Integrative Medicine and the Power of Lifestyle Change

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Richard E Haynes Distinguished Professorship for Clinical Cancer Prevention
Director, Integrative Medicine Program
MD Anderson Cancer Center
"The health care revolution continues… an accessible, science-based approach to wellness."

— ANDREW WEIL, MD

Anticancer Living
TRANSFORM YOUR LIFE AND HEALTH WITH THE MIX OF SIX

Lorenzo Cohen, PhD
Alison Jefferies, MEd
33% Reduction in Overall Cancer Death Rate

2020

3.8 MILLION LIVES SAVED

2.4% Largest One Year Drop in Cancer Mortality

2017

2018

AACR Progress Report, 2022
• Since the mid-20th century, substantial multigenerational changes in the exposome have occurred.
• Changes in diet, lifestyle, obesity, environment, and the microbiome.
• All of this might interact with genomic and/or genetic susceptibilities.
Prevalence of Obesity Based on Self-Reported Weight and Height Among US Adults by State and Territory, BRFSS, 2022

Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.

- 22 states, Guam, Puerto Rico, and the Virgin Islands had an obesity prevalence between 30% to 35%.
- 19 states had an obesity prevalence between 35% to 40%.
- Louisiana, Oklahoma, and West Virginia had an obesity prevalence of 40% or greater.

Percent of adults with obesity = 41.9%; Overweight and obesity = 73.6%

*Sample size <50, the relative standard error (dividing the standard error by the prevalence) ≥30%, or no data in a specific year.
• Overweight or obesity are directly linked with 15 types of cancer.

• Being active lowers the risk of 9 cancers and likely more.
“Integrative oncology is a patient-centered, evidence-informed field of cancer care that utilizes mind and body practices, natural products, and/or lifestyle modifications from different traditions alongside conventional cancer treatments. Integrative oncology aims to optimize health, quality of life, and clinical outcomes across the cancer care continuum and to empower people to prevent cancer and become active participants before, during, and beyond cancer treatment.”
Complementary & Integrative Medicine Approaches

- Natural Products
  Dietary supplements

- Mind and Body
  Deep Breathing
  Relaxation/Meditation
  Yoga/Tai Chi
  Therapeutic Massage
  Acupuncture

- Other Complementary Health Approaches
In Breast Cancer: Grade A, B (moderate to substantial benefit)

- Music therapy, meditation, stress management, and yoga are recommended for **anxiety/stress reduction**.
- Meditation, relaxation, yoga, massage, and music therapy are recommended for **depression/mood disorders**.
- Meditation and yoga are recommended to improve **quality of life**.
- Acupressure and acupuncture are recommended for reducing **chemotherapy-induced nausea and vomiting**.
### AT-A-GLANCE GUIDELINE RECOMMENDED INTERVENTIONS

<table>
<thead>
<tr>
<th>Symptom Setting</th>
<th>Integrative Therapy</th>
<th>Type of Recommendation</th>
<th>Evidence Quality</th>
<th>Strength of Rec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatase inhibitor-related joint pain</td>
<td>Acupuncture</td>
<td>Evidence-based</td>
<td>Intermediate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Yoga</td>
<td>Evidence-based</td>
<td>Low</td>
<td>Weak</td>
</tr>
<tr>
<td>General cancer pain</td>
<td>Acupuncture</td>
<td>Evidence-based</td>
<td>Intermediate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Reflexology or acupressure</td>
<td>Evidence-based</td>
<td>Intermediate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Massage</td>
<td>Evidence-based</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Hatha yoga</td>
<td>Evidence-based</td>
<td>Low</td>
<td>Weak</td>
</tr>
<tr>
<td></td>
<td>Guided imagery with PMR</td>
<td>Evidence-based</td>
<td>Low</td>
<td>Weak</td>
</tr>
<tr>
<td>CIPN</td>
<td>Acupuncture</td>
<td>Evidence-based/informal consensus</td>
<td>Low</td>
<td>Weak</td>
</tr>
<tr>
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<td>Reflexology or acupressure</td>
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<tr>
<td>Procedural pain</td>
<td>Hypnosis</td>
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<td>Intermediate</td>
<td>Moderate</td>
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<tr>
<td>Surgical pain</td>
<td>Acupuncture or acupressure</td>
<td>Evidence-based/informal consensus</td>
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<tr>
<td></td>
<td>Music therapy</td>
<td>Evidence-based</td>
<td>Low</td>
<td>Weak</td>
</tr>
<tr>
<td>Pain during palliative care</td>
<td>Massage</td>
<td>Evidence-based</td>
<td>Intermediate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**Abbreviations:** CIPN, chemotherapy-induced peripheral neuropathy; PMR, progressive muscle relaxation; Rec, recommendation

