Cancer Prehabilitation & Rehabilitation: Exploring the Latest Science with a Focus on Translating Research Into Clinical Care

Julie K. Silver, MD
Disclosure

Founder, Oncology Rehab Partners, LLC
The expert panel published this report & had 10 key recommendations

Towards a National Initiative in Cancer Rehabilitation: Recommendations from a Subject Matter Expert Group.


Abstract

The health care delivery system in the United States is challenged to meet the needs of a growing population of cancer survivors. A pressing need is to optimize overall function and reduce disability in these individuals. Functional impairments and disability impact a majority of patients during and after disease treatment. Rehabilitation health care providers can "diagnose and treat patients' physical, psychological, and cognitive impairments in an effort to maintain or restore function, reduce symptom burden, maximize independence and improve quality of life in this medically complex population." However, few care delivery models integrate comprehensive cancer rehabilitation services into the oncology care continuum. The Rehabilitation Medicine Department of the Clinical Center at the National Institutes of Health with support from the National Cancer Institute and the National Center for Medical Rehabilitation Research convened a subject matter expert group to review current literature and practice patterns, identify opportunities and gaps regarding cancer rehabilitation and its support of oncology care, and to make recommendations for future efforts that promote quality cancer rehabilitation care. The recommendations suggest stronger efforts towards integrating cancer rehabilitation care models into oncology care from the point of diagnosis, incorporating evidence-based rehabilitation clinical assessment tools, and including rehabilitation professionals in shared decision making in order to provide comprehensive cancer care and maximize the functional capabilities of cancer survivors. These recommendations aim to enable future collaborations among a variety of stakeholders to improve the delivery of high quality cancer care.
1. Provide rehabilitation screening and assessment as part of a comprehensive cancer care plan, from the time of diagnosis, throughout the course of illness and recovery, to address the functional needs of patients. These services should be provided by trained rehabilitation professionals who utilize evidence-based best practices to diagnose and treat the many physical, cognitive and functional impairments associated with this medically complex population.

“Cancer rehabilitation is medical care that should be integrated throughout the oncology care continuum and delivered by trained rehabilitation professionals who have it within their scope of practice to diagnose and treat patients’ physical, psychological and cognitive impairments in an effort to maintain or restore function, reduce symptom burden, maximize independence and improve quality of life in this medically complex population.”

2. Incorporate **objective assessment of a patient’s functional status before cancer treatment begins**, at regular intervals during treatment, and during survivorship in order to preserve and optimize function and monitor for late effects of treatment.

3. In selected cancers, **rehabilitation services should be offered pre-treatment** to optimize tolerance to surgical intervention and adjuvant treatment in order to minimize toxicity and improve outcomes.

“Prehabilitation is a process on the cancer continuum of care that occurs between the time of cancer diagnosis and the beginning of acute treatment and includes physical and psychological assessments that establish a baseline functional level, identify impairments, and provide interventions that promote physical and psychological health to reduce the incidence and/or severity of future impairments.”

4. Develop practice guidelines regarding: functional assessment, screening for physical impairments, and rehabilitation interventions, to enhance the selection of rehabilitation interventions, referrals, and outcomes measurement.

5. Expand cancer-related education and training among rehabilitation providers through curriculum instruction, educational courses, residency and fellowship programs, professional continuing medical education, and conferences.

6. Elevate awareness and education among healthcare providers, patients and payers regarding rehabilitation as an integral part of quality cancer care.

7. The rehabilitation community should utilize the Institute of Medicine’s cancer-related reports to identify the survivorship care delivery components that rehabilitation services can address and support.

8. Conduct a thorough assessment of the content coverage and psychometric properties of existing clinical measurement tools and forge consensus regarding “gold standard” functional measures specific to different cancer populations.

9. Create a centralized electronic interface, utilizing an infrastructure such as the Assessment Center, to facilitate systematic clinical collection of candidate Patient Reported Outcomes Measures in order to facilitate psychometric characterization of these measures, especially responsiveness, in clinically important populations and trait ranges.

10. Identify research gaps in cancer rehabilitation domains and promote awareness of these gaps to funding agencies that support professional training and scientific inquiry in clinical, translational, and health services research in order to increase funding mechanisms.

