Lifestyle Practices among Cancer Survivors: A Need to Intervene

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Objectives

• Review data on survivors’ lifestyle practices
  - weight management
  - physical activity
  - diet
  - smoking
  - alcohol-use

• Review potential benefits of lifestyle interventions and challenges
## Associations between Behavior and Cancer Risk

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Cancer-type</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Obesity (BMI ≥ 30)</strong></td>
<td>• Endometrium • Gastric Cardia • Liver • Meningioma • Colorectum • Ovary • Thyroid</td>
<td>7.1 (6.3–8.1) to 1.1 (1.0–1.1)</td>
</tr>
<tr>
<td></td>
<td>• Esophagus (Adenocarcinoma) • Kidney • Multiple Myeloma • Pancreas • Gallbladder • Breast (post-menopause)</td>
<td>[fatal prostate, , male breast, B-cell lymphoma]</td>
</tr>
<tr>
<td><strong>Physical Inactivity (&lt;10 min MVPA)</strong></td>
<td>• Colon</td>
<td>1.61 (1.03–2.50) to 1.14 (1.06–1.20) (adj. weight)</td>
</tr>
<tr>
<td><strong>Tobacco Use</strong></td>
<td>• Head and Neck • Liver • Colorectal</td>
<td>6.96 (6.73–12.11) to 4.52 (1.33–1.74)</td>
</tr>
<tr>
<td></td>
<td>• Esophagus (Squamous Cell) • Breast</td>
<td>5.13 (4.31–6.10) to 1.44 (1.25–1.65)</td>
</tr>
<tr>
<td><strong>Alcohol (&gt;50 g d⁻¹)</strong></td>
<td>• Head and Neck • Liver • Colorectal</td>
<td></td>
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The cancer diagnosis can provide the impetus for behavior change...but few can transform themselves without support...
Obesity Rates in Cancer Survivors (age 20+), 1992-2015


Greenlee H et al. JCO 2016
Rates of No Leisure Time Physical Activity among Cancer Survivors (age 18+), 1997-2015

Smoking Rates among Cancer Survivors (age 18+), 1992-2015

But, younger survivors (18-40 y) at greater risk for continued smoking  
Bellizzi et al. JCO 2005;  
Dietary Comparison NHANES 1999-2010
Cancer Survivors (n=1533) vs. Non-Cancer Controls (n=3075)

- Healthy Eating Index (2010)
  47.2 ± 0.5 vs 48.3 ± 0.4; p=0.03

- Empty calories
  13.6 vs 14.4; p = 0.001

- Higher intake of solid fats, alcohol, and added sugars.

Zhang FF et al. CANCER 2015
...so, many cancer survivors have poor adherence to healthy lifestyle behaviors – **Why** do we care?

<table>
<thead>
<tr>
<th></th>
<th>Diet</th>
<th>Exercise</th>
<th>Smoking Cessation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>2nd Cancers</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Comorbidity</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Adverse Δ Body Composition and Functional Decline</td>
<td>✓</td>
<td>✓ ✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Fatigue</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

✓ Possible benefit  ✓ ✓ Probable benefit  ✓ ✓ ✓ Convincing benefit

*Turn around when possible*
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.
RCT of $\alpha$–Tocopherol + $\beta$–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)**
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)

Chlebowski et al. JNCI 98:1767, 2006
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 >5% loss of body weight.
  - Clinically significant benefits in HbA1C, 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)

Obesity and Cancer

IOM Workshop on Cancer Survival and Recurrence Oct 2011

American Society of Clinical Oncology Position Statement on Obesity and Cancer


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 complications. Research shows that...
When?

Response to: “When after diagnosis is the best time to provide instruction on healthy lifestyle behaviors (n=988 Breast & Prostate Cancer Survivors)

Adams RN et al (2015) Integrative analysis on largest home-based diet and exercise intervention trials for cancer survivors (n = 23,841)
OR (95% CI) more proximal vs less to dx
Willing to Participate: 0.95 (0.92-0.98)
Enrolled: 0.93 (0.89-0.97)
No difference in adherence/completion

Nayan S et al (2013) Pooled analysis of 13 studies. Identical smoking cessation interventions instituted in the perioperative period had a pooled odds ratio of 2.31 (95% CI, 1.32-4.07) of successfully leading to cessation vs. non-significant effects later
How (to get started): 5–A’s

**Ask:**
- Have you heard about the relationship between *smoking, body weight, diet, physical activity* and cancer?
- Have you tried to *stop smoking, lose weight, start eating a healthier diet, get more physical activity* recently?

**Advise:**
- Orient to *educational materials, BMI chart*.

**Assess:**
- Readiness to pursue behavior change

**Assist:**
- Set a start date, an incremental goal, simple changes (including environmental control)
- Provide more specific brochures, point to select websites

**Arrange:**
- Refer to primary care physician, allied health (clinical psychologist, registered dietitian, certified trainer/exercise physiologist/physical therapist), or specialist (physiatrist, bariatric medicine)
Key Elements of Behavior Change

• Self-monitoring
• Self-efficacy
• Support (long-term and by many)
Behavioral change may be more attainable if addressed at multiple levels.
Workforce and Infrastructure Needs

• Training (clinicians, but also in allied health – only 600 Dietitians who are Certified Specialists in Oncology, of 465 Certified Exercise Trainers)

• Development of Competencies

• Reimbursement
How well are clinicians prepared to deliver lifestyle guidance?

- Survey among 768 colorectal cancer clinicians
- 323 respondents (42% response rate)
- 77% thought reducing weight was important for improving health
- 75% endorsed offering lifestyle advice to people with BMI>30
- 52% reported that they were familiar with guidance for lifestyle advice for cancer survivors.
- 50% reported that weight reduction is an important service priority for clinical practice.
- 50% would value additional training in this area.

Anderson AS et al. Colorectal Dis. 2013
Synergy between Lifestyle Practices?

- 670 Early stage breast cancer survivors in Multi-ethnic Cohort. Inactive survivors eating poor-quality diets vs. Active survivors eating better-quality diets had an 89% reduced risk of death from any cause HR: 0.11 (0.04-0.36) and a 91% reduced risk of death from breast cancer HR: 0.09 (0.01-0.89). George et al. 2011

- 1490 early stage breast cancer survivors who ate 5+ daily servings of F&V and who were active (540+ MET-min/w) had a doubling of survival HR: 0.56 (0.31 - 0.98) Pierce et al. 2007

- 2193 post-menopausal breast cancer survivors in Iowa Woman’s Health Study, those who adhered to 6-8 AICR/WCRF guidelines vs. 0-4 had a 33% lower mortality rate Inoue-Choi et al. 2013
Discovery in Dissemination and Implementation Science

Need for optimal, effective options

• Combine, Sequence
• Delivery Channels
• Messaging
• Triage
Conclusions

• Cancer survivors are a vulnerable population at risk for recurrence, second cancers, comorbidities, functional decline and poor quality of life who may benefit greatly from lifestyle interventions.

• There are some barriers that must be addressed in terms of training, research, policy and infrastructure that must be addressed before holistic, optimal care is available to all survivors.