[asco.org/survivorship-guidelines](asco.org/survivorship-guidelines)
INTEGRATIVE ONCOLOGY CARE OF
SYMPTOMS OF ANXIETY AND DEPRESSION
IN ADULT PATIENTS WITH CANCER

GUIDELINE AT-A-GLANCE RECOMMENDED INTERVENTIONS

**Anxiety**
- During Active Treatment
  - Mindfulness-based interventions
  - Yoga
  - Hypnosis
  - Relaxation therapy
  - Music therapy or music-based interventions
  - Reflexology
  - Lavender essential oil inhalation
- Post-Treatment
  - Mindfulness-based interventions
  - Yoga
  - Acupuncture
  - Tai chi and/or qigong
  - Reflexology

**Depression**
- During Active Treatment
  - Mindfulness-based interventions
  - Yoga
  - Relaxation therapy
  - Music therapy or music-based interventions
- Post-Treatment
  - Mindfulness-based interventions
  - Yoga
  - Tai chi and/or qigong

Carlson et al J Clin Oncol 2023
asco.org/survivorship-guidelines

Note. Evidence quality and strength of recommendations are available in the guideline publication.
Integrative oncology: Addressing the global challenges of cancer prevention and treatment

Jun J. Mao MD, et al 2021

TABLE 1. National Comprehensive Cancer Network Clinical Practice Guidelines for the Use of Integrative Medicine for Supportive Cancer Care

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>ACUPUNCTURE</th>
<th>MASSAGE</th>
<th>MEDITATION/MBSR</th>
<th>YOGA</th>
<th>MUSIC THERAPY</th>
<th>EXERCISE</th>
<th>NUTRITION</th>
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</thead>
<tbody>
<tr>
<td>Adult cancer pain</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Cancer-related fatigue</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Sleep disorders</td>
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<tr>
<td>Distress (anxiety/depression)</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Cancer-associated cognitive dysfunction</td>
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<td></td>
<td>X</td>
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<tr>
<td>Hot flashes/night sweats</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Sexual dysfunction</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<td></td>
<td>X</td>
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<tr>
<td>Nausea/vomiting</td>
<td>X</td>
<td></td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Anorexia</td>
<td></td>
<td></td>
<td>X</td>
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<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Abbreviation: MBSR, mindfulness-based stress reduction.

# Healthy Lifestyle Recommendations Before, During, and After Cancer Treatment

<table>
<thead>
<tr>
<th>Institution</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Society for Clinical Oncology (ASCO)</td>
<td>ASCO Guidelines for physical activity, diet, and weight management during and after cancer treatment (2022)</td>
</tr>
<tr>
<td>American Cancer Society (ACS)</td>
<td>ACS Guidelines for nutrition and physical activity during and after cancer treatment (2022)</td>
</tr>
<tr>
<td>American Institute for Cancer Research (AICR)</td>
<td>AICR recommendations for cancer prevention and survival include plant-based nutrition, healthy weight, and physical activity (2022)</td>
</tr>
<tr>
<td>Society for Integrative Oncology (SIO)</td>
<td>SIO Clinical Practice Guidelines on the evidence-based use of integrative therapies during and after breast cancer (2017)</td>
</tr>
<tr>
<td>National Institutes of Health – National Cancer Institute (NIH-NCI)</td>
<td>NIH-NCI Guidelines on physical activity, diet, and weight management for cancer patients (2020)</td>
</tr>
<tr>
<td>U.S. Centers for Disease Control and Prevention (CDC)</td>
<td>CDC’s Division of Nutrition, Physical Activity and Obesity recommends healthy behaviors before and after cancer treatment (2022)</td>
</tr>
</tbody>
</table>
Cancer Prevention and Control: The Mix of Six

- Social Support
- Stress Management
- Sleep
- Physical Activity
- Diet
- Environmental Toxins
Cancer Hallmarks

Hannahan, Cancer Discover, 2022
Synergy

A phenomena where the whole is more than the sum of the parts
Social Support
“SUPPORT IS THE BACKBONE ON WHICH ALL OTHER LIFESTYLE CHANGES WILL EITHER SUCCEED OR FAIL”

Anticancer Living
VEGF and Social Support

Women with ovarian carcinoma who reported higher levels of social well being had lower levels of VEGF.

