



## Contemporary Issues in Cancer Rehabilitation

# A Guide to Inpatient Cancer Rehabilitation: Focusing on Patient Selection and Evidence-Based Outcomes

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## Abstract

Cancer inpatients commonly suffer from impairments that can prohibit safe discharge home from the acute care inpatient medical service and thus require transfer to a postacute inpatient rehabilitation facility. It has been demonstrated in multiple studies that cancer rehabilitation inpatients are able to make statistically significant functional improvements and at a similar pace as their noncancer counterparts. Medical fragility and reimbursement regulations are concerns that affect acceptance and triage of cancer rehabilitation inpatients. Strategies to rehabilitate these challenging patients include considering risk factors for medical complications, consult-based inpatient rehabilitation, and improved communication and coordination with oncology teams.

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## Introduction

The majority of cancer physiatry has been in the outpatient setting primarily because of the increasing number of long-term cancer survivors without evidence of disease. However, inpatient rehabilitation is necessary for many patients with advanced cancer undergoing active treatment. In 2009, there were 4.7 million adult cancer-related hospitalizations in the United States, of which 1.2 million had cancer as the principal diagnosis [1]. An estimated 27% of direct medical costs for patients with cancer in 2014 were due to inpatient hospital stays [2]. Oncology inpatients can suffer from a number of debilitating impairments, from systemic/generalized weakness to more focal sources, including the central nervous system, peripheral nervous system, and musculoskeletal system [3]. These impairments can have functional implications that make discharge home from acute care unsafe. Table 1 lists impairments that may require postacute inpatient rehabilitation admission.

Rehabilitation consults during the acute care stay can help improve function and minimize debility. Despite the fact that patients in the oncology service who are hospitalized frequently have impairments, research has shown an underreferral of these individuals to rehabilitation [4,5]. Inpatient physiatry

and rehabilitation services consults often occur when the primary acute care medical team realizes that the patient is unsafe to go home. A common scenario is that acute care medical treatment has finished and the attending oncology physician informs the patient (and his/her family) that it's time for discharge; however, the patient/family express concerns regarding readiness for discharge. In these cases, it is likely that a physiatry and/or other rehabilitation consultation that is provided earlier in the course of the hospitalization could improve discharge planning and reduce anxiety and/or prevent the need for transfer to an inpatient rehabilitation facility or an unplanned acute care readmission shortly after discharge.

Inpatient cancer rehabilitation occurs in a number of settings. During an acute care hospitalization, patients can receive physical, occupational, and speech therapy, sometimes with or without the support of a physiatrist, while they are receiving medical treatment. In the United States, for patients who require postacute care (PAC) inpatient rehabilitation, there are 3 types of inpatient rehabilitation facilities: (1) acute inpatient rehabilitation facilities (IRFs) and subacute rehabilitation facilities that are divided into (2) skilled nursing facilities (SNFs); and (3) long-term acute care facilities.

Postacute inpatient rehabilitation physiatrists may be reluctant to accept cancer patients for a number of

**Table 1**  
Impairments that may require postacute inpatient rehabilitation admission

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1) Systemic
a. Deconditioning/cachexia/asthenia
b. Cancer-related fatigue
2) Neurologic
a. Brain Injury from brain mass
i. Todd paralysis
ii. Radiation necrosis
b. Spinal cord injury due to spinal mass and/or compression from vertebral fracture
i. Lower motor neuron, eg, sacrectomy
ii. Upper motor neuron
c. Leptomeningeal disease with/without intrathecal chemotherapy
d. Central nervous system radiation necrosis
e. Radiculopathy due to tumor invasion
f. Plexopathy due to radiation or tumor invasion
g. Chemotherapy-induced peripheral neuropathy
h. Neurogenic bowel
i. Neurogenic bladder
j. Spasticity
k. Cognitive deficits, including "chemo brain"
l. Autonomic dysfunction including orthostatic hypotension
m. Dysphagia
n. Dysphonia
o. Paraneoplastic syndromes
i. Neuropathy
ii. Cerebellar dysfunction
3) Musculoskeletal
a. Peripheral edema due to other conditions (eg, bone marrow transplant inflammation, hypoalbuminemia)
b. Pathologic bone pain
c. Amputation (eg, external hemipelvectomy)
d. Myopathy
i. Steroid myopathy
ii. Critical care myopathy
e. Restrictions due to postsurgical flaps

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reasons. First, many patients with cancer continue to receive radiation treatment or chemotherapies, which can be expensive and result in reduced margins in a Medicare Prospective Payment System environment. Second, Medicare requirements regarding IRF admission composition may present significant challenges for IRF admission reimbursement, which are discussed in the next section. Third, psychiatrists may be hesitant as the result of concerns about the medical stability of patients with cancer. The challenges of rehabilitating patients with cancer in an inpatient setting has stimulated research to improve rehabilitation triage and creative ways to rehabilitate them.

### Regulatory Considerations

Within the United States, acute inpatient rehabilitation is delivered within IRFs. Those IRFs that are certified by the Centers for Medicare & Medicaid Services (CMS) have regulations and requirements regarding the admission and continued inpatient stay for patients requiring rehabilitation services.

Admissions to inpatient rehabilitation must be deemed both reasonable and necessary and must generally meet the following criteria on admission:

- requirement for multiple therapy disciplines (physical, occupational, speech-language pathology, or prosthetics/orthotics), of which one must be physical or occupational therapy;
- delivery of therapy services for at least 3 hours of therapy per day at least 5 days per week (intensity also may be demonstrated by the provision of 15 hours in a 7-consecutive day period starting from the date of admission, in certain well-documented cases [6]);
- active participation and significant benefit for patients from an intensive rehabilitation therapy program;
- supervision by a rehabilitation physician for at least 3 days per week to assess and treat medical and functional issues; and
- multidisciplinary and intensive coordinated team approach to delivery of care.

As a requirement for participation in the Medicare reimbursement program (called the Prospective Payment System), IRFs also are required to maintain a minimum percentage of their total inpatient population within 1 of 13 diagnostic categories. Although the percentage has varied in the past, the current threshold for compliance is 60%, and hence this requirement is termed the 60% rule (Table 2) [7]. This rule has provided challenges regarding the admission of cancer survivors, because none of the diagnoses listed are explicitly cancer. This does not necessarily indicate that patients with cancer will not benefit from comprehensive rehabilitation services at IRF.

The difficulty for many institutions is how to maintain 60% compliance and provide access to care for the cancer population. Interestingly, several cancer diagnoses can be coded as compliant within the 60% rule. For example, brain tumors (both primary and metastatic) may be considered brain injuries. Sarcoma resections with resultant amputation of the affected extremity are appropriately diagnosed as an amputation. Primary and metastatic spinal tumors with neurologic impairment may be considered spinal cord injuries. Pathologic lesions in the femur can be categorized as a femur fracture. Polyneuropathy secondary to chemotherapy or myopathy due to corticosteroids also may fall under the 60% rule. Several other examples may exist either due to the primary effects from tumor, or secondary effects of treatment.

Studies have shown that patients with non-60% rule-compliant diagnoses are able to make significant functional improvements in an IRF. For example, Guo et al [8] was able to demonstrate that asthenic (a non-60% rule compliant diagnosis) patients with cancer are able to make statistically significant functional

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