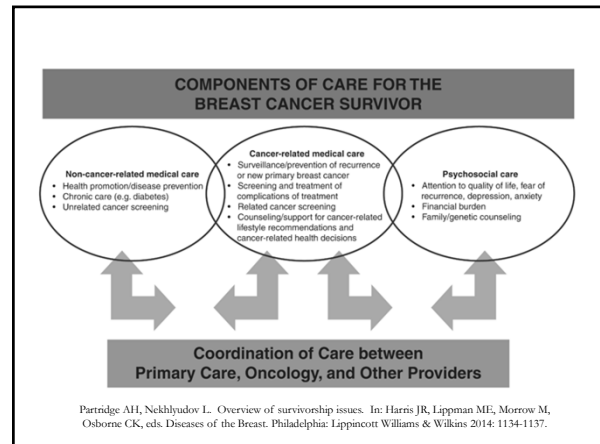
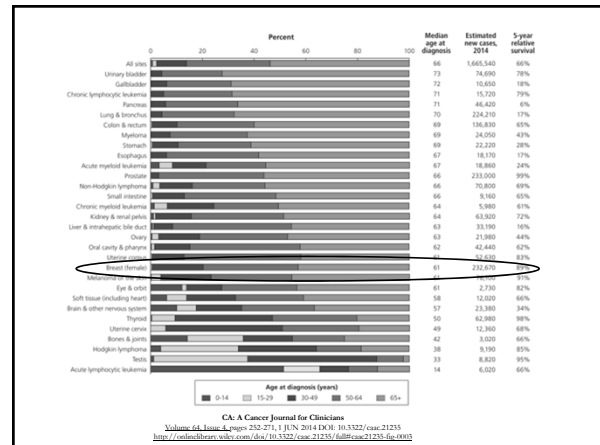


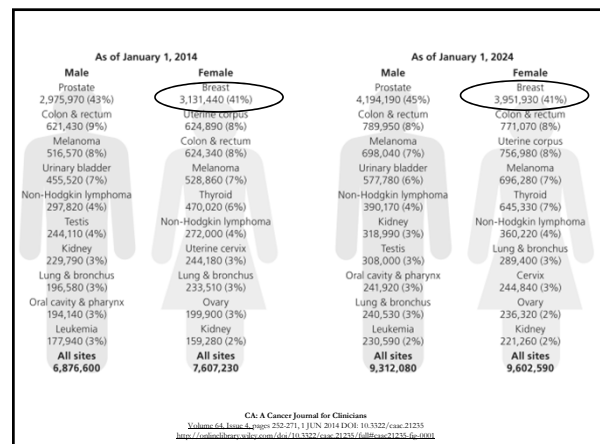
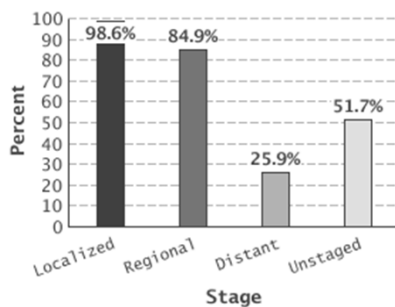
- AR is a 70 yo female with **BREAST CANCER** - Invasive lobular dx 2006, stage IIB, mastectomy, chemo (taxol/AC), XRT. Completed tamoxifen, AI. Neuropathy, joint aches.
  - Surveillance with mammograms, surgical oncologist, oncology, GYN, PCP!!!
  - Up to date with other screening and prevention
  - Numerous other medical conditions managed by other specialists
  - Worried about cancer all the time!