Exercise, Wellness & Impairment-Driven Cancer Rehabilitation
What is the difference between **impairment-driven cancer rehabilitation** and **general exercise** that promotes strength and aerobic fitness?

Apples and oranges are both on the list of things that are good for cancer survivors but eating an apple is not the same as eating an orange. To the educated consumer, these are very different foods.
Impairments in Cancer Survivors

In a study of 163 women with metastatic breast cancer:
1. What percent had impairments?
2. How many total impairments were documented?
3. What percent of women received rehabilitation treatment as outpatients?

Answers:
92% of the women had impairments
530 impairments were documented
<2% of the impairments were treated


In a study of 529 older adults with cancer:
1. How many of these patients should have been sent for PT/OT for their functional deficits?
2. What percent received PT/OT?

Answers:
341 survivors (65%) had potentially modifiable functional deficits and needed PT/OT
9% received OT/PT


Cancer rehabilitation is medical care
Impairment-Driven Cancer Rehabilitation


Case

Answer these questions according to a 2016 study in the journal PM R:

Joe and John are both admitted for inpatient rehabilitation. Joe has metastatic disease and John doesn’t.

1. Will Joe and John both make functional gains?

2. Will there be significant differences in their functional gains?

Sally and Sarah are both admitted for inpatient cancer rehabilitation. Sally has a diagnosis compliant with the 60% Rule and Sarah doesn’t.

1. Will Sally and Sarah both make functional gains?

2. Will there be significant differences in their functional gains?

Answers:
1. Yes
2. No
3. Yes
4. No
Cancer Rehabilitation: Do Functional Gains Relate to 60 Percent Rule Classification or to the Presence of Metastasis?

Sliwa JA, Shahpar S, Huang ME, Spill G, Semik P.

Abstract

BACKGROUND: Literature supporting the benefits of inpatient rehabilitation for cancer patients is increasing. Many cancer patients, however, do not qualify for inclusion in the Centers for Medicare and Medicaid 60% rule and consequently may not receive services. The benefit of inpatient rehabilitation in this specific cancer group has not been investigated and is the focus of this study.

OBJECTIVE: To investigate functional gains made during inpatient rehabilitation by patients impaired by cancer, and to compare the functional gains made during inpatient rehabilitation for patients impaired by cancer in relation to the presence or absence of metastatic disease and compliance or noncompliance with the Medicare 60% rule.

SETTING: Freestanding university-affiliated rehabilitation hospital.

PARTICIPANTS: A total of 176 adult patients admitted for inpatient rehabilitation due to cancer.

METHODS: Retrospective chart review of patients admitted for inpatient rehabilitation with deficits identified related to cancer.

MAIN OUTCOME MEASURES: Demographic data including cancer type, presence of metastasis, age, gender, marital status, ethnicity, length of stay (LOS), discharge destination, and transfer to acute care. Functional status including admission and discharge Functional Independence Measure Score (FIM), total, motor, and cognitive FIM gains, total, motor, and cognitive FIM efficiency for the study sample, for patients with and without a diagnosis compliant with the 60% rule and for patients with and without metastatic disease.

RESULTS: In all, 176 cases met inclusion criteria. An admission coded diagnosis that was compliant with the 60% rule was present in 97 cases (55.1%). In 153 cases, the presence or absence of metastatic disease was known. Metastatic disease was present in 69 cases (45%). All groups (total sample, metastatic versus nonmetastatic, compliant versus noncompliant) made significant functional gains. Patients with a diagnosis noncompliant with the 60% rule had higher admission total FIM (P = .001), discharge total FIM (P = .014), admission motor FIM (P = .005), admission cognitive FIM (P = .008), and discharge cognitive FIM (P < .001) scores than those with a compliant diagnosis. Patients with metastatic disease had higher admission total FIM (P = .026) and admission (P = .001) and discharge (P = .02) cognitive FIM scores than patients with nonmetastatic disease. There were no significant differences between groups regarding total, motor, or cognitive FIM gains or total motor or cognitive FIM efficiencies. Differences in age, length of stay, and admission motor and discharge FIM scores between groups were related to cancer types and source of impairment.

CONCLUSION: Patients with functional limitations resulting from cancer or its treatment made significant functional gains in inpatient rehabilitation.

