



SPAULDINGTM
REHABILITATION NETWORK

*Integrating Person-Centered Care
across Ages, Diagnoses and Disciplines*

Cancer Prehabilitation & Rehabilitation

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HARVARD MEDICAL SCHOOL
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HEALTHCARE

What is an impairment? What is a disability?

Example:
Bone cancer (sarcoma)



**Impairment-
driven cancer
rehabilitation**



**General
exercise**

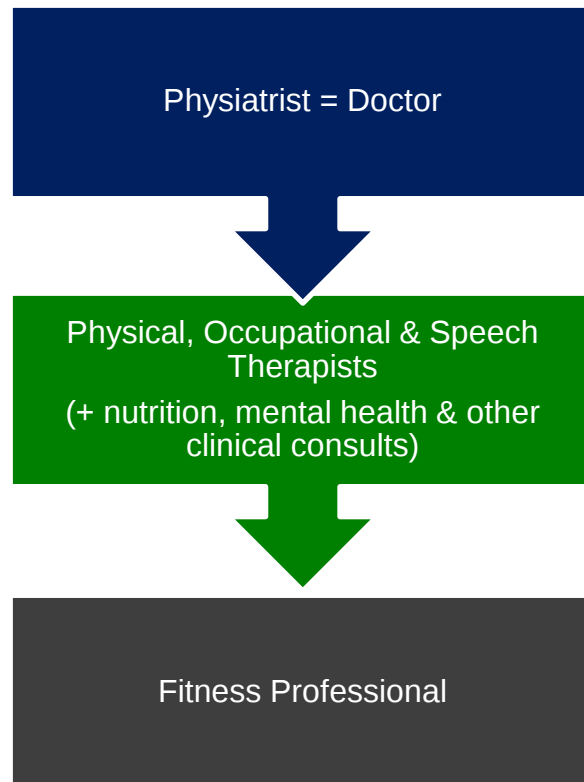
**Example:
Head and neck cancer
Breast cancer**

Impairment-Driven Cancer Rehabilitation: An Essential Component of Quality Care and Survivorship

Julie K. Silver, MD¹; Jennifer Baima, MD²; R. Samuel Mayer, MD³

Adult cancer survivors suffer an extremely diverse and complex set of impairments, affecting virtually every organ system. Both physical and psychological impairments may contribute to a decreased health-related quality of life and should be identified throughout the care continuum. Recent evidence suggests that more cancer survivors have a reduced health-related quality of life as a result of physical impairments than due to psychological ones. Research has also demonstrated that the majority of cancer survivors will have significant impairments and that these often go undetected and/or untreated, and consequently may result in disability. Furthermore, physical disability is a leading cause of distress in this population. The scientific literature has shown that rehabilitation improves pain, function, and quality of life in cancer survivors. In fact, rehabilitation efforts can ameliorate physical (including cognitive) impairments at every stage along the course of treatment. This includes prehabilitation before cancer treatment commences and multimodal interdisciplinary rehabilitation during and after acute cancer treatment. Rehabilitation appears to be cost-effective and may reduce both direct and indirect health care costs, thereby reducing the enormous financial burden of cancer. Therefore, it is critical that survivors are screened for both psychological and physical impairments and then referred appropriately to trained rehabilitation health care professionals. This review suggests an impairment-driven cancer rehabilitation model that includes screening and treating impairments all along the care continuum in order to minimize disability and maximize quality of life. CA Cancer J Clin 2013;63:295-317. ©2013 American Cancer Society.

Cancer Rehabilitation



Rehabilitation Medicine + Palliative Care



Patient + Family/Loved Ones (Caregiver)
+ Entire Oncology Team



Cancer Rehabilitation

“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.”**

Silver JK, Raj VS, Fu JB, Wisotzky EM, Smith SR, Kirch RA. Cancer rehabilitation and palliative care: Critical components in the delivery of high-quality oncology services. *Support Care Cancer*. 2015;(23):3633-43.

Knowledge is Power



*Cancer rehabilitation is
medical care*

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

Pergolotti M et al. The prevalence of potentially modifiable functional deficits and the subsequent use of occupational and physical therapy by older adults with cancer. J Geriatric Onc 2015.

Distress & Disability

Med J Aust, 2010 Sep 6;193(5 Suppl):S62-7.

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 E¹, 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...”

Quality of Life

Psychooncology. 2011 Nov;20(11):1211-20. doi: 10.1002/pon.1837. Epub 2010 Sep 27.

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

Penttinen HM¹, Saarto T, Kellokumpu-Lehtinen P, Blomqvist C, Huovinen R, Kautiainen H, Järvenpää S, Nikander R, Idman J, Luoto R, Sievänen H, Utriainen M, Vehmanen L, Jääskeläinen AS, Elme A, Ruohola J, Luoma M, Hakamies-Blomqvist L.

