Prospective Surveillance Model for Rehabilitation: An emerging standard for comprehensive breast cancer rehabilitation

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Inherent in cancer treatment...

- Known sequelae that have a deleterious impact on function, impacting a majority of patients
- An aggregate burden of impairment
- Short and long term impact on function
- Risk for impairment and recurrent disease
  - Low risk today ≠ Low risk tomorrow
- Patients want and need information to help them stay functional and active
Why Prospective Surveillance?

- Economic burden of cancer morbidity
  - World-wide cancer morbidity creates the largest economic burden on society
    - This does NOT include the cost of treating cancer
  - 20% > heart disease
  - Greater than morbidity with HIV/AIDS and TB

ACS and LAF *The Global Economic Cost of Cancer*. Presented at UICC Cancer Congress 2010
Why prospective surveillance?

• Surveillance enables early detection of and intervention for treatment-related impairments
• Surveillance and intervention will decrease severity or prevent impairment and functional loss at all stages of disease management

From Vision to Reality

- American Cancer Society Round Table on Prospective Surveillance
- April 2012 – Supplement issue to Cancer
  - Proceedings of an international, multi-disciplinary panel meeting
  - 16 articles portraying and supporting the PSM model
- “A Prospective Surveillance Model for Rehabilitation for Women with Breast Cancer.”

http://onlinelibrary.wiley.com/doi/10.1002/cncr.v118.8s/issuetoc
Pre-operative Assessment
1 visit at Diagnosis prior to surgery

- Limb volume measurement at baseline to reduce error in diagnosis
  - Inter-limb comparison
    - Weight consideration increases/decreases over time
    - Normal limb variance – 3% to 10% in normal healthy individuals (Gebruers 2007)

- Strength and mobility
- Activity status
- Extensive education for post operative exercise and plan of care
Ongoing Surveillance

• Regular intervals of post-op follow-up

• Interval follow-up should continue for 1st post-op year, or longer
  – Progression of lymphedema can occur at any time post treatment (Armer 2010, Johansson 2011, Bar Ad 2009)
<table>
<thead>
<tr>
<th>Citation</th>
<th>Reported Incidence</th>
<th>Intervention</th>
</tr>
</thead>
</table>
| Stout et al 2008         | **21% Sub-clinical**  
|                          | 0 % Stage I                                            | **Education and Surveillance**  
|                          | 2 % Stage II*                                           | **Monitoring with intervention upon volume change**                            |
|                          | 0 % Stage III                                          |                                                                               |
| Hayes et al              | 33 % Stage II/III                                      | None                                                                          |
| Armer et al              | 48 % Stage II/III                                      | None                                                                          |
| Bar Ad et al             | 16 % Stage I with 21 % progression rate to Stage II in 1st year | None                                                                          |
| Torres Lacomba 2010      | 7 % Stage I  
|                          | 2 % Stage II*                                           | **Manual lymph drainage, education and surveillance**                           |
|                          | 0 % Stage III                                          |                                                                               |

* Associated with infection (n = 2) or metastatic disease (n = 2)
### 1 year shoulder morbidity rates

<table>
<thead>
<tr>
<th>Citation</th>
<th>Reported Incidence</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Springer et al (2010)</td>
<td>4%</td>
<td>Prospective surveillance and education. PT if impairment detected</td>
</tr>
<tr>
<td>Yang et al (2010)</td>
<td>24 %</td>
<td>None</td>
</tr>
<tr>
<td>Devoogdt et al (2009)</td>
<td>45 %</td>
<td>Post op 1 visit only and ongoing education</td>
</tr>
<tr>
<td>Nesvold et al (2008)</td>
<td>12% - 47% (SLNB – ALND)</td>
<td>Education for post op exercises</td>
</tr>
<tr>
<td>Box et al (2002)</td>
<td>14 %</td>
<td>Education only</td>
</tr>
</tbody>
</table>
Comparison of Cost/1 year

PSM

No Lymphedema (66.5 women) $16,957.50

Sub-clinical Lymphedema (33.5 women) $21,315.33

Provider Referral

No Lymphedema, no referral (66.5 women) $0.00

Lymphedema Referral (TM) (33.5 women) $104,684.82
# Direct Cost Analysis of PSM

<table>
<thead>
<tr>
<th>Prospective Surveillance Model</th>
<th>Traditional Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>$636.19</td>
<td>$3124.92</td>
</tr>
</tbody>
</table>

![Graph showing cost analysis](image)
### Direct treatment cost with progression of early stage lymphedema in the PSM

