Updated Evidence in Support of Diet and Exercise Interventions in Cancer Survivors

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American Cancer Society Clinical Research Professor
Associate Director of Cancer Prevention and Control
University of Alabama at Birmingham
Learning Objectives

• Acquire knowledge on the current diet and exercise guidelines for cancer prevention and control and evidence that supports them
  – During Active Treatment
  – Once Curative Treatment is Complete

• Appraise strategies to promote healthful lifestyle behaviors among patients and determine if they can be incorporated into your work flow

• Recognize available resources that can be useful in promoting healthful lifestyle behaviors among patients
During Active Treatment

Exercise, Diet, and Weight Management During Cancer Treatment: ASCO Guideline

Jennifer A. Ligibel, MD; Kari Bohlke, ScD; Anne M. May, PhD; Steven K. Clinton, MD, PhD; Wendy Demark-Wahnefried, PhD, RD; Susan C. Gilchrist, MD, MS; Melinda L. Irwin, PhD, MPH; Michele Late; Sami Mansfield, BA; Timothy F. Marshall, PhD, MS; Jeffrey A. Meyerhardt, MD, MPH; Cynthia A. Thomson, PhD, RD; William A. Wood, MD, MPH; and Catherine M. Alfano, PhD

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Reviewed 52 systemic reviews and 23 RCTs ~3/4 ‘s of source documents were exercise related

1) Does exercise during cancer treatment safely improve outcomes related to QoL, treatment toxicity, or cancer control?
   • Providers should Rx aerobic and resistance exercise (Strength of Rx: Strong)
     • Preserves cardiorespiratory fitness, physical function and strength
     ↓ Fatigue, as well as anxiety, depression in some populations
     ↑ QoL in some populations

   • Providers may Rx preoperative exercise for lung cancer patients undergoing surgery (Strength of Recommendation: Weak)
     ↓ Post-operative complications and length of hospital stay
2) Does consuming a particular dietary pattern or food(s) during cancer treatment safely improve outcomes related to QoL, treatment toxicity, or cancer control?

- Insufficient evidence to Rx for or against dietary interventions such as ketogenic or low-carbohydrate diets, low-fat diets, functional foods, or fasting to improve outcomes.

- Neutropenic diets (i.e., exclusion of raw fruits and vegetables) NOT Rx (Strength of Rx: Weak).

3) Do interventions to promote intentional weight loss or avoidance of weight gain during cancer treatment safely improve outcomes related to QoL, treatment toxicity, or cancer control?

- Insufficient evidence to Rx for or against intentional weight loss or prevention of weight gain

*Lack of evidence was a call to conduct more diet-related research – should not be interpreted as discouraging clinicians from discussing healthy diet and weight with their patients*
Counseling should begin ASAP after diagnosis to...
- avoid nutrient deficiencies
- preserve muscle mass
- tolerate and respond to treatment
- manage side effects
- prevent chronic disease
### Guidelines for Diet & Physical Activity for Cancer Prevention & Control

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Obesity Rates in Adult Cancer Survivors & General Population


Greenlee H et al. JCO 2016
Obesity and Relative Risk of Cancer

Lauby-Secretan et al. NEJM 2016
Obesity and Cancer-related Mortality

Males

Females

Relative Risk of Death (95% confidence interval)

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

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

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<th>Sample</th>
<th>Risk Ratio for All Cause Mortality</th>
</tr>
</thead>
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<td>Ma et al. (2017)</td>
<td>54 RCTs</td>
<td>30,206 adults with obesity</td>
<td>0.82 (95% C.I. 0.71 – 0.95)</td>
</tr>
</tbody>
</table>

But...

Will purposeful weight loss improve cancer-related outcomes and survival in populations with cancer?