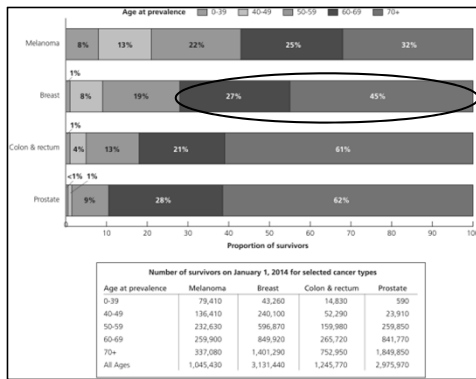


## Epidemiology



## Survival by Stage





CA: A Cancer Journal for Clinicians  
Volume 64, Issue 4, pages 252-271, 11/15/2014 DOI: 10.3322/caac.21255  
<http://cebscholars.aacr.org/doi/10.3322/caac.21255.full.pdf+suppl>

## Surveillance for Recurrences

## Prediction Models

**Patient Information**

Age: 58  
Comorbidity: Perfect Health  
ER Status: Positive  
Tumor Grade: Grade 3  
Tumor Size: 0.1 - 1.0 cm  
Positive Nodes: 0  
Calculate For: Relapse  
10 Year Risk: 21  
Adjuvant Therapy Effectiveness: Horm: Aromatase Inhibitor for 5 yrs  
Chemo: CA<sup>1</sup>CMF, F12506%

**No additional therapy:**  
76.0% alive and without cancer in 10 years.  
28.6 relapse.  
4.4% of other cases.

**With hormonal therapy:** Benefit = 18% without relapse.

**With chemotherapy:** Benefit = 4.4% without relapse.

**With endo:** predict

<https://www.adjuvantonline.com/>

[www.predict.nhs.uk/predict\\_v1.2.html](http://www.predict.nhs.uk/predict_v1.2.html)

## Surveillance after Breast Cancer

AMERICAN CANCER SOCIETY/AMERICAN SOCIETY OF CLINICAL ONCOLOGY BREAST CANCER SURVIVORSHIP CARE GUIDELINE		
Clinical Domain	Recommendation	Level of Evidence
<b>Surveillance for Breast Cancer Recurrence</b>		
History and Physical	It is recommended that primary care clinicians: Should individualize clinical follow-up care provided to breast cancer survivors based on age, specific diagnosis and treatment protocol and as recommended by the treating oncology team.	2A - NCCN guideline
	Should make sure the patient receives a detailed cancer-related history and physical examination every 3 to 6 months for the first 3 years after primary therapy, every 6 to 12 months for the next 2 years, and annually thereafter.	2A - NCCN guideline
Screening the breast for local recurrence or a new primary breast cancer	It is recommended that primary care clinicians: Should refer women who have received a unilateral mastectomy for annual mammography on the intact breast and for those with lumpectomies an annual mammography of both breasts.	2A - NCCN guideline
	Should not refer for routine screening with MRI of the breast unless the patient meets high risk criteria for increased breast cancer surveillance as per ACS Guidelines.	2A - NCCN guideline
Laboratory Tests and Imaging	It is recommended that primary care clinicians should not offer routine laboratory tests or imaging, except mammography if indicated, for the detection of disease recurrence in the absence of symptoms.	2A - NCCN guideline

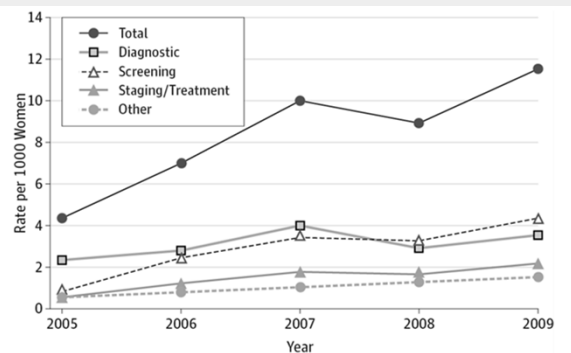
ASCO GUIDELINES [www.asco.org/guidelines/breastsurvivorship](http://www.asco.org/guidelines/breastsurvivorship)

Table 3. Percent of US Physicians Recommending Routine Use of Tests and Exams to Detect Recurrent Cancer

