Cancer Survivorship

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Objectives

• Define cancer survivorship.
• Describe lead-time & length-time bias and how they might contribute to over-diagnosis.
• Recognize the 5 most common cancers with which adults in the U.S. live.
• Describe preventative care and health maintenance strategies for cancer survivors.
• Recognize the importance of a survivor care plan.
• Identify late effects of common cancers and their treatments.
1. Awareness of Cancer Survivors Needs
2. Create a Survivorship Care Plan
3. Develop Guidelines
4. Measurable Quality Indicators
5. Care for Diverse Populations
6. Comprehensive Control Plans
7. Professional Education and Training for providers
8. Eliminate employment discrimination to survivors
9. Cancer Survivors - Access to Affordable Care
10. Research to Guide Survivorship care

(Institute of Medicine, 2011)
Who’s a “cancer survivor”?

• A little history...
• Anyone living with the diagnosis of cancer – from initial diagnosis through all phases of the illness.
• Families of those diagnosed with cancer.
Who will be diagnosed with cancer?

- About HALF of all men in the U.S.
- About ONE-THIRD of all women in the U.S.
Estimated Number of Cancer Survivors in the US

![Graph showing the estimated number of cancer survivors in the US from 1970 to 2020 with projections for 2015 and 2020.](image)

New Cases, Deaths and 5-Year Relative Survival

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</thead>
<tbody>
<tr>
<td>5-Year Relative Survival</td>
<td>48.7%</td>
<td>49.1%</td>
<td>52.5%</td>
<td>57.7%</td>
<td>61.0%</td>
<td>64.0%</td>
<td>67.3%</td>
<td>68.5%</td>
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Which of the following health care-related changes is(are) cause(s) of increased numbers of cancer survivors? (Choose all that apply)

A. Increased use of screening tests  
B. Population aging  
C. Improved treatments  
D. ABFM Maintenance of Certification simulations
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- ✔ A. Increased use of screening tests
- ✔ B. Population aging
- ✔ C. Improved treatments
- ✔ D. ABFM Maintenance of Certification simulations
How might increased use of screening tests improve the 5-year survival rate without actually affecting cancer survival? (Choose all that apply)

A. By detecting cancers that would have otherwise been diagnosed clinically years later (lead time bias).
B. By detecting slow-growing cancers at an early stage when treatment may be effective but unnecessary (length-time bias)
C. By attributing more deaths to cancer due to increased detection (attribution bias).
D. It probably can’t. I don’t know. I hate fractions (anti-math bias).
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Lead time bias
Length time bias

Rapidly Progressive (6 cases)

Slowly Progressive (6 cases)

\( \circ \) = Time of disease onset.
\( \text{Dx} \) = Time when disease is clinically obvious without testing.
Which of the following cancers has the highest 5-year survival rate?

A. Breast cancer
B. Colon cancer
C. Lung cancer
D. Prostate cancer
E. Lymphoma
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Table 1. Incidence, Prevalence, and Survival Rates for Selected Cancers in Adults

<table>
<thead>
<tr>
<th>Cancer type</th>
<th>Incidence (per 100,000 persons, age-adjusted)*</th>
<th>Prevalence†</th>
<th>Five-year survival rate (%)‡</th>
<th>Cancer-related mortality rate (per 100,000 persons per year)</th>
</tr>
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<tbody>
<tr>
<td>Breast (women)</td>
<td>123.8</td>
<td>2,829,041</td>
<td>89.2</td>
<td>22.6</td>
</tr>
<tr>
<td>Prostate (men)</td>
<td>152.0</td>
<td>2,617,682</td>
<td>99.2</td>
<td>23.0</td>
</tr>
<tr>
<td>Colorectal</td>
<td>45.0</td>
<td>1,154,481</td>
<td>64.9</td>
<td>16.4</td>
</tr>
<tr>
<td>Melanoma</td>
<td>21.1</td>
<td>921,780</td>
<td>91.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>19.7</td>
<td>509,065</td>
<td>69.0</td>
<td>6.4</td>
</tr>
<tr>
<td>Acute leukemia (myeloid and lymphoblastic)</td>
<td>12.8</td>
<td>287,963</td>
<td>56.0</td>
<td>7.1</td>
</tr>
<tr>
<td>Hodgkin lymphoma</td>
<td>2.8</td>
<td>181,928</td>
<td>85.1</td>
<td>0.4</td>
</tr>
</tbody>
</table>

*—Based on cases from 2006 to 2010.
†—Point prevalence of disease in 2013.
‡—From 2003 to 2009.