There were no significant differences in functional gains made by those with or without metastatic disease or those compliant versus noncompliant with the 60% rule. The presence of metastatic disease or a diagnosis not compliant with the 60% rule does not preclude cancer patients from making significant functional gains.
Distress, Disability, Financial Toxicity & Quality of Life
Distress & Disability


**Symptom distress predicts long-term health and well-being in allogeneic stem cell transplantation survivors.**


“…physical symptom distress negatively affected all outcomes…”


**Quality of life and physical performance and activity of breast cancer patients after adjuvant treatments.**


“Physical performance and activity level were the only factors that correlated positively to QOL.”

**Med J Aust. 2010 Sep 8;193(5 Suppl):S82-7.**

**Is psychological distress in people living with cancer related to the fact of diagnosis, current treatment or level of disability? Findings from a large Australian study.**

Banks E, Byles JE, Gibson RE, Rodgers B, Latz IK, Robinson IA, Williamson AB, Jorm LR.

“The risk of psychological distress...relates much more strongly to their level of disability...”


**Mental and physical health-related quality of life among U.S. cancer survivors: population estimates from the 2010 National Health Interview Survey.**


Many more cancer survivors had poor QOL due to physical problems than emotional ones.
Take Home Point
It’s hard to fix a problem that you haven’t identified.

If your H&N cancer patient is distressed because he can’t work and this is due to not driving because of reduced cervical ROM, how are you going to identify this?
What happens if survivors who have impairments don’t get rehabilitation?

- Unnecessary disability for the survivor
- Unnecessary financial toxicity for the survivor, loved ones & society

*Cancer rehabilitation may improve function in survivors and decrease the economic burden of cancer to individuals and society.*

*Silver JK¹, Baima J¹, Newman R², Galantino ML³, Shockney LD⁴.*

*Cancer rehabilitation and prehabilitation may reduce disability and early retirement.*

*Silver JK¹.*

*Cancer prehabilitation and its role in improving health outcomes and reducing health care costs.*

*Silver JK.*
CONCLUSION: Our results show that the favourable prognosis of DTC does not directly translate into good HRQOL in these patients. Persistent restrictions in regaining their normal daily life in terms of work and leisure highlight the importance of more detailed investigation of DTC patients' wellbeing, support needs, and disease experience.
Excellent health-related quality of life outcomes are impossible to achieve if survivors live with unnecessary pain, fatigue and disability. Impairment-driven cancer rehabilitation is the next frontier in survivorship care.
Cancer rehabilitation is not optional
Impact of an Automatically Generated Cancer Survivorship Care Plan on Patient-Reported Outcomes in Routine Clinical Practice: Longitudinal Outcomes of a Pragmatic, Cluster Randomized Trial


See accompanying editorial on page 3528

Abstract

Purpose
This study was conducted to longitudinally assess the impact of an automatically generated survivorship care plan (SCP) on patient-reported outcomes in routine clinical practice. Primary outcomes were patient satisfaction with information and care. Secondary outcomes included illness perceptions and health care use.

Methods
Twelve hospitals were randomly assigned to SCP care or usual care in a pragmatic, cluster randomized trial. Newly diagnosed patients with endometrial cancer completed questionnaires after diagnosis (n = 221; 75% response), 6 months (n = 158), and 12 months (n = 147). An SCP application was built in the Web-based ROGY (Registration System Oncological Gynecology). By clicking the SCP button, a patient-tailored SCP was generated.

Conclusion
The present trial showed no evidence of a benefit of SCPs on satisfaction with information and care. Furthermore, SCPs increased patients’ concerns, emotional impact, experienced symptoms, and the amount of cancer-related contact with the primary care physician. Whether this may ultimately lead to more empowered patients should be investigated further.
Cancer Prehabilitation
Starting a Surgical Home

Michael J. Englesbe, MD, Alisha D. Lussiez, BSE, Jeffrey F. Friedman, MSE, June A. Sullivan, MBA, and Stewart C. Wang, MD, PhD

A.H. is an 84-year-old woman with a history of hypertension and a recent diagnosis of colorectal cancer. She is scheduled for an elective procedure that will involve a laparoscopic resection of the colon. The goal of preoperative preparation is to optimize her functional status and reduce the risk of complications. This slide outlines the key steps in the preoperative phase of care in MSHOP (Medical Surgical Hospitalization and Operations Program).

