



Perspective

## The Pursuit of Optimal Living after Cancer through Comprehensive Coordinated Care

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### Abstract

There are 13.7 million cancer survivors in the US today. Unfortunately, many suffer from post-cancer treatment sequelae which often go un-treated. Cancer Rehabilitation is an upcoming sub-specialty of Physical Medicine and Rehabilitation that focuses on helping to reduce the morbidity for cancer survivors suffering from post-cancer treatment complications. The primary goal of this article is to raise awareness amongst the medical community about the impact of cancer rehabilitation on cancer survivorship. Cancer rehabilitation offers an improved quality of life through the treatment of musculoskeletal, neuromuscular, and functional complications experienced by cancer survivors. With the increased awareness of rehabilitative treatment options amongst the medical community, more cancer survivors will be able to live an optimal, cancer-free life.

**Keywords:** Cancer; Rehabilitation; Survivor

### Manuscript

According to 2013 American Cancer Society (ACS) statistics, there are approximately 13.7 million American cancer survivors and the number is growing. Today it is estimated that 65% of those diagnosed with cancer will live at least 5 years [1]. Many cancer survivors face multiple challenges with returning to their pre-morbid activities of daily living as a result of post-cancer treatment sequelae. The majority of impairments that cancer survivors suffer from can be treated and managed with rehabilitative interventions.

Cancer rehabilitation has been defined by an article by Cromes as assisting cancer survivors to obtain maximum physical, social,

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**Citation:** Silva K, Shah J, Durgam R, Stern M, Prince D, et al. (2015) The Pursuit of Optimal Living after Cancer through Comprehensive Coordinated Care. J Phys Med Rehabil Disabil 1: 004.

**Received:** August 04, 2015; **Accepted:** September 04, 2015; **Published:** September 25, 2015

psychological, and vocational functioning through the use of an interdisciplinary team approach [2]. Cancer rehabilitation is underutilized throughout the United States. This occurs due to a lack of provider education and understanding of the benefits that a cancer rehabilitation professional can offer cancer survivors. In a 2008 study performed by Cheville at the Mayo Clinic along with contributions from Memorial Sloan-Kettering Cancer Center, 92% of 163 patients with metastatic breast cancer were found to have at least one physical impairment for which referral to a cancer rehabilitation specialist would have been appropriate. However, the study revealed that only 30% of individuals with impairments requiring intervention by a cancer rehabilitation specialist received referrals to have these impairments further evaluated [3].

Underutilization of cancer rehabilitation is also an international problem. In Norway, researchers looked at 1,325 patients diagnosed with cancer from 2005-2006 and determined that 63% of these patients had unmet physical and psychosocial needs [4]. A retrospective longitudinal cohort study was performed by the National Health Insurance research database in Taiwan which showed that only 39.6% of 632 patients with breast cancer received rehabilitative services [5]. Ultimately, the need for cancer rehabilitation is evident worldwide, however these needs are not being met.

The importance of the role played by Physiatrists in ensuring comprehensive care for cancer survivors cannot be overemphasized. Physiatrists specializing in cancer rehabilitation help to coordinate care amongst primary care physicians, medical oncologists, radiation oncologists, surgical specialists, and psychiatrists [6]. In addition, Physiatrists are adept at evaluating functional impairment and determining what type of intervention may be needed. They are capable of treating pain by utilizing therapy services, providing pharmacologic management, and through interventional procedures. Furthermore, many physiatrists are adept at acupuncture and lymphedema services, both of which can be utilized to treat post-cancer sequelae.

Since physical impairments limit the patient's ability to function optimally and are associated with poor overall survival, early identification and intervention is of the utmost importance [7]. As the number of cancer survivors continues to increase so too will the need for improved recognition of functional impairments and access to rehabilitative care. This can only be achieved through the increased awareness of primary care physicians about post-cancer treatment sequelae and rehabilitative interventions available to address these specialized needs.

