

THE UNIVERSITY OF
ALABAMA AT BIRMINGHAM

WORKING EVERYDAY TO PROVIDE THE HIGHEST QUALITY OF LIFE FOR PEOPLE WITH CANCER

Eating and Exercising toward Better Health in Cancer Survivors

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Objectives

- Nutrition and physical activity guidelines for cancer control and supporting rationale.
- Strategies for approaching patients to quickly assess, intervene and refer patients needing guidance on lifestyle medication.
- Resources providing credible guidance and resources to cancer survivors in the area of nutrition and cancer.



2012 American Cancer Society (ACS) Nutrition & Physical Activity Guidelines for Cancer Survivors

Achieve and maintain a healthy weight

If overweight or obese, limit high calorie foods & beverages increase physical activity to promote weight loss

Engage in regular physical activity

- Avoid inactivity; resume normal activities as soon as possible following dx
- Exercise ≥ 150 minutes/week
- Include strength training exercises at least 2 days/week

Achieve a dietary pattern that is high in vegetables, fruits and whole grains

- Follow ACS Guidelines on Nutrition & Physical Activity for Cancer Prevention
 - Choose foods & beverages in amounts that achieve/maintain a healthy weight
 - Limit processed and red meat
 - Eat ≥ 2.5 cups of vegetables & fruits/day
 - Choose whole grains instead of refined grain products
 - If you drink ETOH, drink ≤ 1 drink/day for ♀ & 2 drinks/day for ♂

Supplements

- Try to obtain nutrients through diet, first.
- Consider only if a nutrient deficiency is biochemically or clinically observed, or if intakes fall persistently below recommended levels as assessed by an RD.



Nutrition Red Flags for Undernutrition

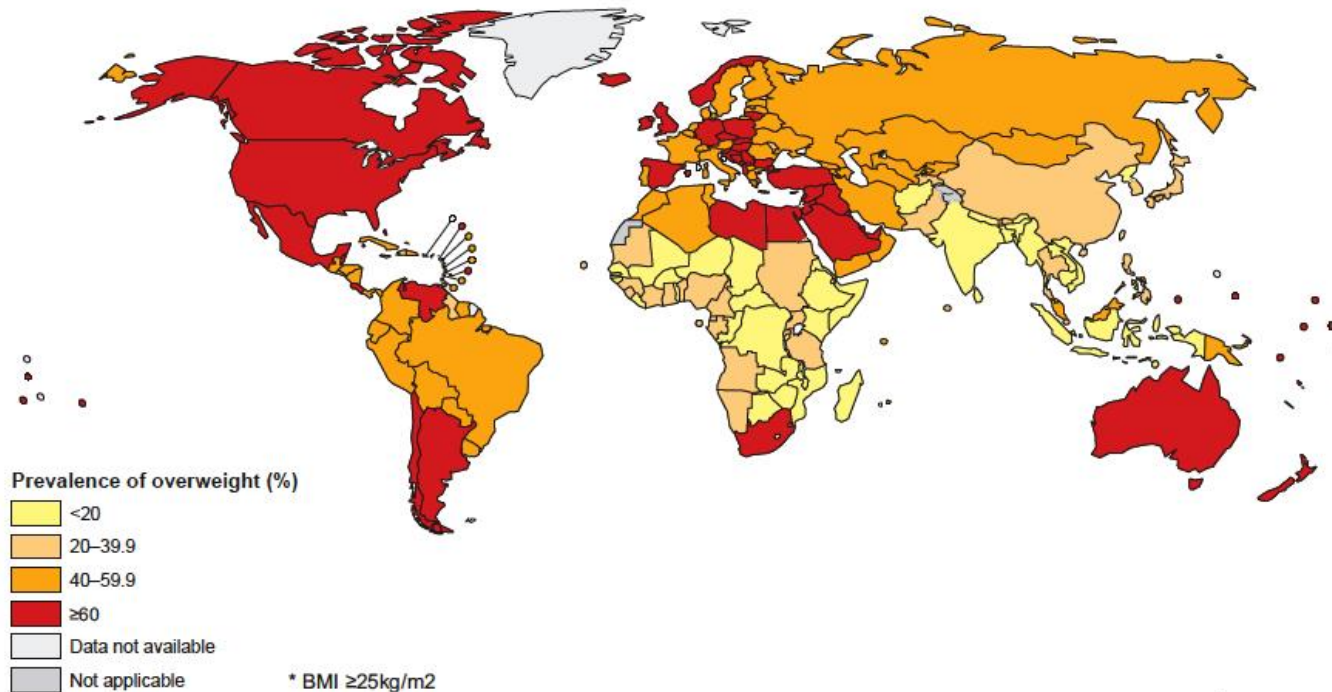
- Body Mass Index (kg/m^2) below 20
- Unintentional weight loss $>2\%$ in 1 month, $>5\%$ in 3 months or $>10\%$ in 6 months
- Hemoglobin <12 g/dl or albumin <3.2 g/dl
- Changes in appetite, ability to eat (physiologic or access)