**Shared Decision Making**
- Risk assessment and patient empowerment
  - Risk Score: 76
  - Probability of complications: Low

**Patient Training**
- Move
  - Goal: Increase walking distance each day
  - Patients given a pedometer to track progress
- Breathe
  - Incentive spirometer given to patients with training goals
- Eat
  - Smoking cessation resources/classes offered
  - Resources for improving nutrition and weight loss goals
- Relax
  - Relaxation techniques and sleep training
  - Resources for alternative relaxation classes

**Patient Reported Outcomes**
- Collect patient-specific recovery data

FIGURE 1. Preoperative phase of care steps in MSHOP.
LETTER TO THE EDITOR

Is "Move, Breathe, Eat and Relax" Training for Major Surgery Effective?

To the Editor:

We congratulate Englesbe et al1 for describing their experience with starting a surgical home. The patient-centered medical home was introduced by the American Academy of Pediatrics in 1967, and the model of a surgical home is an extension of it.2 The surgical home is a physician-led paradigm for care that is patient-centered and has the goals of improving clinical outcomes, care coordination, and compliance with best practices, which then result in reduced costs. In short, this involves a multidisciplinary team that focuses on risk assessment, decision making, and pre-, peri-, and postoperative optimization. The days or weeks leading up to surgery is called prehabilitation, and is a long established initial part of the rehabilitation care continuum.3–5 By definition prehabilitation includes physical and psychological assessments that establish a baseline functional level, identify impairments, and provide interventions that promote physical and psychological health to reduce the incidence and/or severity of should be quantified in the context of a structured program including a goal for intensity and frequency. Although a recent systematic review confirms that preoperative exercise training in abdominal or thoracic surgery can improve fitness, there was limited or no impact on postoperative outcomes.7 Of note, the exercise interventions were aerobic training, not simply “movement.” Therapeutic exercise should take into account not only aerobic fitness but also flexibility and strength training. Similarly, the primary goal of preoperative nutritional assessment is to evaluate physiological reserve, and intervene to promote anabolism and meet energy requirements. By integrating exercise and nutrition supplements, muscle protein synthesis can be maximized and this translates into greater strength and functional capacity. The relationship between diet and exercise and the need for both interventions to work synergistically with each other is a well-established and intensely studied paradigm in the sports medicine literature.

Implementation of these interventions must be evaluated in the context of each surgical procedure to verify whether they meet the intended goal to improve fitness in a short period, are embraced by patients and are safe. At present, there is simply no and patient recovery.4 Prehabilitation was used in the context of an established ERP where length of stay was already low (median 4 days).9 Prehabilitation increased preoperative walking distance before surgery in 50% of patients, and the increased levels of activity were maintained after surgery. However, this beneficial effect did not reduce duration of hospital stay (which remained at 4 days), complications, or health-related quality of life.4 How do the authors explain the very significant decrease in hospital stay of 2 days they report using their change in preoperative care alone?

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**RESPONSE TO LETTER**

We Are Doing It Because They Demanded It

Reply:

We appreciate the opportunity to respond to these excellent comments. Our vision for the perioperative surgical home was inspired by the excellent work of Dr. Carli and his colleagues at McGill.

As we began trials in prehabilitation, we noted strong patient preference to participate in preoperative training programs, giving us pause about assigning to the control group. Focus groups noted patient empowerment, clinical engagement, and fear alleviation as powerful positive forces. This motivated our development of the current nonresearch, clinical program.

This inexpensive patient-centered clinical program has now enrolled more than 1000 patients. The primary outcomes have been financial, in an effort to build a business case for this patient-centered program. Our attempts to implement this simple, home-based intervention across the state of Michigan have been daunting. Patient-tailored, complex, and nonhome-based programs suggested by the authors will never be able to be implemented across broad populations.

Studies that follow physiologic outcomes are important to understand mechanism; they do not provide pragmatic solutions to the problems that our patients face. Understanding why our program works requires partnerships with social scientists and psychologists; this work is underway. In the mean time, we will continue with this program because preoperative positive psychology is good for patients and good for business.

