My Orthopedic Patient Has A History Of Cancer: What Do I Need To Know?

Barbara Feltman, PT, DHS, CLT-LANA
Community Health Network
Indianapolis IN
bfeiltman@acommunity.com
mamapt@gmail.com

Learning objectives
- Describe cancer
- Describe cancer treatments
- Recognize long-term and late effects
- How they affect PT decisions
- Employ evidence-based knowledge
- Impairments
- Functional limitations
- Precautions

People diagnosed with cancer 2013

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>29%</td>
</tr>
<tr>
<td>Prostate</td>
<td>28%</td>
</tr>
<tr>
<td>Lung, Bronchus</td>
<td>14%</td>
</tr>
<tr>
<td>Colon, Rectum</td>
<td>9%</td>
</tr>
<tr>
<td>Urinary Bladder, Uterus, Thyroid</td>
<td>6%</td>
</tr>
<tr>
<td>Kidney, Melanoma</td>
<td>5%</td>
</tr>
<tr>
<td>Leukemia, Oral, Pancreas, Ovary, NHL</td>
<td>4%</td>
</tr>
</tbody>
</table>

There are 13.7 million survivors now

- 64% 8.76 million > 5 years
- 40% 5.5 million 10+ years
- 15% 2 million 20+ years

59% of survivors are 65 or older

There will be almost 18 million survivors by 2022

70% of children treated for osteosarcoma will survive their cancer

What makes this patient different?

What extra precautions should I take with this patient?

What problems will this patient have that will impact my decision-making?

What problems will this patient have that will impact my decision-making?
Who is defined as a survivor?

“The person from time of diagnosis through the balance of his or her life”

“Includes family members, friends and caregivers who are impacted by the survivorship experience”

Often described in terms of 5-year survival rates

Terms that you need to know

- Tumor
- Benign vs malignant
- Primary vs secondary
- In situ vs infiltrating
- Inflammatory
- Metastatic

Screening and diagnosis

- Tumor markers
- Genomic assay
  Oncotype DX
  Cancer genome atlas

What do we really know about red flags?

Evidence for “Red Flags”

Early warning signs

- Change in bowel-bladder habits
- A sore that does not heal
- Unusual bleeding or discharge
- Thickening or lump
- Indigestion or difficulty swallowing
- Obvious changes in wart or mole
- Nagging cough or hoarseness

How is cancer staged?

- Tumor
  - Tx, T0, Tis, T1, T2, T3, T4
- Node
  - N0, N1, N2, N3
- Metastasis
  - M0, M1

Cancer genome atlas

http://guardianlv.com
What is cancer grading?

**High grade** – poorly differentiated (not similar to normal cells)
Example: Grade 3 for br CA

**Low grade** – well differentiated (similar to normal cells)
Example: Grade 1 for br CA

What does patient mean by ER +?

ER +/-
PR +/-
Her2Neu +/-
Triple negative
BRCA 1, 2 testing

How do cancers grow and spread?

- Cells multiply
- Add vascularization
- Mechanical pressure
- Release of lytic enzymes
- Decreased adhesion
- Increased motility

Where does cancer like to spread to?

<table>
<thead>
<tr>
<th>Bone</th>
<th>Liver</th>
<th>Lung</th>
<th>Brain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>Breast Uterus</td>
<td>Breast Uterus</td>
<td>Breast</td>
</tr>
<tr>
<td>Uterus</td>
<td>Ovary</td>
<td>Ovary</td>
<td>Lung</td>
</tr>
<tr>
<td>Prostate</td>
<td>Lung</td>
<td>Prostate</td>
<td>(other)</td>
</tr>
<tr>
<td>Lung</td>
<td>Thyroid</td>
<td>Lung</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Colorectal</td>
<td>Colorectal</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Stomach</td>
<td>Stomach</td>
<td>Stomach</td>
</tr>
<tr>
<td>Stomach</td>
<td>Pancreas</td>
<td>Pancreas</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Pancreas</td>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Kidney</td>
<td>Kidney</td>
<td>Kidney</td>
</tr>
<tr>
<td>Kidney</td>
<td>Melanoma</td>
<td>Melanoma</td>
<td>Melanoma</td>
</tr>
<tr>
<td>Melanoma</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
<td>Lung (other)</td>
</tr>
</tbody>
</table>

Cancer treatments

1. **Surgery**
2. **Chemotherapy**
3. **Radiation therapy**
4. **Hormonal therapies**

What kind of treatment did this patient have for the cancer?

What do I need to know?
What impairments to expect

Short term
Long term
Late effects

How will these impact your decisions?

