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ORIGINAL ARTICLE

Promoting assessment and management of function through navigation: opportunities to bridge oncology and rehabilitation systems of care

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Abstract

Recent calls from oncology providers and cancer policy forums advocate for improved connections between rehabilitation services and cancer care delivery. Traditionally, this intersection has occurred when patients present with overt disability related to cancer treatment and is driven by reactive approaches to care. A growing body of evidence suggests that a proactive approach to functional screening and assessment encourages the identification and management of functional impairment and morbidity earlier in the cancer care continuum and contributes to better outcomes. A clinical pathway that prompts screening and referral to rehabilitation services in an expedited manner is needed. Cancer patient navigators provide care coordination through the duration of medical treatment, survivorship, and end-of-life. This article presents a framework for navigation workflows to support functional assessment and provide early triage pathways to the rehabilitation system of care. We provide a case example of novel approach to patient navigation from a Southeastern United States community cancer center that uses a patient navigator with a rehabilitation background to serve in this role. An overview of the position skills, functional assessment and referral pathways, and perspective on quality improvements related to this approach are described. The use of rehabilitation providers beyond traditional clinical roles should be further explored. Their expertise in functional assessment and interpretation could foster improvements in cancer care delivery and outcomes for survivors in both the short and long term.

Keywords Patient navigation · Rehabilitation · Function · Functional morbidity · Functional assessment · Care coordination

Introduction

The population of cancer survivors, expected to exceed 20 million by 2025, experience functional morbidity at high rates (> 60%) during and after medically directed cancer treatments [1, 2]. Survivors experience physical, cognitive, and social functional decline which compromise quality of life [3], productivity [4, 5], and survival [6]. Rehabilitation medicine, an established medical discipline that includes nursing, physiatry, physical and occupational therapy, rehabilitation psychology, and speech and language pathology, is underutilized in managing the functional sequelae from cancer treatments despite growing evidence that rehabilitation optimizes outcomes. Referral rates to rehabilitation from oncology services are as low as 2% even when overt physical impairment is present [7]. Reasons include low awareness of the benefits of rehabilitation services among patients and providers, and uncertainty around referral pathways [2, 7–9].

Rehabilitation interventions improve function from the point of a cancer diagnosis, through prehabilitation [10, 11], and onward during medical treatment and survivorship [12]. Experts have called for more direct and proactive linkages between oncology and rehabilitation services [13–17]. A workflow that supports proactive functional assessment could significantly reduce the barriers to coordinating care between

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oncology and rehabilitation services and may alleviate many of the gaps in cancer care delivery that contribute to functional decline.

Cancer navigation services reduce disparities in access to care, expedite time to treatment, improve care plan coordination, facilitate better communication between clinicians, and reduce unnecessary health care service utilization [18–20]. A recent report from the National Cancer Policy Forum (NCPF) of the National Academies of Science, Engineering and Medicine (NASEM) titled *Establishing Effective Patient Navigation Programs in Oncology* shared recommendations for optimizing cancer patient navigation [21]. One aspect of the report addressed the question "who navigates?" While this role has traditionally been nursing-based, there are other health care providers with varying skill sets who could effectively serve as navigators. The NASEM report suggests that the answer to this question depends, in part, on the circumstances of the patient population needing navigation services.

In light of the high rate of functional morbidity experienced by the cancer population and the need for better integration of rehabilitation services with oncology care, the purpose of this manuscript is to provide a framework for a patient navigation workflow that improves proactive functional assessment and triage to rehabilitation services. Additionally, we present a case example from a community-based cancer center that leverages the skills and knowledge of a rehabilitation provider—in this case, a physical therapist—in the navigation role. The unique skills of the rehabilitation provider are described, and rationale provided for the value that these skills bring in providing functional assessment and triage to rehabilitation and exercise interventions.

Functional needs of the survivorship population

Individuals undergoing cancer treatment experience substantial morbidity in the physical and cognitive domains of function [2]. While many symptoms attenuate after the completion of treatment, the long-term impact on function may be more protracted, potentially leading to long-term disability. A recent analysis of the published literature identified that functional morbidity is widely underrecognized and unmanaged, adequate assessment of physical function is essentially missing from cancer care, and care pathways to optimize physical function are poorly developed [22].