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**REFERENCE**

Survivorship Care Continuum

Cancer Diagnosis
- Prehabilitation Assessments and Interventions

Cancer Treatment
- Rehabilitation Assessments and Interventions

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Pre/Peri/Postoperative Care Continuum

- Cancer Diagnosed
- Signed up to Run a Marathon
- Training for Marathon
- 48-72 hours Before, During & After Race
- Recovery & Training for Next Marathon
- Prehabilitation
- Enhanced Recovery Program
- Rehabilitation
- Preoperative Phase
- Perioperative Phase
- Postoperative Phase
- Surgery
- Race
- Next Cancer Treatment
- Next Race
Review

A systematic review of pre-surgical exercise intervention studies with cancer patients

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ABSTRACT

Background: Recent reviews suggest that enhancing fitness and functional capacity prior to surgery can accelerate post-surgery recovery and reduce mortality. However, the effect of pre-surgical exercise interventions in cancer patients is not fully explained. The aim of this paper is to systematically review the available literature regarding pre-surgery exercise training interventions in cancer patients and examine their effects on physiological outcomes as well as quality of life (QOL) and length of hospital stay.

Methods: Relevant studies were identified through a search on MEDLINE, PreMEDLINE, AMED, MEDLINE Daily Update, CINAHL and SPORTDiscus. All randomized controlled trials (RCTs) and non-RCTs that had some form of physical exercise undertaken prior to surgery were included. Descriptive characteristics such as participant characteristics, study design, types of cancer, length of study, and primary outcomes were extracted. Methodological rigour was assessed using a modified Delphi List. Due to the heterogeneity and the dearth of pre-surgical studies, we were limited to a systematic review rather than a meta-analysis.

Results: Eighteen studies were included consisting of a total of 966 participants. Lung cancer studies were the predominant group represented. Most of the studies prescribed an aerobic intervention programs done prior to surgery. Mode, frequency, duration, and intensity of exercise intervention varied across the different cancer groups. The majority of studies showed preliminary positive change in clinical outcomes with significant improvements in the rate of incontinence, functional walking capacity and cardiorespiratory fitness.

Conclusion: Pre-surgical exercise may benefit cancer patients through positive effects on function and physical capacity. Surgical oncologists may consider pre-surgical exercise interventions as a potential adjuvant therapy to improve patients' outcomes.
A Randomized Control Trial in Patients Undergoing Colorectal Resection for Cancer


ABSTRACT

Background: The preoperative period (prehabilitation) may represent a more appropriate time than the postoperative period to implement an intervention. The impact of prehabilitation on recovery of functional exercise capacity was thus studied in patients undergoing colorectal resection for cancer.

Methods: A parallel-arm single-blind superiority randomized controlled trial was conducted. Seventy-seven patients were randomized to receive either prehabilitation (n = 38) or rehabilitation (n = 39). Both groups received a home-based intervention of moderate aerobic and resistance exercises, nutritional counseling with protein supplementation, and relaxation exercises initiated either 4 weeks before surgery (prehabilitation) or immediately after surgery (rehabilitation), and continued for 8 weeks after surgery. Patients were managed with an enhanced recovery pathway. Primary outcome was functional exercise capacity measured using the validated 6-min walk test.

Results: Median duration of prehabilitation was 24.5 days. While awaiting surgery, functional walking capacity increased (≥20 m) in a higher proportion of the prehabilitation group compared with the rehabilitation group (53 vs. 15%, adjusted P = 0.006). Complication rates and duration of hospital stay were similar. The difference between baseline and 8-week 6-min walking test was significantly higher in the prehabilitation compared with the rehabilitation group (+23.7 m [SD, 54.8] vs. −21.8 m [SD, 80.7]; mean difference 45.4 m [95% CI, 13.9 to 77.0]). A higher proportion of the prehabilitation group were also recovered to or above baseline exercise capacity at 8 weeks compared with the rehabilitation group (84 vs. 62%, adjusted P = 0.049).

Conclusion: Meaningful changes in postoperative functional exercise capacity can be achieved with a prehabilitation program. (ANESTHESIOLOGY 2014; 121:937-47)
Prehabilitation to Enhance Perioperative Care

Francesco Carli, MD, MPhil, FRCAN, FRCPC\(^a\,*\), Celena Scheede-Bergdahl, MSc, PhD\(^{a,b}\)

KEYWORDS
• Surgery • Elderly • Cancer • Prehabilitation • Exercise • Nutrition

KEY POINTS
• Despite advances in surgical care, there remain patients with suboptimal recovery; elderly patients, especially those with cancer and limited protein reserve are at highest risk for negative postsurgical outcomes.
• Although more traditional approaches have targeted the postoperative period for rehabilitation, it has been shown that the preoperative period is most effective for intervention.
• Surgical prehabilitation is an emerging concept, deriving from the realization that effective perioperative care must include in addition to the clinical and pharmacological preparation of the surgical preparation, preoperative physical, nutritional and psychological optimization.