More cancer survivors look like this



Not this

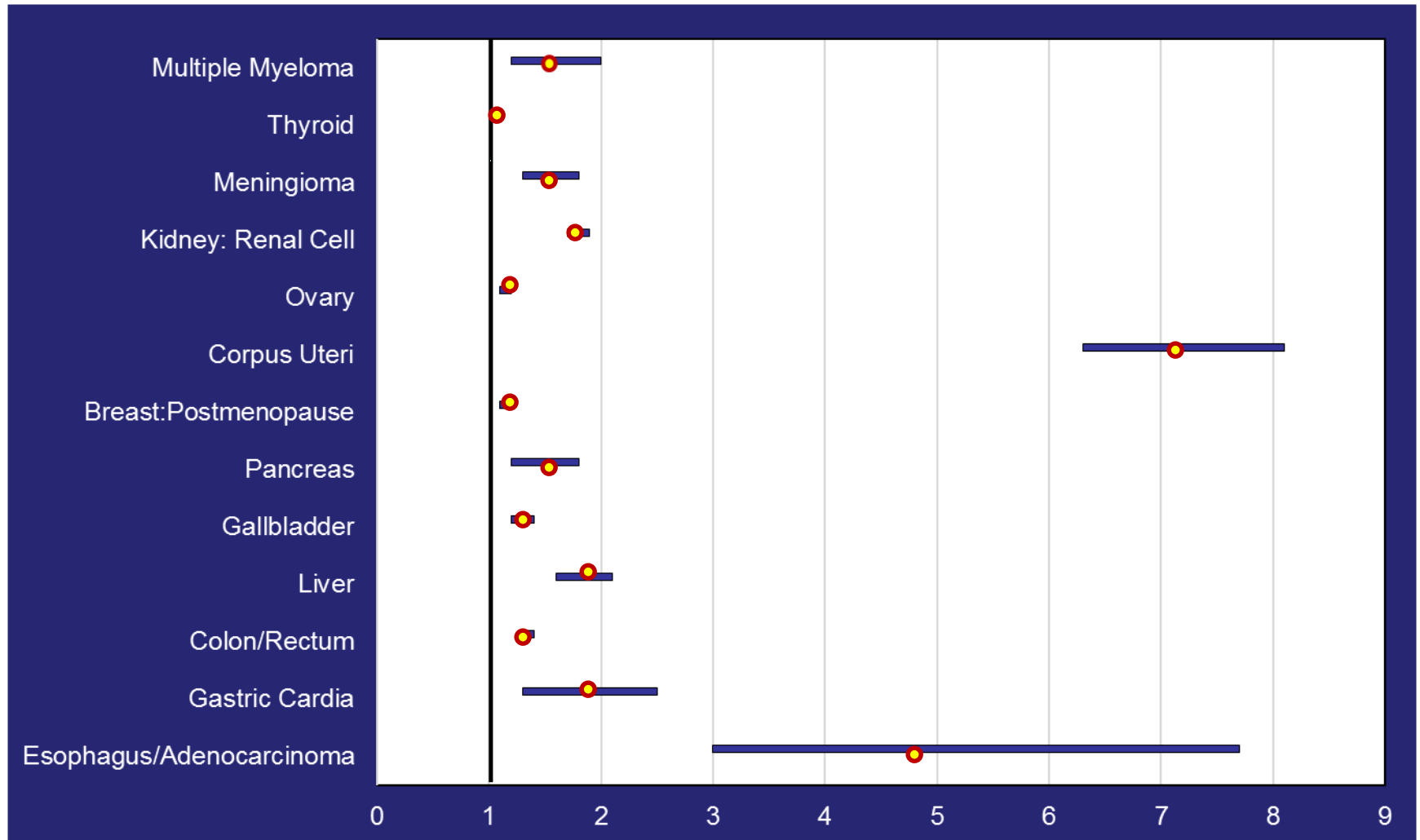
Worldwide rates of obesity and overweight



- Worldwide 35% of adults are overweight and 11% are obese (2008) doubled since 1980 – prevalence higher in select survivor groups (breast & prostate)
- 65% of the world's population live in countries where overweight and obesity kills more people than underweight.
- Medical costs for obese people are \$1,429 (USD) higher than those of normal weight

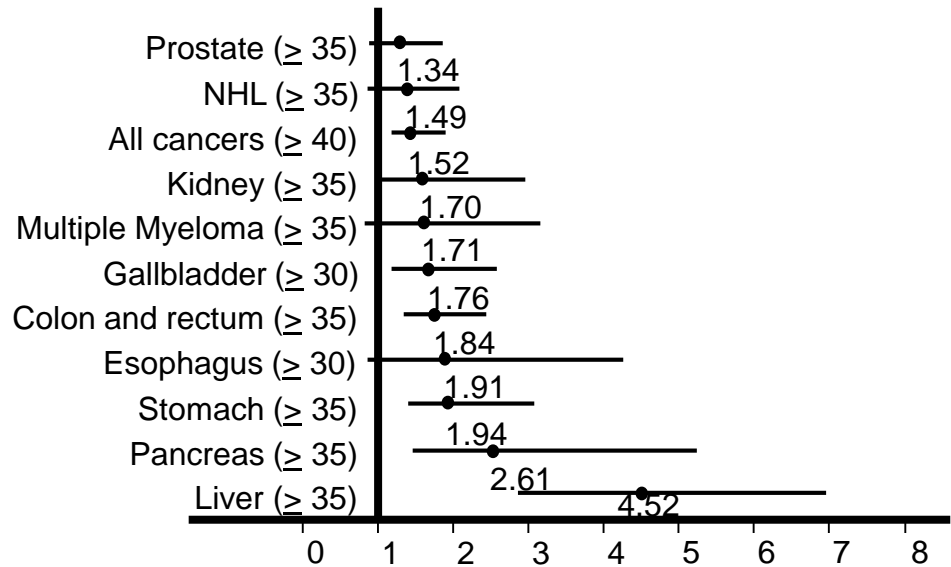
Obesity and Relative Risk of Cancer

More limited data on male breast cancer, fatal prostate cancer and diffuse large B-cell lymphoma