- Lutgendorf et al., Cancer, 2002
It Takes a Team
Your Team
Sleep
Sleep and Health

• Too little or too much unhealthy (less than 6 and more than 8)
• Key time for psychological, physical, and biological restoration
• Critical for brain health
• Sleep loss is listed as a “probable” carcinogen
Sleep and Genes

- Insufficient sleep and circadian rhythm disruption are associated with negative health outcomes.

- 1 wk of insufficient sleep alters gene expression in human blood cells, reduces the amplitude of circadian rhythms in gene expression, and intensifies the effects of subsequent acute sleep loss on gene expression.

- Changes in regulation of gene expression and immune and stress responses.

Moller-Veet et al., PNAS, 2013
Physical Activity
Amount and Intensity of Leisure-Time Physical Activity and Lower Cancer Risk

Charles E. Matthews, PhD; Steven C. Moore, PhD; Hannah Arem, PhD; Michael B. Cook, PhD; Britton Trabert, PhD;
Niclas Håkansson, PhD; Susanna C. Larsson, PhD; Alicja Wolk, DrMedSci; Susan M. Gapstur, PhD; Brigid M. Lynch, PhD;
Roger L. Milne, PhD; Neal D. Freedman, PhD; Wen-Yi Huang, PhD; Amy Berrington de Gonzalez, DPhil; Carl M. Kitahara, PhD;
Martha S. Linet, MD; Eric J. Shiroma, ScD; Sven Sandin, PhD; Alpa V. Patel, PhD; and I-Min Lee, ScD

Breast
Cancers, n = 17,983
Overall association, P < .0001
Nonlinear association, P = .11

Endometrial
Cancers, n = 3,030
Overall association, P < .0001
Nonlinear association, P = .28

Colon
Cancers, n = 7,692
Overall association, P < .001
Nonlinear association, P = .10

Esophageal Adenocarcinoma
Cancers, n = 569
Overall association, P = .02
Nonlinear association, P = .57

Mathew et al., JCO, 2020
Joint Prevalence of Daily Sitting Time and Leisure-Time Physical Activity Among US Cancer Survivors Age 40 Years or Older, 2007 to 2015

Even if you are inactive, you can decrease risk of death if you sit less
Women who engaged in at least 18 MET-hours per week had a reduced chance of colorectal cancer–specific mortality 61% and reduced overall mortality of 57% compared with those who exercised the least.

Meyerhardt et al., JCO, 2006
• Women who increased their physical activity (compared to pre levels) had a 52% lower risk of colorectal cancer–specific mortality 61% and reduced overall mortality of 49% compared with those with no change in activity.

• Recreational physical activity after the diagnosis of stages I to III colorectal cancer may reduce the risk of colorectal cancer–specific and overall mortality.
Post-Diagnosis Leisure Time Physical Activity

Colorectal Cancer Mortality

<table>
<thead>
<tr>
<th>Hazard Ratio</th>
<th>0</th>
<th>0 to &lt; 1 h/wk</th>
<th>1 to &lt; 4 h/wk</th>
<th>4 to &lt; 7 h/wk</th>
<th>≥ 7 h/wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>0.1</td>
<td></td>
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<tr>
<td>0.2</td>
<td></td>
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<td>0.3</td>
<td></td>
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<td>0.4</td>
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<td>0.6</td>
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<td>0.7</td>
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<td>0.8</td>
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<td>0.9</td>
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<tr>
<td>1</td>
<td></td>
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</tbody>
</table>

Both resistance and endurance exercise are necessary to obtain a better physiological adaptation and a combination of both seems to be needed to properly tackle the increasing prevalence of non-communicable pathologies.

- Resistance exercise induced epigenetic changes in pathways associated with energy metabolism and insulin sensitivity, contributing to healthy skeletal muscle.

- Endurance exercise caused modifications in biomarkers associated to metabolic alterations through changes in DNA methylation and the expression of specific miRNAs.

Barron-Cabrera et al., Lifestyle Genomics, 2019
American Cancer Society
Physical Activity Guidelines

150–300 minutes of moderate-intensity physical activity per week

75–150 minutes of vigorous-intensity physical activity, or a combination

Getting 300 minutes or even more will give you the most health benefits
Movement Goals

- Walk
- Dance
- Elliptical
- Stairs
- Hiking
- Bike
- Swimming
- Pickleball

- Weights
- Resistance Bands
- Yoga
- Body Weight Resistance
- Sit to Stand

- Stand up
Diet
Red Meat

Armstrong and Doll, 1975, in Willett, 1995
Colorectal Cancer Recurrence or Death and the Western Diet

