Disclosures

• No commercial support or funding was provided for this webinar.
Diet & Lifestyle for Cancer Prevention and Survivorship — Evidence over Opinion

Oldways Preservation Trust Special Webinar

October 17, 2023

Nigel Brockton, PhD.
VP Research, American Institute for Cancer Research

Karen Collins, MS, RDN, CDN, FAND
Senior Nutrition Advisor, American Institute for Cancer Research
Disclosures
I have no actual or potential conflicts of interest in relation to this presentation.
The world’s leading authority on the links between diet, weight, physical activity and cancer prevention and survival
AICR/WCRF Expert Reports

1997

2007

2018
“...we know cancer as a disease we have few good ways to prevent.”

President Biden, 02 Feb 2022
Did you hear this? Oatmeal is now your enemy
JULY 1, 2018

by Carolyn Thomas ♥ @HeartSisters ♥ July 1, 2018

Doctors, are you frustrated by failed attempts to convince your heart patients to follow your sound advice on lifestyle improvements? Are you exhausted from trying to figure out why they won't stop eating junk and start eating heart-healthy foods just like you are recommending?

Stand back, please. I think I have finally figured out WHY YOUR PATIENTS WON'T LISTEN!

It's because no sooner do doctors start advising that something is good for heart patients, that it seems other doctors start advising that not only is it NOT good for us, but it might even be downright dangerous! And vice versa.

Eggs are bad for us. No wait, eggs are okay after all.

Fat is bad for us. No, wait...

Oatmeal is a healthy breakfast food. No, wait..

https://myheartsisters.org/2018/07/01/breakfast-oatmeal-now-your-enemy/
AICR/WCRF Global Cancer Update Program

Distinguishing Evidence from Opinion
Systematic Literature Review

Assessment of Evidence

Evidence: 17 Cancers, 51 million people and 3.5 million cancer cases

CUP Scientists: ~100 researchers!
A call for action, not for perfection
(Karen Collins, MS, RDN, CDN, FAND)
Societal attitudes and dietary recommendations have changed...

Four Decades of Progress in Diet & Lifestyle Cancer Research

- **2020s**: Survivorship and quality of life
- **2000s**: Strong evidence-based Recommendations
- **1980s**: Low acceptance that diet influenced cancer risk
- **1990s**: First cancer prevention guidelines

Cancer typically takes two to three decades to develop. AICR pioneered the research that is reducing cancer risk and improving survivorship TODAY.
Findings: **Strong evidence** for recommendations
### Activity and Body Weight

**Recommendation:**

- **Be a healthy weight**
  
  Keep your weight within the healthy range and avoid weight gain in adult life.

- **Be physically active**
  
  Be physically active as part of everyday life – walk more and sit less.

### Diet & Nutrition

**Recommendation:**

- **Eat a diet rich in wholegrains, vegetables, fruit and beans**
  
  Make wholegrains, vegetables, fruit, and pulses (legumes) such as beans and lentils a major part of your usual daily diet.

- **Limit consumption of ‘fast foods’ and other processed foods high in fat, starches or sugars**
  
  Limiting these foods helps control calorie intake and maintain a healthy weight.

- **Limit consumption of red and processed meat**
  
  Eat no more than moderate amounts of red meat, such as beef, pork and lamb. Eat little, if any, processed meat.

- **Limit consumption of sugar sweetened drinks**
  
  Drink mostly water and unsweetened drinks.

- **Limit alcohol consumption**
  
  For cancer prevention, it’s best not to drink alcohol.

### “Special Recommendations”

**Recommendation:**

- **Do not use supplements for cancer prevention**
  
  Aim to meet nutritional needs through diet alone.

- **For mothers: breastfeed your baby, if you can**
  
  Breastfeeding is good for both mother and baby.

- **After a cancer diagnosis: follow our Recommendations, if you can**
  
  Check with your health professional what is right for you.
Healthy Weight

RECOMMENDATION

Be a healthy weight

Keep your weight within the healthy range\(^1\) and avoid weight gain in adult life

**Goal:** Ensure that body weight during childhood and adolescence projects towards the lower end of the healthy adult BMI range

**Goal:** Keep your weight as low as you can within the healthy range throughout life

**Goal:** Avoid weight gain (measured as body weight or waist circumference)\(^2\) throughout adulthood

---

\(^1\) The healthy or, as defined by WHO, 'normal' range of BMI for adults is 18.5–24.9 kg/m\(^2\) [1]. Different reference ranges have been proposed for Asian populations [2]. Where these ranges differ from the WHO definition, they are to be used as the guide. Further research is required to establish appropriate thresholds in other ethnic groups. The healthy range for BMI during childhood varies with age [2].