	Breast		Colon	
	Primary Care Physicians n=1072	Oncologists n=1130	Primary Care Physicians n=1072	Oncologists n=1130
	Weighted % (95% CL %)	Weighted % (95% CL %)	Weighted % (95% CL %)	Weighted % (95% CL %)
<b>Routine Blood Tests:</b>				
Tumor Markers	51 (50-55)	31 (29-34)	82 (80-85)	89 (86-91)
Complete Blood Count (CBC)	79 (76-82)	69 (67-72)	89 (87-91)	83 (81-85)
Liver Function	79 (76-82)	66 (64-69)	88 (86-90)	83 (81-85)
Fecal Occult Blood			78 (76-81)	65 (62-68)
<b>Imaging Tests:</b>				
Annual Mammograms	99 (98-100)	99 (99-100)		
Any CT Scan	10 (8-13)	3 (2-5)	22 (19-24)	26 (23-29)
Any MRI	19 (16-21)	5 (3-6)		
Any Chest X-Ray	42 (39-45)	22 (20-25)	35 (33-38)	23 (20-25)
Any PET	8 (6-10)	1 (1-2)	9 (7-11)	3 (2-4)
Any Bone Scan	23 (20-25)	3 (2-4)	14 (12-16)	1 (1-2)
Colonoscopy 1-3 years			90 (88-92)	65 (62-68)
Colonoscopy 4-5 years			10 (8-11)	30 (27-32)

Potosky et al. JGIM 2011

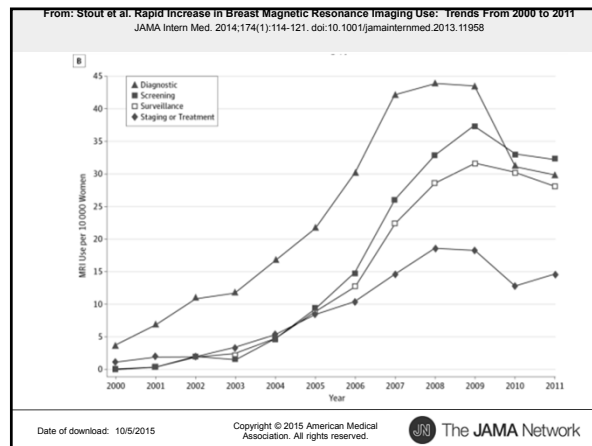
From: Wernli et al. Patterns of Breast Magnetic Resonance Imaging Use in Community Practice  
JAMA Intern Med. 2014;174(1):125-132. doi:10.1001/jamainternmed.2013.11963



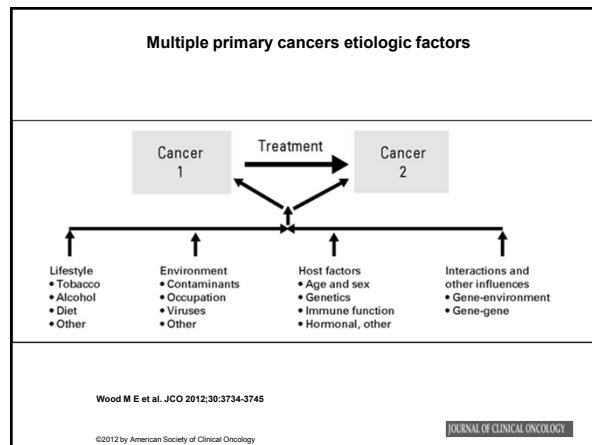
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The JAMA Network



## Second/Secondary Cancers



### Systematic review

## Risk of second non-breast cancer after radiotherapy for breast cancer: A systematic review and meta-analysis of 762,468 patients

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Department of Experimental Clinical Oncology, Aarhus University Hospital, Denmark