Meyerhardt et al., JAMA, 2007
Your Body is Mostly Microbes
A tale of team science
Overall schema for current study: to assess gut microbiota profiles, dietary habits and probiotic use with outcomes in melanoma patients

Melanoma Patients (n=438)

Identify microbial taxa associated with response to ICB and other therapies (n=293)

Determine associations of dietary habits/probiotic use with response to ICB (n=128/158)

Mechanistic studies in preclinical models of ICB treatment for melanoma

A: Kaplan-Meier plot comparing progression-free survival intervals by dietary fiber intake among patients who received ICB. B: Kaplan-Meier plot comparing progression-free survival intervals by combined dietary fiber and probiotic status among patients who received ICB.
Alcohol and Cancer Risk

Consumption of alcohol increases an individual’s risk of developing six types of cancer—certain types of head and neck cancer, esophageal squamous cell carcinoma, and breast, colorectal, liver, and stomach cancers.
A 40-year-old could add a decade to his or her life expectancy by switching from a typical Western diet to one that includes more legumes, whole grains, and nuts, and less red and processed meat.
Diet and the Cancer Hallmarks

Steck & Murphy, Nature Reviews Cancer, 2020
“Sometimes I cheat and I’ll have a lizard or two.”
Health-Supporting Dietary Pattern

- Vegetables
- Fruits
- Grains
- Beans and legumes
- Nuts and seeds
- Lean clean animal protein
Eating by Food Groups

- Alliums
- Cruciferous vegetables
- Low-glycemic root vegetables
- Fruit (limited)
Stress and Stress Management
The Stress Response and Regulation of the Tumor Microenvironment
Cancer Hallmarks

- Sustaining proliferative signaling
- Evading growth suppressors
- Resisting cell death
- Enabling replicative immortality
- Inducing or accessing vasculature
- Avoiding immune destruction
- Activating invasion and metastasis
- Senescent cells
- Deregulating cellular metabolism
- Genome instability and mutation
- Tumor-promoting inflammation
- Unlocking phenotypic plasticity
- Nonmutational epigenetic reprogramming
- Polymorphic microbes

Hannahan, Cancer Discover, 2022
Stress Management

“Your mother and I are feeling overwhelmed, so you'll have to bring yourselves up.”
Mind-body Programs

- Cognitive Behavioral Therapy
- Support Groups
- Journaling
- Gratitude

- Yoga
- Tai Chi/Qigong
- Meditation
- Breathing
- Emotional Expression
- Expressive Arts
Association of a Mediterranean Lifestyle With All-Cause and Cause-Specific Mortality: A Prospective Study from the UK Biobank

Javier Maroto-Rodriguez, MSc; Mario Delgado-Velandia, MSc; Rosario Ortollá, MD; Aurora Pérez-Cómago, PhD; Stefanos N. Kales, MD; Fernando Rodríguez-Artalejo, MD; and Mercedes Sotos-Prieto, PhD

(1) “Mediterranean food consumption,” items on food intake (e.g., sweets, legumes, red meat, fruits, and nuts)

(2) “Mediterranean dietary habits,” with items about habits and practices around meals (e.g., limiting salt at meals and consumption of healthy beverages)

(3) “physical activity, rest, social habits and conviviality,” with items on resting and collective activities (e.g., regular naps, sedentary habits, collective sports, and socializing with friends)

Maroto-Rodriguez et al., Mayor Clinic Proceedings, 2023
ACS Guidelines Score and *Colorectal* Cancer Incidence

ACS Guidelines Score and Colorectal Cancer Mortality

Thomson et al., Cancer Prev Res, 2014
Colorectal Cancer Recurrence or Death Based on ACS Guidelines

Adherence to the ACS guidelines (score of 5-6) was associated with a 9.0% absolute reduction in the risk of death at 5 years compared with a score of 0 to 4.

Van Blarigan et al., JAMA Oncology, 2018
Colorectal Cancer Recurrence or Death Based on ACS Guidelines (Including alcohol)

The more guidelines followed, the lower the risk

Van Blarigan et al., JAMA Oncology, 2018
Synergy

A phenomena where the whole is more than the sum of the parts
What to Strive For!

- Harness your team: make groups or join groups to help make change happen
- Meditation – at least 10 minutes/day
- Sleep 7–9 hours; establish and keep a routine
- Exercise – 6 days a week – 30–60 minutes; limit sitting; keep moving
- Food 90/10
- Watch your environmental exposures
It is a practice...

The more you practice the better you get....
Start Anticancer Living Today!

What is your next step?