

Assessing Relationships between Access to Standardized Nutritional Care and Health Outcomes and Cost-Effectiveness of Care in Outpatient Cancer Centers

This concept paper describes the rationale to support a workshop to explore ways in which access to nutritional care in outpatient cancer centers impacts a variety of outcome measures, including morbidity, mortality and cost-effectiveness of oncology care.

The workshop will examine relationships between: 1) current standards for nutritional services in outpatient cancer centers and health outcomes and survival; 2) nutritional status and nutrition intervention strategies and cancer morbidity and mortality; 3) patient access to medical nutrition therapy in outpatient cancer centers and health outcomes and survival; and 4) nutritional intervention and the cost-effectiveness of outpatient oncology care.

Background and Significance

Standards for nutritional services

With the advent of more effective options for managing cancer symptoms and side effects, most oncology treatment has moved to an outpatient model; about 90% of oncology patients now receive treatment in outpatient cancer centers and clinics.¹ This change from the previous model of inpatient care has important implications for the overall quality of care for oncology patients, and particularly for care related to access to nutrition services. Standards set by the Joint Commission on Accreditation of Healthcare Organizations mandate hospitals define criteria for nutritional screening and that screening occur within 24 hours of admittance into the hospital.² Ambulatory nutritional care standards, however, are ambiguous and inconsistently applied across health care settings. Access to oncology nutrition care is left to the discretion of the ambulatory entity and/or the health care providers. As a result, a large majority of individuals treated in outpatient cancer centers do not have access to oncology nutrition services.

The loss of access to oncology nutrition services coincides with a growing recognition of the importance of providing nutritional care to optimize oncology treatment outcomes and maximize patient quality of life. Numerous mainstream professional organizations, including the American College of Surgeons Commission on Cancer,^{3,4} the Association of Community Cancer Centers,⁵ the American and European Societies of Parenteral and Enteral Nutrition,^{6,7} the National Institute for Health and Care Excellence of Great Britain,⁸ and the Victorian Department of Health in Australia⁹ recognize nutrition services as an essential component of cancer care. These organizations call for formalized nutrition screening and assessment, care plans, and early nutrition intervention when deficits are detected. The U.S. stands alone in failing to specify and cover the inclusion of a registered dietitian nutritionist (RDN) on the multi-modal oncology care team.

Nutrition status and treatment outcomes

Malnutrition occurs in up to 80% of cancer patients at some point during cancer care.¹⁰ Malnutrition negatively affects outcomes; involuntary weight loss of just 5% decreases survival in cancer patients.^{11,12}

The evidence analysis report by the Oncology and Nutrition Evidence Analysis Project of the Academy of Nutrition and Dietetics notes that poor nutritional status was associated with increased morbidity and mortality.¹³ Further, weight loss, malnutrition, sarcopenia, cachexia and fatigue, all outcomes associated with cancer, were associated with increased mortality.¹³ Other analyses demonstrate that markers of malnutrition, such as weight loss, low muscle mass index, and muscle attenuation, independently predict survival.¹⁴

In addition to reduced survival, malnutrition impairs the ability to complete treatment, reduces quality of life, and increases the risk of cancer recurrence.¹⁵⁻¹⁹ Patients receiving multi-modal treatments experience multiple side effects, which may result in inadequate dietary intake and consequent weight loss, leading to treatment breaks, longer hospitalizations, unplanned hospital admissions, more severe treatment side effects, dose-limiting toxicities, less delivered chemotherapy, and decreased quality of life and performance status.²⁰⁻²³

On the other hand, nutritional interventions have been shown to improve treatment tolerance, reduce treatment breaks, decrease weight loss and loss of lean body mass, increase quality of life, decrease unplanned hospitalizations by more than 50 percent, reduce length of hospital stay (LOS), and improve survival.^{15-19,24-30} Despite surveys documenting malnutrition rates of up to 67% in cancer populations, these same surveys found less than 60% of those classified as malnourished received nutrition interventions of any type.³¹

At the other end of the spectrum, excess energy intake leading to overweight and obesity have negative health consequences on cancer patients.³² Obesity at diagnosis and weight gain during and after treatment—common among cancer survivors—are associated with poorer outcomes, decreased disease free- and overall survival, and possibly enhanced cancer progression.³²⁻³⁸

Regardless of the impact of weight loss on cancer survival, weight management is key to controlling prevalent comorbid conditions,^{39,40} and dietitian-led weight management programs have been shown to be significantly more effective at achieving appropriate body weight and metabolic parameters at one year compared with usual care or free access to a weight control program.⁴¹ Unfortunately, as noted in the Institutes of Medicine (IOM) Workshop Summary on The Role of Obesity in Cancer Survival and Recurrence, quality nutrition care for cancer survivors, delivered by a RDN, is difficult to procure.⁴²