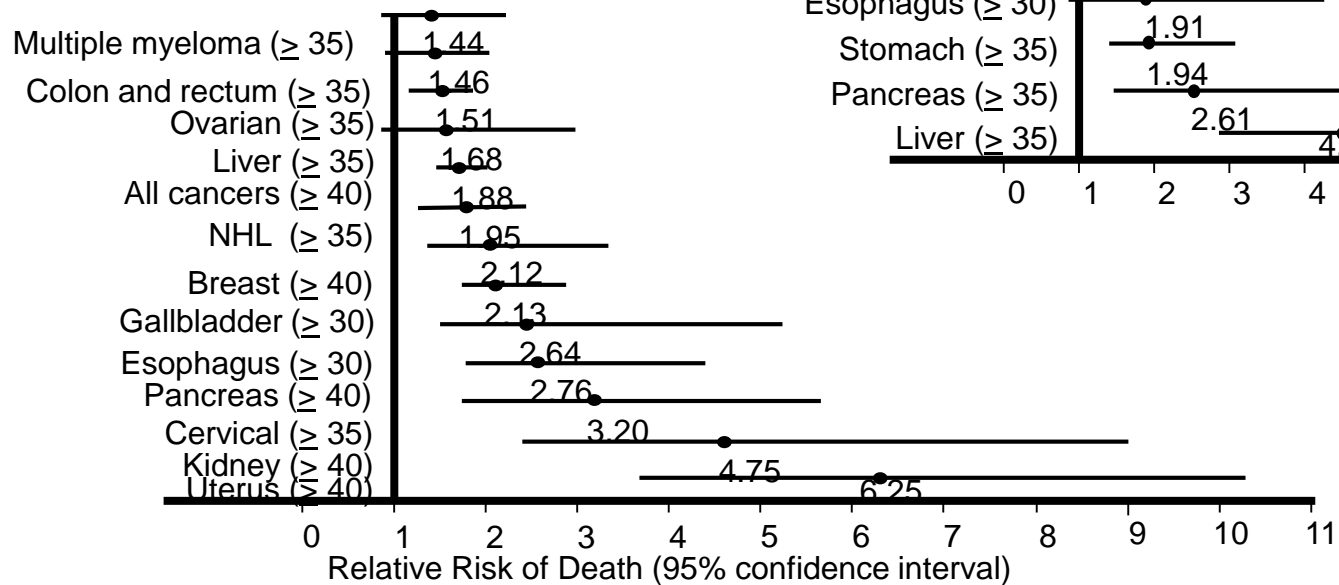


Obesity and Cancer-related Mortality

Males



Females



Prognostic Effects of Weight Gain Among Individuals with Breast and Prostate Cancer: Results of 2 Meta-Analyses

Group (year)	# of studies	Sample	RR (95% CI) for every 5 kg/m ² increase in BMI from pre- to post-dx
Chan et al. (2014)	82	213,075 women with breast cancer	<u>Breast CA Specific Mortality</u> 1.29 (0.97-1.72) <u>Total Mortality</u> 1.08 (1.01-1.15)
Cao & Ma (2011)	6 cohort	18,203 men with prostate cancer	<u>Biochemical Recurrence</u> 1.21 (1.11-1.31) <u>Prostate CA Specific Mortality</u> 1.20 (0.99-1.46)



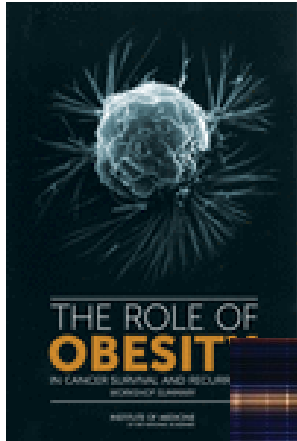
Weight Loss Interventions in Breast Cancer Survivors

- **1st trial de Waard 102 post-menopausal breast cancer survivors (1993)**
- **Review by Reeves et al. (2014) 14 weight loss trials (10 RCTs, 4 1-arm)**
 - 2-18 months in duration (n's 10-102)
 - No serious adverse events
 - 57% resulted in $\geq 5\%$ loss of body weight.
 - Clinically significant benefits in Hb_{A1C}, insulin, inflammatory markers, QoL, lipids, physical functioning and B/P with 5-9% weight loss.
- **In field or in analysis or reported in past 2 years.**
 - Sheppard et al. (2016) (n=22/12 week)
 - Swisher et al. (2015) (n=28/12 weeks)
 - Travier et al. (2014) (n=42/12 weeks)
 - DAMES (n=68/1-yr)
 - LEAN (n=100/6-mths)
 - CHOICE (n=249/6-mths)
 - LISA (n=338/2-yrs)
 - ENERGY (n=692/2-yrs)
 - DIANA-5 (n=1,417/5-yrs)
 - SUCCESS-C pre/post breast cancer (n= 3,642 [1,400-1,600]/5-yrs)
 - BWEL (n=3136 Stage II/III breast cancer within 5 yrs – Alliance)

de Waard et al. Europ J Cancer Prev 2:233, 1993; Reeves et al Obes Rev 15:749, 2014; Sheppard et al. Contemp Clin Trials 46:106, 2016; Swisher et al. Support Care Cancer 23: 2995, 2015; Travier et al. Med Oncol 31: 783, 2014; Demark-Wahnefried et al. Cancer 120:2522, 2014; Harrigan et al. JCO 34:669, 2016; Thompson et al PLoSOne 10: 2015; Goodwin JCO 32:2231; 2014; Rock et al JCO 33:3169, 2015; Villarini et al Tumori 98:1, 2012; Rack et al. Breast Care 5:395, 2010.

Great Interest in Obesity and Cancer

IOM Workshops on Obesity and Weight Management
Oct 2011/Feb 2017



JOURNAL OF CLINICAL ONCOLOGY

ASCO SPECIAL ARTICLE

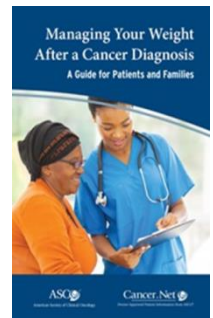
American Society of Clinical Oncology Position Statement on Obesity and Cancer

Jennifer A. Ligibel, Catherine M. Alfano, Kerry S. Courneya, Wendy Demark-Wahnefried, Robert A. Burger, Rowan T. Chlebowski, Carol J. Fabian, Ayca Guzalp, Dawn L. Hershman, Melissa M. Hudson, Lee W. Jones, Madhuri Kakarala, Kirsten K. Ness, Janette K. Merrill, Dana S. Wollins, and Clifford A. Hudis

Jennifer A. Ligibel, Dana-Farber Cancer Institute, Boston, MA; Catherine M. Alfano, National Cancer Institute, Bethesda, MD; Kerry S. Courneya, University of Alberta, Edmonton, Alberta, Canada; Wendy Demark-Wahnefried, University of Alabama at Birmingham, Birmingham, AL; Robert

ABSTRACT

Rates of obesity have increased significantly over the last three decades in the United States and globally. In addition to contributing to heart disease and diabetes, obesity is a major unrecognized risk factor for cancer. Obesity is associated with worsened prognosis after cancer diagnosis and also negatively affects the delivery of systemic therapy, contributes to morbidity of cancer treatment, and may raise the risk of second malignancies and comorbidities. Research shows that



Getting Beyond the Stigma



June 18, 2013 AMA declared obesity a disease

5–A's

Ask:

- Have you heard about the relationship between body weight and cancer?
- Have you tried to lose weight recently?

