A snapshot of inpatient oncology rehabilitation: Patient profiles and rehab outcomes

Rehabilitation Rounds, University of Toronto
April 5, 2012

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## Cancer Rehab Research

<table>
<thead>
<tr>
<th></th>
<th>Stroke</th>
<th>Cancer</th>
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<tbody>
<tr>
<td>Annual Incidence Canada</td>
<td>~50,000</td>
<td>~175,000</td>
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<tr>
<td>Annual Rehab Manuscripts</td>
<td>1180</td>
<td>730</td>
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</table>
Presentation Overview

• Overview of cancer rehabilitation
• Overview of St. John’s inpatient oncology rehab program
• Retrospective chart review results
• Future directions
Cancer rehab is not new…

• Defined in 1978 (Cromes) as helping a person with cancer to help himself or herself to reach the maximum physical, social, psychological, and vocational functioning within the limits imposed by the disease and its treatment
Cancer rehab has evolved...

- from a mainly supportive and palliative role to a more active role with complex rehab interventions designed to remediate impairment and functional loss and to optimize patient participation and quality of life

  — Gilchrist et al., 2009
Effects of Cancer & its Treatment

- Fatigue
- Distress
- Weakness
- Cardiovascular deconditioning
- Anxiety
- Nutritional Deficiencies
- Pain

↓ Function,
↓ Participation,
↓ Quality of Life
Why Inpatient Rehab?

- Inpatient rehabilitation is suitable for patients who require an interprofessional program and require 24-hour hospital care.

Greater Toronto Area (GTA) Rehab Network. Rehab definitions conceptual framework (2007)
Oncology Rehab at SJRH

- Pilot project with Sunnybrook 2007
- Expanded to other referring hospitals
- 6 beds
Oncology Rehab at SJRH

- For patients who have undergone major surgeries or medical treatment for cancer as a primary diagnosis
- Receives referrals from hospitals and physicians throughout Ontario
Oncology Rehab at SJRH

Inter-Disciplinary Team

Inpatient Services
- Physiotherapists
- Occupational Therapists
- Social workers
- Nurses
- Speech-language pathologists
- Pharmacists
- Physicians
- Dieticians
- Psychologists
- Physiatrists
- Spiritual care

Fee-for Service care
- Massage therapy
- Acupuncture
- Chiropractic
- Chiropody
SJRH Oncology Rehab
Admission Criteria

- For patients who have undergone or are planning for surgical or medical Rx for cancer
- Medically stable, no fluctuations past 72 hrs
- Motivated, active rehab goals, able to participate in 2 sessions per day 5-7 days/week
- Able to sit unsupported at least 30 minutes
- Cognitive abilities and mental health support active rehab
- Completed or on hiatus from radiation or IV chemo
Special needs accommodated:

- IV therapy (PICC and portacath)
- Intermittent $O_2$ / Home $O_2$
- Tracheotomy
- Intermittent tube feeds
- Ostomy
- Dialysis off site
18 Month Retrospective Review
(Oct 2008-Mar 2010)

1. What are the characteristics of the patients coming to our program?

2. What are the relationships between patient characteristics and functional outcomes?
   - D/C FIM™ Scores
   - D/C Destination

153 records reviewed
Findings - Overview

- 60% women
- Mean age 72.6 years
- 39.3% lived alone
- Mean LOS was 20.1 days
- Wide range of cancers seen
  - 28.8% colorectal cancer
  - 15.7% metastatic disease
  - 7% bladder cancer
Frequency of Cancer Types

- Colorectal
- Metastatic disease
- Bladder
- Brain
- Non-Hodgkin’s Lymphoma
- Uterus
- Gallbladder, Biliary tract
- Leukemia
- Ovary
- Soft Tissue
- Vulva/vagina
- Stomach
- Multiple Myeloma
- Pancreas
- Prostate
- Other
• Breast (2)
• Lung (1)
• Liver (2)
• Oral (2)
• Small Intestine (2)

• Ureter (2)
• Bone (1)
• Hodgkin's Lymphoma (1)
• Kidney (1)
• Other (3)
Compare SJRH frequencies to Canadian incidence

**Figure 1.** Incidence of Cancer Types in Canada Compared to Frequency of Cancer Types Attending St. John’s Rehab Hospital

*Canadian Cancer Society, 2010*
Individual Patient Goals

• Activity/Participation (40%)

I want to:

“walk”

“be safe in bathroom”

“go grocery shopping”
Individual Patient Goals

• Body Structures and Function (35%)

I want to:

“increase my strength”
“improve my breathing”
“rebuild my stamina”
“decrease my pain”
Individual Patient Goals

• Improve knowledge (2%)

I want to:

“learn how to deal with my stoma”