\(^2\) WHO recommends keeping waist circumference below 94 cm (37 inches) in men and 80 cm (31.5 inches) in women (based on data from European people). These values are roughly equivalent to a BMI of around 25 kg/m\(^2\) [3]. For Asian populations, cut-offs for waist circumferences of 90 cm (35.4 inches) for men and 80 cm (31.5 inches) for woman have been proposed [3]. Further research is required to establish appropriate waist circumference values for other ethnic groups.
# Adult body fatness

<table>
<thead>
<tr>
<th>Panel Assessment of Evidence</th>
<th>Cancer Site</th>
<th>Relative risk of cancer associated with elevated body fatness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Convincing</strong></td>
<td>Endometrial cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Esophageal cancer (Adenocarcinoma)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Liver cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Kidney cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Postmenopausal breast cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Pancreatic cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Colorectal cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td><strong>Probable</strong></td>
<td>Gall Bladder cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Stomach cancer (Cardia)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Prostate cancer (Advanced)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Ovarian cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td></td>
<td>Head &amp; Neck cancer (Never smokers)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td><strong>Probable</strong></td>
<td>Premenopausal breast cancer</td>
<td><img src="image" alt="Graph" /></td>
</tr>
</tbody>
</table>
Physical Activity

RECOMMENDATION

Be physically active

Be physically active as part of everyday life - walk more and sit less

GOAL: Be at least moderately physically active\(^4\), and follow or exceed national guidelines

GOAL: Limit sedentary habits

\(^4\) Moderate physical activity increases heart rate to about 60 to 75 per cent of its maximum.
Physical activity

Highest vs Lowest meta-analysis

- Colorectal cancer
- Endometrial cancer
- Postmenopausal breast cancer
- Premenopausal breast cancer

Convincing

Probable

Total

Occupational

Recreational

Vigorous
Diet & Nutrition

RECOMMENDATION
Eat a diet rich in wholegrains, vegetables, fruit and beans

Make wholegrains, vegetables, fruit, and pulses (legumes) such as beans and lentils a major part of your usual daily diet.

RECOMMENDATION
Limit consumption of ‘fast foods’ and other processed foods high in fat, starches or sugars

Limiting these foods helps control calorie intake and maintain a healthy weight.

RECOMMENDATION
Limit consumption of red and processed meat

Eat no more than moderate amounts of red meat¹, such as beef, pork and lamb. Eat little, if any, processed meat².

RECOMMENDATION
Limit consumption of sugar sweetened drinks

Drink mostly water and unsweetened drinks.

RECOMMENDATION
Limit alcohol consumption

For cancer prevention, it's best not to drink alcohol.
RECOMMENDATION

Eat a diet rich in wholegrains, vegetables, fruit and beans

Make wholegrains, vegetables, fruit, and pulses (legumes) such as beans and lentils a major part of your usual daily diet
CRC & Whole Grains

Figure 1: Dose-response meta-analysis of wholegrains intake and colorectal cancer per 90 grams per day

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Sex</th>
<th>Per 90 g/day RR (95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyrø</td>
<td>2013</td>
<td>M/W</td>
<td>0.87 (0.78, 0.96)</td>
<td>28.88</td>
</tr>
<tr>
<td>Fung</td>
<td>2010</td>
<td>M</td>
<td>0.83 (0.68, 0.97)</td>
<td>12.84</td>
</tr>
<tr>
<td>Fung</td>
<td>2010</td>
<td>W</td>
<td>0.86 (0.70, 1.06)</td>
<td>9.94</td>
</tr>
<tr>
<td>Schatzkin</td>
<td>2007</td>
<td>M/W</td>
<td>0.73 (0.63, 0.84)</td>
<td>18.19</td>
</tr>
<tr>
<td>McCarl</td>
<td>2006</td>
<td>W</td>
<td>0.79 (0.66, 0.94)</td>
<td>13.28</td>
</tr>
<tr>
<td>Larsson</td>
<td>2005</td>
<td>W</td>
<td>0.93 (0.80, 1.08)</td>
<td>16.88</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td>0.83 (0.78, 0.89)</td>
<td>100.00</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis
Foods containing fibre

Figure 3: Dose-response meta-analysis of dietary fibre intake and colorectal cancer per 10 grams per day, including individual study results and not the overall Pooling Project result