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

Cancer Epidemiol Biomarkers Prev. 2012 Nov;21(11):2108-17. doi: 10.1158/1055-9965.EPI-12-0740. Epub 2012 Oct 30.

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

Weaver KE¹, Forsythe LP, Reeve BB, Alfano CM, Rodriguez JL, Sabatino SA, Hawkins NA, Rowland JH.

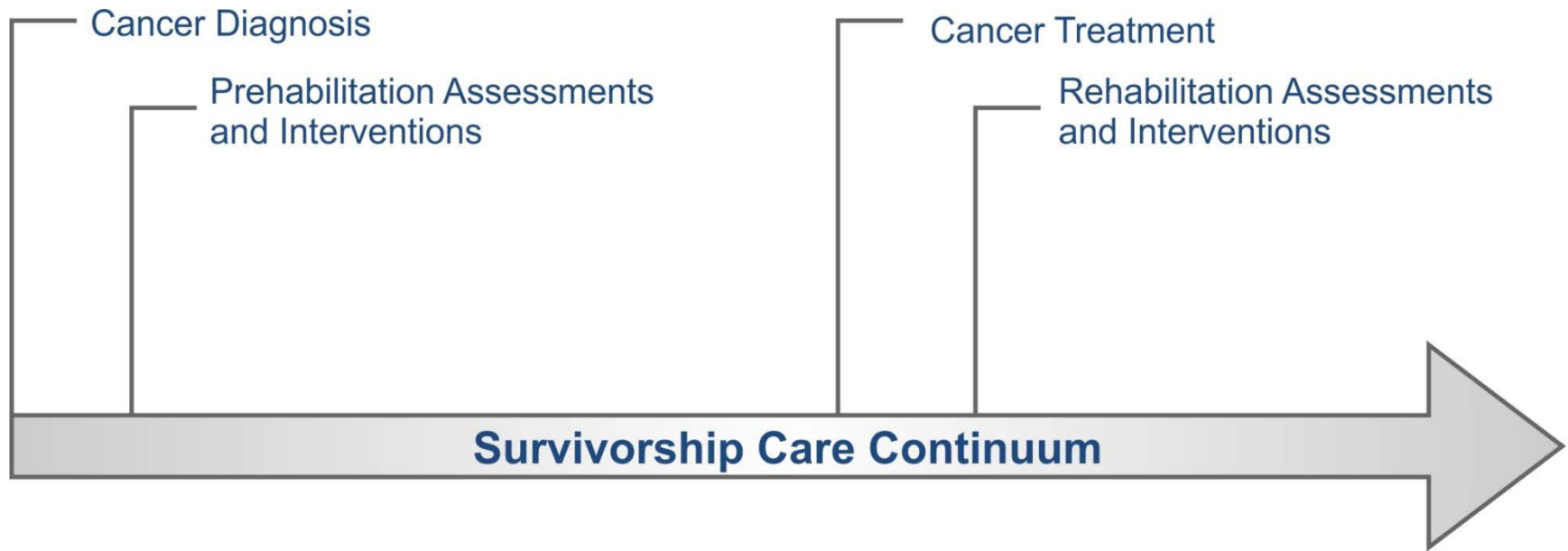
Many more cancer survivors had poor QOL due to physical problems than emotional ones.



Cancer **Pre**habilitation

“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.”

Silver JK, Baima J, Mayer RS. Impairment-driven cancer rehabilitation: an essential component of quality care and survivorship. *CA Cancer J Clin*. 2013;63(5):295-317.



Surgical Prehabilitation in Patients with Cancer



State-of-the-Science and Recommendations for Future Research from a Panel of Subject Matter Experts

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Bradford Hirsch, MD^h

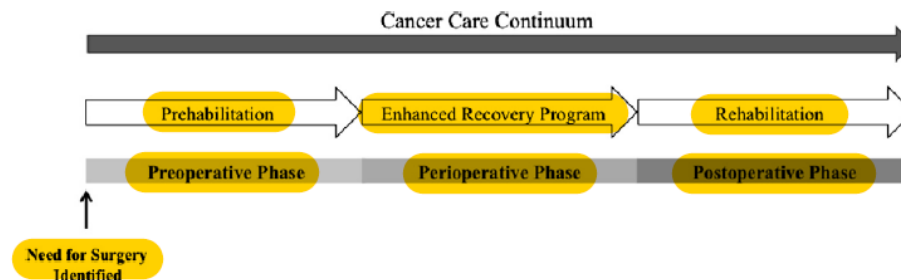


Fig. 2. Assessment and interventions designed to improve outcomes and reduce health

Lung Cancer

EDITORIAL COMMENTARY

Prehabilitation: Prevention is better than cure

Karen J. Dickinson, MBBS, and Shanda H. Blackmon, MD, MPH

See related article on pages 569-73.

