to HPV vaccination if they held the belief that they did not



have enough information about the vaccine or indicated they preferred to wait because the vaccine was too new. **CONCLUSION:** Increasing public awareness of head and neck cancer prevention with HPV vaccination could increase HPV vaccination acceptance.

Krishnan, S., S. Sivaram, et al. "Using implementation science to advance cancer prevention in India." Asian Pac J Cancer Prev. 2015;16(9):3639-44.

Oral, cervical and breast cancers, which are either preventable and/or amenable to early detection and treatment, are the leading causes of cancer-related morbidity and mortality in India. In this paper, we describe implementation science research priorities to catalyze the prevention and control of these cancers in India. Research priorities were organized using a framework based on the implementation science literature and the World Health Organization's definition of health systems. They addressed both community-level as well as health systems-level issues. Community-level or "pull" priorities included the need to identify effective strategies to raise public awareness and understanding of cancer prevention, monitor knowledge levels, and address fear and stigma. Health systems-level or "push" and "infrastructure" priorities included dissemination of evidence-based practices, testing of point-of-care technologies for screening and diagnosis, identification of appropriate service delivery and financing models, and assessment of strategies to enhance the health workforce. Given the extent of available evidence, it is critical that cancer prevention and treatment efforts in India are accelerated. Implementation science research can generate critical insights and evidence to inform this acceleration.

Kruk, J. "Lifestyle components and primary breast cancer prevention." Asian Pac J Cancer Prev. 2014;15(24):10543-55.

Breast cancer primary prevention is a high research priority due to the high psychological and economic costs. The disease is a multistep process and several risk factors have been recognized. Over the past three decades numerous studies have investigated the association of lifestyle with breast cancer, showing independent effects of various factors. We report here a summary of the present state of knowledge on the role of lifestyle patterns, such as physical activity, diet, smoking, hormone therapy, and experience of psychological stress in the modulation of breast cancer in women, and discuss commonly accepted biological mechanisms hypothesized as responsible for the associations. The findings indicate that regular physical activity of moderate to vigorous intensity is probably linked with the decreased breast cancer risk

among postmenopausal females and suggestive for a decrease of the risk in premenopausal women. In contrast, the consumption of high-fat diet, alcohol intake, and use of combined estrogen and synthetic progestagen hormonal therapy may increase the risk. Epidemiological findings dealing with a role of smoking and experience of psychological stress are conflicting.

Kumar, N. B., J. Pow-Sang, et al. "Randomized, Placebo-Controlled Trial of Green Tea Catechins for Prostate Cancer Prevention." Cancer Prev Res (Phila). 2015 Apr 14. pii: canprevres.0324.2014.

Preclinical, epidemiological and prior clinical trial data suggest that green tea catechins (GTCs) may reduce prostate cancer (PCa) risk. We conducted a placebo-controlled, randomized clinical trial of Polyphenon E(R) (PolyE), a proprietary mixture of GTCs, containing 400 mg (-)-epigallocatechin-3-gallate (EGCG) per day, in 97 men with high-grade prostatic intraepithelial neoplasia (HGPIN) and/or atypical small acinar proliferation (ASAP). The primary study endpoint was a comparison of the cumulative one-year PCa rates on the two study arms. No differences in the number of PCa cases were observed: 5/49 (PolyE) versus 9/48 (placebo),  $P=0.25$ . A secondary endpoint comparing the cumulative rate of PCa plus ASAP among men with HGPIN without ASAP at baseline, revealed a decrease in this composite endpoint: 3/26 (PolyE) versus 10/25 (placebo),  $P<0.024$ . This finding was driven by a decrease in ASAP diagnoses on the Poly E (0/26) compared to the placebo arm (5/25). A decrease in serum prostate specific antigen (PSA) was observed on the PolyE arm [-0.87 ng/ml (95%CI: -1.66, -0.09)]. Adverse events related to the study agent did not significantly differ between the two study groups. Daily intake of a standardized, decaffeinated catechin mixture containing 400 mg EGCG per day for 1 year accumulated in plasma and was well tolerated but did not reduce the likelihood of PCa in men with baseline HGPIN or ASAP.

Latorre, S. G., S. D. Ivanovic-Zuvic, et al. "[Coverage of the gallbladder cancer prevention strategy in Chile: results from the 2009-2010 National Health Survey]." Rev Med Chil. 2015 Feb;143(2):158-67. doi: 10.4067/S0034-98872015000200002.

**BACKGROUND:** In Chile, gallbladder cancer (GBC) is one of the most important causes of death and gallstone disease (GSD) is its main risk factor. Abdominal ultrasonography (AU) is used for the diagnosis of GSD and cholecystectomy is used to prevent it. **AIM:** To estimate GSD prevalence in the general population and to assess the diagnostic and therapeutic coverage of GSD as a preventive strategy

for GBC in Chile. MATERIAL AND METHODS: A standardized digestive symptoms questionnaire of the 2009-2010 Chilean National Health Survey was answered by 5412 adults over 15 years old. Self-reports of AU, GBD and cholecystectomies were recorded. RESULTS: The prevalence of biliary-type pain was 7.1%. During the last five years, the prevalence of AU was 16%. GSD was reported in 20% of these tests and 84% of them were asymptomatic. The prevalence of AU was significantly lower in Araucania region and among people with less than 12 years of education. Life cholecystectomy prevalence was 11% and reached 40% in people aged over 60 years. Women accounted for 75% of total cholecystectomies. Twenty-one percent of individuals who referred biliary-type pain, were studied with an AU. Only 60% of people with GSD confirmed by AU underwent a cholecystectomy. CONCLUSIONS: GSD affects at least 27% of the Chilean adult population. Important deficits and inequities in GSD diagnostic and therapeutic coverage were identified.

Marek, E., K. Berenyi, et al. "Influence of risk-taking health behaviours of adolescents on cervical cancer prevention: a Hungarian survey." *Eur J Cancer Care (Engl)*. 2015 Jun 8. doi: 10.1111/ecc.12332.

An anonymous questionnaire survey was conducted among the Hungarian adolescents to establish their use of tobacco, alcohol and drugs in relation to sexual behaviours, knowledge of human papillomavirus (HPV) and cervical cancer, and beliefs and attitudes towards screening and vaccination. Results indicated that adolescent risk-taking health behaviours correlate with risky sexual behaviours. As risk-taking behaviours do not correlate with a better awareness of the risk associated with HPV infection, it is of crucial importance that HPV/cervical cancer preventing educational programmes shall be sensitive to this 'vulnerable' population and draw the attention of these adolescents to their increased risk of sexually transmitted diseases and undesired pregnancies. Well-designed behavioural change interventions may be effective when in addition to providing adolescents (both men and women) with clear information about the implications of an HPV infection, they also aim to improve safer sex behaviours: consistent condom usage, limiting the number of sex partners, as well as encouraging regular participation in gynaecological screenings and uptake of the HPV vaccine. As this study population demonstrated positive attitudes towards the primary and secondary prevention of cervical cancer, the free HPV vaccination for the 12-13-year-old girls in Autumn 2014 will hopefully increase the currently low uptake of the vaccine in Hungary.