Advise:

- Orient to BMI chart, show where they are currently, assess weight goals

Assess:

-

Assist:

-

Arrange:

-

Normal Weight

Overweight

Obese

BMI 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

Height **Body Weight (pounds)**

4'10	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'0	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7	122	128	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
5'8	126	132	138	144	150	158	164	171	177	184	190	197	203	210	216	223	230
5'9	130	136	142	148	154	162	169	176	182	189	196	203	209	216	223	230	236
5'10	134	140	146	152	158	167	174	181	188	195	202	209	216	222	229	236	243
5'11	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6'0	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272

Patient 1:
 35 y/o stage II BC
 5'4" 140 lbs

	Normal Weight						Overweight					Obese					
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height	Body Weight (pounds)																
4'10	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'0	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1	100	105	110	115	121	127	132	137	143	148	153	158	164	169	174	180	185
5'2	103	108	113	118	124	131	136	142	147	153	158	164	169	175	180	186	191
5'3	106	111	116	121	127	135	141	146	152	158	163	169	175	180	186	191	197
5'4	110	115	120	126	132	140	145	151	157	163	169	174	180	186	192	197	204
5'5	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
6'1	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272

Patient 2:
65 y/o stage II BC
5'2" 175 lbs

175

Any weight loss would be good...you might see health benefits with a loss of 6 lbs (3%)
 At what weight do you feel your best?
 What's your lowest weight in the past 5-years?
 What's your lowest weight during adulthood?

5–A's

Ask:

- Have you heard about the relationship between body weight and cancer?
- Have you tried to lose weight recently?

Advise:

- Orient to BMI chart, show where they are currently, assess weight goals

Assess:

- Readiness to pursue weight loss

Assist:

-
-
-
-

Arrange:

-

Assess Readiness to Pursue Weight Loss Regimen

- Have you ever tried losing weight before?
- How successful were you?
- How do you feel about working to get your weight down now, by watching what you eat and exercising more?
- If patient is not ready – plant message regarding importance – reassess during future appointments

5–A's

Ask:

- Have you heard about the relationship between body weight and cancer?
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Advise:

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Assess:

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Assist:

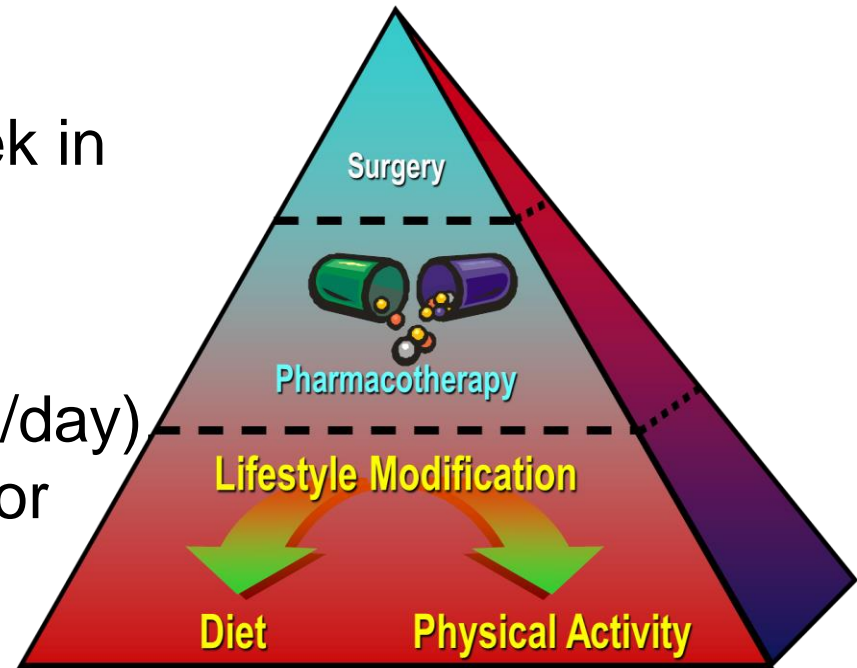
- Set a start date and incremental goals
- Provide brochures, point to select websites
- Promote foods low in kcal and high in nutrients (raw vegetables); limit foods high in kcal and low in nutrients (high sugar or fat) - regular soft drinks, fried foods, added fats and sugars, chips, desserts.
- Environmental control/Behavioral modification: minimize food cues, purposeful eating, etc.

Arrange:

- Refer to registered dietitian, primary care physician, or specialist (bariatric medicine if Class II/III obese)

General Guidelines

- Loss of as little as 3% of body weight associated with health benefit
- Weight loss of up to 2 pounds/week in adults (go slower in younger AND older populations)
- Energy restriction(1200–1800 kcal/day) increased physical activity, behavior modification
- No recommendation regarding distribution of carbohydrate, fat and protein (Thomson C et al. *Nutr Cancer* 2010; Thompson H et al. *Breast Cancer Res* 2012).
- Self-monitoring: Weighing everyday, keeping a food and exercise log/journal, electronic devices



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Engage in regular physical activity