Information from reference 2.
Estimated Number of Persons Alive in the U.S. Who Were Diagnosed With Cancer, by Site (as of January 1, 2014)
Total Cancer Survivors, N=14.5M

Cancer survivors are (choose all that apply):

A. More likely to receive influenza vaccination than the general population.
B. Less likely to receive smoking cessation counseling than the general population.
C. More likely to be up-to-date on cervical cancer screening than the general population.
D. More likely to rate their health-related quality-of-life as “poor” compared to the general population.
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General prevention and health maintenance

• Evidence shows that cancer survivors receive less preventative care and meet fewer quality measures of chronic diseases compared to same-age non-cancer patients.

• Why?
  – Fewer cancer survivors claim to have a PCP
  – Cancer survivors and their care providers may tend to focus on their cancer history to the detriment of their other health risks
Care Coordination

• There is limited evidence that cancer survivors derive health benefits from care coordinated among specialties, including family medicine.
  – Increased rates of preventative services offered
  – Improved adherence to chronic disease guidelines

• Patients express a preference for maintaining care with their cancer specialist after active treatment, but there is no evidence of benefit.
Care Coordination

• With other diseases and specialties, there is ample evidence that patients fare better when physicians coordinate care.

• Think of PCMH, chronic disease management, cardiovascular disease care, etc.
Diagnosis  
Treatment  
Early Follow-Up  
Survivorship Treatment Follow-Up  
Long-Term Post-Treatment Follow-Up

- Surveillance
- Screening new cancers
- Symptom management
- Health promotion
- PCP communication
- Treatment summary/Survivorship Care Plan

Pediatric / Adult Oncology Specialist
Nurse Practitioner / Physician Assistant
Primary Care Provider + Specialists

(Feuerstein & Ganz, 2011)
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<th>Table 2. Core Elements of the Survivorship Care Plan for Adults Completing Cancer Treatment</th>
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| Cancer treatment history  
Potential long-term and late effects of treatment  
Recommended surveillance for long-term and late effects  
Recommended surveillance for recurrence and new cancers  
Specific information about the timing and content of recommended follow-up  
Recommendations on preventive practices, and how to maintain health and well-being  
Information on legal protections regarding employment and access to health insurance  
Availability of psychosocial services in the community |

*Information from reference 1.*
The Survivorship Care Plan

- To summarize and communicate what took place during cancer treatment
- To describe present and potential late effects of cancer treatments
- To communicate to the survivor and other health care providers what has been done and what needs to be done in the future
- To promote a healthy lifestyle to prevent recurrence and to reduce the risk of other comorbid conditions
Causes of Late Effects

- Surgery
- Chemotherapy/Immunotherapy
- Hormone Therapy
- Radiation Therapy
- Psychological effect of the cancer experience
Late Effects of Cancer

• Surgical sequelae
  – Brain tumors: Loss of function, cognitive impairment
  – Bone tumors: Amputation, limb salvage
  – Kidney tumor: Nephrectomy
  – Nerve Damage
  – Body Image Disturbance
Late Effects of Cancer

- **Avascular necrosis:** Steroids
- **Cardiomyopathy/CHF:** Anthracycline chemotherapy, Radiation to the chest
- **Infertility:** Alkylating agents, Radiation
- **Endocrine (Growth hormone deficiency, gonadotropin, thyroid):** Radiation
- **Renal:** Cisplatin, Ifosfamide, Radiation, Surgery
- **Lung damage:** Radiation, Bleomycin
- **Skin damage:** Radiation, GVHD
Late Effects of Cancer

• **Secondary malignancy:**
  - Skin cancer: Radiation
  - Breast cancer: Radiation
  - Bone tumors: Radiation
  - Secondary AML: Etoposide, Alkylating agents

• **Neuro/Neurocognitive:** Intrathecal chemotherapy, Cranioradiation, Chemotherapy - Vinca alkaloids, Oxaliplatin, Cisplatin, Velcade, Taxol

• **Psychosocial:** Overall cancer experience
  - Depression, anxiety, limits in job options, health insurance
Late Effects Risk Factors

- Type of cancer
- Location of cancer
- Age during treatment
- Type of treatment
- Side effects experienced during treatment
Which of these follow-up recommendations has demonstrated benefit in the care of breast cancer survivors after curative-intent therapy?