Maseko, F. C., M. L. Chirwa, et al. "Health systems challenges in cervical cancer prevention program in Malawi." *Glob Health Action*. 2015 Jan 22;8:26282. doi: 10.3402/gha.v8.26282. eCollection 2015.

BACKGROUND: Cervical cancer remains the leading cause of cancer death among women in sub-Saharan Africa. In Malawi, very few women have undergone screening and the incidence of cervical cancer is on the increase as is the case in most developing countries. We aimed at exploring and documenting health system gaps responsible for the poor performance of the cervical cancer prevention program in Malawi. DESIGN: The study was carried out in 14 randomly selected districts of the 29 districts of Malawi. All cervical cancer service providers in these districts were invited to participate. Two semi-structured questionnaires were used, one for the district cervical cancer coordinators and the other for the service providers. The themes of both questionnaires were based on World Health Organization (WHO) health system frameworks. A checklist was also developed to audit medical supplies and equipment in the cervical cancer screening facilities. The two questionnaires together with the medical supplies and equipment checklist were piloted in Chikwawa district before being used as data collection tools in the study. Quantitative data were analyzed using STATA and qualitative in NVIVO. RESULTS: Forty-one service providers from 21 health facilities and 9 district coordinators participated in the study. Our findings show numerous health system challenges mainly in areas of health workforce and essential medical products and technologies. Seven out of the 21 health facilities provided both screening and treatment. RESULTS showed challenges in the management of the cervical cancer program at district level; inadequate service providers who are poorly supervised; lack of basic equipment and stock-outs of basic medical supplies in some health facilities; and inadequate funding of the program. In most of the health facilities, services providers were not aware of the policy which govern their work and that they did not have standards and guidelines for cervical cancer screening and treatment. CONCLUSION: Numerous health system challenges are prevailing in the cervical cancer prevention program in Malawi. These challenges need to be addressed if the health system is to improve on the coverage of cervical cancer screening and treatment.

Maurya, A. K. and M. Vinayak "Modulation of PKC signaling and induction of apoptosis through suppression of reactive oxygen species and tumor necrosis factor receptor 1 (TNFR1): key role of

quercetin in cancer prevention." Tumour Biol. 2015 Jun 16.

Cancer cells are characterized by increased production of reactive oxygen species (ROS) and an altered redox environment as compared to normal cells. Continuous accumulation of ROS triggers oxidative stress leading to hyper-activation of signaling pathways that promote cell proliferation, survival, and metabolic adaptation to the tumor microenvironment. Therefore, antioxidants are proposed to contribute to cancer prevention. Protein kinase C (PKC) is a crucial regulator of diverse cellular processes and contributes to cancer progression. The activation of PKC is partially dependent on ROS signaling. In the present study, cancer preventive activity of natural flavonoid quercetin is analyzed in ascite cells of Dalton's lymphoma-bearing mice. The total ROS level and activity of PKC were downregulated after quercetin treatment in lymphoma-bearing mice. Quercetin modulates the expression of almost all isozymes of classical, novel, and atypical PKC as well as downregulates the level and expression of PKC $\alpha$ . Further, quercetin improves apoptotic potential, as observed by the levels of caspase 3, caspase 9, PARP, PKC $\delta$ , and nuclear condensation. Additionally, quercetin reduces cell survival and promotes death receptor-mediated apoptosis via differential localization of the TNFR1 level in ascite cells. The overall result suggests the cancer preventive activity of quercetin via the induction of apoptosis and modulates PKC signaling with the reduction of oxidative stress in ascite cells of lymphoma-bearing mice.

Meier-Abt, F., M. Bentires-Alj, et al. "Breast cancer prevention: lessons to be learned from mechanisms of early pregnancy-mediated breast cancer protection." Cancer Res. 2015 Mar 1;75(5):803-7. doi: 10.1158/0008-5472.CAN-14-2717. Epub 2015 Feb 6.

Pregnancy at early, but not late age, has a strong and life-long protective effect against breast cancer. The expected overall increase in breast cancer incidence demands the development of a pharmaceutical mimicry of early-age pregnancy-mediated protection. Recently, converging results from rodent models and women on molecular and cellular mechanisms underlying the protective effect of early-age pregnancy have opened the door for translational studies on pharmacologic prevention against breast cancer. In particular, alterations in Wnt and TGF $\beta$  signaling in mammary stem/progenitor cells reveal new potential targets for preventive interventions, and thus might help to significantly reduce the incidence of breast cancer in the future.

Mitchell, J. A., M. Manning, et al. "Fatalistic Beliefs About Cancer Prevention Among Older African American Men." Res Aging. 2014 Aug 19. pii: 0164027514546697.

**OBJECTIVES:** Evidence suggests that minority groups are more likely to exhibit fatalistic beliefs about cancer prevention (FBCP), which are defined as confusion, pessimism, and helplessness about one's ability to prevent cancer. This study examines the socioeconomic and psychosocial predictors of FBCP among older African American men (AAM). **METHODS:** AAM (N = 1,666) enrolled in Medicare and participating in a longitudinal study on patient navigation were surveyed. Measures included three FBCP constructs, namely demographic items and physical and mental health variables. Binary logistic regression was performed. **RESULTS:** The average participant was 73.6 years old; 76.5% felt helpless, 44.2% were confused, and 40.7% were pessimistic about the ability to prevent cancer. As education increased, so did all three FBCP. Being downhearted was predictive of confused and helpless beliefs. **Discussion:** It is critical for health practitioners to understand how psychosocial and economic challenges influence beliefs that may impede cancer prevention efforts for older AAM.

Miyanaga, N. and H. Akaza "[Prostate cancer prevention]." Gan To Kagaku Ryoho. 2015 May;42(5):538-43.

Environmental factors, mainly diet, play an important role in the development of prostate cancer. A previous study identified fat and calcium as risk factors, and lycopene, selenium, soy isoflavone, and vitamin E as preventive factors for the development of prostate cancer. However, many previous studies were observational or in vitro/in vivo based, and enough evidence in a large-scale randomized study has not been provided. In the study of food, not only the intake but also the metabolism is important. For soy isoflavone, analysis of enterobacterial flora concerned with its metabolism to equol is in progress.

