Report of the
Cancer Control & Intervention Working Group
Melissa Hudson, M.D.

CCSS Investigator Meeting
Williamsburg, VA
June 9-10, 2010
Objectives

• Establish priorities for cancer control and intervention research within the CCSS

• Monitor/facilitate progress of ongoing CCSS cancer control research initiatives

• Engage and mentor new/junior investigators in CCSS cancer control research initiatives
Co-Chairs:
• Melissa Hudson/Kevin Oeffinger
Members
• Jackie Casillas, Children’s Hospital L.A.
• Sharon Castellino, Wake Forest University
• Tara Henderson, University of Chicago
• Paul Nathan, Sick Kids, Toronto
• Kirsten Ness, St. Jude Children’s Research Hospital
• Emily Tonorezos, Memorial Sloan Kettering
• 21 approved concept proposals
  – 16 manuscripts published/in press
  – 5 manuscripts under review (3 revised/resubmit)
  – 4 manuscripts under development
• 7 applications of intent pending concepts
• 9 ancillary studies
  – 4 closed; 5 manuscripts published
  – 6 in progress
Research priorities and focus

• Health status
• Health care utilization
• Health knowledge
• Health behavior
• Health screening
Health status


Health status


• Kirchhoff et al. Unemployment among Adult Survivors of Childhood Cancer: A report from the Childhood Cancer Survivors Study. Medical Care (in press).

• Casillas et al. The impact of insurance type on survivor and general preventive health care utilization in childhood cancer survivors. Cancer (revise/resubmit).
Health status

• Kirchoff et al. **Occupational outcomes** of adult childhood cancer survivors. Social Science Med. Submitted

• Hudson et al. **Longitudinal** changes in **health status**. AOI approved. Concept draft. Awaiting 2007 data.
Health care & health care utilization


Health care & health care utilization


• Caplin et al. Influence of regional access on follow-up care for adult survivors of pediatric cancer (manuscript in preparation).

Health behaviors – Tobacco


Health behaviors – Tobacco

• Kahalley et al. *Psychosocial vulnerabilities increase smoking risk* for adolescent cancer survivors (under review by J Cancer Survivorship).

• Klosky et al. Predictors of *smokeless tobacco* use among survivors of childhood cancer. Concept proposal submitted.

• Klesges et al. *Prevalence and predictors of smoking cessation* in childhood cancer survivors. AOI approved.
Health behaviors – Physical activity


• Wampler et al. Factors associated with **inactivity** in survivors of **lower extremity sarcoma**. Medicine and Science in Sports (under review).
Health behaviors – Physical activity

• A comparison of functional outcomes between sarcoma survivors with surgery or radiation as their local control. AOI approved. Concept under development.

• A comparison of functional outcomes between upper extremity and lower extremity sarcoma survivors. AOI approved. Concept under development.
Health screening


Health screening – breast cancer

- Smith et al. *Inconsistent mammography perceptions and practices* among women at risk of breast cancer following a pediatric malignancy. Cancer Causes & Control (in press).
- Cox et al. *Identifying intervention targets* to increase mammography screening among at-risk childhood cancer survivors. AOI approved.
Health behaviors - Alcohol

• Lown et al. Alcohol consumption patterns and risk factors among childhood cancer survivors compared to siblings and general population peers. Addiction, 2008.
Health knowledge


Evaluation of Cardiovascular Health Outcomes among Survivors: The ECHOS Study

Melissa Hudson & Cheryl Cox
Co-Principal Investigators
R01NR011322
ECHOS

- Aim #1: To assess efficacy of two interventions in increasing CV screening.
- Aim #2: To measure behavioral changes induced by intervention and their mediating effects on CV screening.
- Aim #3: To evaluate the cost-effectiveness of intervention.
ECHOS