The National Cancer Policy Forum report on *Long-Term Survivorship Care After Cancer Treatmen*t offered recommendations (Table 1) to improve the delivery of cancer supportive care and reduce the physical morbidity burden on cancer survivors with specific emphasis on improving the integration of rehabilitation care into the cancer continuum [13].

Table 1 NCPF recommendations to improve symptom management and rehabilitation

- Disseminate evidence-based practice guidelines to manage cancer symptoms and treatment side effects.
- Integrate evidence-based psychosocial services into care for cancer survivors and caregivers and improve access to behavioral and mental health services.
- Provide evidence-based interventions to cancer survivors with persistent fatigue or sleep problems (e.g., exercise, cognitive behavioral therapy, sleep hygiene measures, psychoeducation).
- Use cancer rehabilitation to maintain and restore function, reduce symptom burden, maximize independence, and improve quality of life.
- Offer cancer rehabilitation services to certain patients prior to initiating cancer treatment to minimize toxicity and morbidity.

The rehabilitation system of care

Rehabilitation medicine offers a comprehensive system of care leveraging licensed medical professionals who are integrated in nearly every health care system in the USA today. Rehabilitation services are a component of the Medicare *Essential Health Benefits Coverage* and are covered services by nearly all third-party payers, with some stipulation around medical necessity [23, 24].

Cancer rehabilitation is defined as "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" [25]. Comprehensive cancer rehabilitation care, as outlined by Dietz and colleagues, recognizes the role of rehabilitation for individuals with cancer in four domains (Fig. 1): preventive, restorative, supportive, and palliative care services [26].

Incorporating rehabilitation services from the point of cancer diagnosis throughout the care continuum improves functional outcomes [27, 28]. The Prospective Surveillance Model (PSM) [16, 29] is a recommended approach to provide functional screening and assessment, education interventions, and exercise recommendations throughout the duration of cancer care [17, 30]. Rehabilitation providers use valid assessment tools and intervention strategies to manage function. Although calls have been made to strengthen the linkages between oncology care and rehabilitation care and to integrate the PSM, the uptake of this concept has languished.

Leveraging navigation services to meet the functional needs of survivors

High-quality cancer care is complex and multi-faceted involving numerous care disciplines, multiple appointments, and the collation of substantial medical information to inform a plan

