Nutrition Guidelines for Cancer Survivors

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6.2.2017
Dairy products cause cancer

Curcumin prevent cancer

Macrobiotics diet cure cancer

Omega-3s cause cancer cells to self-destruct

Bacon and Sausage Cause Cancer

Sugar feed cancer
Guidelines

WCRF/AICR Expert Report
WCRF - World Cancer Research Fund
AICR - American Institute for Cancer Research
Food, Nutrition, Physical Activity and the Prevention of Cancer
Continuous Update Project - (CUP)

ACS –
American Cancer Society
Nutrition and Physical Activity Guidelines for Cancer Survivors
Last update 2012

ESPEN – European Society for Clinical Nutrition
Guidelines on nutrition in cancer patients - 2016

American Dietetic Association
Oncology Nutrition Dietetic Practice Group - ON DPG
“ATID” - Israeli Dietetic Association
Israel Oncology Nutrition Group

Diet facts and evidence
COSA-Nutrition Group
WCRF  AICR CUP
Food, Nutrition, Physical Activity, and the
Prevention of……
9,000 studies on diet, physical activity, weight and cancer
17 cancers and breast cancer survivors

Cancer Prevention Recommendations is expected to be published in 2017
Levels of evidence between alcoholic beverages, obesity, physical activity and other nutritional factors and cancer risk

<table>
<thead>
<tr>
<th>Solid tumors</th>
<th>Hematological malignancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasopharynx</td>
<td><strong>Advanced</strong></td>
</tr>
<tr>
<td>Head and neck</td>
<td><strong>Locally</strong></td>
</tr>
<tr>
<td>Mouth (oral cavity, pharynx, larynx)</td>
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</tr>
<tr>
<td>Oesophagus</td>
<td><strong>Locally</strong></td>
</tr>
<tr>
<td>Oesophageal and gastric junction adenocarcinoma</td>
<td>-</td>
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<tr>
<td>Stomach</td>
<td><strong>Locally</strong></td>
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<tr>
<td>Small intestine</td>
<td>-</td>
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<tr>
<td>Colon and rectum</td>
<td>-</td>
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<tr>
<td>Pancreas</td>
<td>-</td>
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<tr>
<td>Ampulla of Vater</td>
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<tr>
<td>Liver</td>
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<td>Gallbladder</td>
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<td>Kidney</td>
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<td>Bladder</td>
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<td>Breast (premenopause)</td>
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<tr>
<td>Breast (postmenopause)</td>
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<tr>
<td>Endometrium</td>
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<td>Cervix</td>
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<td>Ovary</td>
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<td>Prostate</td>
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<td>Testis</td>
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<td>Lung</td>
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<td>Thyroid</td>
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<tr>
<td>Stomach cancer</td>
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<tr>
<td>Non-Hodgkin lymphoma</td>
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<td>Leukemia</td>
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<tr>
<td>Multiple myeloma</td>
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</table>

**Alcoholic beverages**

<table>
<thead>
<tr>
<th>Overweight, obesity</th>
<th>Red meat</th>
<th>Processed meat</th>
<th>Salt, salted foods</th>
<th>Beta-carotene supplements</th>
<th>Physical activity</th>
<th>Fruits</th>
<th>Vegetables (non starchy)</th>
<th>Dietary fiber</th>
<th>Dairy products</th>
<th>Breastfeeding</th>
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</thead>
<tbody>
<tr>
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<td>Men</td>
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<td>Women</td>
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<tr>
<td><strong>Convincing</strong></td>
<td><strong>Probable</strong></td>
<td><strong>Suggestive</strong></td>
<td><strong>Non conclusive</strong></td>
<td><strong>Not studied</strong></td>
<td><strong>Suggestive</strong></td>
<td><strong>Probable</strong></td>
<td><strong>Convincing</strong></td>
<td><strong>Decreased</strong></td>
<td><strong>Decreased</strong></td>
<td><strong>Decreased</strong></td>
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</tbody>
</table>
Caring Cancer Survivors

nutrition-related issues

• The number of cancer survivors is increasing dramatically
• Survivorship encompasses a range of cancer experience:
  ✓ Long-term disease-free living
  ✓ Late complications of treatment including nutritional complications
  ✓ Risk of second cancer
  ✓ Risk of chronic disease such as cardiovascular disease, diabetes, and osteoporosis
• The largest group of cancer survivors (~50%) is breast, prostate and colorectal cancer – most widely studied
Caring Cancer Survivors

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

The recommendations in three basic areas:

✓ Weight management
✓ Dietary patterns
✓ Physical activity

Cancer Prevention
Cancer Survivors - Putting it Together
Caring Cancer Survivors

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

The recommendations in three basic areas:

- Weight management
- Dietary patterns
- Physical activity

Cancer Prevention
Cancer Survivors - Putting it Together
Association of obesity with increased risk of certain cancers