Ma C et al. BMJ 359: 2017
We DO know that large RCTs will yield survival outcomes soon

Lifestyle Intervention for oVarian cancer Enhanced Survival

- NCI and NRG (GOG) Clinical Trial
- 1205 stage II-IV ovarian cancer survivors; 6 wk-6 mos post-primary therapy
- 24 month lifestyle intervention
- Centralized telephone-based intervention
- Low fat, high F&V, high fiber, +4000 step/day vs health information control
- Primary endpoint: Progression-free survival – results 2022


Breast Cancer Weight Loss Trial (BWEx)

- NCI and Alliance for Clinical Trials in Oncology
- 3181 women with Stage II/III Breast Cancer from 49 US States and 7 Canadian provinces
- 2-year
- Telephone counseling with Fitbit/Aria scale tracking
- Apply Look AHEAD & telephone counseling of LISA trial
- Event driven analysis (results anticipated 2024)
- Interim analysis: Intervention arm experienced at least a 4% weight loss from baseline


Also may obtain insights from:
PREDICOP (n=2,108 pre/post-menopausal, Stage Ic-IIIa breast cancer within 3 months of primary treatment)
SUCCESS-C (n= 2,292 pre/post-menopausal breast cancer within 6 weeks post-surgery)
What DO we know from Cochrane Reviews of Weight Loss Interventions among Cancer Survivors

<table>
<thead>
<tr>
<th>Group (year)</th>
<th># of studies (sample)</th>
<th>Interventions</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Shaikh et al. (2020) | 20 RCTs in a total of 2,028 breast cancer survivors | Diet + exercise + behavior modification 6-24 months Follow-up 3-36 months | • No increase in adverse events  
• MD in weight -2.25 kg; 95% CI -3.19 to -1.3  
• MD in waist girth -1.73 cm; 95% CI -3.17 to -0.29  
• Multimodal interventions resulted in greater weight loss -2.88 kg; 95% CI -3.98 to -1.77  
• SMD in QoL 0.74; 95% CI 0.20 to 1.29  
• No effect on anxiety and depression  
• TG MD -0.26 nmol L⁻¹ 95% CI -0.45 to -0.07  
• Leptin MD -14.67 ng mL⁻¹ 95% CI -26.36 to -2.98  
• No differences for insulin, glucose, cholesterol, HDL  
• Insufficient data for E2, T, IGF1, adiponectin, IL6, CRP, TNFα |
| Kitson et al. (2018) | 3 RCTs in a total of 161 endometrial cancer survivor | Diet + exercise + behavior mod. 6-12 months Follow-up 12 months | • No increase in serious adverse events  
• MD in weight -1.88 kg; 95% CI -5.98 to 2.21  
• MD in QoL 2.51; 95% CI -5.61 to 10.64  
• Musculoskeletal symptoms RR 19.03; 95% CI 1.17 to 310.52 |
We DO know Guidelines for Management of Overweight and Obesity in the General Population

- 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
- Self-monitoring: Weighing everyday, keeping a food and exercise log/journal, electronic devices

2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults
http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437739.71477.ee
But, we DO know that Weight Control differs for Cancer Survivors

- Weight gain common side effect with chemo- and hormonal therapy for breast cancer, hormonal therapy for prostate cancer, and among children treated for ALL and brain cancer (lower brain XRT)
- Retention rates significantly higher: 71-100% in survivors vs. 53-65% in general population
- Cancer survivors have significantly worse diets, i.e., higher empty calories, lower diet quality (high sodium, saturated fat, & lower calcium and fiber), yet heightened concerns re: foods, food additives, pesticides
- Survivors often receive negative feedback re: weight loss.
- Cancer survivors have additional concerns:
  - comorbidity
  - osteoporosis
  - fatigue
  - cardiotoxicity
  - neurotoxicity
  - GI/alimentary tract symptoms
  - adverse body change: sarcopenic obesity
- 10% Weight loss may be necessary to affect cancer pathways

To Date, Diet Composition findings appear to track with General Guidelines

6-month Low fat (<24 g/d) vs Low Carb (<76 g/d) Weight Loss Diets

Thomson et al. (n=43)
- 93% retention
- Average loss: 7.3% BW
- No between-group differences in weight, glucose, insulin, HbA1c, HOMA, total or HDL cholesterol, BP or hsCRP
- TG significantly lower in low CHO group (p=0.01)

Thompson et al. (n=249)
- 77% retention
- Average loss: 12.5% BW
- No between-group differences in weight, total, LDL or HDL cholesterol
- TG significantly lower in low CHO group (p=0.01)