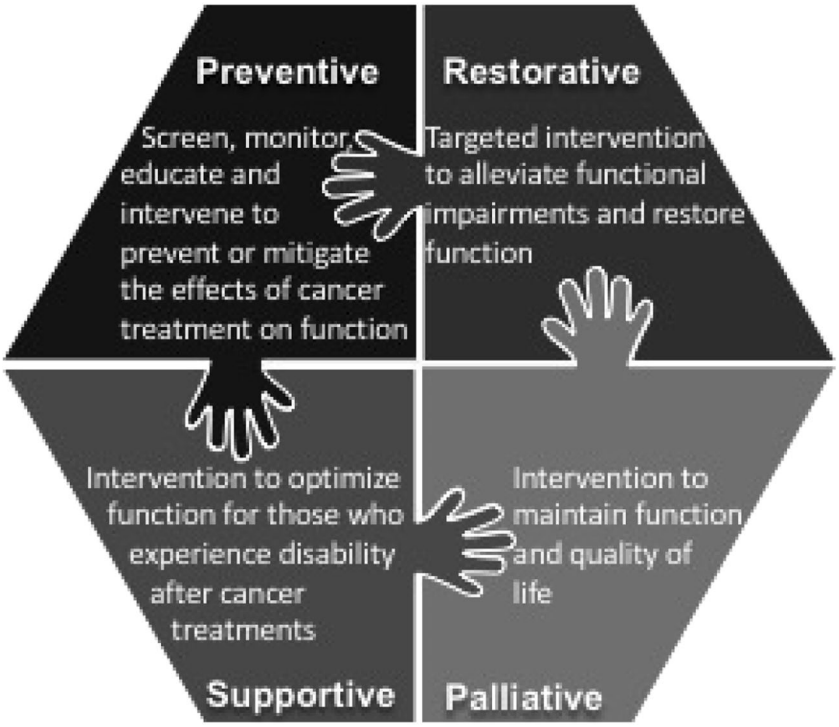


Fig. 1 Dietz model domains of cancer rehabilitation

of care. In the last two decades, attention was drawn to mechanisms that reduce fragmented cancer care and improve care plan coordination [31]. Foremost in improving care plan coordination is the use of oncology navigation programs. Oncology navigators provide supportive guidance as patients move through the complexities of cancer care and are at the forefront of fulfilling the important role of coordinating comprehensive cancer care planning.

While cancer navigator tools and tasks are well described [32], there are foundational principles of navigation that, when viewed in the context of function, could improve assessment and management of functional impairment and disability. Since navigation occurs throughout the continuum of cancer care delivery, the navigator has ongoing points of contact with the individual and therefore opportunities to assess physical function and identify meaningful changes indicative of emerging functional decline. Additionally, navigators play a key role in expediting care coordination and getting patients to the services they need. Oncologists and oncology nurses are necessarily focused on disease treatment and may not have the resources, knowledge, or the time to proactively direct supportive care services targeting function. Therefore, the navigator could play a pivotal role in promoting the early identification and management of functional changes by implementing clinical tools for functional assessment. Most importantly, navigation services build support networks. The navigator serves as an agent of both the system and of the individual patient, complementing and supplementing medically directed cancer care with the services, attention, and support that individuals need. Fostering a strong network that includes rehabilitation, providers can help to expedite triage to the right service as soon as needs are identified.

Due to the need for better alignment of oncology care and rehabilitation services, and with an understanding of the role of the navigator in facilitating comprehensive care, it seems obvious that navigation workflows could incorporate functional assessment into ongoing patient care. Furthermore, navigation services could successfully serve as the critical missing link in expediting the use of rehabilitation services to optimize function for the cancer population. However, the theoretical model for functional assessment and rehabilitation intervention, while well described, requires a more detailed look at the specific tactics and tasks that must be undertaken in a clinical setting to achieve this workflow as well as the knowledge and skills requisite of the navigator to fulfill in this role.

Lee Health system—a case study in cancer rehabilitation navigation services

The Lee Health cancer center is accredited by the American College of Surgeon's Commission on Cancer. The Lee Health oncology rehabilitation specialty program was first established in 2012 when the Oncology Rehabilitation Partners[1] Survivorship Training and Rehabilitation program was implemented. Functional morbidity screening was

[1] http://oncologyrehabpartners.com/

initially performed by a nurse navigator, which proved to be challenging for identifying distinct physical impairments and functional limitations amenable to rehabilitation services due to the discipline-specific skill set needed to comprehensively assess physical function. After a period of staff transition, the functional morbidity assessment aspects of navigation were transitioned to the rehabilitation service and a "rehabilitation navigator" position was created to screen for and manage functional impairments among cancer patients and to assist in triaging them to supportive care services when needed.

The Cancer Rehabilitation Navigator position exists in an administrative cost center and has grown to a full-time (40 h/week) position. Intake appointments are done in person or via phone and referrals to the navigator come from the health care system's oncology practices as well as from community-based oncology practices and other medical disciplines. The clinical and programmatic responsibilities of the rehabilitation navigator are outlined in Table 2. The rehabilitation navigator is a physical therapist from within the system with over 20 years of clinical experience as well as advanced practice skills in oncology, education, and system leadership. The combination of these skills has proven to be the crucial factor in identifying functional morbidity and specific physical impairments and expediting referral for rehabilitation services.

