Cardiovascular Risk Factor Burden among Cancer Survivors
Overview

- Background
  - Cardiovascular health (CVH)

- CVH and incident cancer
  - Shared risk factors
  - WHI data

- CVH among cancer survivors
  - FOCUS data

- Future directions
Cardiovascular health (CVH)

mylifecheck.heart.org
# Cardiovascular health (CVH)

<table>
<thead>
<tr>
<th>Health Behaviors</th>
<th>Poor Health</th>
<th>Intermediate Health</th>
<th>Ideal Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking status</td>
<td>Current</td>
<td>Former ≤ 12 months</td>
<td>Never or quit &gt; 12 months</td>
</tr>
<tr>
<td>Body mass index</td>
<td>≥ 30 kg/m²</td>
<td>25 - 29.9 kg/m²</td>
<td>&lt; 25 kg/m²</td>
</tr>
<tr>
<td>Physical activity</td>
<td>None</td>
<td>1-149 min/wk moderate or 1-74 min/wk vigorous or 1-149 min/wk moderate + vigorous</td>
<td>≥ 150 min/wk moderate or ≥ 75 min/wk vigorous or ≥ 150 min/wk moderate + vigorous</td>
</tr>
<tr>
<td>Healthy diet score</td>
<td>0 – 1 components</td>
<td>2 – 3 components</td>
<td>4 – 5 components</td>
</tr>
</tbody>
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<tr>
<th>Health Factors</th>
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<tbody>
<tr>
<td>Total cholesterol</td>
<td>≥ 240 mg/dL</td>
<td>200-239 mg/dL or treated to goal</td>
<td>&lt; 200 mg/dL</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Systolic ≥ 140 mm Hg or Diastolic ≥ 90 mm Hg</td>
<td>Systolic 120-139 mm Hg or Diastolic 80-89 mm Hg or treated to goal</td>
<td>Systolic &lt; 120 mm Hg</td>
</tr>
<tr>
<td>Fasting plasma glucose</td>
<td>≥ 126 mg/dL</td>
<td>100-125 mg/dL or treated to goal</td>
<td>&lt; 100 mg/dL</td>
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Healthy diet score components

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1. ≥ 4.5 cups per day of **fruits** and **vegetables**  
2. ≥ 2 servings of **fish** weekly  
3. ≥ 3.5 ounces of **whole grains** daily  
4. < 36 ounces of beverages with **added sugar** weekly  
5. ≤ 1,500 mg of **sodium** daily
Age-standardized CVH estimates: NHANES 2005-2006

CVH and incident cancer

WHI data
Collaborators

- The Ohio State University (Foraker RE, Abdel-Rasoul M, Jackson RD)
- University of Pittsburgh (Kuller LH, Tindle HA)
- Northwestern University (Van Horn L, Hou L, Allen NB)
- Cornell University (Seguin RA)
- University of Alabama at Birmingham (Safford M)
- The University of Iowa (Wallace RB, Robinson JG)
- University of North Carolina at Chapel Hill (Kucharska-Newton A)
- The George Washington University (Martin, LW)
- Brown University (Agha G)
Background

Cardiovascular disease
- Smoking
- Body mass index
- Physical activity
- Diet
- Blood pressure
- Cholesterol
- Glucose

Cancer
- Smoking
- Obesity
- Physical activity
- Diet
- Immunosuppression
- Radiation
- Infection

http://mylifecheck.heart.org/
http://www.cancer.gov/cancertopics/pdq/prevention/overview/
Methods

**Ideal Health**

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| Blood pressure            | Systolic < 120 mm Hg  
                           | Diastolic < 80 mm Hg |
| Fasting plasma glucose    | < 100 mg/dL       |

- **Ideal CVH score:** number of ideal behaviors and factors at baseline
  - 0 (worst) - 7 (best)
- **Cox proportional hazards regression to estimate the hazard of incident disease by ideal CVH score**
  - 115,306 women free of CVD
  - 129,149 women free of cancer
Results

Results: Cancer site

Conclusions

- A lower ideal CVH score is associated with an increased risk of cancer in older, post-menopausal women
  - Lung
  - Colorectal
  - Breast

- Providers who care for older patients have the opportunity to address these important health behaviors and factors to prevent chronic diseases
CVH among cancer survivors

FOCUS (Follow-up Care Use among Survivors) survey data

Collaborators

- Wake Forest Baptist Medical Center (Weaver KE)
- The Ohio State University College of Public Health (Foraker RE)
- National Institutes of Health (Alfano CM, Rowland JH, Arora NK, Aziz NM)
- University of Connecticut (Bellizzi KM)
- University of Southern California (Hamilton AS)
- Cancer Prevention Institute of California (Oakley-Girvan I)
- Information Management Services (Keel G)
Background

- Heart disease as leading cause of death in the US
  - Heart disease and cancer accounted for nearly 50% of all deaths in 2010
- Early detection and multimodal treatment
  - 2/3 of adults diagnosed with cancer today will be alive in 5 years
  - Many survivors will die of cardiovascular disease rather than their cancer
Methods

FOCUS

- 5 – 14 year cancer survivors
- Breast, prostate, colorectal, and gynecologic cancers
- SEER cancer registries in CA
- White (non-Hispanic, Hispanic), Black, Asian Pacific Islander, American Indian / Alaska Native

CHIS

- California Health Interview Survey (CHIS)
- Adults 50 – 93 years old (age range that included 94% of the FOCUS sample)
- Residing in same CA counties covered by the SEER cancer registries
Results: CVH prevalence

Results: CVH prevalence by site
Conclusions

- Cancer survivors were more likely to be:
  - Overweight or obese
  - Physically inactive
  - Hypertensive
  - Diabetic
  - (Current) non-smokers

  - No difference in history of regular smoking

- CVH differed slightly by cancer site
Future directions

https://www.whi.org/researchers/SitePages/Home.aspx
Future directions in the WHI

- Foraker RE, Weaver KE, Caan BJ, Tindle HA, Paskett ED. Coronary Heart Disease following Breast Cancer Treatment in the WHI LILAC Study.
  - “Multiple-hit hypothesis”

Future directions, continued

- Eaton CB, Rosamond WD. Heart Failure following Cancer Diagnosis in the WHI.
  - Evaluate for effect measure modification by CVH
  - Investigate HF with preserved ejection fraction
Thank you!

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