Mondul, A. M., S. C. Moore, et al. "Metabolomic analysis of prostate cancer risk in a prospective cohort: The alpha-tocolpherol, beta-carotene cancer prevention (ATBC) study." Int J Cancer. 2015 Apr 22. doi: 10.1002/ijc.29576.

Despite decades of concerted epidemiological research, relatively little is known about the etiology of prostate cancer. As genome-wide association studies have identified numerous genetic variants, so metabolomic profiling of blood and other tissues represents an agnostic, "broad-spectrum" approach for examining potential metabolic biomarkers of prostate cancer risk. To this end, we

conducted a prospective analysis of prostate cancer within the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study cohort based on 200 cases (100 aggressive) and 200 controls (age- and blood collection date-matched) with fasting serum collected up to 20 years prior to case diagnoses. Ultrahigh performance liquid chromatography/mass spectroscopy and gas chromatography/mass spectroscopy identified 626 compounds detected in >95% of the men and the odds ratio per 1-standard deviation increase in log-metabolite levels and risk were estimated using conditional logistic regression. We observed strong inverse associations between energy and lipid metabolites and aggressive cancer ( $p = 0.018$  and  $p = 0.041$ , respectively, for chemical class over-representation). Inositol-1-phosphate showed the strongest association (OR = 0.56, 95% CI = 0.39-0.81,  $p = 0.002$ ) and glycerophospholipids and fatty acids were heavily represented; e.g., oleoyl-linoleoyl-glycerophosphoinositol (OR = 0.64,  $p = 0.004$ ), 1-stearoylglycerophosphoglycerol (OR=0.65,  $p = 0.025$ ), stearate (OR=0.65,  $p = 0.010$ ) and docosadienoate (OR = 0.66,  $p = 0.014$ ). Both alpha-ketoglutarate and citrate were associated with aggressive disease risk (OR = 0.69, 95% CI = 0.51-0.94,  $p = 0.02$ ; OR = 0.69, 95% CI = 0.50-0.95,  $p = 0.02$ ), as were elevated thyroxine and trimethylamine oxide (OR = 1.65, 95% CI = 1.08-2.54,  $p = 0.021$ ; and OR = 1.36, 95% CI = 1.02-1.81,  $p = 0.039$ ). Serum PSA adjustment did not alter the findings. Our data reveal several metabolomic leads that may have pathophysiological relevance to prostate carcinogenesis and should be examined through additional research.

Morimoto, Y., F. Beckford, et al. "Adherence to cancer prevention recommendations and antioxidant and inflammatory status in premenopausal women." *Br J Nutr.* 2015 Jun 8:1-10.

For cancer prevention, the World Cancer Research Fund and American Institute for Cancer Research (WCRF/AICR) emphasise recommendations to improve individual behaviour, including avoidance of tobacco products, maintaining a lean body mass, participating in physical activity, consuming a plant-based diet, and minimising the consumption of energy-dense foods, such as sodas, red and processed meats and alcohol. In the present study of 275 healthy premenopausal women, we explored the association of adherence scores with levels of three biomarkers of antioxidant and inflammation status: serum C-reactive protein (CRP), serum gamma-tocopherol and urinary F2-isoprostane. The statistical analysis applied linear regression across categories of adherence to WCRF/AICR recommendations. Overall, seventy-two women were classified as low ( $\leq 4$ ), 150 as

moderate (5-6), and fifty-three as high adherers ( $\geq 7$ ). The unadjusted means for CRP were 2.7, 2.0 and 1.7 mg/l for low, moderate and high adherers ( $P$  trend= 0.03); this association was strengthened after adjustment for confounders ( $P$  trend= 0.006). The respective values for serum gamma-tocopherol were 1.97, 1.63 and 1.45  $\mu\text{g/ml}$  ( $P$  trend= 0.02 before and  $P$  trend= 0.03 after adjustment). Only for urinary F2-isoprostane, the lower values in high adherers (16.0, 14.5, and 13.3 ng/ml) did not reach statistical significance ( $P$  trend= 0.18). In an analysis by BMI, overweight and obese women had higher biomarker levels than normal weight women; the trend was significant for CRP ( $P$  trend< 0.001) and gamma-tocopherol ( $P$  trend= 0.003) but not for F2-isoprostane ( $P$  trend= 0.14). These findings suggest that both adherence to the WCRF/AICR guidelines and normal BMI status are associated with lower levels of biomarkers that indicate oxidative stress and inflammation.

Moyad, M. A. and N. J. Vogelzang "Heart healthy equals prostate healthy and statins, aspirin, and/or metformin (S.A.M.) are the ideal recommendations for prostate cancer prevention." *Asian J Androl.* 2015 Feb 3. doi: 10.4103/1008-682X.148070.

Cardiovascular disease (CVD) has been the number one cause of death in the U.S. for 114 of the last 115 years. Lifestyle factors that promote CVD also appear to increase prostate cancer risk and those that reduce CVD risk also appear to reduce the risk of prostate cancer. The largest randomized trials utilizing dietary supplements or pharmacologic agents for prostate cancer prevention (Selenium and Vitamin E Cancer Prevention Trial [SELECT]) have also shed light on the problems and future solutions in this area. Dietary supplements that have not been found to be CVD protective, such as selenium and Vitamin E have not been found to be prostate protective. In addition, over exposure to specific anti-oxidants in nutritionally replete populations may be encouraging cancer growth. Future trials of dietary supplements to prevent prostate cancer could be problematic because by the time a definitive trial is initiated the participants will no longer be "deficient" in the nutrient being tested, which arguably occurred in the SELECT trial. It is also interesting that statins, aspirin, and/or metformin (S.A.M.) are 3 generic, low-cost, heart healthy agents derived from natural sources with separate mechanism of actions, which all appear to have the best benefit to risk ratio compared to any other agent available for prostate cancer prevention, especially aggressive disease, or as an ancillary agent (s) to conventional cancer treatment. It is time to focus on the forest over the trees and recommend proven CVD protective



measures for men concerned about their risk of prostate cancer.

Nash, S. H., J. M. Schenk, et al. "Association between Serum Phospholipid Fatty Acids and Intraprostatic Inflammation in the Placebo Arm of the Prostate Cancer Prevention Trial." Cancer Prev Res (Phila). 2015 Apr 29.