THE STRESS OF SURGERY AND TRAJECTORY OF RECOVERY
Tissue trauma, physical inactivity, quasi-starvation and psychological distress represent major stresses to the body. In turn, immediate systemic changes are initiated.
Journal of Oncology Navigation & Survivorship - August 2014

AONN+ Annual Navigation and Survivorship Conference Poster Abstract

Prehabilitation Improves the Physical Functioning of a Newly Diagnosed Lung Cancer Patient Before and After Surgery to Allow for a Safe Surgical Resection and Decreased Hospital Length of Stay: A Case Report

Elizabeth Hunt, RN, MSN, CRRN, CCM; Kristen VanderWijst, PT; Bobbi Stokes, PTA; Regina Kenner, RN; Kathryn Duval, MS, CCC-SLP; Messina Corder, RN, BSN, MBA
Mary Washington Healthcare

Background: Patients diagnosed with cancer often present with decreased functional status because of age, deconditioning, and comorbidities—all factors that may influence surgical intervention as a potential treatment option. The Survivor...
Take Home Point
The control group had a significantly higher number of serious post-op complications.


Preoperative nutritional support in cancer patients with no clinical signs of malnutrition-prospective randomized controlled trial.

Kabata P², Jastrzębski T, Kakol M, Król K, Bobowicz M, Kosowska A, Jaśkiewicz J.

Abstract
PURPOSE: Preoperative nutrition is beneficial for malnourished cancer patients. Yet, there is little evidence whether or not it should be given to nonmalnourished patients. The aim of this study was to assess the need to introduce preoperative nutritional support in patients without malnutrition at qualification for surgery.

METHODS: This was a prospective, two-arm, randomized, controlled, open-label study. Patients in interventional group received nutritional supplementation for 14 days before surgery, while control group kept on to their everyday diet. Each patient’s nutritional status was assessed twice-at qualification (weight loss in 6 months, laboratory parameters: albumin, total protein, transferrin, and total lymphocyte count) and 1 day before surgery (change in body weight and laboratory parameters). After surgery, all patients were followed up for 30 days for postoperative complications.

RESULTS: Fifty-four patients in interventional and 48 in control group were analyzed. In postoperative period, patients in control group suffered from significantly higher (p < 0.001) number of serious complications compared with patients receiving nutritional supplementation. Moreover, levels of all laboratory parameters declined significantly (p < 0.001) in these patients, while in interventional arm were stable (albumin and total protein) or raised (transferrin and total lymphocyte count).

CONCLUSIONS: Preoperative nutritional support should be introduced for nonmalnourished patients as it helps to maintain proper nutritional status and reduce number and severity of postoperative complications compared with patients without such support.
Take Home Point
Prehab is medical care that drives specific outcomes.
Does the location of pre/rehabilitation services delivery matter?

Where is my patient getting high quality cancer care?

- Within the Oncology/Surgery Department (Onsite)
- Within the Rehabilitation Medicine Department (Onsite but different department)
- Within the hospital system but not under Oncology or Rehab Med Departments (Onsite but decentralized location)
- Community based (Offsite)

The farther the patient is from the oncologist/surgeon, the less control the physician has over care delivery.
### Palliative Care vs. Cancer Rehabilitation

#### Key Differences

**Palliative Care**
- High symptom burden
- Focuses on pain but also nausea and other GI symptoms
- Priority is patient and family values that include spiritual issues
- Physicians often not trained in procedures including Edx, TPIs, etc.

**Cancer Rehabilitation**
- May be one symptom or impairment (eg, carpal tunnel syndrome)
- Generally not focused on nausea and other GI symptoms
- Priority is patient function
- Physiatrists trained in procedures including Edx and injections

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“From the rehabilitation professional perspective, treatment options are continually changing, requiring maintenance of current knowledge for a large array of cancer types, treatments, and level of disability.”