The benefit of pulmonary rehabilitation for patients undergoing lung resections for non-small cell lung cancer (NSCLC) or, indeed, any thoracic surgery is well established.¹ Gaining momentum in many surgical specialties, often as part of enhanced recovery pathways, is the concept of prehabilitation.²⁻⁶ This describes presurgical exercise interventions used in an attempt to reduce morbidity and mortality. With so much emphasis being placed on smoking cessation to prevent lung cancer, one may wonder why prehabilitation before thoracic surgery is not routine practice.

Tarumi and colleagues¹⁰ provide evidence for improved pulmonary function in patients undergoing prehabilitation during chemoradiotherapy with subsequent lung resection for NSCLC. This is an important patient group to study, because the patients are classically associated with increased surgical morbidity. We recognize that this was an observational study without randomization or matching, and therefore translation into improved clinical outcome is less clear.¹¹ There was no significant difference between the rate of complications between those patients with and without respiratory impairment (6.1% vs 6.1%, $P = .9908$). Berry and colleagues¹² demonstrated that in patients with impaired pulmonary function, preoperative

Br J Surg. 2016 Apr;103(5):504-12. doi: 10.1002/bjs.10096. Epub 2016 Feb 11.

Randomized clinical trial of prehabilitation before planned liver resection.

Dunne DF^{1,2}, Jack S³, Jones RP^{1,2}, Jones L¹, Lythgoe DT⁴, Malik HZ¹, Poston GJ¹, Palmer DH^{2,5}, Fenwick SW¹.

Author information

Abstract

BACKGROUND: Patients with low fitness as assessed by cardiopulmonary exercise testing (CPET) have higher mortality and morbidity after surgery. Preoperative exercise intervention, or prehabilitation, has been suggested as a method to improve CPET values and outcomes. This trial sought to assess the capacity of a 4-week supervised exercise programme to improve fitness before liver resection for colorectal liver metastasis.

METHODS: This was a randomized clinical trial assessing the effect of a 4-week (12 sessions) high-intensity cycle, interval training programme in patients undergoing elective liver resection for colorectal liver metastases. The primary endpoint was oxygen uptake at the anaerobic threshold. Secondary endpoints included other CPET values and preoperative quality of life (QoL) assessed using the SF-36®.

RESULTS: Thirty-eight patients were randomized (20 to prehabilitation, 18 to standard care), and 35 (25 men and 10 women) completed both preoperative assessments and were analysed. The median age was 62 (i.q.r. 54-69) years, and there were no differences in baseline characteristics between the two groups. Prehabilitation led to improvements in preoperative oxygen uptake at anaerobic threshold (+1.5 (95 per cent c.i. 0.2 to 2.9) ml per kg per min) and peak exercise (+2.0 (0.0 to 4.0) ml per kg per min). The oxygen pulse (oxygen uptake per heart beat) at the anaerobic threshold improved (+0.9 (0.0 to 1.8) ml/beat), and a higher peak work rate (+13 (4 to 22) W) was achieved. This was associated with improved preoperative QoL, with the overall SF-36® score increasing by 11 (95 per cent c.i. 1 to 21) ($P = 0.028$) and the overall SF-36® mental health score by 11 (1 to 22) ($P = 0.037$).

CONCLUSION: A 4-week prehabilitation programme can deliver improvements in CPET scores and QoL before liver resection. This may impact on perioperative outcome.

Nutrition: Prehabilitation

Take Home Point

The control group had a significantly higher number of serious post-op complications.



[Support Care Cancer](#). 2015 Feb;23(2):365-70. doi: 10.1007/s00520-014-2363-4. Epub 2014 Aug 6.

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

[Kabata P¹](#), [Jastrzebski T](#), [Kakol M](#), [Król K](#), [Bobowicz M](#), [Kosowska A](#), [Jaśkiewicz J](#).