WCRF, AICR

Body fatness marked by BMI

Being overweight or obese INCREASES the risk of 11 cancers:
- BOWEL (colorectum)
- BREAST (post-menopause)
- GALLBLADDER
- KIDNEY
- LIVER
- OESOPHAGUS (oesophageal adenocarcinoma)
- OVARY
- PANCREAS
- PROSTATE (advanced)
- STOMACH (cardia)
- WOMB (endometrium)

Hematological malignancies

Associated comorbidities: dyslipidemia, hypertension, diabetes, cardiovascular disease
Weight and Body Composition
Cancer Survivors

Malnutrition and underweight (head, neck, lung, BMT)
- Preventing and treating malnutrition and regaining lost weight
- Positive energy balance and adequate protein to preserve or rebuild lean body mass (+physical activity)

Overweight or obese at diagnosis & following treatment
- Obesity rates are high among cancer survivors (28 % - USA)
- Obesity increases the risk of cancer recurrence, cancer mortality, and all-cause mortality (breast, colorectal, prostate)
- Intentional weight loss following treatment recovery among those who are overweight and obese may be associated with health-related benefits
Obesity - Breast cancer Survivors

- Positive association – all cause mortality, breast cancer mortality, second primary breast ca.
- Irrespective when obesity was assessed: before, around or after diagnosis
- Weight loss after diagnosis may improve prognosis - limited evidence

Parekh N. Annu Rev Nutri 2012
Chan DS. Ann Oncol. 2014
AICR, CUP, Breast Cancer Survivorship 2014
Obesity in Cancer Survivors

Post-diagnosis BMI

• COLORECTAL (n=6 studies)
  - Mixed results
  - May associated with recurrence and mortality
  - Abdominal adiposity/duration of exposure to body fatness (not evaluated) may be better predictors of outcomes

• PROSTATE (n=8 studies)
  - Higher BMI - increased risk of dying
  - No studies on intentional weight loss on prostate cancer survival

Parekh N. Annu Rev Nutri 2012
Sarcopenic Obesity

• Decreased muscle mass with increased fat mass
• Sarcopenia - Prognostic Index of Nutritional Status
• Low lean body mass - especially as part of sarcopenic obesity, associated with poor health outcomes (like: prostate + ADT, breast + aromatase inhibitors)
• Managing – nutrition and exercise

Lindsey S et al, Clinical Journal of Oncology Nursing, 2016
Villaseñor A, J Cancer Surviv 2012
**ESPEN guidelines on nutrition in cancer survivors**

<table>
<thead>
<tr>
<th>Strength of recommendation</th>
<th>Cancer survivors: Body weight and lifestyle</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRONG</td>
<td><em>In cancer survivors we recommend to maintain a healthy weight (BMI 18.5–25 kg/m²) and to maintain a healthy lifestyle, which includes being physically active and a diet based on vegetables, fruits and whole grains and low in saturated fat, red meat and alcohol.</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Questions for research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Effects of a healthy diet on metabolic syndrome, quality of life, cancer relapse rates and overall survival</td>
</tr>
</tbody>
</table>

Arends J, Clinical Nutrition 2016
ESPEN guidelines on nutrition in cancer patients
## Food and cancer

Partial list !!!

<table>
<thead>
<tr>
<th>Foods containing dietary fibre</th>
<th>Red meat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aflatoxins</td>
<td>Processed meat</td>
</tr>
<tr>
<td>Non-starchy vegetables</td>
<td>Foods containing iron</td>
</tr>
<tr>
<td>Allium vegetables</td>
<td>Cantonese-style salted fish</td>
</tr>
<tr>
<td>Garlic</td>
<td>Fish</td>
</tr>
<tr>
<td>Carrots</td>
<td>Foods containing vitamin D</td>
</tr>
<tr>
<td>Chilli</td>
<td>Smoked foods</td>
</tr>
<tr>
<td>Fruits</td>
<td>Grilled or barbecued animal foods</td>
</tr>
<tr>
<td>Pulses (legumes)</td>
<td>Diets high in calcium</td>
</tr>
<tr>
<td>Foods containing folate</td>
<td>Milk and dairy products</td>
</tr>
<tr>
<td>Foods containing carotenoids</td>
<td>Milk</td>
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<tr>
<td>Foods containing beta-carotene</td>
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<tr>
<td>Foods containing lycopene</td>
<td></td>
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<tr>
<td>Foods containing vitamin C</td>
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<tr>
<td>Foods containing selenium</td>
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</table>
Eating Pattern

• Foods contain thousands of nutrients - may increase or decrease cancer risk
• Majority of studies on the effect of individual nutrients, bioactive food components, or specific foods

But… people eat food, not nutrients

• **Individual Differences:** Insulin sensitivity, microbiota, body composition, physical activity, medical conditions & medications
• The same food can trigger different blood sugar response in different people
• **GLICEMIC INDEX - POOR PREDICTOR TOOL**

Zeevi D. Segal E. Elinav E. et al., Cell 2015
Karen Collins AICR Webinar 2013
Eating Pattern

The best diet to advise is a plant-based diet high in vegetables, fruits and whole grains, and low in saturated fats, red meats, and alcohol.