A. Annual breast self-exam
B. Annual breast MRI
C. Annual mammography
D. Annual chest x-ray
E. None of the above
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D. Annual chest x-ray
E. None of the above
Breast cancer

• No evidence that more intensive approaches are better than mammography for:
  – Detecting recurrences
  – Improving survival
  – Improving quality of life

Breast cancer survivors

• Recommend:
  – achieving/maintaining normal range BMI
  – 150 minutes per week of aerobic exercise
  – Low-fat, plant-based diet

• Late effects of chemo:
  – Heart failure
  – Pulmonary toxicity
  – leukemia
Breast cancer survivors

• Anti-estrogen therapy is commonly employed for 5 years after curative-intent treatment and may cause:
  – Hot flashes
  – Sexual dysfunction
  – Uterine cancer

• Aromatase inhibitors, c/w anti-estrogen therapy:
  – Cause fewer VTE, fewer uterine cancers
  – More arthralgias and fractures

• Tailor your prevention recommendations and screening appropriately for the therapy
Breast cancer survivors

- Lymphedema occurs in up to 20% of women with axillary lymph node dissection.
- Treatments include compression and physical therapy.
A 65 year old male undergoes radiotherapy for localized prostate cancer. Which of the following conditions is most likely to be the cause of his death?

A. Recurrent prostate cancer
B. Bladder cancer
C. Rectal cancer
D. Cardiovascular disease
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✔ D. Cardiovascular disease
Prostate cancer survivors

• More likely to suffer consequences of treatment than to die of their disease.
• Need to have other disease prevention addressed.
• Should be counseled on CV risks as with any other same-age male.
Prostate cancer survivors

• Curative-intent treatment for prostate cancer includes:
  – Surgery +/- ADT for high-grade
  – Radiation +/- ADT for high-grade

• Second-line therapy: androgen deprivation
  – Eventually, PrCA develops resistance to this.

• Metastatic disease: chemotherapy and radiation
Prostate cancer survivors

• Common adverse effects of treatment:
  – Sexual dysfunction (XRT and surgery about the same rates)
  – Urinary incontinence (XRT and surgery about the same rates)
  – ED and UI from XRT may begin months or years after treatment
  – Radiation may cause proctitis, hematuria, rectal bleeding, diarrhea and secondary cancers (bladder & rectal)
A 50 year old male with rectal bleeding was found to have a large sigmoid cancer which the endoscope could not pass. He was treated with surgical resection and adjuvant chemotherapy and staged as IIB (no nodes involved, no distant mets). When should he have his next colonoscopy?

A. As soon as possible
B. In one year
C. In 3-5 years
D. In 10 years (return to routine screening)
A 50 year old male with rectal bleeding was found to have a large sigmoid cancer which the endoscope could not pass. He was treated with surgical resection and adjuvant chemotherapy and staged as IIIB (no nodes involved, no distant mets). When should he have his next colonoscopy?

A. As soon as possible
B. In one year
C. In 3-5 years
D. In 10 years (return to routine screening)
Colon cancer survivors

• Risk for recurrence depends on grade and stage of cancer
• 95% of recurrences are within the first 5-years after diagnosis and treatment
• Risk for second colon cancers is increased
Colon cancer survivors

• Complications of disease and treatment include:
  – Adhesions
  – Ostomy care
  – Radiation proctitis
  – Diarrhea
  – Fecal incontinence
  – Abdominal pain
  – Sexual dysfunction
  – Fatigue
Which of the following cancer has seen the greatest percentage increase in new diagnoses in the last 20 years?

A. Breast cancer
B. Colon cancer
C. Leukemia
D. Melanoma
E. Prostate cancer
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✔ D. Melanoma
Melanoma survivors

- Annual skin exam
- Patient education ("ABCDE") and periodic skin self-exam
- Sun avoidance
  - Some evidence that sunscreens reduce risk
- Primary treatment is results in predictable adverse effects – scarring, pain
- Treatment of advanced disease requires specialized care
In a woman with a history of chest or axillary radiation treatment for Hodgkin lymphoma 10 years ago, screening for which of one of the following cancers is recommended?

A. Breast cancer
B. Lung cancer
C. Thyroid cancer
D. Secondary blood cancers
E. All of the above
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C. Thyroid cancer
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E. All of the above
Hodgkin survivors

• Consider cardiac stress testing and echocardiography at 10-year intervals
• If neck radiation, annual TSH
• If chest or axillary radiation, initiate annual breast screening at 8-10 years post-therapy or at 40 years of age (whichever comes first)
• Breast MRI in addition to mammography for women who received chest or axillary radiation between 10-30 years of age
Nonhodgkin lymphoma survivors

- Late effects vary based on type of lymphoma and treatment, and could consist of:
  - Cardiomyopathy
  - Thyroid dysfunction
  - Myelodysplasia
  - Acute leukemia
  - Breast, bladder, lung, skin, thyroid, and head and neck cancers
  - Infertility, sexual dysfunction
Leukemia survivors

- Late effects vary based on type of leukemia and treatment – similar to nonhodgkin lymphoma

- BMT survivors have increased risk of:
  - Nonmelanoma skin cancers
  - Second hematologic malignancies
  - Post-transplant lymphoproliferative disorders
The End