Aromatase inhibitors may cause physical impairments in:

A. Joints
B. Tendons
C. Nerves
Drug-induced tendinopathy is an underestimated problem
4 classes of drugs cause problems—recent addition is aromatase inhibitors (AI)
(AIs, statins, glucocorticoids and quinolones)

- 50% of patients may have musculoskeletal (MSK) problems
- 20% may discontinue drug due to MSK problems
- 60% of symptoms in the hands and wrists
- 90% or more show periarticular changes on ultrasound
- 50% may have baseline problems that worsen with starting an AI
- 2 months—mean time from treatment initiation to symptom onset or worsening
- Prior chemotherapy, particularly a taxane, increases the risk of MSK problems
- MSK problems include trigger fingers, DeQuervain’s tenosynovitis, and tenosynovitis of finger extensors and flexors

GENERAL

What are the goals of the Oncology Care Model (OCM)?

The goals of OCM are to utilize appropriately aligned financial incentives to improve care coordination, appropriateness of care, and access to care for beneficiaries undergoing chemotherapy. The model encourages participating practices to improve care and lower costs through a model that incorporates a care coordination fee and episode-based payments. The Innovation Center expects that these improvements will result in better health outcomes, higher quality care, and lower Medicare costs. This is in accordance with the Department of Health and Human Services’ “Better, Smarter, Healthier” approach to improving our nation’s health care, setting clear, measurable goals and a timeline to move the Medicare program -- and the health care system at large -- toward paying providers based on the quality, rather than the quantity of care they give patients.
EPISODE DEFINITION

How is an episode of care defined?

Episodes in OCM for Medicare Fee-For-Service beneficiaries (OCM-FFS) will initiate with either an initial chemotherapy administration claim or an initial Part D chemotherapy claim for cancer, and include all Medicare Parts A and B services that the OCM-FFS beneficiary receives during the six-month episode. Certain Medicare Part D expenditures will also be included. Services that OCM-FFS beneficiaries receive before the initial chemotherapy claim will not be included in the OCM-FFS episode. Subsequent episodes may occur if the beneficiary receives additional chemotherapy after the first six-month episode.

NEW: Will any services be excluded from OCM episodes?

No. All Medicare Part A and B services and certain Part D expenditures occurring during the 6-month OCM episodes will be included in the total cost of care. These services may include but are not limited to all inpatient costs, post-acute care services, drugs, labs, imaging, surgery, and radiation therapy. All of these expenditures will also be included in the historical baseline period used to construct benchmark prices.
Are hormonal therapies that are used for cancer included in OCM-FFS?

Yes. Hormonal therapies used to treat a cancer diagnosis, such as aromatase inhibitors for breast cancer and anti-androgen therapy for prostate cancer, are included on the chemotherapy list for OCM-FFS and trigger episodes in the same manner as other chemotherapy drugs.
Case

Bethany is a 53-year-old woman who recently underwent surgery for breast cancer. She is having some problems with her arm and shoulder. She’s back at work, but her boss has informed her that he’s not happy with how much leave Bethany has taken. According to a study in the journal *Breast*, will her arm problems likely lead to more absences from work?
“Breast and arm symptoms are as strongly associated with being on sick leave as types of breast and/or axillary surgery. Early self-reported symptoms are important to consider in guidelines for sick leave and rehabilitation after breast cancer surgery.”

DASH increased at 3 & 12 months after surgery and then decreased (but were still above baseline) at 2 years. However, although the impairments improved, activity and participation restriction scores (functional limitations) didn’t. Why do you think this is so?
We know we should be concerned about upper quadrant impairments and associated disability in the breast cancer population.

What other population has a lot of shoulder impairments that affect both leisure activity and ability to work?
Association Between Multimodality Neck Treatment and Work and Leisure Impairment: A Disease-Specific Measure to Assess Both Impairment and Rehabilitation After Neck Dissection.


Abstract

IMPORTANCE: This study describes the effect of adjuvant treatment on shoulder-related quality of life, leisure activities, and employment for patients undergoing neck dissection for head and neck cancer.

OBJECTIVE: To explore the association between treatment outcome and shoulder-related on critical daily life functions such as employment and recreation.

DESIGN, SETTING, AND PARTICIPANTS: Cross-sectional study of patients with head and neck cancer at a tertiary care hospital.

