

**Nutrition & Physical Activity to  
Reduce Breast Cancer Risk**

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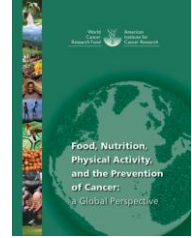
[www.karencollinsnutrition.com](http://www.karencollinsnutrition.com)

**What Research Says**

About 1/3 of our most common cancers can be prevented with a healthy diet, weight control, & regular physical activity

About 38% of U.S. breast cancers can be prevented

AICR Expert Report, 2007  
AICR Policy & Action Report, 2009



[www.dietandcancerreport.org](http://www.dietandcancerreport.org)

**SPECIAL RECOMMENDATION  
FOR CANCER SURVIVORS:**

After treatment, cancer survivors should follow the recommendations for cancer prevention.

All cancer survivors to receive nutritional care from an appropriately trained professional.

**RECOMMENDATION:**

**Be as lean as possible without becoming underweight.**

Cancer Links

Convincing:

Breast (post-menopause)    Colon  
Kidney    Endometrium  
Esophagus    Pancreas

Probable:

Gallbladder

**Body Mass Index &  
Post-Menopausal Breast Cancer**

5% increased risk  
for each 2 unit increase in BMI

(AICR Continuous Update 2010)

Example: woman 5'4"  
BMI 30 (175 lb), 13% ↑ risk vs. BMI 25 (146 lb)

**Body Fat:  
What's the Link?**

- ↑ Insulin & Insulin-related Growth Factors
- ↑ Bioavailable Estrogen
- ↑ Leptin
- ↓ Adiponectin
- ↑ Inflammatory Cytokines

**Normal Weight Obesity**

BMI < 25 BUT  
Body fat > 30-35% in women or > 20-25% in men

- Metabolic syndrome: almost 4x incidence
- CV mortality in women: more than 2x higher
- Inflammatory cytokines (TNF- $\alpha$ , IL-6)

(NHANES III, Romero-Corral, Eur Heart J 2010  
Di Renzo, Obesity, 2010)



**Avoid weight and waist gain through adulthood**

postmenopausal breast risk  
↑ 3 to 5% for each 11-lb gain  
over adult life

(meta-analysis, AICR expert report 2007)

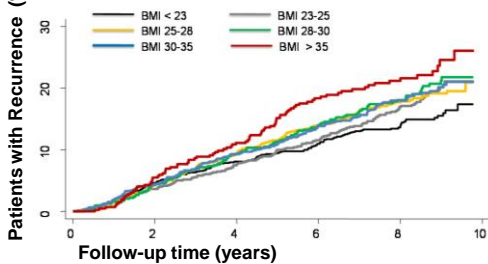
**Breast Cancer Risk & Weight Change after Menopause**

Compared to those who Gained More:

- Maintained Weight 7% lower risk
- Lost Weight 22% lower risk

*Iowa Women's Health Study  
Harvie, CaEpidBiomPrev 2005*

**Recurrence of Breast Cancer (ER+ or PR+) & Pre-Diagnosis Obesity in Postmenopausal Women**



ATAC Trial. Sestak. JCO 2010 28:3411

**Pre-diagnosis Obesity**

Increased Non-Cancer Mortality

Increased All-Cause Mortality  
60% increase with obesity  
in LACE cohort study

(Caan, Cancer Causes Control 2008)

## **Weight Change**

Problems:

- Undesired Weight Loss
- Undesired Weight Gain
- Sarcopenia

Breast Cancer

68-70% gain weight by 3 years  
Average 8-10 lbs.  
Many gain after year 1

(Vance, Obes Rev 2010)

## **Weight Gain in Survivors of Invasive Nonmetastatic Breast Cancer**

LACE trial Average 7 yr post-diagnosis  
Weight gain (moderate or large)

No association with recurrence or death  
(Caan, Ca Caus Contr 2008, 19:1319)

CWLS Average 12 yr post-diagnosis  
For each 11-pound gain:

13% ↑ breast cancer mortality

19% ↑ cardiovascular mortality

\*\*Regardless of pre-diagnosis weight

(Nichols, Cancer Epid Bio Prev 2009, 18:1403)

## **Will Weight Loss Help Overweight Survivors?**

### RECOMMENDATION:

**Be physically active for at  
least 30 minutes every day**

## **Physical Activity & Reduced Risk**

Convincing evidence: Colon

Probably: **breast (post-menopause)**  
endometrial

(Limited suggestive: lung, pancreas,  
**pre-menopausal breast**)

Could prevent ~17% of U.S. Breast Cancer

(AICR Policy & Action Report, 2009)

