

# **Diet and Nutrition in Cancer Prevention: Separating Fact from Fiction**

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# Many believe that (& there is evidence that)

- there are dietary choices that can make the body's biochemical environment hostile to cancer development growth and recurrence, and strengthen the immune system's ability to attack remaining cancer cells.
- there are supplement protocols that be used to modify processes like inflammation and glycemia that, if left untreated, can fuel the growth of cancer, lessen treatment side effects or relieve disease-related symptoms.

Many believe that  
(& there is evidence that)

- exercise and stress reduction can help restore your strength, reduce anxiety and depression, and support the body's own ability to heal.**
- strategies you can implement to minimize the chances of the disease recurring.**

# Consider: Diet and Supplements

No single food or food component has been shown to protect against cancer

Scientists believe the combination of foods in a predominately plant-based diet- may provide some protection in some cancers

There is evidence that the minerals, vitamins and phytochemicals in plant foods could interact in ways that boost their individual anti-cancer effects

# Everyone wants to “detox”



# WCRF/AICR Nutrition guidelines for reducing risk

## *Consider:*

**Diet is involved in 30%-35% of all cancers**

**Effect of diet is less firm-  
due to contradictory results**

# WCRF/AICR Nutrition guidelines for reducing risk

Be lean- **but not underweight**

Limit **refined sugar**

Evidence of **IGF-1 signaling in the development/ progression of some cancers- including breast cancer**

Eat more variety of **vegetables, fruits, legumes**

**\*Insulin like growth factor 1** -A hormone similar in molecular structure to insulin. A natural activator of the AKT signaling pathway- a stimulator of cell growth and proliferation, and a potent inhibitor of programmed cell death.

# WCRF/AICR Nutrition guidelines for reducing risk

**Soy and breast cancer: Is soy safe in women with ER+ breast cancer?**

**Alcohol and breast cancer?**

**Lace Study 2009**

**Green Tea**

**Iowa Women's Health Study-  
examples that GT may be  
contraindicated in some cancers  
and helpful in others**

# WCRF/AICR Nutrition guidelines for reducing risk

Red Meat **and breast cancer**

Alcohol – **1 drink/day for women- MAX**

Red wine **associated with ↓ risk of lung cancer**

**FYI.....**

# Life After Cancer Epidemiology (LACE) Study: a cohort of early stage breast cancer survivors (US)

## Abstract

The Life After Cancer Epidemiology (LACE) Study, a cohort of 2321 early stage breast cancer survivors, was established in 2000 to examine how modifiable behavioral risk factors affect quality of life and long-term survival. Women were recruited primarily from the Kaiser Permanente Northern California Cancer Registry (KPNCAL) and the Utah cancer registry (UCR), United States. Baseline data were collected, on average, at two years post-diagnosis through self-administered questionnaires that included information on demographics, medical history, anthropometry, diet, supplements, physical activity and quality of life. The purpose of this paper is to describe the creation and baseline characteristics of the cohort. Forty-six percent of women to whom questionnaires were mailed agreed to participate.

# Life After Cancer Epidemiology (LACE) Study: a cohort of early stage breast cancer survivors

The cohort which is 80% white, was diagnosed predominantly with Stage I and II breast cancer (93%), and will have been followed for 5.6 years post-diagnosis, on average, by the end of 2004. Women reported slightly over four daily servings of fruit and vegetables, well below the suggested 5-A-Day national guidelines. Compared to women free of cancer, physical activity patterns were similar, while weight gain, especially in younger women, was higher than is typical. These data suggest that in the early years post-diagnosis, breast cancer survivors exhibit similar patterns to the general population in many health behaviors.

# The Iowa Women's Health Study (IWHS)

- started in 1986, is a cohort of 41,836 postmenopausal women aged 55-69 at baseline. The primary aims of the study were to:
  - to determine if the distribution of body fat (waist/hip) predicts incidence of chronic diseases, with the primary endpoints being total mortality, and incident cancers of the breast, endometrium, and ovaries, and
  - Determine to what degree diet and other lifestyle factors influence risk of chronic disease.