EXPOSURES: Level V–sparing selective neck dissection or modified radical neck dissection sparing the accessory nerve, with or without radiation therapy and/or chemotherapy.

MAIN OUTCOMES AND MEASURES: Patients completed the Neck Dissection Impairment Index (NDII), with scores ranging from 0 to 100 and higher scores indicating better shoulder functioning and shoulder-related quality of life, and underwent objective testing with the Constant-Murley Shoulder Function Test (Constant test) at least 12 months after the completion of all adjuvant treatment. Additional outcome measures related to physical therapy, pain medication use, leisure activity, and employment status.

RESULTS: We evaluated 167 patients who underwent 121 selective neck dissections and 46 modified radical neck dissections. The median (range) NDII score was 90 (10-100). Patients with modified radical neck dissection reported lower scores than those with selective neck dissection (85 [10-100] vs. 92 [30-100]; P = .01). Multivariable analysis showed that advanced-stage disease (mean, 77 [range, 25-100] vs. 87 [18-100]; P = .006), radiation therapy (80 [10-100] vs. 88 [50-100]; P = .03), and chemotherapy (77 [30-100] vs. 83 [18-100]; P = .002) were associated with greater shoulder impairment. The NDII and Constant test were well correlated (0.64; P < .001). Change in leisure activity was correlated with greater impairment (median [range] NDII score, 90 [18-100] for patients with no change vs. 53 [10-100] for patients with change, P = .005; Constant score, 85 [12-100] vs. 68 [10-88], P = .004). Patients who remained employed or resumed working had higher median (range) NDII scores (94 [10-100] and 88 [75-100], respectively) than those who limited or stopped working (70 [10-100]), which also correlates with greater shoulder impairment (P < .001).

CONCLUSIONS AND RELEVANCE: More aggressive treatment, either in the form of increased surgical dissection, radiation therapy, or chemotherapy, was associated with worse shoulder function and quality of life. The degree of impairment perceived by the patient and measured in objective testing was correlated with leisure activity and employment status. These findings may stimulate further investigation related to optimizing quality of life following neck dissection.
The IHI Triple Aim

The IHI Triple Aim is a framework developed by the Institute for Healthcare Improvement that describes an approach to optimizing health system performance. It is IHI’s belief that new designs must be developed to simultaneously pursue three dimensions, which we call the “Triple Aim”:

- Improving the patient experience of care (including quality and satisfaction);
- Improving the health of populations; and
- Reducing the per capita cost of health care.

Triple Aim in Cancer Care

Can you make your patients happier and healthier—with fewer visits, fewer unnecessary tests (e.g. metastatic workups for musculoskeletal problems) and less cost?

**YES, if you prevent some impairments and identify others early – treating them efficiently and effectively.**
Save the Date - Cancer Rehabilitation Conference

This conference is being co-sponsored by the National Institutes of Health, Department of the NIH Clinical Center and is co-sponsored by the National Institute on Aging, National Cancer Institute, National Institute on Disability, Independent Living and Rehabilitation Research, and the National Institute for Nursing Research.

When: Monday, October 22, 2023
Where: National Institutes of Health, Main Campus

Who Should Attend: The conference will be of interest to clinicians, researchers, and policymakers.

The National Institutes of Health is excited to announce a rehabilitation symposium designed to disseminate the findings of a subject matter expert group comprised of clinical NIH staff and other nationally recognized experts regarding cancer rehabilitation practices in the United States. The conference will present current practice models in cancer rehabilitation, identify screening and triage models and clinical measurement tools and discuss clinical integration of rehabilitation services into the oncology continuum of care and survivorship.
Next on the Horizon

1. More and better studies on cancer rehab
2. More sophisticated understanding by oncology healthcare professionals of the difference between general exercise vs therapeutic exercise to treat impairments
3. Huge increases in survivors demanding cancer rehab
4. Huge increases in oncologists wanting rehab care of their patients (high-quality cancer care)
5. Hospitals and cancer centers being held accountable for cancer rehab care--including demonstrating appropriate screening, tracking of referrals to rehab (what is the gap in care compared to new cancer cases), and physical/psychological outcomes
6. More inclusion of primary care providers, nurse navigators, mental health professionals & others
7. Better reimbursement
8. Cancer rehab is part of bundles
9. Rehab is not optional—it’s a standard part of high-quality cancer care