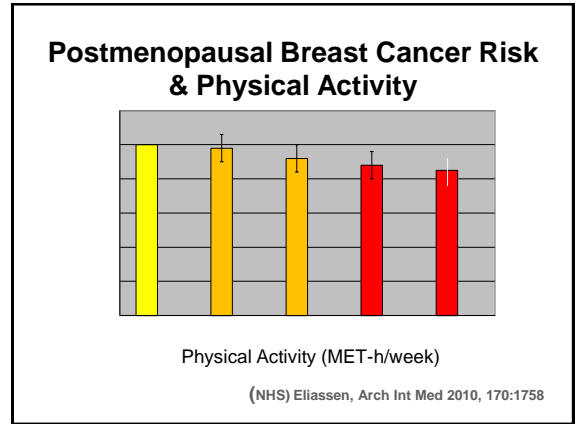
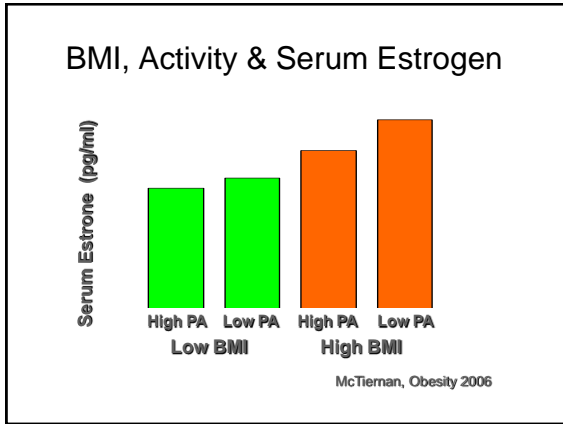
## **Impact of Physical Activity**

### Weight Control

- Assists weight loss
- Reduces loss of muscle with age
- Reduces weight gain
- Provides coping strategy for stress

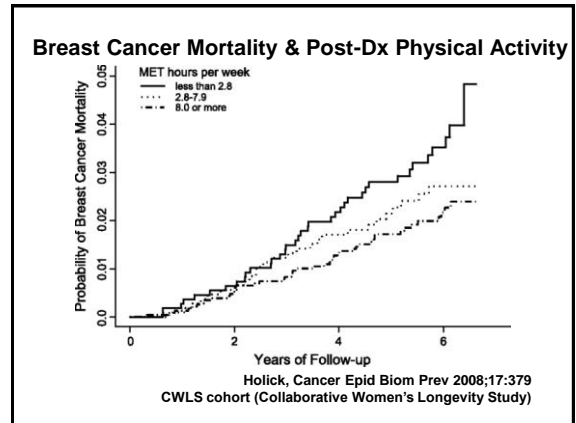
### \* Unseen Impact \*

- ✓ Insulin resistance reduced
- ✓ Markers of chronic inflammation reduced
- ✓ Post-menopausal estrogen & androgen levels may be reduced
- ✓ Immune system possibly strengthened



### Recommendations

- At least 30 minutes moderate activity every day (such as brisk walking)
- Work up to at least 60 minutes moderate or 30 minutes vigorous activity daily
- Limit sedentary habits such as watching TV



### Physical Activity for Survivors

- Improved quality of life
- May reduce fatigue
- May reduce weight gain
- Decreased cardiovascular mortality
- May decrease cancer recurrence

\*\* Unique concerns : immune status, anemia, radiation, heart health, lymphedema

### Key Messages

- Includes Recreation, Transportation, Occupation, Household chores
- It's not just for weight control
- Can be 10 to 15-minute blocks
- Limit super-sedentary TV

**RECOMMENDATION :**

**If consumed at all,  
limit alcoholic drinks to  
2 for men and 1 for women a day**

(One drink = 5 oz wine, 12 oz beer,  
1.5 oz 80-proof liquor)

**Cancers Associated with  
Alcohol Consumption**

Convincingly Increases Risk:  
colorectal (men),  
**breast (pre- and post-menopausal)**  
mouth, larynx, pharynx, esophagus,

Probably Increases Risk:  
colorectal (women), liver

**The Million Women Study:  
Alcohol & Breast Cancer Risk**

Compared to 0-2 drinks /week:

3-6 drinks	8% ↑ breast cancer
7-14 drinks	13% ↑ breast cancer
≥15 drinks	29% ↑ breast cancer

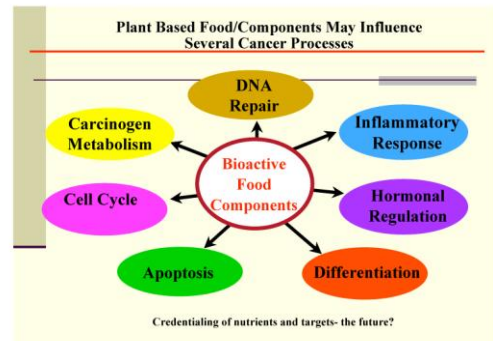
Allen, J Nat Can Inst 2009, 101:296

**RECOMMENDATION:**

**It is best for mothers to breastfeed  
exclusively for up to 6 months and  
then add other liquids and foods.**

**RECOMMENDATION  
To Reduce Overall Cancer Risk :**

**Eat more of a variety of  
vegetables, fruits,  
whole grains and legumes**





**Energy Density in Self-Selected Diets over 6 Years**

Low ED	1022 g	1514 kcal	+ 5.5 lbs
Med ED	864 g	1659 kcal	+ 10.6 lbs
High ED	751 g	1737 kcal	+ 14.1 lbs