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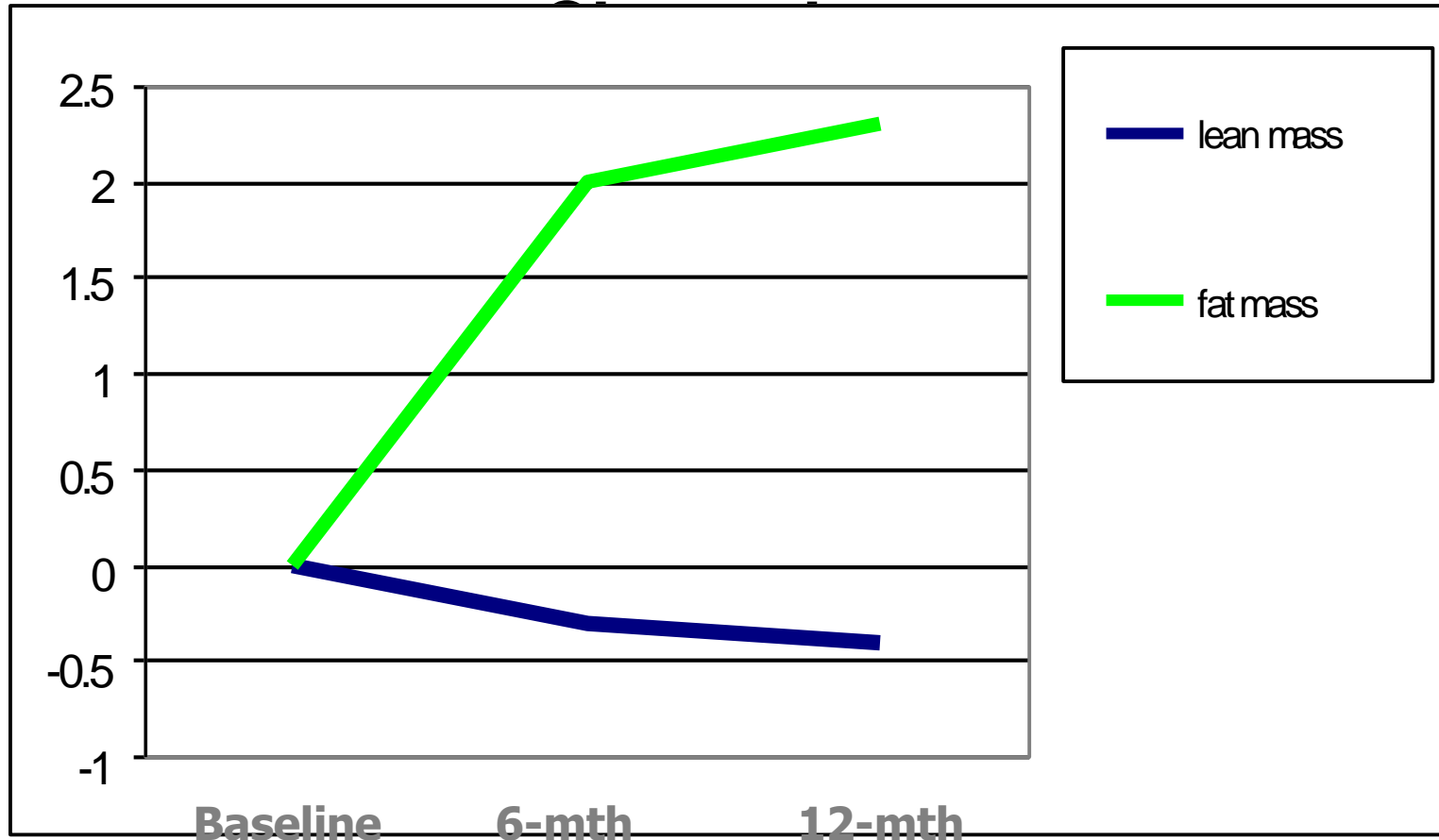
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Supplements

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Change in Body Composition Post-Diagnosis among Premenopausal Breast Cancer Patients on Adjuvant



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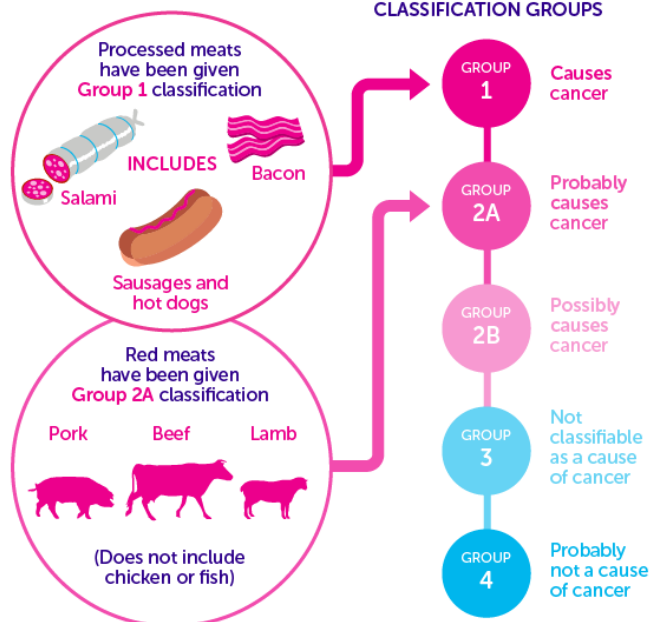
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MEAT AND CANCER HOW STRONG IS THE EVIDENCE?

IARC CARCINOGENIC CLASSIFICATION GROUPS



These categories represent how likely something is to cause cancer in humans, not how many cancers it causes.

October 26, 2015 IARC declared:
“Red meat is a carcinogen”

- Pooled analysis of 37,698 men from the Health Professionals Follow-up Study and 83,644 women from the Nurses' Health Study
- 9464 cancer deaths during 2.96 million person-years of follow-up.
- If substitute fish, poultry, nuts, legumes, low-fat dairy for red meat would equate with a 7% to 19% lower mortality risk.
- RX: No more than 18 oz/week

	Q1 (ref)	Q2	Q3	Q4	Q5	P_{Trend}	HR (95% CI) for 1 svg day ⁻¹ increase
Not Processed	1	1.03 0.97-1.10	1.03 0.96-1.10	1.09 1.02-1.16	1.17 1.10-1.26	<.001	1.10 (1.06-1.14)
Processed	1	1.03 0.97-1.10	1.08 1.01-1.15	1.08 1.01-1.15	1.14 1.07-1.22	<.001	1.16 (1.09-1.23)



Dietary Patterns Prudent vs. Western



Team (year)	Sample	Diet	CA Mortality HR (95% CI)	Other Cause Mortality HR (95% CI)
Kroenke (2005)	2619 Breast CA	Prudent	1.07 (0.66-1.73)	0.54 (0.31-0.95)
		Western	1.01 (0.60-1.70)	2.31 (1.23-4.32)
Kwan (2009)	1901 Breast CA	Prudent	0.79 (0.43-1.43)	0.35 (0.17-0.73)
		Western	1.20 (0.62-2.32)	2.15 (0.97-4.77)
Vrieling (2013)	2522 Post- menopausal Breast	Prudent	0.89 (0.59-1.35)	0.81 (0.40-1.61)
		Western	3.69 (1.66-8.17)	0.99 (0.64-1.52)
Meyerhardt (2007)	1009 Stage III CRC	Prudent	1.13 (0.77-1.67)	1.32 (0.86-2.04)
		Western	2.85 (1.75-4.63)	2.32 (1.36-3.96)

