Cost Effectiveness and Cancer Rehabilitation

Andrea L Cheville, MD, MSCE
Associate Professor and Research Chair
Department of Physical Medicine and Rehabilitation
Mayo Clinic, Rochester

Why cost matters

- Most health care $ spent per capita on cancer
- Cancer costs are increasing
- US health care costs currently 17.9% GDP
  - To increase ≥7.4% annually after 2014
  - Estimated 20% GDP in 2021
- Staggering opportunity costs
  - Education
  - Domestic infrastructure
  - Civic resources

Projections of the Cost of Cancer Care in the United States: 2010-2020

- Authors: Paulo C. Ferro, Martin L. Brown, et al.
- Source: Projections of the Cost of Cancer Care in the United States: 2010-2020

© 2013 Memorial Sloan-Kettering Cancer Center, All Rights Reserved.
Health outcomes do not reflect our national investment

CMS & IOM Triple mandate

- Patient centered
  - Empirically shown to improve outcomes
  - Lowers cost
Cost-effectiveness analyses examine the cost of:

- Number of cases of disease prevented
- Non-monetary measurement of benefits
  - Degrees recovered shoulder ROM
  - Distance ambulated
  - FIM score change
- Number of QALYs obtained

What constitutes good value?

- NICE -- Explicit, transparent and highly structured methods
- QALYs range from 0 (death) to 1 (perfect health)
  - Blindness = 0.67
  - Paraplegia = 0.43
  - Refractory major depression = 0.24
- Society would prefer a person to live three years with paraplegia (0.43 x 3 = 1.29), than have one year of good health (1.0).
What constitutes good value?

\[
\text{Incremental cost} = \frac{\text{Total cost}_{\text{Rehab}} - \text{Total cost}_{\text{No Rehab}}}{\text{QALYS}_{\text{Rehab}} - \text{QALYS}_{\text{No Rehab}}} = \text{Incremental effect}
\]

- £20,000 - £30,000 per QALY gained is the range.
- >£30,000 per QALY: society should spend healthcare £ elsewhere.

Is cancer rehabilitation good value? Return on invested resources?

1. Are we getting the most functional improvement per program dollar?

2. Can we demonstrate that cancer rehabilitation services are a bargain relative to the alternatives?

Somewhat moot

- Few patients at tertiary cancer centers receive rehabilitation services until frankly disabled
- Odds of receiving outpatient care for a physical impairment: Cheville A, JCO, 2008
  - Any intervention: 1:88
  - Physician-directed intervention: 1: >500
in a study of services offered by National Cancer Institute—designated comprehensive cancer centers, 70% of centers had a lymphedema management program, but no comprehensive cancer rehabilitation programs were reported.

Falls short of potential benefits and the vision of its founders

- Integrated, multidisciplinary team providing individualized services to sustain functionality across the cancer trajectory
  - Restorative
  - Supportive
  - Preventive
  - Palliative

Can a shift from reactive to proactive rehabilitation enhance cost effectiveness?

- High impairment prevalence
  - 65.8% mixed cancer cohort
  - Impairments - 92% Stage IV breast
- Impairments may increase utilization
  - Breast cancer survivors with lymphedema cost $7K more per year

© 2013 Memorial Sloan-Kettering Cancer Center, All Rights Reserved.
Cancer Survivorship and Cancer Rehabilitation: Revitalizing the Link

It is time to revitalize the link between cancer survivorship and cancer rehabilitation and investigate a new model of comprehensive cancer rehabilitation, involving a multidisciplinary team of providers that aims to optimize the patient's physical, psychologic, vocational, and social functioning...

Bethesda Naval Hospital Experience

- PT evaluation components
  - PRO - upper quadrant impairment
  - Limb volume
  - Range of motion
  - Palpation

- Pre-op & at 3, 6, 9 months

- Improved outcomes
  - ↓ arm volumes
  - ↑ shoulder recovery


Opportunity for cost savings

Economic Burden of Cancer in the United States: Estimates, Projections, and Future Research

© 2013 Memorial Sloan-Kettering Cancer Center, All Rights Reserved.
Two important challenges

1. Identifying the right patients at the right time
2. Securing patient buy-in
Some difficulty in doing moderate or strenuous activities
Limited in bed, basic transfers
Limited mobility inside of building; Unable to do bending/reaching activities
Limited in going outdoors

AM PAC CAT Basic Mobility Score

How to operationalize?
- Tablet computer input at clinical encounters
- Interactive voice response
- Identification of high risk subgroups for more intense screening

Two important barriers
- Identifying the right patients at the right time
- Securing patient buy-in
Current care delivery models rely on primary disease management

Lack of hysteresis
- Loss of:
  - Lean muscle mass
  - Vascular tone
  - Bone mineralization
  - Intravascular volume
  - Confidence

Receptivity to rehabilitation
- Interest among patients with mobility < high level ambulator
  - “NO” 79.7% (n=1277)
  - “YES” 10.4% (n=166)
- Interest among patients rating functional distress ≥4 (11-point numerical rating scale)
  - “NO” 72.3% (n=513)
  - “YES” 17.0% (n=121)
Receptivity to rehabilitation

- Interest among patients with AM PAC CAT <65
  - “NO” 79.7% (n=1277)
  - “YES” 10.4% (n=166)

- Interest among patients rating functional distress ≥4
  - “NO” 72.3% (n=513)
  - “YES” 17.0 % (n=121)

Patients’ attitudes regarding rehabilitation services (n=364)

- Not beneficial
  - Wouldn’t do any good/nothing would change (27)
  - No time/energy/air left (17)

- Burdensome
  - Worsening symptoms (28)
  - Travel (12)

- Too busy
  - Fighting cancer (13)
  - Appointments (8)
  - Other things to worry about/problems/complications (10)

- Unnecessary
  - Have plenty of help (40)
  - Not that bad off (33)
  - I can take care of myself (36)
Patients’ attitudes regarding rehabilitation services (n=364)

- Waiting
  - Recovery from chemotherapy/radiation/surgery (17)
  - Symptoms to improve (4)
  - Test results (6)
  - Treatment to work (7)

Limited appreciation of symptomatic benefits of exercise

- ≥ 45 minute in depth interviews conducted with 20 patients & caregivers
- Usual activities sufficient
- Overestimation usual activities rigor
- Assumed endorsement of oncology care team
- Caregivers reluctant to become “coaches”

Conclusions

- Cost is a critical force in healthcare
- Cancer rehabilitation currently lacks an evidence base and is rarely prescribed
  - Absence evidence of effectiveness ≠ Evidence of absence of effectiveness
- Opportunities to reduce costs during the last year of life and long-term survivorship
  - Need sensitive and specific screening techniques
  - Need patient AND clinician buy in
- Robust findings needed to support expenditures

Thank you for your time and attention