Inflammation may play an etiologic role in prostate cancer. Several dietary factors influence inflammation; studies have shown that long-chain n-3 polyunsaturated fatty acids are anti-inflammatory, whereas n-6 and trans fatty acids are proinflammatory. We evaluated whether serum phospholipid n-3, n-6, and trans fatty acids were associated with intraprostatic inflammation, separately in 191 prostate cancer cases and 247 controls from the placebo arm of the Prostate Cancer Prevention Trial (PCPT). Men without a prostate cancer diagnosis underwent prostate biopsy at trial end, and benign prostate tissue inflammation was evaluated in approximately three biopsy cores per man; this was expressed as no, some, or all cores with inflammation. In controls, serum eicosapentaenoic acid [OR of all cores with inflammation versus none (95% CI), 0.35 (0.14-0.89)] and docosahexaenoic acid [OR (95% CI), 0.42 (0.17-1.02)] were inversely associated with, whereas linoleic acid [OR (95% CI), 3.85 (1.41-10.55)] was positively associated with intraprostatic inflammation. Serum trans fatty acids were not associated with intraprostatic inflammation. No significant associations were observed in cases; however, we could not rule out a positive association with linoleic acid and an inverse association with arachidonic acid. Thus, in the PCPT, we found that serum n-3 fatty acids were inversely, n-6 fatty acids were positively, and trans fatty acids were not associated with intraprostatic inflammation in controls. Although, in theory, inflammation could mediate associations of serum fatty acids with prostate cancer risk, our findings cannot explain the epidemiologic associations observed with n-3 and n-6 fatty acids. *Cancer Prev Res*; 8(7); 1-7. (c)2015 AACR.

Nicastro, H. L., S. A. Ross, et al. "Garlic and onions: their cancer prevention properties." Cancer Prev Res (Phila). 2015 Mar;8(3):181-9. doi: 10.1158/1940-6207.CAPR-14-0172. Epub 2015 Jan 13.

The Allium genus includes garlic, onions, shallots, leeks, and chives. These vegetables are popular in cuisines worldwide and are valued for their potential medicinal properties. Epidemiologic studies, while limited in their abilities to assess Allium consumption, indicate some associations of Allium vegetable consumption with decreased risk of cancer, particularly cancers of the gastrointestinal tract.

Limited intervention studies have been conducted to support these associations. The majority of supportive evidence on Allium vegetables cancer-preventive effects comes from mechanistic studies. These studies highlight potential mechanisms of individual sulfur-containing compounds and of various preparations and extracts of these vegetables, including decreased bioactivation of carcinogens, antimicrobial activities, and redox modification. Allium vegetables and their components have effects at each stage of carcinogenesis and affect many biologic processes that modify cancer risk. This review discusses the cancer-preventive effects of Allium vegetables, particularly garlic and onions, and their bioactive sulfur compounds and highlights research gaps.

Obel, J., J. McKenzie, et al. "Mapping HPV Vaccination and Cervical Cancer Screening Practice in the Pacific Region-Strengthening National and Regional Cervical Cancer Prevention." Asian Pac J Cancer Prev. 2015;16(8):3435-42.

**OBJECTIVE:** To provide background information for strengthening cervical cancer prevention in the Pacific by mapping current human papillomavirus (HPV) vaccination and cervical cancer screening practices, as well as intent and barriers to the introduction and maintenance of national HPV vaccination programmes in the region. **MATERIALS AND METHODS:** A cross-sectional questionnaire-based survey among ministry of health officials from 21 Pacific Island countries and territories (n=21). **RESULTS:** Cervical cancer prevention was rated as highly important, but implementation of prevention programs were insufficient, with only two of 21 countries and territories having achieved coverage of cervical cancer screening above 40%. Ten of 21 countries and territories had included HPV vaccination in their immunization schedule, but only two countries reported coverage of HPV vaccination above 60% among the targeted population. Key barriers to the introduction and continuation of HPV vaccination were reported to be: (i) Lack of sustainable financing for HPV vaccine programs; (ii) Lack of visible government endorsement; (iii) Critical public perception of the value and safety of the HPV vaccine; and (iv) Lack of clear guidelines and policies for HPV vaccination. **CONCLUSION:** Current practices to prevent cervical cancer in the Pacific Region do not match the high burden of disease from cervical cancer. A regional approach, including reducing vaccine prices by bulk purchase of vaccine, technical support for implementation of prevention programs, operational research and advocacy could strengthen political momentum for cervical cancer prevention and avoid risking the lives of many women in the Pacific.

Parham, G. P., M. H. Mwanahamuntu, et al. "Population-level scale-up of cervical cancer prevention services in a low-resource setting: development, implementation, and evaluation of the cervical cancer prevention program in Zambia." *PLoS One*. 2015 Apr 17;10(4):e0122169. doi: 10.1371/journal.pone.0122169. eCollection 2015.

**BACKGROUND:** Very few efforts have been undertaken to scale-up low-cost approaches to cervical cancer prevention in low-resource countries. **METHODS:** In a public sector cervical cancer prevention program in Zambia, nurses provided visual-inspection with acetic acid (VIA) and cryotherapy in clinics co-housed with HIV/AIDS programs, and referred women with complex lesions for histopathologic evaluation. Low-cost technological adaptations were deployed for improving VIA detection, facilitating expert physician opinion, and ensuring quality assurance. Key process and outcome indicators were derived by analyzing electronic medical records to evaluate program expansion efforts. **FINDINGS:** Between 2006-2013, screening services were expanded from 2 to 12 clinics in Lusaka, the most-populous province in Zambia, through which 102,942 women were screened. The majority (71.7%) were in the target age-range of 25-49 years; 28% were HIV-positive. Out of 101,867 with evaluable data, 20,419 (20%) were VIA positive, of whom 11,508 (56.4%) were treated with cryotherapy, and 8,911 (43.6%) were referred for histopathologic evaluation. Most women (87%, 86,301 of 98,961 evaluable) received same-day services (including 5% undergoing same-visit cryotherapy and 82% screening VIA-negative). The proportion of women with cervical intraepithelial neoplasia grade 2 and worse (CIN2+) among those referred for histopathologic evaluation was 44.1% (1,735/3,938 with histopathology results). Detection rates for CIN2+ and invasive cervical cancer were 17 and 7 per 1,000 women screened, respectively. Women with HIV were more likely to screen positive, to be referred for histopathologic evaluation, and to have cervical precancer and cancer than HIV-negative women. **INTERPRETATION:** We creatively disrupted the 'no screening' status quo prevailing in Zambia and addressed the heavy burden of cervical disease among previously unscreened women by establishing and scaling-up public-sector screening and treatment services at a population level. Key determinants for successful expansion included leveraging HIV/AIDS program investments, and context-specific information technology applications for quality assurance and filling human resource gaps.