Diet Quality: 3-of-4 studies show significant protective effect for overall mortality, one shows significant protection for cancer specific mortality (George 2011 & 2014; Izano 2013; Kim 2011)

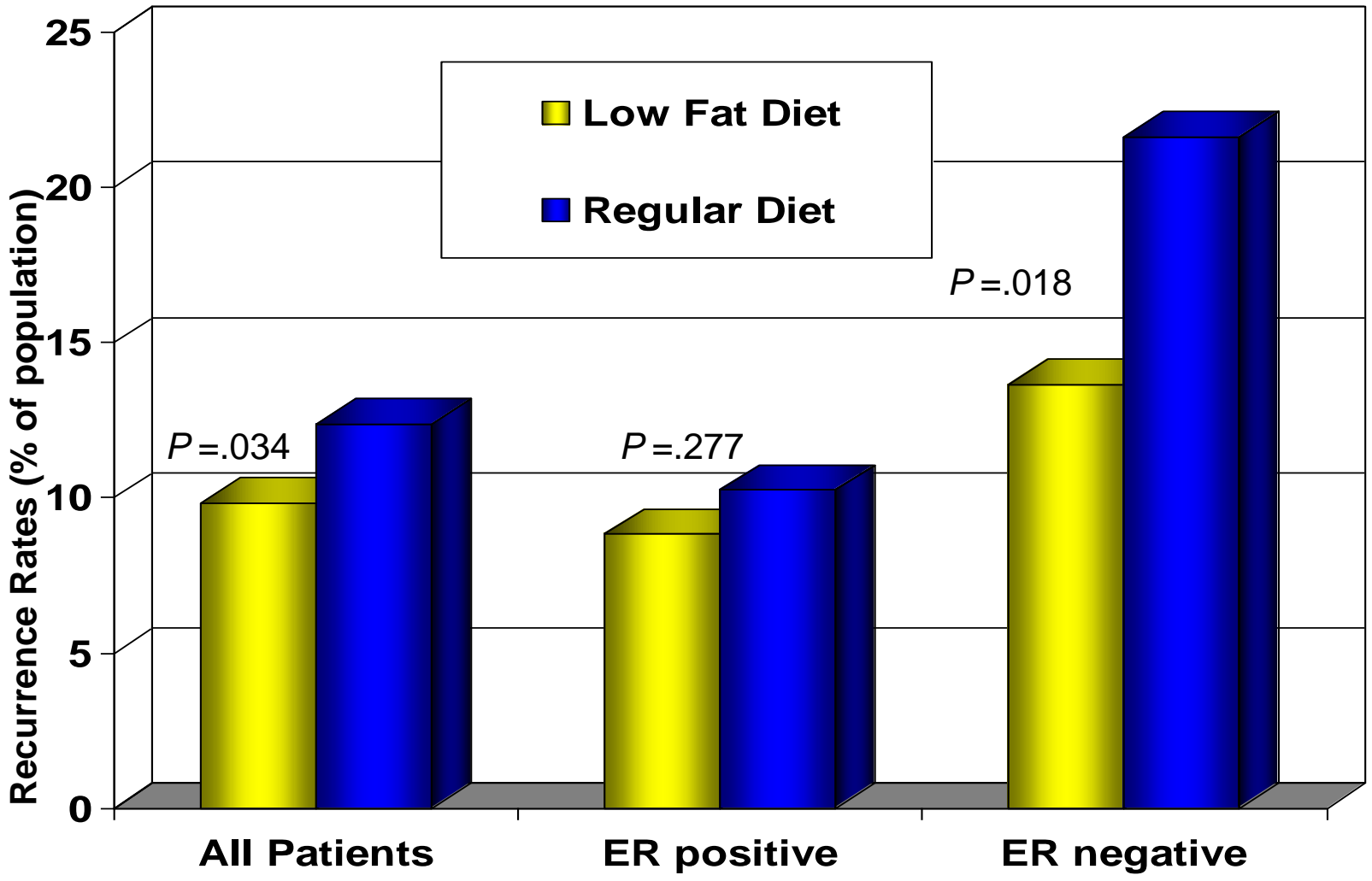
Women's Healthy Eating & Living (WHEL) Study

- **Sample:** 3088 early stage breast cancer survivors dx'd within 4 yrs
- **Intervention:** 5 vegetable servings plus 16 oz of vegetable juice; 3 fruit servings; 30 g of fiber; and 15% to 20% of energy intake from fat
- **Follow-up:** Up to 10 years

	Intervention	Control
Total Breast Cancer Events	256	262
Total Breast Cancer Deaths	127	135
Total Deaths	155	160

- **Comments:** No weight loss, baseline F&V ~ 7.4 servings/day

Results of the Women's Intervention Nutrition Study (WINS) Show Reduced Rates of Recurrence in Patients Assigned to a Low Fat Diet (n=2,437)



Why the Discrepancy?

	WINS	WHEL
Time since Diagnosis	Within 1-year	Within 5-years
Sample	Post-Menopause	Pre/Peri/Post Menopause
Screen for Previous Diet	Yes	No (baseline F&V intake 7.4 servings/day)
Other Factors	Lost 6 pounds over study period	Weight stable

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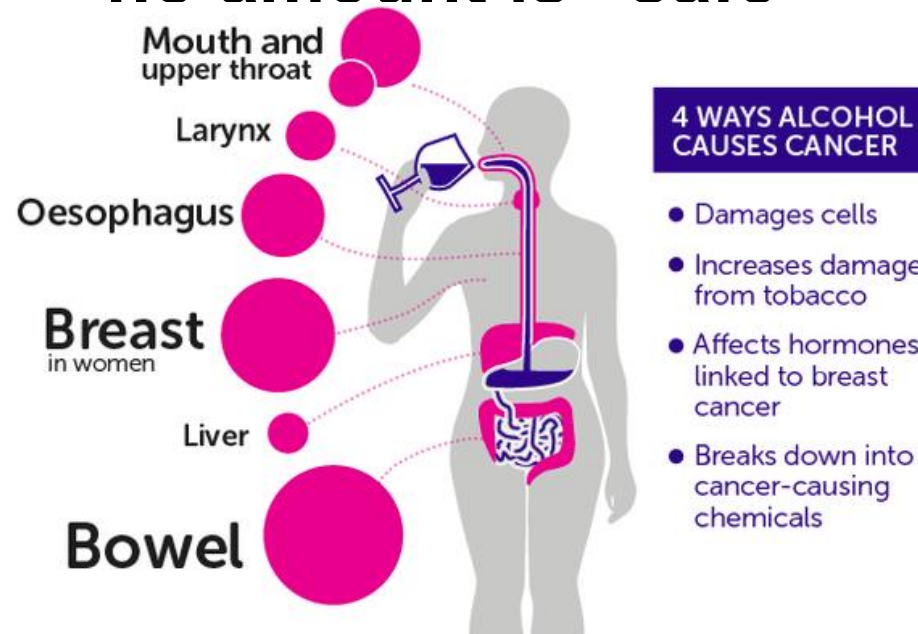
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Association between Alcohol and Cancer is Linear

no amount is “safe”