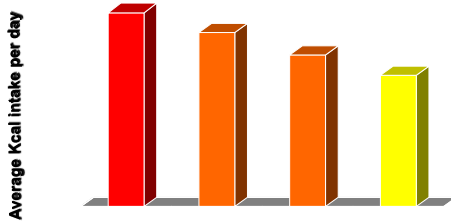
Savage, AJCN 2008

**Low Energy Density in Practice**

- Limit added fats and high-fat foods
  - \* Moderate amounts of oils & nuts as part of a healthy diet are not linked to weight gain
- Use vegetables and fruits to replace some foods high in energy density
  - \* Mainly low energy-dense produce
  - \*\* Most powerful step?

Rolls, J Amer Diet Assoc 2005  
Ledikwe, AJCN 2006

**Reducing Energy Density & Portions to Reduce Calorie Consumption**

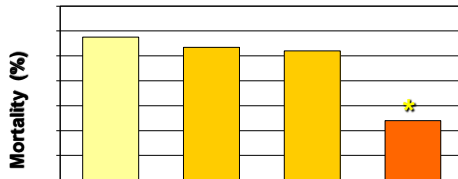


(Rolls, AJCN 2006, 83:11)

**Diet Acts Throughout the Cancer Process**

- ❖ DNA Damage & Repair
- ❖ Inflammation
- ❖ Hormones & Growth Factors
- ❖ Epigenetics
- ❖ Gut Microbiota

**Lifestyle Pattern & Breast Cancer Recurrence**



\* p=.01  
Pierce, J Clin Oncol 2007

**RECOMMENDATION :**

**Don't use supplements to protect against cancer.**

- In some dietary or health circumstances supplements may be valuable.
- Supplements are not recommended for cancer prevention

### Questions about Supplements

**1) Insurance?**

- Variety
- Synergy



**2) If some is good, isn't more better?**

### Total Folate Intake & Breast Cancer Incidence

Effect Varies with Level of Intake  
Top vs Bottom Quintile

Malmö Diet & Cancer 456 ug vs 160 ug	HR 0.56 (p=.006)
PLCO Cancer Screening >853 ug vs ≤336 ug	HR 1.27 (p=.05)

Ericson, AJCN 2007, 86:434  
Stolzenberg-Solomon, AJCN 2006, 83:895

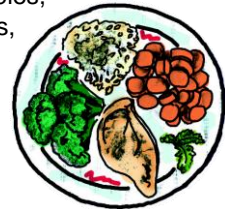
### Supplement Advice for Survivors? Conclusions of One Recent Review:

- Possible decrease in mortality with Vit D (but how much? for whom?)
- Prudent to avoid excess folic acid (how much is too much?)
- MVI not necessarily helpful,
- Don't count on antioxidant supplements

(Giovannucci, J Clin Oncol 2010, 28:4081)

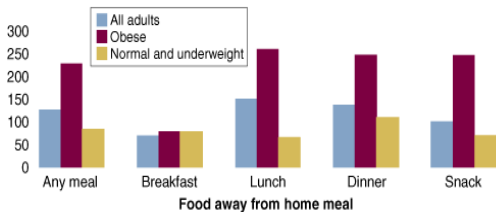
### The New American Plate

- $\frac{2}{3}$  (or more) vegetables, fruits, whole grains, and beans
- $\frac{1}{3}$  (or less) animal protein



AICR: [www.aicr.org](http://www.aicr.org)

### Eating Out & Increase in Total Daily Calorie Consumption



Source: USDA, ERS; 1994-96 CSFII & NHANES 2003-04

### Weight Loss: Small Changes for Keeps

**Cut 200 - 300 Calories  
Walk 15 - 30 minutes**

**= 2.5 - 4 pounds per month weight loss**

**= 15 - 24 pounds weight loss in 6 months**

Simplify the Message:

**AICR's Three Guidelines**

- ❖ Choose mostly plant foods. Limit red meat and avoid processed meat.
- ❖ Be physically active every day in any way for 30 minutes or more.
- ❖ Aim to be a healthy weight throughout life.

**Recognizing & Responding  
to Misinformation**

Some Good Questions

- ✓ Association or cause?
- ✓ Who was studied?
- ✓ Controlled for other influences?
- ✓ From a peer-reviewed journal?
- ✓ How many studies?
- ✓ Compare to messages from reputable scientific organizations?
- ✓ Is something for sale?

**What Do We Say?**

- Food & supplements are not the same
- Base choices on recommendations & reports, not single studies and hearsay

**All AICR Recommendations**

**on evidence rated convincing or probable**

- ❖ Judgement unlikely to change over time (convincing)
- ❖ At least 2 independent cohorts (convincing)
- ❖ At least 2 cohorts or 5 case-controls (probable)
- ❖ No unexplained heterogeneity
- ❖ Good quality studies that account for error
- ❖ Dose response evident
- ❖ Plausible evidence from laboratory studies