Perez, D., J. Kite, et al. "Exposure to the 'Dark Side of Tanning' skin cancer prevention mass media campaign and its association with tanning attitudes in New South Wales, Australia." *Health Educ Res*. 2015 Apr;30(2):336-46. doi: 10.1093/her/cyv002. Epub 2015 Feb 19.

Melanoma is the most common cancer among 15- to 29-year-olds in Australia, with rates increasing with age. The 'Dark Side of Tanning' (DSOT) mass media campaign was developed in 2007 to influence attitudes related to tanning. This study aimed to assess recall and impact of the DSOT campaign. Data were collected using online surveys of 13- to 44-year-olds living in New South Wales in the summer months of 2007-2010 (n = 7490). Regression models were used to determine predictors of recall of DSOT and to investigate associations between exposure to the campaign and tanning attitudes. The campaign achieved consistently high recall (unprompted recall 42-53% during campaign periods; prompted recall 76-84%). Those who recalled DSOT advertisements had a higher likelihood of reporting negative tanning attitudes compared with those who reported no recall, after adjusting for other factors (odds ratio [OR] 1.13, 95% confidence interval [CI] 1.01-1.27 for unprompted recall; OR 1.19, 95% CI 1.03-1.36 for prompted recall). Being interviewed in later campaign years was also a significant predictor of negative tanning attitudes (e.g. fourth year of campaign versus first year: OR 1.24, 95% CI 1.01-1.53). These results suggest that mass media campaigns have potential to influence tanning-related attitudes and could play an important role in skin cancer prevention.

Ports, K. A., F. Haffeejee, et al. "Integrating cervical cancer prevention initiatives with HIV care in resource-constrained settings: A formative study in Durban, South Africa." *Glob Public Health*. 2015 Feb 5:1-14.

Cervical cancer screening rates remain suboptimal among women in South Africa (SA), where cervical cancer prevalence is high. The rollout of HIV-related services across SA may provide a means to deliver cervical cancer screening to populations with limited access to health care systems. In this mixed methods study, psychosocial factors influencing cervical cancer prevention and perceptions of the provision of Pap smears in HIV care settings were examined. Structured interviews were conducted with women (n = 67) from a municipal housing estate in Durban, SA. Key informants (n = 12) also participated in semi-structured interviews. Findings revealed that participants had low cervical cancer knowledge, but desired more information. Relevant themes included the normalisation of HIV and beliefs

that cervical cancer might be worse than HIV. A comprehensive community clinic was desired by most, even if HIV-positive patients were treated there. This study provides important insight into integrating cervical cancer screening with HIV clinics, which may increase cancer screening among South African women.

Quante, A. S., A. S. Whittemore, et al. "Practical problems with clinical guidelines for breast cancer prevention based on remaining lifetime risk." J Natl Cancer Inst. 2015 May 8;107(7). pii: djv124. doi: 10.1093/jnci/djv124. Print 2015 Jul.

**BACKGROUND:** Clinical guidelines for breast cancer chemoprevention and MRI screening involve estimates of remaining lifetime risk (RLR); in the United States, women with an RLR of 20% or higher meet "high-risk" criteria for MRI screening. **METHODS:** We prospectively followed 1764 women without breast cancer to compare the RLRs and 10-year risks assigned by the risk models International Breast Cancer Intervention Study (IBIS) and Breast and Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm (BOADICEA) and to compare both sets of model-assigned 10-year risks to subsequent incidence of breast cancer in the cohort. We used chi-square statistics to assess calibration and the area under the receiver operating characteristic curve (AUC) to assess discrimination. All statistical tests are two-sided. **RESULTS:** The models classified different proportions of women as high-risk (IBIS = 59.3% vs BOADICEA = 20.1%) using the RLR threshold of 20%. The difference was smaller (IBIS = 52.9% vs BOADICEA = 43.2%) using a 10-year risk threshold of 3.34%. IBIS risks (mean = 4.9%) were better calibrated to observed breast cancer incidence (5.2%, 95% confidence interval (CI) = 4.2% to 6.4%) than were those of BOADICEA (mean = 3.7%) overall and within quartiles of model risk (P = .20 by IBIS and P = .07 by BOADICEA). Both models gave similar discrimination, with AUCs of 0.67 (95% CI = 0.61 to 0.73) using IBIS and 0.68 (95% CI = 0.62 to 0.74) using BOADICEA. Model sensitivities at thresholds for a 20% false-positive rate were also similar, with 41.8% using IBIS and 38.0% using BOADICEA. **CONCLUSION:** RLR-based guidelines for high-risk women are limited by discordance between commonly used risk models. Guidelines based on short-term risks would be more useful, as models are generally developed and validated under a short fixed time horizon (<=10 years).

Ramalingam, S., D. Subramaniam, et al. "Manipulating miRNA Expression: A Novel Approach for Colon Cancer Prevention and

Chemotherapy." Curr Pharmacol Rep. 2015 Jun 1;1(3):141-153.

Small non-coding RNA has been implicated in the control of various cellular processes such as proliferation, apoptosis, and differentiation. About 50% of the miRNA genes are positioned in cancer-associated genomic regions. Several studies have shown that miRNA expression is deregulated in cancer and modulating their expression has reversed the cancer phenotype. Therefore, mechanisms to modulate microRNA (miRNA) activity have provided a novel opportunity for cancer prevention and therapy. In addition, a common cause for development of colorectal cancers is environmental and lifestyle factors. One such factor, diet has been shown to modulate miRNA expression in colorectal cancer patients. In this chapter, we will summarize the work demonstrating that miRNAs are novel promising drug targets for cancer chemoprevention and therapy. Improved delivery, increased stability and enhanced regulation of off-target effects will overcome the current challenges of this exciting approach in the field of cancer prevention and therapy.

Ramprasath, V. R. and A. B. Awad "Role of Phytosterols in Cancer Prevention and Treatment." J AOAC Int. 2015 May;98(3):735-8. doi: 10.5740/jaoacint.SGERamprasath.

Plant sterols or phytosterols have been shown to be effective in improving blood lipid profile and thereby protective against cardiovascular disease. In addition to their cardioprotective effects, phytosterols have gained more insight for their protective effect against various forms of cancer. Phytosterols have been reported to alleviate cancers of breast, prostate, lung, liver, stomach and ovary. Reductions in growth of various cancer cells including liver, prostate and breast by phytosterols treatment have been demonstrated. Although exact mechanisms of phytosterols for their anticancer effects are not very well delineated, there have been several mechanisms proposed such as inhibition of carcinogen production, cancer cell growth and multiplication, invasion and metastasis and induction of cell cycle arrest and apoptosis. Other mechanisms including reduction of angiogenesis, invasion and adhesion of cancer cells and production of reactive oxygen species have also been suggested. However, cancer therapy using phytosterol formulations have yet to be designed, largely due to the gap in the literature with regards to mode of action. Furthermore, most of the studies on anticancer effects of phytosterols were conducted in vitro and animal studies and need to be confirmed in humans.