- Head & Neck survivors should NOT drink; it increases complications and reduces survival. Meta-analysis on upper aerodigestive cancers of 19 studies (RR 2.97; 95% CI, 1.96-4.50). Druesne-Pecollo et al. CEBP 23: 324-31, 2014
- Choice less clear for other survivors.
- Studies in breast CA, largest in 22,890 survivors with 135M follow-up 7-9 drinks/week vs none Newcomb PA et al. JCO 2013
 - Breast CA Mortality: 1.01 [95% CI, 0.55 to 1.87]
 - All Cause Mortality: 0.85 [95% CI, 0.77 to 0.93]

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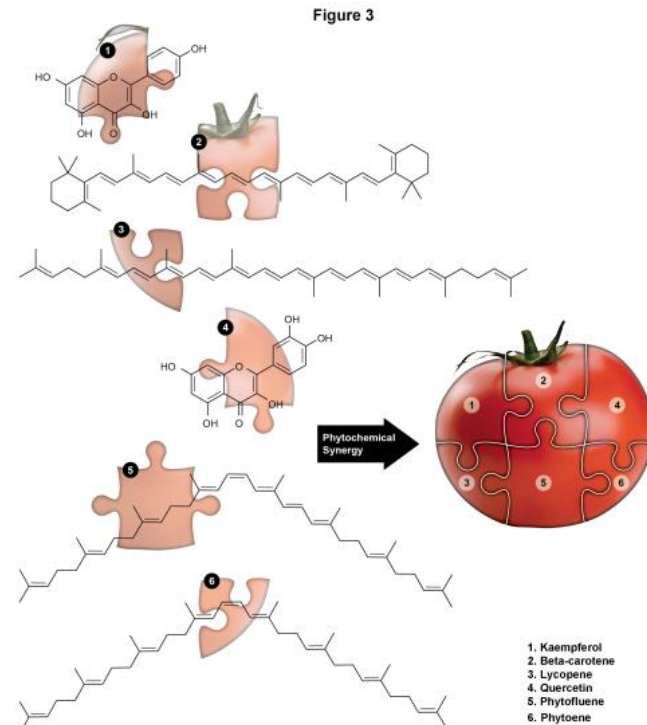
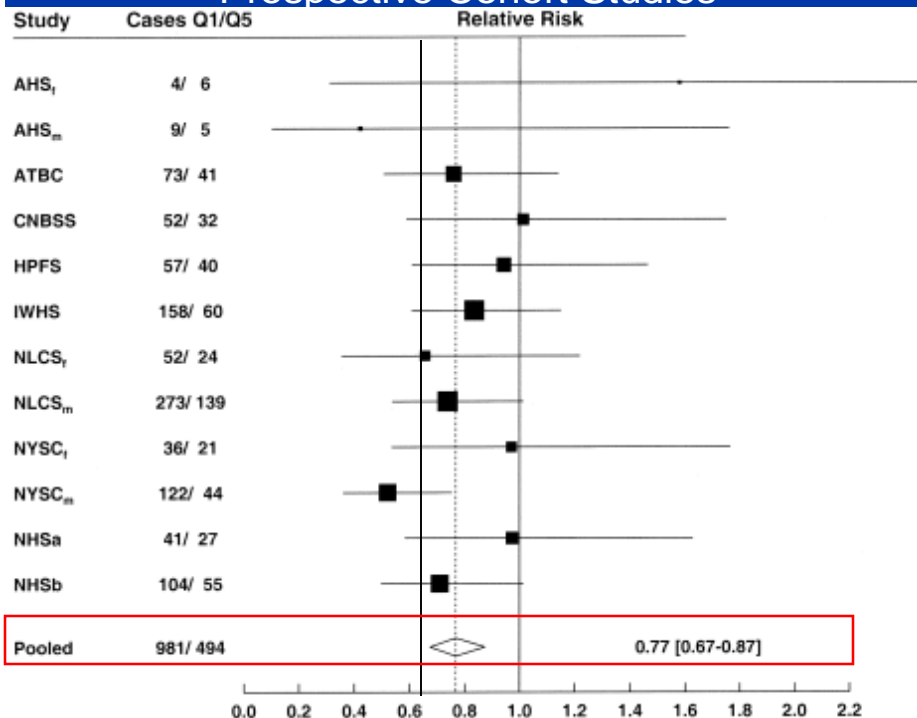
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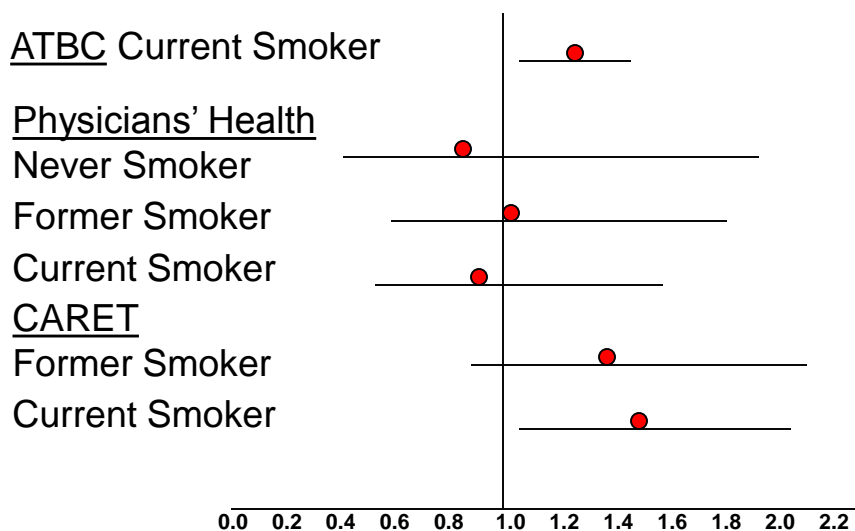
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Vegetables & Lung Cancer Prospective Cohort Studies