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Sex</th>
<th>Per 10 g/day fibre RR (95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murphy</td>
<td>2012</td>
<td>M/W</td>
<td>0.90 (0.84, 0.96)</td>
<td>29.72</td>
</tr>
<tr>
<td>Kabat</td>
<td>2008</td>
<td>W</td>
<td>1.03 (0.85, 1.25)</td>
<td>3.50</td>
</tr>
<tr>
<td>Nomura</td>
<td>2007</td>
<td>M/W</td>
<td>0.87 (0.81, 0.94)</td>
<td>23.92</td>
</tr>
<tr>
<td>Schatzkin</td>
<td>2007</td>
<td>M/W</td>
<td>0.99 (0.87, 1.12)</td>
<td>8.93</td>
</tr>
<tr>
<td>Wakai</td>
<td>2007</td>
<td>M/W</td>
<td>0.55 (0.33, 0.93)</td>
<td>0.48</td>
</tr>
<tr>
<td>McCari</td>
<td>2006</td>
<td>W</td>
<td>0.90 (0.83, 0.99)</td>
<td>16.88</td>
</tr>
<tr>
<td>Otani</td>
<td>2006</td>
<td>M/W</td>
<td>0.82 (0.61, 1.10)</td>
<td>1.52</td>
</tr>
<tr>
<td>Shin</td>
<td>2006</td>
<td>W</td>
<td>0.97 (0.61, 1.53)</td>
<td>0.64</td>
</tr>
<tr>
<td>Lin</td>
<td>2005</td>
<td>W</td>
<td>0.82 (0.60, 1.12)</td>
<td>1.38</td>
</tr>
<tr>
<td>Michels</td>
<td>2005</td>
<td>M</td>
<td>0.92 (0.76, 1.12)</td>
<td>3.52</td>
</tr>
<tr>
<td>Michels</td>
<td>2005</td>
<td>W</td>
<td>0.96 (0.78, 1.18)</td>
<td>3.09</td>
</tr>
<tr>
<td>Sanjoquin</td>
<td>2004</td>
<td>M/W</td>
<td>0.90 (0.65, 1.25)</td>
<td>1.24</td>
</tr>
<tr>
<td>Mai</td>
<td>2003</td>
<td>W</td>
<td>0.98 (0.73, 1.31)</td>
<td>1.57</td>
</tr>
<tr>
<td>Terry</td>
<td>2001</td>
<td>W</td>
<td>0.99 (0.72, 1.37)</td>
<td>1.26</td>
</tr>
<tr>
<td>Pietinen</td>
<td>1999</td>
<td>M</td>
<td>1.00 (0.79, 1.27)</td>
<td>2.32</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td>0.91 (0.88, 0.94)</td>
<td>100.00</td>
</tr>
</tbody>
</table>

NOTE: Weights are from random effects analysis
Fibre Intake
“Fast” & Processed Foods

RECOMMENDATION

Limit consumption of ‘fast foods’ and other processed foods high in fat, starches or sugars

Limiting these foods helps control calorie intake and maintain a healthy weight

GOAL

Limit consumption of processed foods high in fat, starches or sugars – including ‘fast foods’; many pre-prepared dishes, snacks, bakery foods and desserts; and confectionery (candy)

1 ‘Fast foods’ are readily available convenience foods that tend to be energy dense and are often consumed frequently and in large portions.
Diet, nutrition and physical activity: Energy balance and body fatness

The determinants of weight gain, overweight and obesity
## Diet and physical activity and weight gain, overweight and obesity in adults and children

The factors identified in the matrix as increasing or decreasing risk of weight gain, overweight or obesity do so by promoting excess energy intake (positive energy balance, increased risk) relative to the level of energy expenditure (in particular physical activity), or appropriate energy balance (decreased risk), through a complex interplay of physiological, psychological and social influences.

<table>
<thead>
<tr>
<th>STRONG EVIDENCE</th>
<th>Decreases risk of weight gain, overweight, and obesity</th>
<th>Increases risk of weight gain, overweight, and obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convincing</td>
<td>Walking</td>
<td>Screen time (children)(^3)</td>
</tr>
<tr>
<td>Probable</td>
<td>Aerobic physical activity</td>
<td>Sugar-sweetened drinks(^4)</td>
</tr>
<tr>
<td></td>
<td>Foods containing dietary fibre</td>
<td>Screen time (adults)(^3)</td>
</tr>
<tr>
<td></td>
<td><em>Mediterranean type 'dietary pattern'</em>(^5)</td>
<td><em>Fast foods</em>(^7)</td>
</tr>
<tr>
<td></td>
<td>Having been breastfed(^6)</td>
<td><em>Western type</em> diet(^8)</td>
</tr>
<tr>
<td>Limited – suggestive</td>
<td>Wholegrains(^9)</td>
<td>Sedentary behaviours(^10)</td>
</tr>
<tr>
<td></td>
<td>Fruit and vegetables</td>
<td>Refined grains(^9)</td>
</tr>
<tr>
<td>Limited – no conclusion</td>
<td>Vegetarian or vegan diets, adherence to dietary guidelines, dietary variety, eating breakfast, family meals, eating in the evening, eating frequency, snacking, pulses (legumes), nuts, fish, dairy, confectionery, water, artificially sweetened drinks, fruit juice, coffee and tea, alcoholic drinks, total carbohydrate, glycaemic load, total protein, caffeine, catechins, strength training, energy density, and sleep</td>
<td></td>
</tr>
</tbody>
</table>
Red meat and processed meat