Rigas, B. and G. J. Tsioulis "The evolving role of nonsteroidal anti-inflammatory drugs in colon cancer prevention: a cause for optimism." J Pharmacol Exp Ther. 2015 Apr;353(1):2-8.

Colorectal cancer (CRC) is a serious yet preventable disease. The low acceptance and cost of colonoscopy as a screening method or CRC make chemoprevention an important option. Nonsteroidal anti-inflammatory drugs (NSAIDs), not currently recommended for CRC prevention, have the potential to evolve into the agents of choice for this indication. Here, we discuss the promise and challenge of NSAIDs for this chemopreventive application. Multiple epidemiologic studies, randomized clinical trials (RCTs) of sporadic colorectal polyp recurrence, RCTs in patients with hereditary colorectal cancer syndromes, and pooled analyses of cardiovascular-prevention RCTs linked to cancer outcomes have firmly established the ability of conventional NSAIDs to prevent CRC. NSAIDs, however, are seriously limited by their toxicity, which can become cumulative with their long-term administration for chemoprevention, whereas drug interactions in vulnerable elderly patients compound their safety. Newer, chemically modified NSAIDs offer the hope of enhanced efficacy and safety. Recent work also indicates that targeting earlier stages of colorectal carcinogenesis, such as the lower complexity aberrant crypt foci, is a promising approach that may only require relatively short use of chemopreventive agents. Drug combination approaches exemplified by sulindac plus difluoromethylornithine appear very efficacious. Identification of those at risk or most likely to benefit from a given intervention using predictive biomarkers may usher in personalized chemoprevention. Agents that offer simultaneous chemoprevention of diseases in addition to CRC, e.g., cardiovascular and/or neurodegenerative diseases, may have a much greater potential for a broad clinical application.

Royston, K. J. and T. O. Tollefsbol "The Epigenetic Impact of Cruciferous Vegetables on Cancer Prevention." Curr Pharmacol Rep. 2015 Feb 1;1(1):46-51.

The answer to chemoprevention has perhaps been available to the general public since the dawn of time. The epigenetic diet is of extreme interest, for research suggests that cruciferous vegetables are not only an important source of nutrients, but perhaps a key to eliminating cancer as life threatening disease. Cruciferous vegetables such as kale, cabbage, Brussels sprouts, and broccoli sprouts contain chemical components, such as sulforaphane (SFN) and indole-3-carbinol (I3C), which have been revealed to be regulators of microRNAs (miRNAs) and inhibitors of

histone deacetylases (HDACs) and DNA methyltransferases (DNMTs). The mis-regulation and overexpression of these genes are responsible for the uncontrolled cellular proliferation and viability of various types of cancer cells. The field of epigenetics and its incorporation into modern medicinal investigation is an exponentially growing field of interest and it is becoming increasingly apparent that the incorporation of an epigenetic diet may in fact be the key to chemoprevention.

Sancho, M. and N. Mach "[Effects of wine polyphenols on cancer prevention]." Nutr Hosp. 2014 Oct 3;31(2):535-51. doi: 10.3305/nh.2015.31.2.8091.

INTRODUCTION: Cancer has become in the recent decades one of the leading causes of death worldwide. The search for effective prevention has become a priority for the basic and clinical science. Wine polyphenols have been proposed as alternative therapy for induction and on maintaining remission of cancer. OBJECTIVE: To review current scientific evidence of cancer and the efficacy of dietary supplement therapy (especially wine polyphenols). MATERIALS AND METHODS: Extensive search of scientific publications was performed in specialized electronic databases: NBCI, Elsevier, Scielo, Scirus and Science Direct. RESULTS AND DISCUSSION: Results from in vitro and laboratory animals experiments demonstrate that wine polyphenols controls the cell apoptosis of different type of cancers through out the increase of reactive oxygen species, and decrease of cell growth. Different studies have shown that regular and moderate wine consumption (one or two glasses for day) is associated with decreased incidence of cardiovascular disease, hypertension, diabetes, and certain cancers, such as colon, breast, lung, or prostate. However, more scientific evidences are needed to strength the effect of resveratrol in controlling cancer. CONCLUSIONS: A better knowledge and understanding of the wine polyphenol role in cancer disease patients is possible with the current published results. The wine polyphenols plays a significant role as antioxidant and prooxidant in cancer, although more extensive studies are required to determine the clinical significance in humans.

Shanmugam, M. K., G. Rane, et al. "The multifaceted role of curcumin in cancer prevention and treatment." Molecules. 2015 Feb 5;20(2):2728-69. doi: 10.3390/molecules20022728.

Despite significant advances in treatment modalities over the last decade, neither the incidence of the disease nor the mortality due to cancer has altered in the last thirty years. Available anti-cancer drugs exhibit limited efficacy, associated with severe



side effects, and are also expensive. Thus identification of pharmacological agents that do not have these disadvantages is required. Curcumin, a polyphenolic compound derived from turmeric (*Curcumin longa*), is one such agent that has been extensively studied over the last three to four decades for its potential anti-inflammatory and/or anti-cancer effects. Curcumin has been found to suppress initiation, progression, and metastasis of a variety of tumors. These anti-cancer effects are predominantly mediated through its negative regulation of various transcription factors, growth factors, inflammatory cytokines, protein kinases, and other oncogenic molecules. It also abrogates proliferation of cancer cells by arresting them at different phases of the cell cycle and/or by inducing their apoptosis. The current review focuses on the diverse molecular targets modulated by curcumin that contribute to its efficacy against various human cancers.

Siddiqui, I. A., V. Sanna, et al. "Resveratrol nanoformulation for cancer prevention and therapy." Ann N Y Acad Sci. 2015 Jun 24. doi: 10.1111/nyas.12811.