# The Iowa Women's Health Study (IWHS)

**Questionnaires at baseline and for five follow-ups (1987, 1989, 1992, 1997, 2004) provide self-reported information on demographics, reproductive history, medical history, hormone replace therapy, dietary intake, physical activity and other factors.**

# The Iowa Women's Health Study (IWHS)

**From 1986 to 2007, there have been 9,434 incident cancers: over 2,900 breast; 1,200 colon; 975 lung; 600 uterine; and 300 ovarian. There have been over 15,700 deaths, including about 4,900 from cancer and 5,900 from cardiovascular disease. Over 270 manuscripts have been published based on analyses in IWHS or based on collaborative projects with Harvard and Oxford Universities, and the NCI Cohort Consortium.**

# Journal of the National Cancer Institute

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Dietary modulation of Omega 3/Omega 6  
Polyunsaturated Fatty Acid Ratios in Patients  
with Breast Cancer

from the *Conclusion*.....dietary intervention  
could provide an effective way to alter the  
fatty acid availability in tumor growth and  
thereby possibly affect tumor growth

# What You Eat Matters

**ABSTRACT: Self-Reported Dietary Habits, Overall Dietary Quality and Symptomatology of Breast Cancer Survivors: a Cross-Sectional Examination**

Little information is available about the relationship between quality of life of women who have survived breast cancer (specifically, symptoms including those of menopause and depression) and the quality of their diet. In this cross-sectional study, 117 women with known primary breast cancer completed a self-administered food frequency questionnaire (FFQ) reflecting usual diet during the past year, a Survey of Feelings and Attitudes using the Center for Epidemiologic Studies Depression scale (CES-D) and a survey that includes menopausal symptoms among others common to women with a history of breast cancer. When women's responses to the FFQ were scored using the Healthy Eating Index (HEI), most often diets were evaluated as those that "need improvement" with a mean total HEI score of 67.2. With regard to the CES-D scores, study women averaged 9.5, with 19 women being classified as clinically depressed. HEI and CES-D scores were inversely related ( $r = -0.22$ ,  $p = 0.02$ ). A negative correlation was also observed between energy-adjusted calcium intakes and CES-D scores ( $r = -0.19$ ,  $p = 0.04$ ). Clinical depressed women had not only lower HEI scores and calcium intakes, but also lower grain and variety scores. Comparisons to national data for disease-free women and that available for those with breast cancer suggest that our study women consumed diets low in energy and dietary variety.

**Diet quality may be an important factor influencing the manifestation of depressive symptoms in breast cancer survivors or conversely, poorer diet quality may be an outcome of depression.**

# The contribution of the environment (especially diet) to breast cancer risk

## Abstract

Environmental factors play an important role in breast carcinogenesis. Opportunities for prevention are limited, however, because most of the known or suspected risk factors are not targets for modification.

Dietary factors have generally not emerged as crucial contributors to mammary tumor causation. We still appear to be missing a critical piece of the breast cancer puzzle because we can only explain a moderate proportion of international and national variation in breast cancer rates.

Research needs to pursue new avenues, focusing on exposure windows that have not yet been sufficiently explored, such as events between conception and adolescence, and on modifiable risk factors that show large variation within or between populations.

Breast Cancer Res 2002, 4: 58-61

# A Prospective Study of Major Dietary Patterns and the Risk of Breast Cancer

Our aim was to study the broader eating patterns that potentially reflect many dietary exposures working together in their association with breast cancer risk.

Using data from a prospective study of 61,463 women with an average follow-up of 9.6 years and 1,328 incident cases of breast cancer, we conducted a factor analysis to identify major dietary patterns. Proportional hazards regression was used to estimate hazard ratios.

We found no association between the "Western" dietary pattern (characterized by such foods as red and processed meats, refined grains, fat, and sweets) or the "healthy" dietary pattern (fruit and vegetables, fish and poultry, low-fat dairy, and whole grains) and breast cancer risk.