RECOMMENDATION

Limit consumption of red and processed meat

Eat no more than moderate amounts of red meat\(^1\), such as beef, pork and lamb. Eat little, if any, processed meat\(^2\)

**GOAL** If you eat red meat, limit consumption to no more than about three portions per week. Three portions is equivalent to about 350 to 500 grams (about 12 to 18 ounces) cooked weight of red meat.\(^3\) Consume very little, if any, processed meat.

---

\(^1\) The term 'red meat' refers to all types of mammalian muscle meat, such as beef, veal, pork, lamb, mutton, horse and goat.

\(^2\) The term 'processed meat' refers to meat that has been transformed through salting, curing, fermentation, smoking or other processes to enhance flavour or improve preservation.

\(^3\) 500 grams of cooked red meat is roughly equivalent to 700-750 grams of raw meat, but the exact conversion depends on the cut of meat, the proportions of lean meat and fat, and the method and degree of cooking.
Red meat and processed meat
Table 81: Table with red meat values and corresponding RRs (95% CIs) for non-linear analysis of red meat and colorectal cancer

<table>
<thead>
<tr>
<th>Red meat (g/day)</th>
<th>RR(95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>1.00(0.99-1.02)</td>
</tr>
<tr>
<td>30</td>
<td>1.00(0.97-1.04)</td>
</tr>
<tr>
<td>50</td>
<td>1.01(0.96-1.07)</td>
</tr>
<tr>
<td>100</td>
<td>1.05(0.99-1.12)</td>
</tr>
</tbody>
</table>

Nonlinear relation between red meat and the risk of colorectal cancer

- Best fitting cubic spline
- 95% confidence interval
RECOMMENDATION

Limit consumption of sugar sweetened drinks

Drink mostly water and unsweetened drinks

Do not consume sugar sweetened drinks¹

¹ Sugar sweetened drinks are defined here as liquids that are sweetened by adding free sugars, such as sucrose, high fructose corn syrup and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrate. This includes, among others, sodas, sports drinks, energy drinks, sweetened waters, cordials, barley water, and coffee- and tea-based beverages with sugars or syrups added. This does not include versions of these drinks which are ‘sugar free’ or sweetened only with artificial sweeteners.
The 2015-2020 Dietary Guidelines for Americans recommends limiting calories from added sugars to no more than 10% each day. That’s 200 calories, or about 12 teaspoons, for a 2,000 calorie diet.

“Collectively, SSBs are the largest source of added sugar in the diet; a typical 12 fl oz (355 ml) serving of soda delivers 35.0–37.5 g of sugar and 140–150 calories”

Half of the US population consumes sugary drinks on a given day
Alcohol

**RECOMMENDATION**

**Limit alcohol consumption**

For cancer prevention, it’s best not to drink alcohol
1. Alcoholic drinks and the risk of cancer: a summary matrix

<table>
<thead>
<tr>
<th>WCRF/AICR GRADING</th>
<th>DECREASES RISK</th>
<th>INCREASES RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure</td>
<td>Cancer site</td>
</tr>
<tr>
<td>STRONG EVIDENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convincing</td>
<td>Alcoholic drinks</td>
<td>Kidney 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probable</td>
<td>Alcoholic drinks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIMITED EVIDENCE</td>
<td>Limited – suggestive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Alcohol

Breast Cancer

Alcohol intake*  

0.8  1.0  1.2  1.4  1.6  1.8

Premenopausal breast cancer
Postmenopausal breast cancer

Beer
Wine
Spirits

*per 10g ethanol /day
Dietary supplements

RECOMMENDATION
Do not use supplements for cancer prevention
Aim to meet nutritional needs through diet alone

GOAL
High-dose dietary supplements\(^1\) are not recommended for cancer prevention – aim to meet nutritional needs through diet alone.

\(^1\) A dietary supplement is a product intended for ingestion that contains a 'dietary ingredient' intended to achieve levels of consumption of micronutrients or other food components beyond what is usually achievable through diet alone.
Breast Feeding

RECOMMENDATION

For mothers: breastfeed your baby, if you can

Breastfeeding is good for both mother and baby

This recommendation aligns with the advice of the World Health Organization, which recommends infants are exclusively breastfed¹ for 6 months, and then up to 2 years of age or beyond alongside appropriate complementary foods.