- Primary outcome: completion of imaging evaluation of LV systolic function (e.g., echo).
- Hypothesis: Survivors randomized to standard care + APN phone counseling will have a greater proportion completing CV screening.
- Eligibility: CCSS participant, age > 25 years, reporting no cancer-related follow-up in previous 5 years.
- Stratification: age (< 30 years v. ≥ 30 years), sex, frequency of recommended CV screening.
**Baseline assessment**

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- **Standard Care**
  - Individualized Treatment Summary
    - Cancer therapy
    - Cancer-related health risks
    - CV health screening recommendations
    - Risk reduction behaviors

- **Standard Care + APN Tailored Care**
  - 2 Motivational interviewing sessions by telephone @ 1 and 3 weeks
  - 2 Follow-up letters summarizing counseling session content

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- **12-month assessment:**
  - Primary outcome: Cardiac imaging of LV function (yes/no)
  - Secondary outcomes: Moderating/mediating factors; barriers to completing CV screening; replicating costs of intervention
Study Design

Childhood Cancer Survivor Study Cohort (n=10,254)

Eligibility: Age ≥ 25 years, without cancer-related follow-up in previous 5 years (n= 815)

Contact eligible survivors and obtain informed consent

Baseline assessment

Randomize* (n=652 expected of 815 eligible) Ratio 1:1, Stratified by age, sex, recommended frequency of CV follow-up

Standard Care (n=326)

Standard Care + APN Tailored Care (n=326)

Completion of Cardiovascular Health Screening
Encouraging Mammography/MRI and Preventive Opportunities for Women Exposed to Radiation.

The EMPOWER Study

Kevin Oeffinger
Principal Investigator
R01CA134722
EMPOWER

• **Primary aim:** Determine the efficacy of an intervention, consisting of mailed tailored print materials followed by a telephone-delivered Brief MI, on mammogram screening rates compared with an attention control.

• **Hypothesis:** Women in the intervention group will have a 20% higher rate of screening mammography than women in the attention control group.
Secondary Aims:

• Explore moderating and mediating factors that predict mammogram completion and timing of the obtained surveillance.

• Determine the percent of women who have an adjunct breast MRI and explore barriers to completing this imaging test (e.g., insurance/cost, physician authorization).

• Estimate (1) the replication costs of the intervention and (2) costs resulting from the intervention.
• Primary outcome: completion of mammogram
• Eligibility: CCSS female treated with chest radiation, age 25-39 years, reporting breast cancer imaging in previous 2 years and without history of breast cancer
• Randomization stratified by: age 25-33 yrs and 34-39 yrs) and minority status (white, NH and minority)
EMPOWER Schema

CCSS At-Risk Women (N=360)
Ages 25-39 yrs
No history of breast cancer
No mammogram in past 2 yrs

Attention control
N=120

Stepwise two-component intervention
N=240
- Mailed educational intervention
- At 2 wks, telephone delivered TTM/HBM based brief motivational interview

12-month measurements
1^o outcome: mammogram report (yes/no)
2^o outcomes: modifying/mediating factors; breast MRI (yes/no) and barriers to completing an MRI; economic analysis (replicating costs of intervention, costs resulting from intervention)
Childhood Cancer Survivor Study
Women post chest radiation
N=330
Age 25-39 yrs
No mammogram in past 2 yrs

Baseline Survey
Mail or telephone
Administered by CCSS Coordinating Center

Randomize

Intervention Group
N=220
Theoretical foundation: HBM/TTM

Tailored Mailing
- COG breast cancer screening recommendations
- Benefits and other considerations of breast cancer surveillance
- Risk information/laminated placard for physician
- Low cost mammography options

Telephone-delivered Stage-based Brief MI
(delivered at 2 weeks by AMC Denver)
- Reinforce screening guidelines
- Assess readiness
- MI-tailored dialogue:
  - Eliciting change talk and create ambivalence
  - Resolve ambivalence
  - Change decisional balance
  - Develop action plan
- Tailored follow-up letter post MI with laminated