ESPEN guidelines on nutrition in cancer patients
AICR- American Institute for Cancer Research
ACS - American Cancer Society
Eating Patterns to Lower Cancer Risk: More than One Route to a Plant-Based Diet

Mediterranean Eating Pattern
Japanese Diet
New Nordic Diet

Is there a BEST eating pattern?
Mediterranean Eating Pattern

- Not Low Fat (30-38%)
  * Low Saturated Fat (<10%)
  * Olive Oil !!!
- Moderate Carbohydrate
- Moderate Protein

Japanese Eating Pattern

- Very Low Fat (6-8%)
- Very Low Saturated fat (2%)
- High Carbohydrate
- Moderately Low Protein

Healthy Nordic diet

- Whole grains: rye, barley
- Vegetables & fruits: root vegetables, cabbage, apples, berries
- Low-fat dairy products
- Fish >3 meals/week
- No sugar-sweetened drinks
Cancer Diets

• Some patients with cancer use “cancer diets”
• Most popular: macrobiotics, Gerson’s regime, Budwig’s and ketogenic diet
• No clinical evidence supporting any of the diets

Espen 2016
We recommend against all forms of diets that are not based on clinical evidence, have no proven efficacy, and that potentially could be harmful

Strength of recommendation - STRONG
## Dietary supplement

<table>
<thead>
<tr>
<th>Strength of recommendation</th>
<th>Vitamin and trace elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRONG</td>
<td><em>We recommend that vitamins and minerals be supplied in amounts approximately equal to the RDA and discourage the use of high-dose micronutrients in the absence of specific deficiencies.</em></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Level of evidence</th>
<th>Questions for research</th>
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</thead>
<tbody>
<tr>
<td>Low</td>
<td>Assessment of micronutrient status in cancer patients and effect of supplementation</td>
</tr>
</tbody>
</table>
Bone density loss

Reduction in bone density (osteopenia / osteoporosis)
• Cancer treatments
• Childhood cancer
• Gender
• Hormone treatments (breast, prostate)
• Steroids

Treatment:
• Physical activity and regular weight-bearing exercise
• Avoiding tobacco
• Limiting alcohol intake
• Maintaining healthy weight
• Consuming proper amount of calcium and vitamin D

**Calcium – 1000 - 1200 mg/day**
### DIET, NUTRITION, PHYSICAL ACTIVITY AND BREAST CANCER SURVIVAL (BY OUTCOME)

#### ALL CAUSE MORTALITY

<table>
<thead>
<tr>
<th></th>
<th><strong>DECREASED RISK</strong></th>
<th></th>
<th><strong>INCREASED RISK</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure</strong></td>
<td><strong>Timeframe</strong></td>
<td></td>
<td><strong>Exposure</strong></td>
<td><strong>Timeframe</strong></td>
</tr>
<tr>
<td>Foods containing fibre</td>
<td>Before diagnosis</td>
<td>≥12 months after diagnosis</td>
<td>Total fat</td>
<td>Before diagnosis</td>
</tr>
<tr>
<td>Foods containing soy</td>
<td>≥12 months after diagnosis</td>
<td></td>
<td>Saturated fatty acids</td>
<td>Before diagnosis</td>
</tr>
</tbody>
</table>
Cancer survivors: Physical activity

ESPEN guidelines on nutrition in cancer patients
Clinical Nutrition 2016

Cancer survivors: Physical activity

- **Strength of recommendation**: STRONG
- **Level of evidence**: Low
- **Questions for research**: Effects of physical activity on physical function, recurrence and survival in cancer survivors

American Cancer Society and The American College of Sports Medicine

- Avoid inactivity
- >150 minutes per week of moderate-intensity aerobic activity
- Should be tailored to the individual survivor

Journal of the American College of Sports Medicine 2010
Basketball for Breast Cancer survivors

“Healing With Basketball"

• George Washington University Cancer Institute
• Post-treatment breast cancer survivors
• Free monthly basketball training

Five Objectives
1. Share recovery goals and bond with other survivors
2. Improve overall strength and endurance
3. Recover upper body range of motion in arms, chest, and back
4. Relate to others via peak performance instead of illness
5. Emphasize play and teamwork through the metaphor of basketball
Israel national women's basketball team with breast cancer survivors
Gotta catch’em all!

British Medical Journal

The game led to increased physical activity - a positive for lower cancer risk and good health

Pokemon GO Ups Activity for a Week, Then Falls

AICR, BMJ December, 2016
Cancer Not Just “Bad Luck”

• Most types of cancer not due to “bad luck”
• Only 10 - 30 % of cancer cases are “bad luck”
• Most common cancers are still heavily influenced by lifestyle
LIVE HEALTHY

- Stay a healthy weight
- Eat a plant-based diet
- Limit alcohol
- Be physically active