¹ ‘Exclusive breastfeeding’ is defined as giving a baby only breastmilk (including breastmilk that has been expressed or is from a wet nurse) and nothing else – no other liquids or solid foods, not even water [93]. It does, however, allow the infant to receive oral rehydration solution, drops or syrups consisting of vitamins, minerals, supplements or medicines [93].
Cancer Survivors

**Recommendation**

After a cancer diagnosis: follow our Recommendations, if you can

Check with your health professional what is right for you

**Goal** All cancer survivors\(^1\) should receive nutritional care and guidance on physical activity from trained professionals

**Goal** Unless otherwise advised, and if you can, all cancer survivors are advised to follow the Cancer Prevention Recommendations as far as possible after the acute stage of treatment

---

\(^1\) Cancer survivors are people who have been diagnosed with cancer, including those who have recovered from the disease.
Survivors of breast and other cancers

- 32.6 million people worldwide living with a cancer diagnosis

- Persuasive evidence that diet, nutrition, physical activity predict outcomes; limited evidence on the impact of changing these.

- CUP/CUP Global Panel judges that following the Recommendations is unlikely to be harmful to survivors who have finished treatment

- Research in cancer survivors is a key future research direction
<table>
<thead>
<tr>
<th>Evidence Level</th>
<th>Type</th>
<th>Exposure</th>
<th>Timeframe</th>
<th>Exposure</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Evidence</td>
<td>Convincing</td>
<td>Before diagnosis</td>
<td>≥12 months after diagnosis</td>
<td>Body fatness</td>
<td>&lt;12 months after diagnosis</td>
</tr>
<tr>
<td>Strong Evidence</td>
<td>Probable</td>
<td>Before diagnosis</td>
<td>≥12 months after diagnosis</td>
<td>Total fat</td>
<td>Before diagnosis</td>
</tr>
<tr>
<td>Limited Evidence</td>
<td>Suggestive</td>
<td>Before diagnosis</td>
<td>≥12 months after diagnosis</td>
<td>Saturated fatty acids</td>
<td>Before diagnosis</td>
</tr>
<tr>
<td>Strong Evidence</td>
<td>Substantial effect on risk unlikely</td>
<td>Before diagnosis</td>
<td>Before diagnosis</td>
<td>Before diagnosis</td>
<td>Before diagnosis</td>
</tr>
</tbody>
</table>

**Strong:** Evidence strong enough to support a judgement of a convincing or probable causal relationship and generally justify making recommendations.

**Limited:** Evidence that is too limited to justify making specific recommendations.
The WCRF/AICR Score is a standardized scoring system to assess adherence to the 2018 WCRF/AICR Cancer Prevention Recommendations. The Score includes eight of the ten Cancer Prevention Recommendations; the inclusion of breastfeeding is optional.

- 1 point is awarded for meeting, 0.5 points for partially meeting and 0 points for not meeting a recommendation.
- The Score components are weighted equally.
- A higher Score reflects greater adherence to the Recommendations.
A call for action, not for perfection

(Karen Collins, MS, RDN, CDN, FAND)

- 58% lower colorectal cancer risk (≥4 vs 1-3 recs)
- 51% lower breast cancer risk (≥6 vs 0-2 recs)
- 33% lower mortality
Thank you!

Nigel Brockton
n.brockton@aicr.org

www.aicr.org
Key Messages and Action Steps

Karen Collins, MS, RDN, CDN, FAND
Senior Nutrition Advisor
American Institute for Cancer Research
Disclosures

I have no conflicts of interest related to this presentation.
Framing Messages:

- Address misinformation
- Consider barriers
- Find flexibility
Recommendation:

Be a healthy weight

Keep your weight within the healthy range and avoid weight gain in adult life
Making Sense of Adiposity’s Link to Cancer Risk & Cancer Survivorship

Lifestyle association or Physiological effect?

- Bioavailable estrogen
- Inflammatory cytokines
- Adiponectin
- Leptin
- Insulin and insulin-related growth factors

AICR/WCRF Third Expert Report, 2018
Naaman, J Clin Endocrinol Metab. 2022;107(8):2154
Practice Pearls: Weight & Cancer Risk

• **Population** level targets for lowest risk
  • Lower end of Healthy BMI 18.5-24.9
  • Waist: Men 94 cm (37 in), Women 80 cm (31.5 in)
  • Asian ethnicity criteria lower; other ethnicity standards needed

• **Individualized targets** working with patients
  • Separate from body-shaming language
  • Will intentional weight loss reduce risk?
    • Change in biomarkers shows potential \(^1\)
    • Data on weight loss and cancer risk is very limited
  • Stop a weight gain trend \(^2\)

---

\(^{1}\) Agurs-Collins, Front Oncol 2019;9:765; Naaman, J Clin Endocrinol Metab. 2022;107(8):2154

Recommendation:

Be physically active

Be physically active as part of everyday life
– walk more and sit less
**Practice Pearls: Physical Activity & Cancer Risk**

Physical activity “works” even without weight loss
- Benefits: hormones, immune system, GI function
- Helps avoid weight gain
- Psychological health, stress management

“Doesn’t work!”