Chemoprevention of human cancer(s) is a viable option for cancer control, especially when chemopreventive intervention is involved during the early stages of the carcinogenesis process. Naturally occurring bioactive food components, such as dietary polyphenols, have shown good antioxidant activity and other beneficial activities. In addition, compounds belonging to the polyphenolic chemical class may play promising roles in cancer prevention. Among them, the phytoalexin resveratrol has demonstrated antiproliferative effects, as well as the ability to inhibit initiation and promotion of induced cancer progression in a wide variety of tumor models. However, resveratrol, like other natural polyphenols, is an extremely photosensitive compound with low chemical stability and limited bioavailability, which limit the therapeutic application of its beneficial effects. In this context, the development of innovative formulation strategies able to overcome physicochemical and pharmacokinetic limitations of this compound could be beneficial. This may be achieved via nanotechnology approaches utilizing suitable carriers that allow slow, sustained, and controlled release of the encapsulated agent. This review focuses on the recent developments of novel nanoformulations used to deliver sustained levels of resveratrol.

Singhal, S. S., J. Singhal, et al. "2'-Hydroxyflavanone: A promising molecule for kidney cancer prevention." Biochem Pharmacol. 2015 May 6. pii: S0006-2952(15)00245-2. doi: 10.1016/j.bcp.2015.04.022.

Kidney cancer, also known as renal cell carcinoma (RCC), is one of the top 10 diagnosed cancers in the USA, and the incidence is rising. Despite major improvements in drug therapy strategies, RCC remains a deadly malignancy if not found and removed in its early stages. RCC is so highly drug-resistant that no effective life-prolonging regimen of cytotoxic chemotherapy has been demonstrated for RCC, despite several decades of effort. It is also highly radiation-resistant, thus circumventing therapies to prevent local recurrence or to control metastatic disease. In the last few years, extensive research has been conducted to elucidate the functional significance of the plant-derived compounds, and their derivatives, as anticancer agents. This review is focussed on a chemo-dietary prevention strategy against RCC using a citrus-derived compound called 2'-hydroxyflavanone. RCC is frequently caused by VHL gene mutations, which contribute to 75% of all RCCs. These mutations are positively linked to cigarette smoking, and exposure to the tobacco carcinogen, N-nitrosodimethylamine and benzopyrene, can disrupt VHL. According to in vitro and preclinical mouse studies, 2'-hydroxyflavanone can both protect the VHL locus and prevent the progression of VHL-mutant cancer. Human clinical trials examining the effect of supplementation of 2'-hydroxyflavanone, either alone or in combination with chemotherapeutic drugs, on RCC prevention have not been conducted, although there is considerable potential for 2'-hydroxyflavanone and its derivatives to be developed as RCC chemoprevention agents. Therefore, the discovery of plant-derived cancer therapies, such as 2'-hydroxyflavanone, offers a new strategy for combating this highly resistant cancer.

Takagi, A., M. Kano, et al. Possibility of Breast Cancer Prevention: Use of Soy Isoflavones and Fermented Soy Beverage Produced Using Probiotics. Int J Mol Sci. 2015 May 13;16(5):10907-10920.

The various beneficial effects of soybeans, which are rich in phytochemicals, have received much attention because of increasing health awareness. Soy milk that has been fermented using lactic acid bacteria has been used to prepare cheese-like products, tofu (bean-curd), and yogurt-type products. However, the distinct odor of soybeans has limited the acceptance of such foods, particularly in Western countries. In Japan, while tofu and soy milk have long been habitually consumed, the development of novel, palatable food products has not been easy. The unpleasant odor of soy milk and the absorption efficiency for isoflavones can be improved using a recently developed fermented soy milk beverage. Cancer has been the leading cause of death, and breast cancer is the most common malignancy among

women. The most common type of breast cancer is estrogen-dependent, and the anti-estrogenic effects of isoflavones are known. The present review focuses on the characteristics of soy milk fermented using probiotics, an epidemiological study examining the incidence of breast cancer and soy isoflavone consumption, and a non-clinical study examining breast cancer prevention using fermented soy milk beverage.

Tanaka, H. "[Genome-cohort studies for the development of personalized cancer prevention programs in Japan]." Gan To Kagaku Ryoho. 2015 May;42(5):544-7.

One of the most important roles of molecular epidemiology is to investigate gene-environment interactions in order to provide data for personalized risk modification. A case-control study conducted in Aichi showed that an aldehyde dehydrogenase-2(ALDH2) polymorphism together with cigarette smoking significantly affects the risk of lung cancer. The main purpose of this large-scale genome-cohort study of healthy individuals is to confirm that these factors are associated with the development of diseases and to set optimal thresholds for the environmental factors. The Japan Multi-Institutional Collaborative Cohort(J-MICC) Study was launched in 2005. It has recruited 100,600 healthy participants up to the end of 2014, and plans to follow them until 2025. Although Japanese genome-cohort studies, including the J-MICC Study, the Japan Public Health Center-based Prospective(JPHC) Study, and the Tohoku Medical Megabank Organization Study, consist of different research teams with different financial resources, collaboration to standardize the data collection format for successful pooled analysis is being discussed.

Tanton, C., K. Soldan, et al. "High-Risk Human Papillomavirus (HPV) Infection and Cervical Cancer Prevention in Britain: Evidence of Differential Uptake of Interventions from a Probability Survey." Cancer Epidemiol Biomarkers Prev. 2015 May;24(5):842-53. doi: 10.1158/1055-9965.EPI-14-1333. Epub 2015 Mar 3.

**BACKGROUND:** The third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3) provides an opportunity to explore high-risk human papillomavirus (HR-HPV) and uptake of cervical screening and HPV vaccination in the general population. **METHODS:** Natsal-3, a probability sample survey of men and women ages 16 to 74, resident in Britain, interviewed 8,869 women in 2010 to 2012. We explored risk factors for HR-HPV (in urine from 2,569 sexually experienced women ages 16 to 44), nonattendance for cervical screening in the past

5 years, and noncompletion of HPV catch-up vaccination. **RESULTS:** HR-HPV was associated with increasing numbers of lifetime partners, younger age, increasing area-level deprivation, and smoking. Screening nonattendance was associated with younger and older age, increasing area-level deprivation (age-adjusted OR 1.91, 95% confidence interval, 1.48-2.47 for living in most vs. least deprived two quintiles), Asian/Asian British ethnicity (1.96, 1.32-2.90), smoking (1.97, 1.57-2.47), and reporting no partner in the past 5 years (2.45, 1.67-3.61 vs. 1 partner) but not with HR-HPV (1.35, 0.79-2.31). Lower uptake of HPV catch-up vaccination was associated with increasing area-level deprivation, non-white ethnicity, smoking, and increasing lifetime partners. **CONCLUSIONS:** Socioeconomic markers and smoking were associated with HR-HPV positivity, nonattendance for cervical screening, and noncompletion of catch-up HPV vaccination. **IMPACT:** The cervical screening program needs to engage those missing HPV catch-up vaccination to avoid a potential widening of cervical cancer disparities in these cohorts. As some screening nonattenders are at low risk for HR-HPV, tailored approaches may be appropriate to increase screening among higher-risk women. *Cancer Epidemiol Biomarkers Prev*; 24(5); 842-53. (c)2015 AACR.