Thomson CA et al. Nutr Cancer 2010
Thompson HJ et al. PLOSOne 2015
We DON’T know optimal rates of weight loss, but we DO see some unsettling data from presurgical trials in prostate cancer

More rapid weight loss (1.5 vs. 0.69 pounds/week), especially with suboptimal physical activity is associated with higher tumor proliferation rate (Ki67) in 2 presurgical RCTs in men with prostate cancer
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### Effects of Exercise on Health-Related Outcomes in Those with Cancer

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<tr>
<th>Outcome</th>
<th>Aerobic Only</th>
<th>Resistance Only</th>
<th>Combination (Aerobic + Resistance)</th>
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<tbody>
<tr>
<td><strong>Strong Evidence</strong></td>
<td></td>
<td></td>
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<tr>
<td>Cancer-related fatigue</td>
<td>3x/week for 30 min per session of moderate intensity</td>
<td>2x/week of 2 sets of 12-15 reps for major muscle groups at moderate intensity</td>
<td>3x/week for 30 min per session of moderate aerobic exercise, plus 2x/week of resistance training 2 sets of 12-15 reps for major muscle groups at moderate intensity</td>
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<td>Health-related quality of life</td>
<td>2-3x/week for 30-60 min per session of moderate to vigorous</td>
<td>2x/week of 2 sets of 8-15 reps for major muscle groups at a moderate to vigorous intensity</td>
<td>2-3x/week for 20-30 min per session of moderate aerobic exercise plus 2x/week of resistance training, 2 sets of 8-15 reps for major muscle groups at moderate to vigorous intensity</td>
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<td>Physical Function</td>
<td>3x/week for 30-60 min per session of moderate to vigorous</td>
<td>2-3x/week of 2 sets of 8-12 reps for major muscle groups at moderate to vigorous intensity</td>
<td>3x/week for 20-40 min per session of moderate to vigorous aerobic exercise, plus 2-3x/week of resistance training 2 sets of 8-12 reps for major muscle group at moderate to vigorous intensity</td>
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<td>Anxiety</td>
<td>3x/week for 30-60 min per session of moderate to vigorous</td>
<td>Insufficient evidence</td>
<td>2-3x/week for 20-40 min of moderate to vigorous aerobic exercise plus 2x/week of resistance training of 2 sets, 8-12 reps for major muscle groups at moderate to vigorous intensity</td>
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<td>Depression</td>
<td>3x/week for 30-60 min per session of moderate to vigorous</td>
<td>Insufficient evidence</td>
<td>2-3x/week for 20-40 min of moderate to vigorous aerobic exercise plus 2x/week of resistance training of 2 sets, 8-12 reps for major muscle groups at moderate to vigorous intensity</td>
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<tr>
<td>Lymphedema</td>
<td>Insufficient evidence</td>
<td>2-3x/week of progressive, supervised, program for major muscle groups does not exacerbate lymphedema</td>
<td>Insufficient evidence</td>
</tr>
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</table>

**What can exercise do?**

- **Prevention of 7 common cancers**
  - Dose: 2018 Physical Activity Guidelines for Americans: 150-300 min/week moderate or 75-150 min/week vigorous aerobic exercise
- **Survival of 3 common cancers**
  - Dose: Exact dose of physical activity needed to reduce cancer-specific or all-cause mortality is not yet known; overall more activity appears to lead to better risk reduction
  
*bladder, breast, colon, endometrial, esophageal, kidney and stomach cancers

**breast, colon and prostate cancers

Overall, avoid inactivity, and to improve general health, aim to achieve the current physical activity guidelines for health (150 min/week aerobic exercise and 2x/week strength training).

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| Alcohol | Limit alcohol. If drink limit to 1-2 drinks/day | Best not to drink alcohol |
| Supplements | Do not rely on supplements | |
How Important is Diet Quality?