Replace old lifestyle habits with new
- Start where you are
- Accumulate shorter blocks
- Don’t use food to reward activity
- Find opportunities for light activity to replace sedentary time
Recommendation:

Eat a diet rich in whole grains, vegetables, fruits, and beans

Make whole grains, vegetables, fruit, and pulses (legumes) such as beans and lentils a major part of your usual diet.

Consume a diet with at least 30 grams of fiber from food sources each day
Practice Pearls: Vegetables, Fruits & Cancer Risk

• Greatest difference in cancer risk is between low intake and 5 a Day
• Fresh, frozen, canned all “count”
• Experiment with swaps
  • Keep current choices: shift proportions
  • Try new choices: replace other foods to meet recommendations or add variety

• Food fears: calories and glycemic load
  • Check portion, preparation and company they keep
  • Expand non-starchy vegetables, don’t fear spuds

Realistic choices “won’t matter”? What about potatoes?
Practice Pearls: Whole Grains & Beans

- **Lectins**: claims as pro-inflammatory based on rodent studies with high doses of the active form
  - Proper cooking inactivates lectins & sharply reduces amount
- **Gluten**: inflammatory only in celiac disease & non-celiac gluten sensitivity
- **Soyfood isoflavones**: claims of risks as “phytoestrogens” based on high doses of isolated compounds in cell & rodent studies
  - Dose matters. Soy food consumption is not linked with increased cancer risk.

Put studies in context of overall human research related to food
- Whole grains & dietary fiber: reduce risk of colorectal cancer
- Whole grains & dietary fiber may reduce risk of weight gain & obesity
- Fermentable fiber supports gut microbiota → anti-inflammatory effects suggested
More Practice Pearls: Whole Grains & Beans

• Make the unfamiliar feel comfortable
  • Use in soups, stews, casseroles, tacos, pasta sauce as swap for some or all meat or
  • Prepare with familiar flavors

• Talk about time
  • Quick-cooking whole grains or cook ahead and freeze
  • Canned or frozen pulses; quick-cooking lentils; tofu & tempeh

• Highlight the benefits
  • Money-saving when swapped for some or all meat
  • Does healthy seem boring? Explore different cuisines
Practice Pearls: Plant Foods & Cancer Risk

• Plant-based diet = “plant-focused” or “plant-forward”
  • Mostly plants, not necessarily exclusively plants
  • Plants-only (vegan), vegetarian, pescatarian, flexitarian all fit
• Reduce cancer risk with what you choose & what you limit
  • Look beyond individual studies to the overall picture
  • Focus on nutritional quality within food categories
• Gradually create a long-term protective dietary pattern
  • Aim for variety of plant foods for nutrients, phytochemicals, types of dietary fiber
  • Individualize choices

“Do I need a vegetarian diet?”

Thompson, JAMA Netw Open. 2023;6(3):e234714
Recommendation:

Limit consumption of ‘fast foods’ and other processed foods high in fat, starches, or sugars

Limiting these foods helps control calorie intake and maintain a healthy weight
• **Processed foods**: Some processing can enhance nutrient bioavailability and/or convenience of healthy eating

• **Ultra-processed foods** aren’t all the same
  - Depends on what is removed, what is added
  - High intake usually = high sweetened drinks, processed meat, French fries, pizza, read-to-eat/heat meals
  - Beyond weight and weight gain, link to cancer risk is unclear

• **Be selective as you limit ultra-processed foods**
  - Low intake in studies can include a few servings daily
  - Focus on limiting those high in added fat, starches, sugars
  - Choose those that help you stick with an overall healthy diet

---

Recommendation:

Limit consumption of red and processed meat

Eat no more than moderate amounts of meat, such as beef, pork, and lamb.