Teixeira, L. A. "From gynaecology offices to screening campaigns: a brief history of cervical cancer prevention in Brazil." Hist Cienc Saude Manguinhos. 2015 Jan-Mar;22(1):221-39. doi: 10.1590/S0104-59702015000100013.

This paper discusses the knowledge and medical practices relating to cervical cancer in Brazil. It analyses the growing medical interest in the disease at the beginning of the twentieth century, the development of prevention techniques in the 1940s, and the emergence of screening programs in the 1960s. It argues that the development of knowledge on cervical cancer was related simultaneously to a number of factors: transformations in medical knowledge, the development of the idea that the disease should be treated as a public health problem, the increased concerns with women's health, and major changes to the Brazilian healthcare system. The article concludes by identifying a number of issues that are still proving to be obstacles to control of the disease.

Temkin, S. M. and N. L. Seibel "Are we missing an opportunity for cancer prevention? Human papillomavirus vaccination for survivors of pediatric and young adult cancers." Cancer. 2015 Jun 25. doi: 10.1002/cncr.29515.

Survivors of pediatric and young adult cancers remain at risk for subsequent diseases, including those related to human papillomavirus (HPV) infection. Prevention of HPV acquisition through vaccination has become possible over the last decade. HPV vaccines have been shown to be safe and effective, yet rates of vaccination among childhood cancer survivors have remained low. Multiple factors, including stronger advocacy for this intervention from providers, could potentially increase vaccination and lead to lower HPV disease burdens for childhood cancer survivors. Health care providers for survivors of pediatric and adolescent cancers should prioritize counseling for HPV vaccination at follow-up visits. Cancer 2015. (c) 2015 American Cancer Society.

Thaxton, L. and A. G. Waxman "Cervical cancer prevention: immunization and screening 2015." Med Clin North Am. 2015 May;99(3):469-77. doi: 10.1016/j.mcna.2015.01.003. Epub 2015 Feb 28.

Both primary and secondary prevention of cervical cancer are now available. Immunizations against human papillomavirus (HPV) types 16 and 18 have the potential to prevent 70% of cancers of the cervix plus a large percentage of other lower anogenital tract cancers. Screening guidelines were recently changed to recommend cotesting with cytology plus an HPV test. The addition of HPV testing increases the sensitivity and negative predictive value of screening over the Papanicolaou (Pap) test alone.

Tuorkey, M. J. "Solar ultraviolet radiation from cancer induction to cancer prevention: solar ultraviolet radiation and cell biology." Eur J Cancer Prev. 2015 Jun 11.

Although decades have elapsed, researchers still debate the benefits and hazards of solar ultraviolet radiation (UVR) exposure. On the one hand, humans derive most of their serum 25-hydroxycholecalciferol [25(OH)D3], which has potent anticancer activity, from solar UVB radiation. On the other hand, people are more aware of the risk of cancer incidence associated with harmful levels of solar UVR from daily sunlight exposure. Epidemiological data strongly implicate UV radiation exposure as a major cause of melanoma and other cancers, as UVR promotes mutations in oncogenes and tumor-suppressor genes. This review highlights the impact of the different mutagenic effects of solar UVR, along with the cellular and carcinogenic challenges with respect to sun exposure.

Winchester, D. A., C. Till, et al. "Variation in genes involved in the immune response and prostate cancer risk in the placebo arm of the Prostate Cancer

Prevention Trial." Prostate. 2015 Jun 5. doi: 10.1002/pros.23021.

**BACKGROUND:** We previously found that inflammation in benign prostate tissue is associated with an increased odds of prostate cancer, especially higher-grade disease. Since part of this link may be due to genetics, we evaluated the association between single nucleotide polymorphisms (SNPs) in immune response genes and prostate cancer in the placebo arm of the Prostate Cancer Prevention Trial. **METHODS:** We genotyped 16 candidate SNPs in IL1beta, IL2, IL4, IL6, IL8, IL10, IL12(p40), IFNG, MSR1, RNASEL, TLR4, and TNFA and seven tagSNPs in IL10 in 881 prostate cancer cases and 848 controls negative for cancer on an end-of-study biopsy. Cases and controls were non-Hispanic white and frequency matched on age and family history. We classified cases as lower (Gleason sum <7; N = 674) and higher (7-10; N = 172) grade, and used logistic regression to estimate odds ratios (OR) and 95% confidence intervals (CI) adjusting for age and family history. **RESULTS:** The minor allele (C) of rs3212227 in IL12(p40) was associated with an increased risk of total (log additive: OR = 1.30, 95%CI 1.10-1.53; P-trend = 0.0017) and lower-grade (OR = 1.36, 95%CI 1.15-1.62; P-trend = 0.0004) prostate cancer. The minor allele (A) of rs4073 in IL8 was possibly associated with a decreased risk of higher-grade (OR = 0.81, 95%CI 0.64-1.02; P-trend = 0.07), but not total disease. None of the other candidates was associated with risk. The minor alleles of IL10 tagSNPs rs1800890 (A; OR = 0.87, 95%CI: 0.75-0.99; P-trend = 0.04) and rs3021094 (C; OR = 1.31, 95%CI 1.03-1.66, P-trend = 0.03) were associated with risk; the latter also with lower- (P-trend = 0.04) and possibly higher- (P-trend = 0.06) grade disease. These patterns were similar among men with PSA <2 ng/ml at biopsy. **CONCLUSION:** Variation in some immune response genes may be associated with prostate cancer risk. These associations were not fully explained by PSA-associated detection bias. Our findings generally support the role of inflammation in the etiology of prostate cancer. Prostate 9999: XX-XX, 2015. (c) 2015 Wiley Periodicals, Inc.

Zaman, S., J. A. Gillani, et al. "Role of isotretinoin in cancer prevention and management in malignancies associated with xeroderma pigmentosum." J Ayub Med Coll Abbottabad. 2014 Apr-Jun;26(2):255-7.

We report a case of 15 year old female patient of xeroderma pigmentosum with large squamous cell carcinoma on the left side of cheek. She received combination chemotherapy with isotretinoin for a period of 4 months and showed complete clinical remission of tumour. The role of isotretinoin in cancer prevention and management of malignancies

associated in xeroderma pigmentosum is also reviewed through literature.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

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