Attention Control Group
N=110

Generic Mailing
- Standard CCSS Newsletter

Telephone Interview
(delivered at 2 weeks by CCSS Center)
- General interview with standard CCSS questions
- Embedded questions regarding mammography practices
- Generic follow-up letter post interview

Mediator Variables

Knowledge
- Screening guidelines
- Harms/benefits of screening for BC

Health Beliefs
- Perception of susceptibility and severity of BC

Decisional Balance
- Pros and Cons of mammography

Self-efficacy
- Confidence and ability to obtain BC screening

Psychological Factors
- Cancer worry
- Depressive, anxious or somatic symptoms

Endpoints (12-Month Post-Randomization Assessment)

Mail, telephone, online
Measurements: repeat baseline survey, collect outcomes
Primary outcome: completed mammogram
Secondary outcomes: moderating/mediating factors, breast MRI, replication cost of intervention and costs resulting from the intervention

Post-Study
Through ongoing CCSS cohort surveys and activities:
- Monitor breast cancer screening practices every two years
- Track morbidity, all-cause mortality, breast-cancer mortality in participants in both groups
Predicting the Risk of Breast Cancer in Women Who Were Treated With Chest Radiation for a Pediatric Malignancy

Chaya Moskowitz
Principal Investigator
R01CA136783
Breast cancer risk by radiation dose to the breast

25% of women diagnosed with BC after chest RT treated with < 20 Gy

Surveillance Recommendations

- Current guidelines:
  - COG: chest RT $\geq 20$ Gy, beginning at age 25 or 8 years after radiation treatment
  - ACS and UK guidelines: start at age 30 / 25, not based on radiation dose
  - Dutch: chest RT $\geq 20$ Gy or TBI, starting at 25; 7 - 19 Gy, starting at age 30

- $\sim 25\%$ of women diagnosed with BC after chest RT treated with $< 20$ Gy

- All exclude other possible risk factors
Develop Risk Calculator

• Build absolute risk (or prediction) model
  – Absolute versus relative risk
  ❖ No absolute risk models for childhood cancer survivors
• Study a range of different risk factors
• Validate the model
• Develop a web-based calculator
Cohort for Model Development

• Original CCSS cohort
  – All females treated with radiation to the chest for their pediatric cancer
  – Includes participants with diagnoses of HL, NHL, Wilms tumor, neuroblastoma, bone cancer, soft tissue sarcomas, leukemia, CNS tumors
  – Radiation fields: mantle, mediastinal, whole lung, TBI, spinal
  – Wide range of radiation doses

• 1677 women, 187 with BC
Validation

• Expanded CCSS cohort
  – Treated with chest RT between 1987-1999
  – 1225 women, ~37 with BC

• Dutch Childhood Oncology Group (DCOG) Late Effect Registry (LATER) Cohort
  – Population-based cohort diagnosed with pediatric cancer who survived at least 5 years
  – 1087 treated with chest RT between 1970-1999, 60 with BC
Gail Model Predictors

- Age
- Number of 1\textsuperscript{st} degree relatives with breast cancer
- Age at first live birth
- Age at menarche
- Number of previous breast biopsies
- Biopsy with atypical hyperplasia
Treatment Related Factors

- RT dose/volume to the chest
- RT dose fractionation
- RT to the pelvis or abdomen
- Alkylating agent chemotherapy
- Primary childhood cancer diagnosis
- Age at exposure
- Interval from primary cancer diagnosis
Other Risk Factors

- Age at menopause
- Years with intact ovarian function after radiation
- Hormone replacement therapy / oral contraceptive use
- Body mass index
New “priority” projects

• Longitudinal health screening
  – Cancer, cardiovascular, other health outcomes

• Longitudinal health behaviors
  – Smoking, alcohol, physical activity

• Relationship of health behaviors to chronic disease, health status, QOL, etc...

• Follow-up health knowledge