Table 2 Responsibilities of the rehabilitation navigator

Clinical responsibilities
• Provide a non-charged rehabilitation intake appointment with oncology patients at ANY point in their disease process to educate, explore, identify, screen and discuss cancer-related side effects that limit the individual's function and reduce their quality of life
• Provide education about functional impairments that commonly occur during cancer treatments, monitoring for adverse effects of treatment, exercise recommendations for walking program or physical activity to maintain fitness, and recommendations for optimal nutritional status and overall wellness
• Procure referrals for rehabilitation therapeutic interventions (PT, OT, SLP) and specialty services like lymphedema therapy and nutritional counseling when triage to these services is indicated
• Continuously monitor using follow-up calls after intake to ensure recommended services are implemented and to identify and problem-solve barriers to obtaining services
• Attendance at clinical grand rounds, tumor board meetings, and other care planning meetings
• Ongoing collaboration with referring providers, clinicians, and multi-disciplinary departments throughout the healthcare system
Programmatic responsibilities
• Develop clinical pathways around evidence-based practice and existing guidelines including prehabilitation clinical pathway, lymphedema surveillance program, pre-operative education classes
• Data tracking for intake, outcomes reporting, and quality improvement
• Community outreach and involvement speaking engagements, health fairs etc.
• Participation in quarterly cancer committee meetings and health system policy engagements

Table 3 Lee Health pre-operative classes and protocols that engage rehabilitation navigation

Enhanced Recovery After Surgery (ERAS) class
A pre-surgery patient education class provided to better prepare individuals undergoing extensive surgery and cancer treatments. This program primarily targets colorectal and other GI cancers. Appropriate patients are identified by the surgeon prior to surgery who have complex co-morbidities and require general deconditioning through the prehabilitation pathway for ERAS patients. If prehabilitation is indicated, referral is made directly to physical therapy for an individualized exercise program to optimize their strength and function prior to the initiation of cancer treatments or surgery. All ERAS individuals are scheduled to receive a rehabilitation navigation appointment 4 weeks post-operatively.
Pre-operative mastectomy/lumpectomy class
A pre-surgery education class that provides post-operative activity guidelines, discusses lymphedema risk and risk reduction strategies, and provides a post-op exercise protocol. The individual is scheduled 4 weeks post-surgery for follow-up appointment with the rehabilitation navigator to assess their recovery and address any functional needs.
Multi-disciplinary breast clinic
A weekly clinic where all newly diagnosed breast cancer patients meet with the oncology team for treatment planning. The rehabilitation navigator meets with each individual, explains their role and discusses timing of the rehabilitation plan of care. A baseline functional assessment is done to identify any prehabilitation needs and a non-charged follow-up appointment is scheduled 4 weeks post-surgery in the breast clinic.

Cancer rehabilitation navigation workflow

Referrals to the navigator come from a variety of providers within the system and from the community. Since Lee Health is a comprehensive cancer center, all cancer diagnoses are seen and supported by the rehabilitation navigator. Referral sources, while often from oncologic-specific disciplines, span primary care providers, palliative care teams, social workers, or patients themselves. The cancer center's pre-operative education classes or clinics (Table 3) serve as entry points to rehabilitation navigation. It is important to note that while newly diagnosed patients referred from the Lee Health system oncologists receive a rehabilitation navigation consultation at the inception of their care plan, patients can be referred for navigation at any point during cancer treatment for all cancer diagnoses. Referrals are made via fax, phone, or EPIC[2] electronic health record order and are for either rehabilitation navigation or a specific rehabilitation service (PT, OT, SLP). For all patients being scheduled for rehabilitation with an oncologic diagnosis, a question is triggered in the EPIC scheduling system to set a rehabilitation navigation intake appointment.

At the initial intake visit, the navigator provides education, conducts a baseline functional screening assessment, and assesses needs for additional services or supportive resources. The assessment is a multi-pronged approach to identify the

[2] https://www.epic.com/software

individual's self-reported and clinically measured levels of function, performance, and distress. The EHR system prompts a series of questions for the navigator to ask at intake including level of assistance needed with activities and mobility, use of assistive devices, activity tolerance with ADL's, work status, fall history and risk, weight changes, swallowing issues, support system, emotional and coping status, cognitive issues, and level of current exercise or physical activity. Most importantly, a battery of clinical assessments are taken by the navigator to gauge pain and fatigue (using a visual analog scale), and to query about physical problems that are contributing to distress. The result of this intake leads to a referral for a formal, more detailed assessment of joint mobility, strength, limb volume, and measures of physical performance for individuals who indicate functional deficits. Furthermore, this intake process helps the navigator identify when referrals to other services such as palliative care, counseling, or support groups are needed and if consultation to other medical services is required. The individual also receives a hard copy of a screening tool as a part of their intake and educational packet. This questionnaire asks specific questions about their function and indicates when it may be necessary for them to follow up with a rehabilitation provider.