Meta-analysis of 113 studies including 3,277,684 people

### Dietary Patterns
**Prudent vs. Western**

<table>
<thead>
<tr>
<th>Team (year)</th>
<th>Sample</th>
<th>Diet</th>
<th>CA Mortality HR (95% CI)</th>
<th>All Cause Mortality HR (95% CI)</th>
</tr>
</thead>
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<tr>
<td>Kroenke (2005)</td>
<td>2619 Breast CA</td>
<td>Prudent</td>
<td>1.07 (0.66-1.73)</td>
<td>0.54 (0.31-0.95)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western</td>
<td>1.01 (0.60-1.70)</td>
<td>2.31 (1.23-4.32)</td>
</tr>
<tr>
<td>Kwan (2009)</td>
<td>1901 Breast CA</td>
<td>Prudent</td>
<td>0.79 (0.43-1.43)</td>
<td>0.35 (0.17-0.73)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Western</td>
<td>1.20 (0.62-2.32)</td>
<td>2.15 (0.97-4.77)</td>
</tr>
<tr>
<td>Vrieling (2013)</td>
<td>2522 Breast CA</td>
<td>Prudent</td>
<td>0.89 (0.59-1.35)</td>
<td>0.81 (0.40-1.61)</td>
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<tr>
<td></td>
<td>2522 Breast CA</td>
<td>Western</td>
<td>3.69 (1.66-8.17)</td>
<td>0.99 (0.64-1.52)</td>
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<tr>
<td></td>
<td>(post)</td>
<td></td>
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<td>Meyerhardt (2007)</td>
<td>1009 Stage III CRC</td>
<td>Prudent</td>
<td>1.13 (0.77-1.67)</td>
<td>1.32 (0.86-2.04)</td>
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<tr>
<td></td>
<td></td>
<td>Western</td>
<td>2.85 (1.75-4.63)</td>
<td>2.32 (1.36-3.96)</td>
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<td>Schwedhelm (2016)</td>
<td>Meta-analysis</td>
<td>Prudent</td>
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<td>1.51 (1.24-1.85)</td>
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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 14-18 oz/week
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Association between Alcohol and Cancer is Linear
no amount is “safe”

- Mouth and upper throat
- Larynx
- Oesophagus
- Breast (in women)
- Liver
- Bowel

4 Ways Alcohol Causes Cancer:
- Damages cells
- Increases damage from tobacco
- Affects hormones linked to breast cancer
- Breaks down into cancer-causing chemicals
Lifestyle Practices of Cancer Survivors

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<th>Lifestyle Factor/Behavior</th>
<th>Prevalence</th>
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<tr>
<td>Overweight and Obesity</td>
<td>59-63%</td>
</tr>
<tr>
<td>Inactive</td>
<td></td>
</tr>
<tr>
<td>Low Vegetable &amp; Fruit</td>
<td>50-73%</td>
</tr>
<tr>
<td>Low Fiber</td>
<td>60-89%</td>
</tr>
<tr>
<td>Excess Red/Processed Meat</td>
<td>26-80%</td>
</tr>
<tr>
<td>Excessive Alcohol</td>
<td>14-19%</td>
</tr>
<tr>
<td>Currently smoking</td>
<td>12-15%</td>
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77% practice multiple “bad” behaviors
Cancer provides a Teachable Moment for Lifestyle Change
Seize the Moment!

- Vast literature showing that the physician is a powerful influence on health behavior.

- 92% of cancer survivors prefer to receive guidance from their oncologist while receiving care at the cancer center. Philip E et al. Supp Care Cancer 2014

- +3.4 MET hr/week (p=.011) in RCT of 450 breast cancer pts. in arm receiving MD Rx alone. Jones et al. Ann Behav Med 28:105-13, 2004