“learn more about my condition”
Individual Patient Goals

• General “get better” (23%)

I want to:

“return to where I was before”
Functional Independence Measure™ (FIM™)

• Widely used rehabilitation outcome
• Score range 7 – 126
  – Motor 91, Cognitive 35
  – Item scoring range 1-7
FIM™ Scores

Figure 2. Functional Status Admission and Discharge Scores and Comparisons

- Scores improved approximately 17 points
- Changes driven by FIM™ Motor only
# Regression FIM™ Admission to Discharge Change

**Table 3.** Regression Model for Change in FIM™ Score

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>95% CI</th>
<th>( p )</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>63.4</td>
<td>49.0 to 77.8</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Male</td>
<td>1.35</td>
<td>-1.05 to 3.75</td>
<td>.27</td>
</tr>
<tr>
<td>Uterine Ca</td>
<td>-8.38</td>
<td>-2.10 to -14.67</td>
<td>.01</td>
</tr>
<tr>
<td>Age</td>
<td>-.17</td>
<td>-.26 to -.08</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Admission FIM</td>
<td>-0.54</td>
<td>-.65 to -.43</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Brain Ca</td>
<td>-7.40</td>
<td>-2.16 to -12.65</td>
<td>.01</td>
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Multivariate Associations with Discharge Location

1. What is the frequency of unplanned transfer to acute care in an inpatient oncology rehabilitation unit?

2. What factors are associated with an unplanned transfer to acute care?
Discharge Location

- **Home without services**: 55%
- **Home with health services**: 18%
- **Assisted living**: 3%
- **Acute care**: 1%
- **Missing data**: 22%
What factors associated with D/C to acute care?

- Logistic regression
- Strong-modernivariate associations
  - Absolute Neutrophil Count
  - Sodium
  - Recent Chemo
  - (Braden Scale, Berg Balance Score)
Multivariate Associations with D/C to Acute Care

Logistic Regression Model for Unplanned D/C to Acute Care

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>$\beta$</th>
<th>$p$</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>16.27</td>
<td>0.06</td>
<td>-</td>
</tr>
<tr>
<td>Sodium</td>
<td>-0.13</td>
<td>0.04</td>
<td>0.88</td>
</tr>
<tr>
<td>ANC</td>
<td>0.11</td>
<td>0.09</td>
<td>1.11</td>
</tr>
</tbody>
</table>

- (1) A unit increase in Sodium value was associated with an odds ratio of 0.88 for U-AC ($e^{-0.13}$)
- (2) A unit decrease in Sodium value was associated with an odds ratio of 1.14 for U-AC ($e^{-1 \times -0.13}$)
Hyponatremia and Cancer

• Many potential causes:
  – chemotherapy
  – nausea and vomiting
  – overhydration
  – pain
  – administration of narcotic drugs
  – physical and emotional stress
• Lamiere et al 2010
Hyponatremia and Cancer

- In acute care, associated with increased LOS and increased mortality
  - Doshi et al 2012
Retrospective Review

Key Findings

• The majority of our sample were older women, 40% of whom lived alone.
• Overall improvement in functional motor scores.
• Those who were younger improved more.
• Having a diagnosis of uterine or brain cancer was associated with lower functional change scores.
Key Findings, Cont’d

• Almost a quarter of patients had unplanned discharge to acute care
• Lower serum sodium was independently associated with discharge to acute care
• Age, sex, length of stay in acute care, recent cancer treatment were NOT independently associated with discharge to acute care
Future Research Directions

• What rehab services are patients with different diagnoses actually receiving?
  – What rehab services do patients and families want/need?

• What are the longer-term changes in function, participation, and health status after rehab?
  – How do they compare to those not receiving rehab?

• Cognition???

• How can we modify programs to best meet the needs of patients with cancer and their families?
Partners in Cancer Rehab Research Meeting

- Define the state of the science in cancer rehabilitation research
- Identify key areas for future research
- Enable the translation of meeting outcomes to clinical and consumer stakeholders
70% of those diagnosed with cancer live for at least five years after diagnosis date...

Wolff SN, 2007

… The Burden of Cancer Survivorship: A Pandemic of Treatment Success.
What is possible...?

... when rehabilitation professionals work to optimize participation?

Cancer Survivor, or Ironman?
Acknowledgements

• **Retrospective Review (SJRH Foundation)**
  – Mila Bishev and SJRH A3 Team 😊
  – Sara Elmi, MD
  – Jorge Rios, BSc
  – Grace Liu, BSc (PT)

• **Partners in Cancer Rehab Research (CIHR)**
  – Margaret Fitch, Sunnybrook
  – Mary Egan, University of Ottawa
  – Martin Chasen, University of Ottawa