Individuals are then followed by the rehabilitation navigator for the duration of their cancer care. The frequency of navigation visits is determined by patient needs and anticipated risk for functional decline during treatment. Follow-up appointments may be in person or via phone. The visits are typically consultative in nature, reassessing critical measures of physical function that were taken at intake and determining if clinically meaningful changes warrant a referral to rehabilitation services for an intensive plan of care. The visits also enable education for home exercises or referral to the Healthy Life Center wellness program. Patients who do not require skilled rehabilitation interventions are given general advice on physical activity recommendations and pathways for follow up with the rehabilitation provider when needed.

Throughout the trajectory of cancer care, the rehabilitation navigator adheres to the principles of navigation and supports patients in identifying needs and facilitating their interface with various providers to meet those needs. Figure 2 depicts the cancer rehabilitation navigation workflow, reflecting inputs to and referrals from the service.

Program outcomes

Since the inception of the cancer rehabilitation navigator position, identification and management of patients who are at highest risk for functional compromise now occurs earlier in the continuum of care and is more proactive. Informal surveys indicate that patient satisfaction with rehabilitation management of cancer-related side effects is 95%. The rehabilitation navigation program has also been instrumental in supporting the cancer center's adherence to National Comprehensive Cancer Network and ASCO guidelines and the clinical workflow has promoted the development of additional clinical pathways such as the breast cancer-related lymphedema surveillance program [33], and has supported the growth of the head and neck survivorship pathway [34]. These clinical pathways have become critical to expediting triage to proactive rehabilitative services. Providers report that they have observed improved patient adherence and participation in the program through the use of phone appointments which facilitate care coordination without the burden of additional appointments. Although formal outcomes of the rehabilitation navigation program are currently being analyzed, the overall feedback and participation rates from patients and providers are positive.

Challenges in implementation

The rehabilitation navigation referral process has been met with varying levels of receptivity among oncology providers. A vital aspect of the program that has improved receptivity is the ongoing education of oncology providers and their support staff regarding the immediate and long-term benefits of early rehabilitation services. "Rehabilitation is not top-of-mind for these providers however the rehabilitation navigator, being co-located in the cancer center, has made great strides in improving awareness through participation in rounds, tumor boards, and other cancer center programs and has helped to increase not only awareness, but demonstrates the value of rehabilitation as a resource to the providers which in turn has increased their receptivity and use of the navigation program and rehabilitation services." The goal of the Lee Health program is to provide accessible rehabilitation services for all patients as a consistent, standard process of cancer care delivery. While administrative and clinical procedures have been developed to support this goal, developing awareness among providers is an ongoing process to facilitate this goal.

Primary care providers (PCPs) are also instrumental in identifying and referring patients. Challenges in primary care include awareness of program availability and acuity of time that PCPs have available to encourage participation in rehabilitation care. Engagement with PCPs to facilitate rehabilitation navigation referral pathways is ongoing.

Insurance payment issues prevail for those who have high co-pays or no insurance for health care services. The program is structured to alleviate the cost burden to access rehabilitation navigation services through uncharged navigation assessments. However, when an individual requires intensive rehabilitation, the added out-of-pocket costs create an additional barrier to optimizing function. For individuals without insurance, the navigator assists with exploring resources for medical treatment funding from local and national sources. These services however frequently only cover the medical costs of