- Smoking (USPSTF Ask, Advise, Assess, Assist, Arrange)
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:**
- 
<table>
<thead>
<tr>
<th>Height</th>
<th>Body Weight (pounds)</th>
<th>Normal Weight</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
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<tbody>
<tr>
<td>4'10</td>
<td>91 96 100 105 110 115</td>
<td>119 124 129 134 138</td>
<td>143 148 153 158 162 167</td>
<td></td>
</tr>
<tr>
<td>5'0</td>
<td>97 102 107 112 118 123</td>
<td>128 133 138 143 148</td>
<td>153 158 163 168 174 179</td>
<td></td>
</tr>
<tr>
<td>5'1</td>
<td>100 106 111 116 122 127</td>
<td>132 137 143 148 153</td>
<td>158 164 169 174 180 185</td>
<td></td>
</tr>
<tr>
<td>5'2</td>
<td>104 109 115 120 126 131</td>
<td>136 142 147 153 158</td>
<td>164 169 175 180 186 191</td>
<td></td>
</tr>
<tr>
<td>5'3</td>
<td>107 113 118 124 130 135</td>
<td>141 146 152 158 163</td>
<td>169 175 180 186 191 197</td>
<td></td>
</tr>
<tr>
<td>5'4</td>
<td>110 116 122 128 134 140</td>
<td>145 151 157 163 169</td>
<td>174 180 186 192 197 204</td>
<td></td>
</tr>
<tr>
<td>5'5</td>
<td>114 120 126 132 138 144</td>
<td>150 156 162 168 174</td>
<td>180 186 192 198 204 210</td>
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<tr>
<td>5'6</td>
<td>118 124 130 136 142 148</td>
<td>155 161 167 173 179</td>
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</tr>
<tr>
<td>5'7</td>
<td>122 128 134 140 146 152</td>
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<td>5'9</td>
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<td>169 176 182 189 196</td>
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<td>174 181 188 195 202</td>
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<td>138 144 150 156 162 168</td>
<td>179 186 193 200 208</td>
<td>215 222 229 236 243 250</td>
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<tr>
<td>6'0</td>
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<td>184 191 199 206 213</td>
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<tr>
<td>6'1</td>
<td>146 152 158 164 170 176</td>
<td>189 197 204 212 219</td>
<td>227 235 242 250 257 265</td>
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<tr>
<td>6'2</td>
<td>150 156 162 168 174 180</td>
<td>194 202 210 218 225</td>
<td>233 241 249 256 264 272</td>
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Patient 1: 35 y/o stage II BC 5'4" 140 lbs
### BMI Chart

<table>
<thead>
<tr>
<th>Height</th>
<th>Normal Weight</th>
<th>Overweight</th>
<th>Obese</th>
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<tr>
<td></td>
<td>BMI 19-20</td>
<td>BMI 21</td>
<td>BMI 22</td>
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<tr>
<td>4'10</td>
<td>91 96 100 105</td>
<td>119 124 129</td>
<td>143 148</td>
</tr>
<tr>
<td>4'11</td>
<td>94 99 104 109</td>
<td>119 124 129</td>
<td>148 153</td>
</tr>
<tr>
<td>5'0</td>
<td>97 102 107 112</td>
<td>123 128 133</td>
<td>153 158</td>
</tr>
<tr>
<td>5'1</td>
<td>100 105 110 115</td>
<td>127 132 137</td>
<td>158 164</td>
</tr>
<tr>
<td>5'2</td>
<td>103 108 113 118</td>
<td>131 136 142</td>
<td>164 170</td>
</tr>
<tr>
<td>5'3</td>
<td>106 111 116 121</td>
<td>134 139 145</td>
<td>169 175</td>
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<td>5'4</td>
<td>109 114 119 124</td>
<td>137 142 148</td>
<td>174 180</td>
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<tr>
<td>5'5</td>
<td>112 117 122 127</td>
<td>140 145 150</td>
<td>179 185</td>
</tr>
<tr>
<td>5'6</td>
<td>115 120 125 130</td>
<td>143 148 153</td>
<td>184 190</td>
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</table>

### Patient 2 Information

<table>
<thead>
<tr>
<th>Height</th>
<th>Body Weight (pounds)</th>
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<tbody>
<tr>
<td>5'2&quot;</td>
<td>175 lbs</td>
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</table>

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

**Assist:**

**Arrange:**
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:
• 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, specialist (bariatric medicine) or …
There are resources to help you: Brochures

- Managing Your Weight After a Cancer Diagnosis
- AICR's Guide to a Plant-Based Diet
- Weight Loss
- The Cancer Fighters In Your Food
Brochures can make an impact

Daughters And MothErS (DAMES) Trial shows controls who received 5 sets of brochures over one year

- 2 pound weight loss in mothers and 6 pound loss in daughters
- 1 cm loss in waist circumference for both
- Daughters increased their physical activity by 24.9 minutes per week.