### ARTICLE INFO

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### ABSTRACT

**Background and purpose:** Radiotherapy for breast cancer both decreases loco-regional recurrence rates and improves overall survival. However, radiotherapy has also been associated with increased second cancer risk at exposed sites. In this meta-analysis, we estimated the risk of second non-breast cancers after radiotherapy for breast cancer. **Material and methods:** The databases Medline/Pubmed, Cochrane, Embase and Cindl were systematically searched, for cohort studies on second cancers after radiotherapy for breast cancer, from inception to August 1st 2013. Included studies were to report the relative risk (RR) of second cancers comparing irradiated female breast cancer patients to unirradiated patients. Primary endpoints were all second non-breast-cancers and second cancers of the lung, esophagus, thyroid and second sarcomas. **Results:** Thirteen studies comprising 762,468 breast cancer patients were included in the meta-analysis. Five or more years after breast cancer diagnosis radiotherapy was significantly associated with an increased risk of second non-breast cancer RR 1.12 (95% confidence interval [CI] 1.06-1.19), second cancer of the lung RR 1.39 (95% CI 1.28-1.51), esophagus RR 1.53 (95% CI 1.01-2.31) and second sarcomas RR 2.53 (95% CI 1.74-3.70). The risk increased over time, and was highest 15 or more years after breast cancer diagnosis, for second lung RR 1.66 (95% CI 1.36-2.01) and second esophagus cancer RR 2.17 (95% CI 1.11-4.25). There was no significant association between radiotherapy and second thyroid cancer. **Conclusions:** Radiotherapy for breast cancer is significantly associated with increased risks of second non-breast cancer, overall and in organs adjacent to the previous treatment fields. Despite a relative small absolute risk, the growing number of long-time survivors after breast cancer warrants the need for normal tissue sparing radiotherapy techniques.

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## Genetic Syndromes

- **Hereditary Breast and Ovarian Syndrome**
  - BRCA1 - Breast, ovarian, prostate, pancreatic cancer and colon cancer
  - BRCA2 - breast, ovarian, prostate, pancreatic, melanoma, Fanconi anemia
- **Li-Fraumeni - TP53, CHEK2 gene mutations**
  - Breast cancer, osteosarcoma, sarcomas, leukemia, brain tumors, adrenal tumors.
- **Cowden - PTEN gene**
  - Breast, thyroid, endometrial, kidney, colorectal cancers and melanoma
- **Peutz-Jeghers syndrome - STK11 gene**
  - GI hamartomas, breast, pancreas, cervix, ovary
- **Hereditary Diffuse Gastric Cancer**
  - Breast, prostate, colon cancers

<https://ghr.nlm.nih.gov/condition/breast-cancer>

## Secondary/second cancers

- Contralateral breast cancer -0.5-1% risk per year
- Chemotherapy may be associated with secondary leukemias and MDS
- Radiation appears to increase risk for secondary cancers in the field (typically years later)

## **Non-Cancer Late- and Long-Term Effects**

## **Surgery**

- Lymphedema
- Arm/shoulder pain
- Decreased range of motion
- Body image

## **Radiation**

- Cardiac effects
  - valvular, restrictive CM, conduction
- Fibrosis
- Fatigue
- Skin changes
- ? Thyroid dysfunction

## **Chemotherapy\***

- Doxorubicin – cardiomyopathy
- Cyclophosphamide – premature menopause, secondary leukemia/MDS
- Paclitaxel/docetaxel – neuropathy
- Carboplatin – neuropathy, hearing loss, cardiac
- Trastuzumab – cardiomyopathy
- All – cognitive changes, fatigue, weight gain

\*Typical treatments for early stage breast cancer

## **Hormone Therapy**

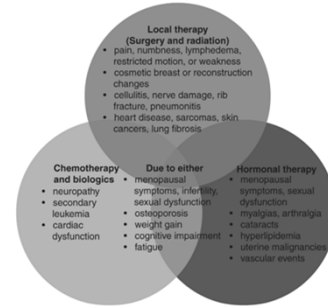
- Tamoxifen
  - Clotting, uterine cancer, hot flashes, vaginal bleeding, increased TG
- Aromatase inhibitors (exemestane, anastrozole, letrozole)
  - Osteoporosis, musculoskeletal pain, vaginal dryness, increased cholesterol
- Androgen deprivation (leuprolide, goserelin)
  - Hot flashes, osteoporosis, metabolic syndrome, fatigue