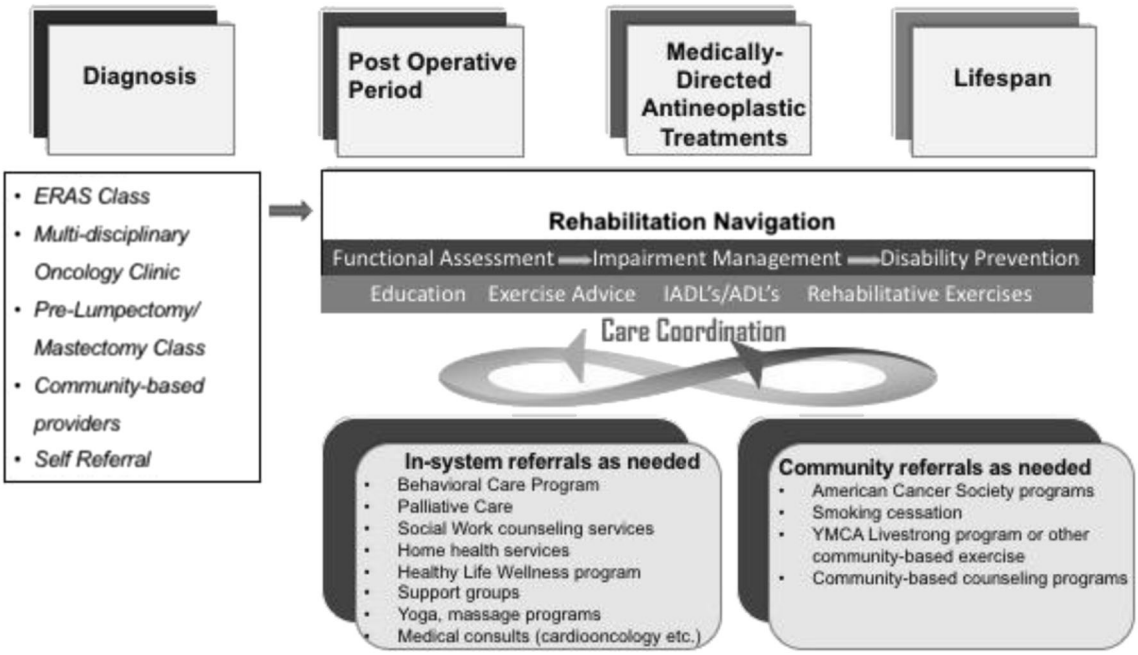


Fig. 2 Workflow for the cancer rehabilitation navigator. Abbreviations: ERAS—enhanced recovery after surgery, IADL—independent activities of daily living, ADLs—activities of daily living, YMCA—Young Men's Christian Association

cancer treatments with supportive services such as counseling or rehabilitation only covered based on criteria qualifications. Additional funding resources through fund raising events, grants, and the system's foundation support are being explored by the health care system.

Discussion

Cancer care is notoriously complex. Multiple treatment interventions delivered by providers in disparate settings lead to fragmented care, especially regarding supportive care services. Care coordination improves cancer treatment outcomes and the quality of cancer care delivery [35]. The most common and effective care coordination intervention, cancer patient navigation programs, enable patients with cancer diagnoses to have better access to the care and services they need in a timely manner [19]. Patients benefit from navigation services because coordinated care delivery and access to supportive services improves cancer care and optimizes an individual's quality of life during treatment [35].

The importance of rehabilitation care services to oncology care cannot be understated in light of the growing number of cancer survivors and their needs for optimal participation in life and work roles. The majority of individuals receiving cancer treatment will experience functional decline amenable to rehabilitation interventions [1, 2, 22]. Traditional pathways for provider referrals to rehabilitation have fallen short of addressing the functional needs of patients despite the presence of an entire system of medical rehabilitation care that could serve their needs. This glaring gap suggests a deficit in care coordination regarding the assessment and management of physical functioning. The recent NCPF report suggests integration of rehabilitation services throughout active treatment improves long-term outcomes for survivors [13], and calls for prospective functional assessment during cancer care have been made by expert groups [14, 36]. A recent ASCO guideline, *Assessing Vulnerabilities in Older Adults Undergoing Chemotherapy*, recommends pre-treatment functional assessment for all individuals $\geq$ 65 years old to monitor for functional decline [37]. This new guideline offers an opportunity to leverage navigation workflows as a pathway to alleviate this care coordination gap and expedite the integration of rehabilitative services.