There are online resources

http://www.livestrong.com/myplate
https://survivorshine.org
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:
• 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 MD, specialist (bariatric medicine) or refer to a study
Plan and act on LIFESTYLES: AMPLIFY Survivor Health
(Adapting MultiPLe behavior Interventions that eFfectively Improve (AMPLIFI) Cancer Survivor Health)

P01 CA229997, R01 CA246695, R01 CA242737, ACS (134169-CRP-19-175-06-COUN)

NCT04000880
WHAT IS AMPLIFY?

A web-based diet and exercise trial for cancer survivors who are committed to taking the next year to lose weight, eat healthier, and move towards better health. By logging in only 15-20 minutes each week and by interacting with the program, cancer survivors can begin their journey to better health through a lifestyle plan that is safe, evidenced based, and personalized just for them.
 DETAILS ABOUT AMPLIFY

- Interventions done totally over the internet (accessed by computers, tablets or smartphones). Totally free – no special foods

- Weekly self-directed sessions with weekly challenges; one of 3 programs below:
  - 24 weeks of diet followed by 24 weeks of exercise; or
  - 24 weeks of exercise followed by 24 weeks of diet; or
  - 48 weeks of combined diet and exercise

- Optional Facebook group

- Scales, pedometers, exercise bands and portion plates provided

- Interventions are based on diet and exercise recommendations of the American Institute of Cancer Research and the American Cancer Society
What AMPLIFY participants are saying about the program?

**Mrs. H**

I'm a breast cancer survivor. The biggest thing I got out of AMPLIFY was being able to go online and answer the questions and put my weight in every day. I have never weighed myself daily, and that has really been a big help. AMPLIFY is a wonderful program. I've been very successful with it.

Ms. H has been in the program for about 6 months, and she lost 36 pounds (21% of her body weight), and dropped her waist size by 5.5 inches.

**Mr. C**

“I'm a 68 year old prostate cancer survivor. Before I started AMPLIFY, I was completely washed-out. I could barely walk a hundred feet without having to stop and catch my breath. I have enjoyed the program. I am eating and sleeping better, and have lost weight.”

Over the course of the past 12 months, Mr. C lost 16 pounds (10% of his body weight) and improved his endurance by walking 27% more steps during a 2-minute testing period.

**Ms. W**

“I'm a breast cancer survivor. I would describe AMPLIFY as being very helpful to live a healthier and better life and be successful in your survivorship. Others should join AMPLIFY because they'll feel better about themselves. Their fight is not over. … Life needs to get better and better, and I believe the AMPLIFY study can help that.”

Over 12 months, Ms. W lost 26 pounds (14% of her body weight) and reduced her waist size from 37 inches to 33 inches (4 inches).
Home page – rotating content

Testimonial: Role modelling, Support, Engagement

Daily Tip: Offers content, Engagement

Key components: Weekly sessions and Progress
My progress – self-monitoring

**Recent Progress and Current Goals**

The boxes below show your progress through last week.

**Aerobic Exercise**

You did not meet your goal last week. If you did light exercise last week, consider boosting some of it to moderate exercise this week.

- **Last Week:** About 40 minutes of moderate/vigorous exercise
- **Previous Goal:** 52 minutes
- **This Week's Goal:** 52 minutes per week

You can increase or decrease by as much as 15 minutes: [ ] 52

**Long-term Goal:** At least 150 minutes per week of moderate/vigorous exercise

**Strategies**

- **New Strategy:** Stay aware of my activity levels.

The graph bars show how many minutes of moderate/vigorous aerobic exercise you told us about each week through last week (this week’s results will be available next week). Your goal is to have the bars reach up to the green area (at least 150 minutes) as many weeks as you can.
Interactive Weekly sessions

Moving Better and Making Healthy Choices Easier

Exercise Session 5

In the program so far, we have talked about 2 of the 3 types of exercises we are encouraging you to do, aerobic and resistance exercises. The third type of exercise is functional exercise which improves flexibility and balance. In this session, we’ll talk about functional exercise and how to fit aerobic, resistance, and functional exercises in your routine. We’ll also discuss ways to take control of your environment to make the choice to exercise each day easier.