⊕ Author information

Abstract

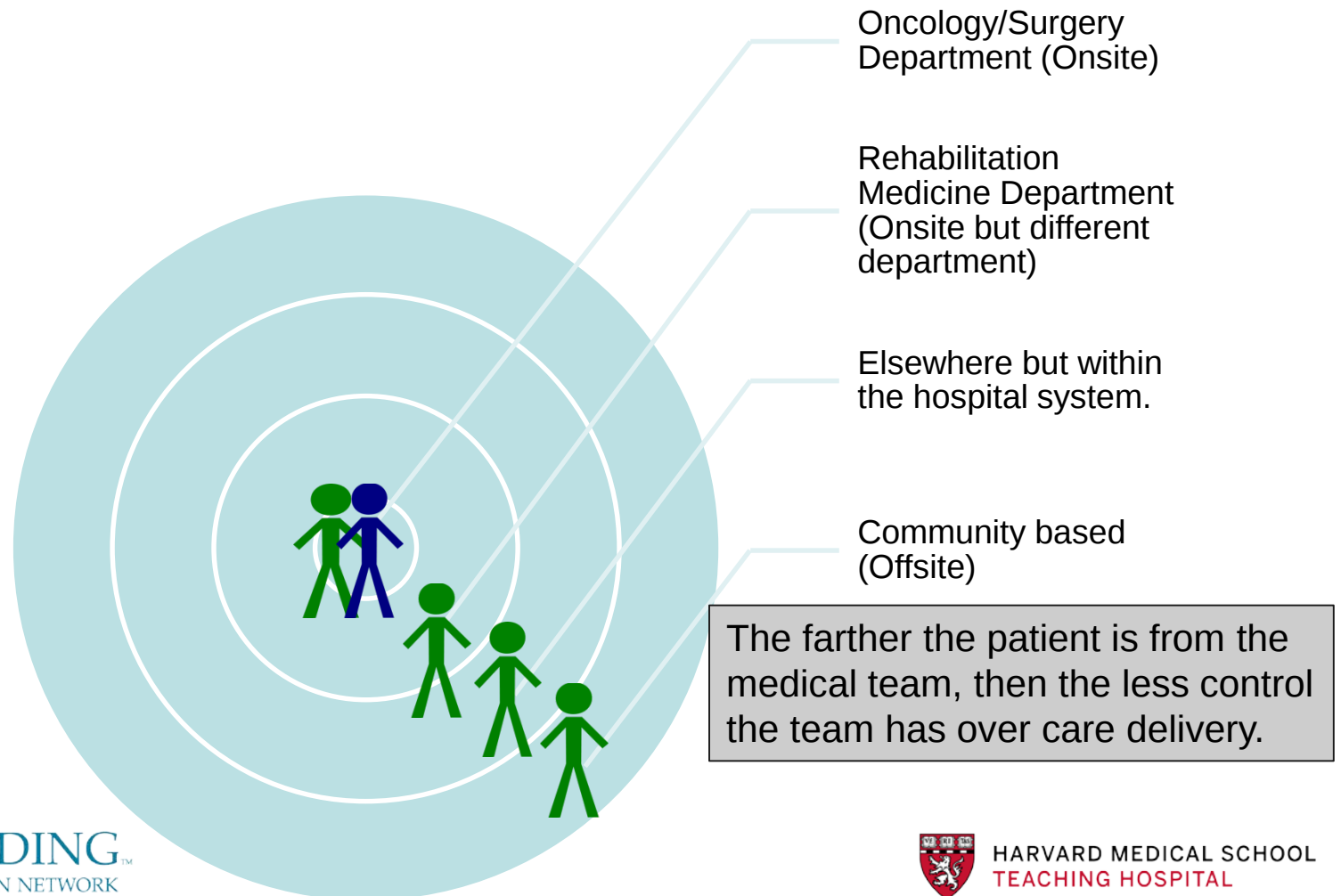
PURPOSE: Preoperative nutrition is beneficial for malnourished cancer patients. Yet, there is little evidence whether or not it should be given to nonmalnourished patients. The aim of this study was to assess the need to introduce preoperative nutritional support in patients without malnutrition at qualification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

Does the location of care delivery matter?



Employment & Disability

Cancer. 2014 Jul 15;120(14):2072-6. doi: 10.1002/cncr.28713. Epub 2014 Apr 18.

Cancer rehabilitation and prehabilitation may reduce disability and early retirement.

Silver JK¹.

Hospital Length of Stay
Metastatic work ups
Return to work
Cluster symptoms

Institute for Healthcare Improvement

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.

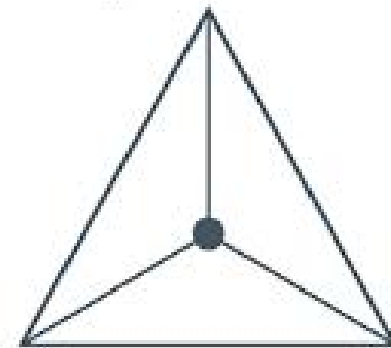
Triple Aim in Cancer Care

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.

The IHI Triple Aim

Population Health



Experience of Care

Per Capita Cost



Alberta
Cancer Survivor

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...

J. Timothy



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NIH Panel: Cancer Rehabilitation Recommendations

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.
2. 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.

Ref: Stout NL, Silver JK, Raj VS, Rowland J, Gerber L, Cheville A, Ness KK, Radomski M, Stubblefield MD, et al. Towards a National Initiative in Cancer Rehabilitation: Recommendations from a Subject Matter Expert Group. *Arch Phys Med Rehabil.* 2016.