Inherent in this approach is the need to integrate screening and assessment tools that facilitate early identification of clinically meaningful functional changes. The Eastern Cooperative Oncology Group (ECOG) scale and the Karnofsky Performance Scale (KPS) are commonly used to assess performance status in the cancer population. These measures however are inadequate in assessing meaningful functional problems and are insufficient to screen for functional decline [38]. Further, these tools have poor concordance with patient-reported measures of function [39]. Emerging research on the various forms of the geriatric assessment (GA) or the Vulnerable Elders Survey (VES) have shown promise in identifying older adults at greatest risk for functional compromise during cancer treatment [40]. However, the use of assessment tools requires knowledge in interpreting their outcomes and facilitating triage to the appropriate service

to manage the identified issues. The Lee Health case identifies that this was challenging when the responsibility fell to a provider without intimate knowledge of function. The rehabilitation provider's skill set fills this knowledge gap and enables smooth triage for patients into the system of care most aligned with their functional needs.

Navigation services are often touted as being flexible to meet patients' needs and are frequently tailored by a health care system based on their specific cancer populations [41]. The Lee Health System tailored its navigation services to incorporate greater attention to functional assessment and proactive management of functional sequelae as a part of the comprehensive navigation role. Filling the navigation role with a rehabilitation professional greatly expands the capabilities of a navigation program by providing the patient access to a health care provider with expertise in functional assessment. Leveraging this skill set to support navigation could greatly enhance timely identification of functional impairments and expedite triage to the most appropriate care provider for efficient and effective supportive care.

While an ideal construct would include rehabilitation navigation services as a standard of care for all patients at the point of diagnosis, there are a number of challenges to implementing this approach. First, it is important to identify the patient's readiness for the information that they receive at the point of diagnosis and to balance the volume and detail provided with their receptivity. Assessing the patient's readiness to receive information should be a primary consideration in determining the extent of detail and the type of information provided. Some individuals report a preference to receive the information proactively and repeatedly throughout care rather than waiting until they have problems [42] while others prefer an approach that manages issues only if and when they present. Second, rehabilitation professionals may not be ubiquitously available at the point of care in oncology care settings. The Commission on Cancer's Cancer Program Standard[3] E-11 requires accredited cancer centers to have *access to* rehabilitation services; however, this has fallen short of driving effective integration of rehabilitation services with oncology care. Standards that would include a process to measure function at pivotal points along the continuum of care are essential.

Calls for integration of rehabilitation services into the direct setting of cancer care have been made [30, 43]. As comprehensive cancer centers around the USA move to integrate rehabilitation providers into their centers, concerted administrative collaborations are needed to achieve better alignment of providers for co-located services [44]. Even with improved alignment of services, the cancer care workflows of providers must include the consideration for functional assessment proactively and promote triage for early management. The rehabilitation navigator can serve to alleviate this gap.

The challenge of coverage for services should be examined closely because while these services carry a cost burden, they are often services that are reimbursable through both public and private payers. There is emerging evidence to suggest that in some types of cancers, proactive rehabilitation services may mitigate downstream costs by reducing utilization through improved functional outcomes [45]. As efforts to incorporate rehabilitation navigation services are undertaken, assessment and analysis of their overall cost effectiveness and impact on downstream expenditures for treatment-related adverse events will be needed.

Summary

Cancer rehabilitation services benefit patients through early rehabilitation education and interventions that promote improved physical function, psychosocial health, and participation in life roles during cancer treatment. The gaps in proactive functional assessment and management of functional decline can no longer be overlooked in light of new guidelines and emerging consensus about the importance of rehabilitation care and its role in preventing and managing cancer treatment-related functional morbidity. While cancer navigation services provide a clinical pathway to integrate proactive assessment and management of function, this approach may be optimized by using a rehabilitation professional in the navigation role. Including cancer rehabilitation navigation early in the cancer care continuum can help mitigate cancer-related symptoms and late toxicities and improve overall quality of life for the oncology population.

Compliance with ethical standards

Disclosures The opinions expressed in this article are the authors' own and do not reflect the view of the National Cancer Institute, the National Institutes of Health, the Department of Health and Human Services, or the US government.

Conflict of interest The authors have full control of all primary data and agree to allow the journal to review the data if requested.

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