Learn About Functional Exercise

Session Summary

- Functional exercises improve flexibility and balance. Flexibility exercises stretch out your muscles. Balance exercises are exercises performed off balance.
- Functional exercise should be performed on at least two days per week, and each time you do aerobic and resistance exercises.
- There are many ways you can take control of your environment to make the choice to exercise easier.
- Use the videos and other materials in the Tools section of the website to help you organize your exercise routine.
- Weekly Challenge: Practice your functional exercises and taking control of your environment.

Check Out these Related AMPLIFY Tools

Description of Flexibility Exercises

One step in creating a personalized exercise plan is to incorporate stretching exercises! This tool contains pictures, tips, and a baseline stretching plan to help you easily understand how to add.
Tools (> 100)

- Meal Plans/Menus (Basic, Foodie, Vegan)
- Exchange Lists
- Grocery Store Tours
- Grocery Lists
- Cooking videos
- Exercise Videos
- And more!
Support

My Support

Want to Learn How You Can Get More Social Support from Others?
AMPLIFY has a tool to help.
Social Support Tool

Have Questions About Making Changes?
Check out Ask AMPLIFY, a library of questions and answers about making healthful changes.
Ask AMPLIFY

Need Help Using the AMPLIFY Website?
The Using AMPLIFY page has instructions and frequently asked technical questions to help you get un-stuck.
Using AMPLIFY

Have you had a SETBACK?
Click here if you think your progress is slipping backward »

AMPLIFY Facebook Group
The AMPLIFY Facebook group is a resource for support from other AMPLIFY participants and a place to see what other people are doing to improve their health.
Open Facebook Group Get help joining the group »
Main Outcomes

- Change over time in weight, physical activity, and diet quality

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Primary Hypotheses</th>
<th>Outcomes</th>
<th>Assessment mode</th>
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<tbody>
<tr>
<td>Project 1</td>
<td>Higher proportion of participants with ≥ 3% weight loss</td>
<td>Weight</td>
<td>In person/Zoom visit</td>
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<td>DIET intervention vs. wait list at 6 months</td>
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<td></td>
<td></td>
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<tr>
<td>Project 2</td>
<td>Higher proportion of participants with ≥150 weekly minutes of ≥moderate intensity physical activity</td>
<td>Physical activity (Accelerometry)</td>
<td>Accelerometer for 7 days during wake and sleep time</td>
</tr>
<tr>
<td>EXERCISE intervention vs. wait list at 6 months</td>
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<td></td>
<td></td>
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<tr>
<td>Project 3</td>
<td>Higher proportion of participants with ≥ 3% weight loss, improved Diet Quality, ≥150 weekly minutes of ≥moderate intensity PA</td>
<td>Weight, Physical Activity, Diet Quality</td>
<td>Two dietary recalls via phone, week and weekend days</td>
</tr>
<tr>
<td>SIMULTANEOUS vs. SEQUENCED at 12/18 months</td>
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</tr>
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</table>
Secondary Outcomes - $25 per timepoint

• During zoom visit
  – Weight/Waist circumference
  – Blood pressure/resting heart rate
  – Physical performance and Balance
    • 30 sec chair stand, chair sit & reach, back scratch, 8-ft up & go, 8-ft walk, 2 min step test
    • Balance side-by-side, semi-tandem, tandem stands

• Muscle mass (D3 creatine)
• Dry blood Spot
  – TSH (baseline), Insulin, Leptin, Adiponectin IL6, CRP, TNFα
• Sleep (Actigraphy)
Eligibility criteria

• Age: 50+ years
• Survivors who completed primary treatment for the following cancers (with no recurrence or other second cancers):
  • **Localized – Regional**: Breast, Colorectum, Endometrium, Prostate, Thyroid
  • **Localized**: Kidney, Ovary
  • Multiple Myeloma, non-Hodgkin Lymphoma
• Overweight/Obese (BMI: 25–50 kg/m$^2$)
• Moderate-to-Strenuous Physical Activity <150 minutes/week
• Not enrolled in a diet or exercise program
• English writing/speaking + completed 8th grade
Thank you! Questions?

Referrals:

https://amplifymyhealth.org/info

https://www.facebook.com/AmplifySurvivorHealth

NCT04000880

833-535-7934.

amplify@uabmc.edu