## **Psychosocial Care**

## Psychosocial Care

- Patients have expressed ongoing need for emotional support.
- Patients look to both oncology and PCPs, but data suggest that neither adequately address these needs.
- Comparing PCPs versus oncology
  - Patients have reported confidence in PCP caring for their psychosocial wellbeing

## LONG-TERM AND LATE PHYSICAL EFFECTS IN BREAST CANCER SURVIVORS



Partridge AH, Nekhlyudov L. Overview of survivorship issues. In: Harris JR, Lippman ME, Morrow M, Osborne CK, eds. Diseases of the Breast. Philadelphia: Lippincott Williams & Wilkins 2014: 1134-1137.

## Psychosocial Wellbeing

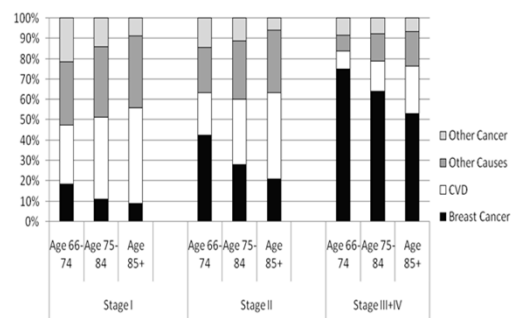
- Attention to the psychosocial well-being of the cancer survivor has increased recently.
- Anxiety, depression, and fatigue are common complaints that may benefit from structured exercise programs.
- Return to work following breast cancer treatment differs by socio-economic status.
- Breast cancer survivors at risk for financial burden following treatment.

## Health Promotion/Prevention

## Lifestyle and breast cancer outcomes

- Obesity
  - Increased risk of recurrence, mortality
- Exercise
  - Beneficial for psychosocial outcomes, upper arm mobility
- Smoking
  - Increased risk of recurrence, breast cancer and overall mortality
- Alcohol
  - Mixed findings

## Leading Causes of Death among Breast Cancer Patients



Patnaik et al, Breast Cancer Research 2011

## Follow up Care

VOLUME 27 • NUMBER 15 • MAY 20 2009

JOURNAL OF CLINICAL ONCOLOGY

EDITORIAL

### “Doc, Should I See You or My Oncologist?” A Primary Care Perspective on Opportunities and Challenges in Providing Comprehensive Care for Cancer Survivors

Larissa Nekhlyudov, Department of Ambulatory Care and Prevention, Harvard Medical School; and Department of Medicine, Harvard Vanguard Medical Associates, Boston, MA



## PCP/Survivors' Views

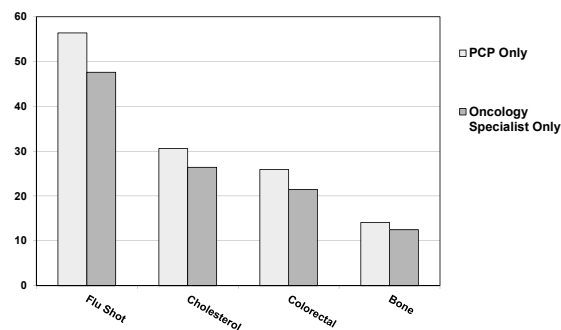
- PCPs
  - Willing to care for breast cancer survivors (*Grunfeld 1995; Nissen 2007; Del Giudice, 2009; Cheung 2009*)
- Survivors (*Mao 2009*)
  - ~75% confident in PCPs providing general care, psychosocial support and health promotion
  - ~ 50% confident about knowledge of cancer follow up, late effects, and treating symptoms related to cancer