Eat little, if any, processed meat.
Practice Pearls: Red Meat & Cancer Risk

Red meat: mainly beef, pork, lamb
- Grass-fed still counts
- Lean for heart health, not lower cancer risk
- Likely mechanisms aren’t fat-related\(^1\)
  - Heme iron (oxidative stress, nitroso-compounds)
  - Inflammation, Microbiome
  - HCAs and PAHs formed in cooking

If you eat red meat, limit consumption to no more than 12 to 18 ounces (cooked weight) per week
- Often translates to no more than 3 times a week
- But if portions are 3-oz deck-of-cards size: 4 to 6 portions per week

---
\(^1\) AICR/WCRF Third Expert Report 2018; Turesky, CHIMIA 2018;72(10):718
Processed meat = Smoked, Cured, Salted, Preservatives

- Examples: bacon, sausage, lunch meat, hot dogs
- “Safe” forms? Evidence not yet clear

Recommendation: Consume very little, if any, processed meat

Practice Pearls: Limiting Red and Processed Meat

Within a mostly plant-based diet, optional to include:

- Poultry
- Fish
- Dairy

“But what can I eat?”

Most important: Opportunity to re-orient the plate

- Focus on what replaces processed meat and big portions of red meat
- What opportunities does limiting meat provide for increasing whole grains, vegetables, pulses and soyfoods?
Recommendation:

Limit consumption of sugar sweetened drinks

Drink mostly water and unsweetened drinks.
Key Points on Sugar-Sweetened Drinks in the Big Picture

- Limit all sugar-sweetened drinks
  - Drinks sweetened with high-fructose corn syrup (HFCS), sugar, honey, agave nectar or syrup, fruit juice concentrate
  - Soda, sports drinks, energy drinks, sweetened waters, coffee- and tea-based beverages sweetened with added sugars or syrups
- Main reason: Reduce unintended weight gain
  - Some research suggests risk also related to effects on blood sugar, elevated insulin levels, and insulin resistance

1 Malik & Hu, Nat Rev Endocrinol 2022;18(4):205
Practice Pearls: Beverages & Cancer Risk

• First choice: drink water or unsweetened drinks, such as tea, coffee, sparkling water

• Beverages sweetened with artificial/non-nutritive sweeteners:
  • No strong evidence of cancer risk in limited amounts
  • Helpful for weight or health? Individual choice

• Fruit juices, even with no added sugar, are best kept to limited portions for most people

1 WCRF/AICR Third Expert Report, 2018; McCullough, Cancer Epidemiol Biomarkers Prev. 2022;31(10):1907; AICR blog July 2023, Aspartame and Cancer Risk – What You Need to Know
2 Malik & Hu, Nat Rev Endocrinol 2022;18(4):205
Recommendation:

Limit alcohol consumption

For cancer prevention, it’s best not to drink alcohol.
Practice Pearls: Alcohol & Cancer Risk

- Mixed findings on heart health
  - Beyond moderation increases hypertension, serum triglycerides
  - Potential confounding in some studies (abstainer bias, cultural eating pattern)

- Research does not show a difference in cancer risk between wine, beer, spirits

- Talk about positive alternatives: beverages & activities
Key Messages on Alcohol

- For lowest cancer risk: avoid alcohol
- For those who choose to drink, moderation: ≤1/day women, ≤2/day men
- Key discussion points: portion and concentration
  1 drink = 14 gm Ethanol

5 ounces of wine
12 ounces of beer
1½ ounces of 80 proof liquor
Recommendation:

Do not use supplements for cancer prevention

Aim to meet nutritional needs through diet alone.
Practice Pearls: Supplements in a Diet to Reduce Cancer Risk

Can’t replace healthy eating pattern & lifestyle
• Small steps in healthier choices make a difference

Supplements can help reach specific nutrient recommendations, but...
• More is not necessarily better for health
• “Gaps” should be identified by a qualified health professional
• Even “natural” botanical supplements can interfere with cancer treatment by competing with shared metabolic pathways.

Aren’t they “insurance”?

So what’s the bottom line?
Recommendation:

After cancer diagnosis: follow the recommendations, if you can

Check with your health professional to determine what is right for you.
Priorities vary among individuals and at different times

- Short-term survivorship issues
- Risk of new cancers
- Risk of other cardiovascular disease and other chronic diseases

**Physical Activity**

- May improve health-related quality of life (fatigue, physical functioning)
- Preliminary evidence: possible benefit for treatment tolerance and response
- Individual considerations:
  - bone health, balance, anemia, peripheral nerve damage, lymphedema
  - overall health

**Key Message:**

*After Cancer, Nutrition & Physical Activity are Individual*
Practice Pearls: Weight & Weight Change after Cancer

Overweight, obesity, large weight gains (≥5-10%)
• Associated with greater cancer-specific & all-cause mortality in some types of cancer
• But weight is complex: reflecting body fat, bone, lean muscle tissue, and water balance