<table>
<thead>
<tr>
<th>% Progression from early stage</th>
<th>Early stage cases</th>
<th>Late stage cases</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>33.5</td>
<td>0</td>
<td>$ 38,272.53</td>
</tr>
<tr>
<td>10</td>
<td>30.5</td>
<td>3</td>
<td>$ 45,735.95</td>
</tr>
<tr>
<td>20</td>
<td>26.5</td>
<td>7</td>
<td>$ 55,687.19</td>
</tr>
<tr>
<td>30</td>
<td>23.5</td>
<td>10</td>
<td>$ 63,150.63</td>
</tr>
<tr>
<td>40</td>
<td>20.5</td>
<td>13</td>
<td>$ 70,614.05</td>
</tr>
<tr>
<td>50</td>
<td>16.5</td>
<td>17</td>
<td>$ 80,565.30</td>
</tr>
<tr>
<td>60</td>
<td>13.5</td>
<td>20</td>
<td>$ 88,028.72</td>
</tr>
<tr>
<td>70</td>
<td>10.5</td>
<td>23</td>
<td>$ 95,492.16</td>
</tr>
<tr>
<td>80</td>
<td>6.5</td>
<td>27</td>
<td>$ 105,443.39*</td>
</tr>
<tr>
<td>90</td>
<td>3.5</td>
<td>30</td>
<td>$ 112,906.83</td>
</tr>
<tr>
<td>100</td>
<td>0</td>
<td>33.5</td>
<td>$ 120,370.25</td>
</tr>
</tbody>
</table>

*Threshold where cost associated with early stage progression eclipses cost of TM
Clinical Application of PSM
Cancer Rehabilitation Needs Across the Care Continuum

Cancer Treatment
- Pre-Operative Rehab Assessment
- Early Post-Operative Rehab
- Ongoing Surveillance and Continued Interval Rehab

Cancer Survivorship
- Referral to/Initiation of Rehabilitation

Adapted from Stout et al, Cancer, 2012
Moving beyond the impairment-based model of care

- Thinking differently in clinical practice – practicing differently in clinical practice
  - Shift in paradigm towards Prospective Surveillance
- Cancer care is ongoing
  - Side effects and Late effects are inherent in cancer treatment
  - Treatment may last up to a year, side effects may persist for a lifetime
  - Parallel in thinking to chronic disease
PSM

- Provides many of the elements outlined in the IOM report
- Focuses on identifying functional issues amenable to rehabilitation and promotes the linkage to rehab professionals
- Adds a critical dimension to survivorship care planning

Gerber et al. Cancer 2012
Put the specialist in proximity to those of greatest need

PSM offers opportunities to leverage non-physician specialty providers

- The right provider at the right time
  - Physical Therapists are experts in function and mobility
- Examination vs. intervention
  - Home exercise component
  - Physical activity guidelines
Thinking beyond the impairment-based model of care: Decision Support

**Pre-operative**
- 6-min walk test
- Chair stand
- Shoulder ROM
- Hand grip strength
- UEFI or KAPS
- FACT- B+4 or Breast-Q

**Early post-operative**
- **Ideal:** As per pre-operative
  - Minimum
  - Shoulder ROM
  - UEFI or KAPS
  - FACT- B+4 or Breast-Q

**Ongoing surveillance**
- **Ideal:** As per pre-operative
  - Minimum
  - FACT-B+4 or Breast-Q

Campbell et al Cancer 2012
The Prospective Surveillance Model is (already!) changing health care policy and changing the way we treat patients

- Policy and Payer forums are requesting information on PSM
- Payers are developing coverage benefits using this scheme
- Researchers and clinicians around the world are using PSM
Commission for the Accreditation of Rehabilitation Facilities (CARF)

- 2013 International Standards Advisory Committee developed standards for Cancer Rehabilitation Specialty Programs
- 33 Standards
- Released in 2014
- Over 30 Rehab centers world-wide have filed intent letters to be reviewed for accreditation in 2015
CARF Cancer Specialty Program

- Integral component of quality cancer care
- Focuses on optimizing outcomes from time of diagnosis through the trajectory of cancer in an effort to:
  - Prevent or minimize the impact of impairments
  - Reduce activity limitations
  - Maximize participation
- Targets workflow linkages through transitions in care
- Standards for workforce education
CARF Cancer Specialty Program
Standards Information:

Chris MacDonell
www.carf.org
866-888-1122 ext. 5007
cmacdonell@carf.org
More on Prospective Surveillance

- APTA Video series on Emerging Models of Care
- American Cancer Society – Supplement to Cancer April 15, 2012 “A Prospective Surveillance Model for Rehabilitation for Women with Breast Cancer.”


Levangie PK, Santasier AM, Stout NL, Pfalzer L. A qualitative assessment of upper quarter dysfunction reported by physical therapists treated for breast cancer or treating breast cancer sequelae. Support Care Cancer 2010.


McNeely ML, Campbell KL, Rowe BH, Klassen TP, Mackey JR, Courneya KS. Effects of exercise on breast cancer patients and survivors: a systematic review and meta-analysis. CMAJ. 2006;175(1): 34-41.


Armer JM, Stewart BR. Post-breast cancer lymphedema: incidence increases from 12 to 30 to 60 months. Lymphology 2010;43(3): 118-27.