The specialized needs of cancer survivors are many, ranging from a variety of impairments such as: anatomic, physiologic, and psychological impairments and how they manifest to produce disability and handicap. Cancer rehabilitation focuses on the restoration of functional losses from direct or indirect causes during the treatment of cancer. Direct causes are related to impairments produced from cancerous lesions, i.e., pathologic fractures, disruption of normal biomechanics, pain and fatigue. While indirect causes can include complications of radiation, chemotherapy, and

surgical intervention such as radiation fibrosis, lymphedema, and disruption of normal biomechanics after surgical intervention. Ultimately, the goal of cancer rehabilitation is to offer an improved quality of life by treating the musculoskeletal, neuromuscular, and functional complications experienced by cancer survivors (Table 1).

<b>Physical Impairments</b>	
Impaired range of motion	
Gait and balance dysfunction	
Deconditioning	
Decreased cardiovascular capacity	
Dysphagia	
Dysarthria	
Lymphedema	
Radiation fibrosis	
Post-surgical scar adhesion management	
Myelopathy	
Cardiomyopathy	
Bowel/Bladder dysfunction	
Cervical dystonia	
Trismus	
<b>Functional impairments</b>	
Inability to perform activities of daily living	
Inability to return to prior activity level (work, home, recreational, social)	
Adaptive equipment needs	
<b>Pain/Fatigue management</b>	
Neuropathic pain	
Biomechanical pain	
Musculoskeletal pain	
Phantom pain	
Cancer related fatigue syndrome	
<b>Psychosocial concerns</b>	
Dysfigurement	
Economic burden	

**Table 1:** Post-cancer treatment sequelae addressed by rehabilitation specialists include, but are not limited to the following table.

There is strong evidence in the medical literature that supports the efficacy of cancer rehabilitation in optimizing survivor function (Table 2). A meta-analysis performed by Mishra et al., analyzed the effects of exercise on health-related quality of life. Their data suggests that exercise can improve body image, self-esteem, emotional well-being, sexuality, social functioning, and fatigue, ultimately allowing for an improved quality of life [8]. Similarly, a meta-analysis performed by Cramp et al., determined that patients suffering from prostate or breast cancer-associated fatigue benefited from resistance training both during and post-treatment [9]. Cho and researchers looked at the efficacy of comprehensive rehabilitation on shoulder Range of Motion (ROM) after mastectomy. Their results showed an increase in ROM from 81.4% to 92.9% improvement over baseline ROM in patients receiving rehabilitation versus no observable change in their control group [10]. A meta-analysis looking at the efficacy of exercise in improving cancer related fatigue confirmed that there is a moderate improvement in fatigue at a statistically significant level [11]. Due to ample evidence-based research in the literature about the

efficacy of rehabilitative care, referral of all cancer survivors to cancer rehabilitation specialists is quickly becoming standard of care.

Endurance
Balance and coordination
Cardiovascular conditioning
Muscular strength and range of motion
Bone mass density
Pain control
Fatigue
Lymphedema and immune functioning
Functional ability
Quality of life

**Table 2:** Evidence based results of cancer rehabilitation improves but is not limited to the following: [12-18].

The 2012 guidelines released by the American College of Surgeons Commission on Cancer (COC) include rehabilitative services as a recognized evidence-based standard of care for cancer survivors [12]. To ensure comprehensive care for cancer survivors, the COC recommends that all cancer treatment facilities offer access to rehabilitative services either within their facility or through referral to an outside provider [13]. Ultimately, the goal of the COC is to provide cancer survivors with a comprehensive survivorship plan to address all cancer-related complications.

The cost of treating cancer today continues to increase. From a monetary standpoint, early rehabilitative intervention focused on early intervention may decrease the overall cost of treating cancer and its complications. Too often, cancer survivors are receiving rehabilitative services once they are severely debilitated. This results in increased re-hospitalization rates and increased absences from work. Through early intervention by cancer rehabilitation specialists who treat patient function, dysfunction can be identified and treated before it becomes a significant disability for the patient.

There is opportunity for improvement regarding the medical care that is offered to cancer survivors in the US today. Although the future of cancer rehabilitation and its implications for cancer survivorship is promising, there is still a great deal of provider education that must occur for cancer survivors to benefit from state of the art cancer rehabilitation. A major barrier which persists is the lack of knowledge by both patients and physicians about cancer rehabilitative services, thus limiting access to care. As awareness amongst health care providers continues to grow, so will the quality of life for all cancer survivors. Ultimately, additional accessibility to rehabilitative treatment will lead to more opportunities to prevent or relieve the suffering endured by cancer survivors.

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