Scars and other skin changes
Persistent fatigue
Pain
Reproductive system changes
Damage to muscles
Osteoporosis
Vasodilation
Altered movement patterns
Impaired GI function

Scars and other skin changes
Persistent fatigue
Pain
Reproductive system changes
Damage to muscles
Osteoporosis
Vasodilation
Altered movement patterns
Impaired GI function

Cancer surgeries

Tumor

Nodes

How do they know which nodes to remove?

Incision site
Breast lump
Lump and surrounding tissue is removed

Sentinel lymph nodes and vessels
Valves allow fluid to flow in one direction only
Breast reconstruction

No reconstruction

Implant-based reconstruction

Latissimus flap reconstruction

TRAM (rectus) flap

Transverse rectus abdominis muscle
Skin, fat, and muscle moved to chest
Microvascular free flaps

Read evidence, make more notes

Oral, head, neck cancer

Open surgery  TORS

Transoral robotic surgery (TORS)

Selective neck dissection


What else do I need to consider?

What about chemotherapy?
Chemotherapy port

If my patient is receiving chemo...
- Myelosuppression
- Fatigue (CRF)
- Cognitive impairments
- GI distress
- Peripheral and central nervous system effects
- Alopecia and nail damage
- Organ toxicities

Can I work with a patient who is receiving chemo?

Which LT/late effects impact PT?
- Chemotherapy-related fatigue (CRF)

Which LT/late effects impact PT?
- Cardiotoxicity
- Pulmonary fibrosis
- Nephrotoxicity
- Hepatoxicity

Which LT/late effects impact PT?
- Chemopause
- Musculoskeletal fibrosis
- Risk of second cancers
- Long lasting immune response impairment
- Permanent alteration of GI function
- Cognitive changes

Always Give Written Exercise Instructions
What is CIPN?
Chemotherapy-induced peripheral neuropathy

Treat CIPN
• Assess the impairments
• Treat the impairments
• Address functional mobility
• Activity limitations
• Participation problems

Tell me about radiation therapy
EBRT = external beam
IMRT = intensity modulated
Partial breast irradiation
IORT = intra-operative
Brachytherapy
Proton therapy

External beam RT terminology
• Simulation
• Fields (ports)
• Fractionation
• Markings or casts

Partial breast irradiation
Intra-operative radiation therapy

Brachytherapy

Acute radiodermatitis

Late effects from radiation
Fatigue
Fibrosis
Pigment and radiation recall
Bone
Plexopathy
Nerve compression

What am I looking at?

Drugs given after cancer treatment
Tamoxifen
Arimidex, aromasin, femara
Faslodex
Lupron
Herceptin
Avastin
Side effects of targeted therapies

- Increased risk of DVT, PE, CVA
- Osteoporosis, risk of fracture
- Loss of muscle mass, weakness
- Fatigue
- Arthralgias and myalgias
- Bone pain
- Vasodilation
- Impaired healing
- Cognitive impairment

Modalities and manual therapies

Evidence regarding safety
ACSM Roundtable – exercise is safe!
Therapy during radiation
Modalities
  - LLLT
  - US
  - E-stim/TENS

Exercise

- Guidelines
- Risk of cancer recurrence
- Risk of lymphedema

My patient is fearful of lymphedema

Understanding risk reduction practices

What about swelling?

Mr Smith arrives in your clinic s/p TKA with orders for PT.

You find out that he had prostate cancer a few years ago.

What can I/should I do about the swelling?
Why retrograde massage doesn't work

I know he needs compression

He is wearing TED hose

We have these ACE™ bandages here.

Why shouldn't I use ACE™ bandages?

Muscle Pump (why not Ace wraps)

Characteristics of bandages

<table>
<thead>
<tr>
<th>Short stretch</th>
<th>Long stretch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low resting pressure</td>
<td>High resting pressure</td>
</tr>
<tr>
<td>High working pressure</td>
<td>Unchanged working pressure</td>
</tr>
<tr>
<td>Knitted like a garment</td>
<td>Contains elastic</td>
</tr>
<tr>
<td>Stretches ~ 70%</td>
<td>Stretches &gt; 200%</td>
</tr>
<tr>
<td>Muscle pump action</td>
<td>No muscle pump</td>
</tr>
</tbody>
</table>

How do I get help?

- www.oncologypt.org
  - Fact sheets
  - Resource library
  - Member listserv
- https://www.facebook.com/OncologySectionApta
- www.educata.com
- www.apta.org
  - Click on “Find a PT”
Resources

• Cancer.org
• Cancer.gov
  • http://www.cancer.gov/dictionary
• http://www.cancersupportcommunity.org/
• http://www.cancercare.org/professionals
• http://www.novartisoncology.com/health-care-professionals.jsp
• http://www.nccn.org/professionals/physician_gls/f_guidelines.asp
• BMC Cancer
• http://www.facit.org/FACITOrg/Questionnaires