However, women who were in the highest category of the "drinker" dietary pattern (wine, beer, and spirits) had a moderately increased risk (rate ratio = 1.27; 95% confidence interval, 1.06–1.52; P for trend, 0.002).

# A Prospective Study of Major Dietary Patterns and the Risk of Breast Cancer

The positive association was somewhat weaker among women below 50 years of age, a finding not inconsistent with chance.

Our results are in agreement with the majority of previous studies that show alcohol consumption moderately increases the risk of breast cancer, but our results do not support any association between breast cancer risk and the "Western" or "healthy" dietary patterns.

Cancer Epidemiology Biomarkers & Prevention Vol. 10, 1281-1285, December 2001 © 2001 American Association for Cancer Research

To be clear

**Dietary interventions**

**are not a substitute for cancer treatment**

**are *complementary* therapies**

**can play an important role in reducing risk**

# Inflammation

Some of the mechanisms that initiate the processes that lead to cancer also promote the growth of cancer- and increase the aggressiveness of existing tumors.

Said another way-

Inflammation is associated with malignancy.

“If a cellular mutation is the spark that lights the malignant fire, then inflammation is the fuel that keeps the fire growing and spreading”

Keith Block – *Life Over Cancer*

# Inflammation

**RA increases the risk of lymphoma and lung cancer**

**Patients with chronic infections of the bone (osteomyelitis- are susceptible to aggressive carcinomas and sarcomas**

**Approximately one in every 10 persons with ulcerative colitis will develop colon cancer**

**If you have/had cancer- inflammatory state measured by CRP in addition to other factors**

# Conversely

**Controlling inflammation can reduce the risk of  
and aggressiveness of cancer**

**It is not about taking anti-inflammatory  
drugs..... ( there are side effects and  
contraindications.....) and not making dietary  
changes**

**It is about dietary interventions**

# Challenges

**Inflammation has a connection to key cancer challenges**

**For example –**

**Reducing tumor growth and spread- inflammation is associated with increased cancer development, angiogenesis and metastases**

**Weakening of immune competence –**

**↑ inflammation = ↑ immune suppression**

**Others**

# Challenges

**Tolerating Conventional Treatment**

**Radiation Therapy**

**Chemotherapy**

**Inflammation and Cachexia**

# How to eliminate causes of inflammation

**Causes: Smoking/ exposure to tobacco smoke , Alcohol, Pollution ( indoor and outdoor), sleep loss, extreme exercise, *unhealthy consumption of Omega 6s, saturated and trans fats, unhealthy carbohydrate : high-glycemic -index foods, unhealthy cooking methods ( high heat/high flame eg charcoal grilling and deep frying), overweight- especially abdominal fat.....***

# Foods that Fight Inflammation

**Salicylate-rich foods include wintergreen,  
turmeric, tomatoes ( should be organic)**

**Flavonoid-rich vegetables - COLOR!**

**2-4 servings/day ( 1 -2 cups cooked / 2-4  
cups raw)**

**and fruit ( 1-2 cups/day)**

**Remember – food preparation = food selection**

# Supplements

## General thoughts

It is important to remember that

if a little is good- more is not

necessarily better

natural  $\neq$  safe

# A Core Diet Plan

## Cancer-fighting phytochemical

consume vegetables of multiple colors

## Energy supporting/sustaining foods

whole grains, complex carbohydrates and fiber

## Avoid processed foods

## Cancer-fighting proteins

legumes, fish and omega-3 eggs (on occasion), soy ( if not contraindicated)

# A Core Diet Plan

**Reduce consumption of dairy products**

**replace milk with rice, oat , nut beverage**

**Essential fats**

**deep sea fish, olives, avocados, nuts, flax and other seeds**

**Avoid trans fats**

**Adequate fluids**

# Specifically

**How do you make these  
recommendations work with your  
life?**