Beta Carotene Supplementation & Lung Cancer



When we try to pick out anything by itself, we find it hitched to everything in the universe – John Muir

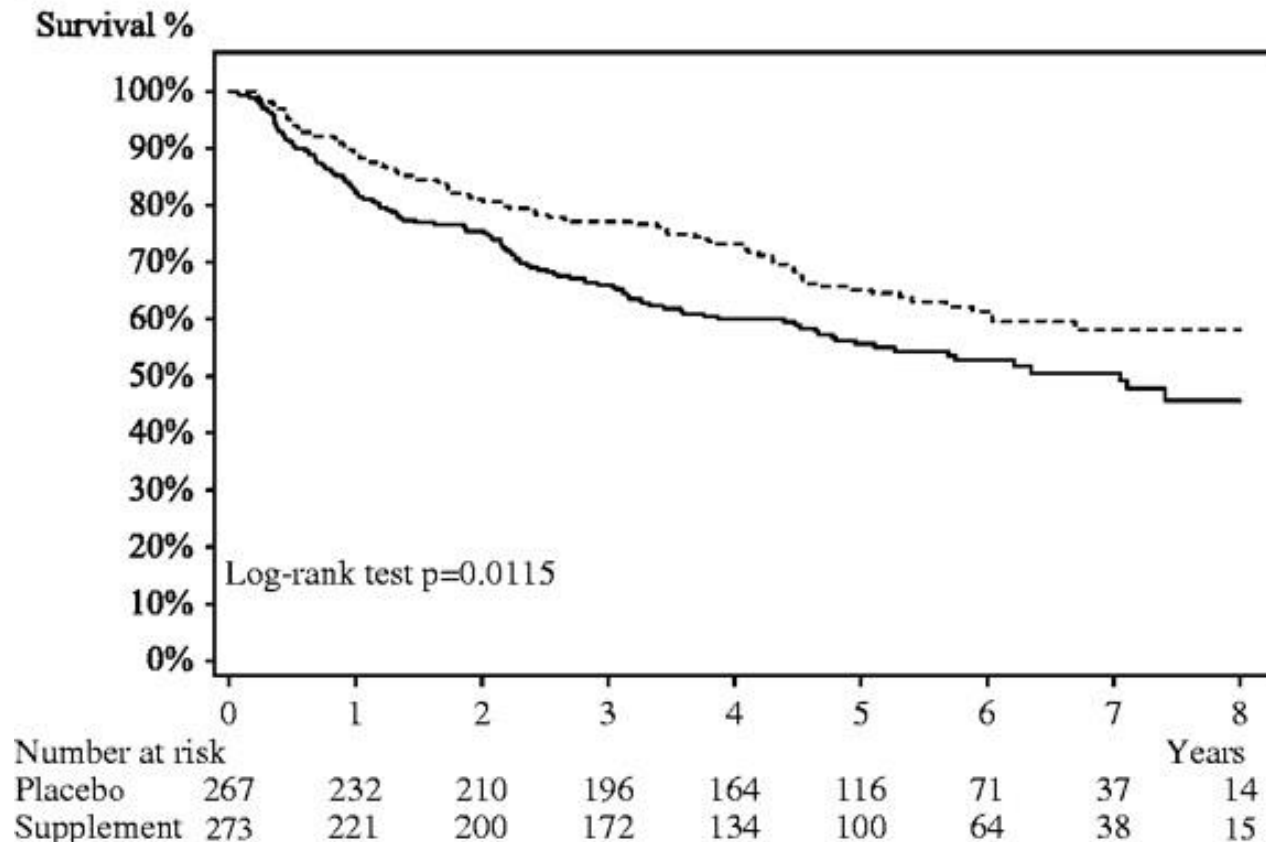
RCT of α -Tocopherol + β -Carotene vs. Placebo

(52M median follow-up)

540 Cases w/ Stage I/II Head & Neck Squamous Cell Cancer

Cancer-free survival (no recurrence & no SPT among participants randomly assigned to the supplement arm (solid line) or to the placebo arm (dotted line))

Second Primary HR 2.88 (95%CI 1.56-5.31)

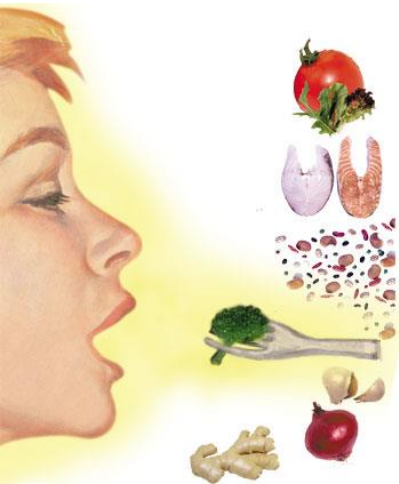


Bottom Line on Supplements

Rely on Food as a Source of Nutrients

But , if considering supplements

- Have dietitian analyze diet for deficiency
- Check blood levels of nutrients
- Consider lowest dosage & most complex preparation
- If currently on supplements wean off slowly.



V.S.



Conclusions:

Much Evidence that Diet and Exercise are
Important for Cancer Survivors
...you can be the instrument of change

- 52.8-71% Overweight or Obese
- 80.9-85.2% Eat <5 servings/day of Fruits and Vegetables
- 52.7-70.4% Underactive
- 8.4-17.4% Currently Smoke

Resources – Questions?

- American Cancer Society: www.cancer.org
- Academy of Nutrition and Dietetics: www.eatright.org
- American Institute for Cancer Research: www.aicr.org
- Centers for Disease Control: www.cdc.gov/HealthyLiving
- LIVESTRONG <http://www.livestrong.com/myplate>
- National Center for Complementary & Integrative Health: <http://nccih.nih.gov>