Unplanned Weight Loss & Loss of Lean Body Mass
• Can lead to treatment interruption or dose reduction, & increase risk of infection or decreased survival
• Sarcopenia occurs in 20-70% of cancer patients\(^1\)
  • Often overlooked due to obesity
  • Associated with greater mortality in people with cancer – at any level of adiposity\(^2\)

Intentional Weight Loss?
• Weight loss of ≥5% may improve markers of inflammation and metabolic health
• **Individual** risk in perspective: abdominal obesity, cardiovascular & metabolic health
• Clarify the goal: possibly allow for slow weight loss from diet plus physical activity

\(^1\)Trujillo, J Acad Nutr Diet 2018; 118(4):749   \(^2\)Caan, JAMA Oncol. 2018;4(6):798
## Activity and Body Weight

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>Activity and Body Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be a healthy weight</td>
<td>Keep your weight within the healthy range and avoid weight gain in adult life</td>
</tr>
<tr>
<td>Be physically active</td>
<td>Be physically active as part of everyday life - walk more and sit less</td>
</tr>
</tbody>
</table>

## Diet & Nutrition

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>Diet &amp; Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat a diet rich in wholegrains,</td>
<td>Eat a diet rich in wholegrains, vegetables, fruit and beans</td>
</tr>
<tr>
<td>vegetables, fruit and beans</td>
<td>Make wholegrains, vegetables, fruit, and pulses (legumes) such as beans and lentils a major part of your usual daily diet</td>
</tr>
<tr>
<td>Limit consumption of ‘fast foods’</td>
<td>Limit consumption of ‘fast foods’ and other processed foods high in fat, starches or sugars</td>
</tr>
<tr>
<td>and other processed foods high in fat, starches or sugars</td>
<td>Limiting these foods helps control calorie intake and maintain a healthy weight</td>
</tr>
<tr>
<td>Limit consumption of red and</td>
<td>Limit consumption of red and processed meat</td>
</tr>
<tr>
<td>processed meat</td>
<td>Eat no more than moderate amounts of red meat, such as beef, pork and lamb. Eat little, if any, processed meat</td>
</tr>
<tr>
<td>Limit consumption of sugar</td>
<td>Limit consumption of sugar sweetened drinks</td>
</tr>
<tr>
<td>sweetened drinks</td>
<td>Drink mostly water and unsweetened drinks</td>
</tr>
<tr>
<td>Limit alcohol consumption</td>
<td>Limit alcohol consumption</td>
</tr>
<tr>
<td>For mothers: breastfeed your baby,</td>
<td>For mothers: breastfeed your baby, if you can</td>
</tr>
<tr>
<td>If you can</td>
<td>Breastfeeding is good for both mother and baby</td>
</tr>
</tbody>
</table>

## “Special Recommendations”

<table>
<thead>
<tr>
<th>RECOMMENDATION</th>
<th>“Special Recommendations”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use supplements for cancer prevention</td>
<td>Aim to meet nutritional needs through diet alone</td>
</tr>
<tr>
<td>For mothers: breastfeed your baby, if you can</td>
<td>Breastfeeding is good for both mother and baby</td>
</tr>
<tr>
<td>After a cancer diagnosis: follow our</td>
<td>After a cancer diagnosis: follow our Recommendations, if you can</td>
</tr>
<tr>
<td>Recommendations, if you can</td>
<td>Check with your health professional what is right for you</td>
</tr>
</tbody>
</table>
Lifestyles Closer to the Recommendations Are Linked with Better Health

• Closer fit with the recommendations is linked with lower cancer risk
  • A package of protection influencing:
    > antioxidant & anti-inflammatory defenses
    > metabolic & hormonal pathways
    > gut microbiome
  • Each step closer helps – Emphasize progress, not perfection

• Steps to reduce cancer risk can reduce overall chronic disease risk

• Emerging evidence among people diagnosed with cancer
  • Lower overall mortality & cancer-specific mortality in several cancers
  • Lower prevalence of metabolic syndrome
  • Greater health-related quality of life
Talking with Patients Amidst Headline Hype
Emphasize: Evidence over Opinion

Educate people: all information is not equal

Base choices on evidence-based recommendations and expert reports
...not single studies and hearsay

Address perceived barriers
• Find flexibility for steps that fit individuals
• Recommendations are a call for action, not perfection
No Need to Reinvent the Wheel

AICR Resources
For Health professionals, Caregivers, Families and children
https://www.aicr.org/

Cancer HealthCheck
https://www.aicr.org/cancer-health-check/

Healthy10 Challenge
https://healthy10challenge.org/

New American Plate
https://www.aicr.org/new-american-plate/
Thank you!

Karen Collins
k.collins@aicr.org

We look forward to addressing your questions!