Table 2. Perceptions of PCPs' Skills Regarding Follow-Up Cancer Care

	Primary Care Physicians (n=1072)	Oncologists (n=1130)
	Weighted % Who Either Strongly or Somewhat Agreed With Statement (95% CI's)	
For Breast Cancer Survivors		
PCPs have skills necessary to provide follow-up care related to the effects of cancer or its treatment	59 (56-62)	23 (21-26)
PCPs have skills necessary to initiate appropriate screening or diagnostic work-up to detect recurrent cancer	75 (72-77)	38 (35-41)
PCPs are better able than oncologists to provide psychosocial support	51 (48-54)	8 (6-10)

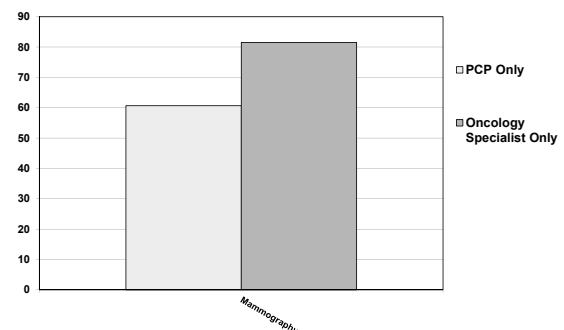
Potosky et al. JGIM 2011

### Receipt of Care by Physician Mix Seen: Breast Cancer Survivors



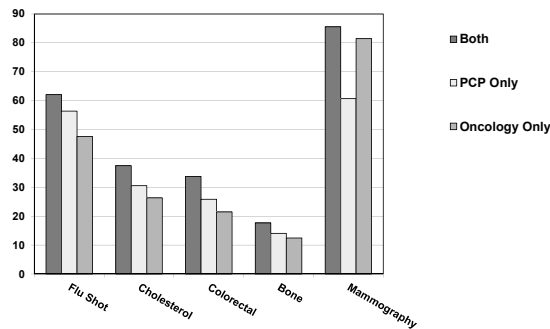
Snyder et al., JGIM, 2009; courtesy Dr. Snyder

### Receipt of Care by Physician Mix Seen: Breast Cancer Survivors



Snyder et al., JGIM, 2009; courtesy Dr. Snyder

## Receipt of Care by Physician Mix Seen: Breast Cancer Survivors



Snyder et al., JGIM, 2009; courtesy Dr. Snyder

## PCP versus Oncology Care: Impact Breast Cancer Outcomes?

Randomized Trial (median 3.5 years follow-up)	Trial Group Number of patients (%)		Risk Difference CC – PCP (95% CI)
	PCP n = 483	Specialist n = 485	
Rate of serious clinical events (35 SCEs over 3,240 patient years)	17 (3.5%)	18 (3.7%)	0.19% (-2.26; 2.65)
Recurrence	54 (11.2%)	64 (13.2%)	2.02% (-2.13; 6.16)
Death (all causes)	29 (6.0%)	30 (6.2%)	0.18% (-2.90; 3.26)

- No difference in health-related quality of life over time
- No difference in anxiety or depression over time
- PCP patients more satisfied

Grunfeld et al JCO 2006

Courtesy Dr. Grunfeld

## Survivorship Care Plan

<http://www.asco.org/practice-research/survivorship-care-clinical-tools-and-resources>

- AR is a 70 yo female with **BREAST CANCER - Invasive lobular dx 2006, stage IIB, mastectomy, chemo (taxol/AC), XRT. Completed tamoxifen, AI. Neuropathy, joint aches.**
  - Surveillance with mammograms, surgical oncologist, oncology, GYN, PCP!!!
  - Up to date with other screening and prevention
  - Numerous other medical conditions managed by other specialists
  - Worried about cancer all the time!

## Breast Cancer Survivorship Resources

- ACS-ASCO Breast Cancer Survivorship Guideline  
<http://jco.ascopubs.org/content/early/2015/12/07/JCO.2015.64.3809.full>
- ASCO Survivorship Compendium  
<http://www.asco.org/practice-research/asco-cancer-survivorship-compendium>
- NCCN Breast Cancer Guideline <https://www.nccn.org>
- UptoDate –  
<http://www.uptodate.com/contents/approach-to-the-patient-following-treatment-for-breast-cancer>