The use of dietary supplements in the cancer population also is of concern. Supplement use often is underreported, which can lead to a lack of awareness among oncologists and other healthcare providers about use by their patients. Over 50% of Americans use at least one dietary supplement, and use is even higher among cancer patients and long-term survivors, with approximately 64% and 81%, respectively, of these populations reporting supplement use.^{43,44} The bioactive compounds in some supplements may be effective for enhancing cancer treatment and ameliorating side effects, however, others may cause serious side effects and interfere with cancer treatment. Given the extensive array of dietary supplement products on the market, lack of enforced quality control in manufacturing, variations regarding recommended dosing, availability of combined formulations, paucity of evidence of efficacy, and conflicting reports of safety, assessment of dietary supplement intake by the RDN is critical to optimal cancer treatment and care.

Access to medical nutritional care

Data on access to nutritional care is limited. One source estimates that RDNs provide 0.5 Full Time Equivalents (FTEs) in inpatient cancer centers and 0.2 FTEs for chemotherapy and radiation areas, which represent typical outpatient center services.⁴⁵ In a practitioner survey of oncology RDNs, approximately 64% worked in an inpatient setting and 36% in an outpatient setting.⁴⁶ However, this sample does not provide insight into the FTEs in outpatient cancer centers or the patient-to-nutrition care provider ratio.

Costs of malnutrition

In adult oncology patients, poor nutritional status is associated with higher hospital costs, primarily related to increased rates of hospital admissions or readmissions and increased LOS.^{47,48} Other parameters that may increase hospital costs, including higher rates of consultation with a general practitioner and higher rates of medication, are associated with risk of malnutrition in cancer patients.⁴⁹

Fewer studies have directly examined the cost-effectiveness of nutritional interventions, however, ample data support that oncology nutrition interventions are effective at reducing costly complications of cancer care, including longer LOS, hospital admissions and readmissions, and frequent and more severe chemotherapy and radiation therapy side effects.¹³ Establishing consistent use of Electronic Medical Records (EMRs) across the U.S.

would provide a means of aggregating large care outcome datasets, which could then be used to identify cost savings that arise from systematically applied oncology nutrition interventions delivered by RDNs.

The cost of failing to address obesity, another form of malnutrition among cancer survivors, is high. In 2008, the medical costs of obesity-related illness in the U.S. were estimated at \$209.7 billion.⁵⁰ By decreasing risk of poor health outcomes these costs can be better controlled. Intensive lifestyle interventions have been shown to reduce the risk of conversion from pre-diabetes to diabetes by 58%, and weight loss of just 5% to 10% of body weight among obese individuals reduces cardiovascular risk factors.⁵⁰ Since overweight and obese cancer survivors are likely at higher risk for heart disease, diabetes, stroke, and hypertension compared with those maintaining a healthy body weight, treating obesity is an important intervention step to maximize short- and long-term health outcomes in cancer survivors and decrease the overall cost of care.

Goals and Objectives

A one-day workshop will be held to examine issues related to nutritional care in outpatient cancer centers. Four specific relationships will be explored:

1. ***The impact of current standards for nutritional services in outpatient cancer centers on health outcomes and survival.***

Although not mandated in outpatient cancer centers in the U.S., many medical oncology organizations recognize the need for nutrition services as part of outpatient cancer care delivery. Many organizations that establish standards of care in oncology recommend the inclusion of nutrition counseling and that nutritional counseling be administered by RDNs.

2. ***Nutritional status and nutrition intervention strategies, and cancer morbidity and mortality.***

In adult oncology patients, nutritional status can impact oncology health outcomes. Poor nutritional status is associated with increased morbidity and mortality. There is evidence that nutritional intervention leads to improved health outcomes and survival. Thus there is a need to explore how best to demonstrate the impact that nutritional services have on cancer patients' symptoms and side effects, quality of life, ability to receive and complete cancer care protocols as planned, other health outcomes, and survival.

3. ***Access of oncology patients to medical nutrition therapy in outpatient cancer centers and health outcomes and survival.***

Current RDN to patient staffing ratios are unknown and may be inadequate to provide the type of nutritional care needed to improve outcomes and require validation. Whether access to nutritional care in outpatient cancer centers affects health outcomes needs to be clarified. Further, the optimal staffing level of RDNs in outpatient cancer centers essential to improving the health outcomes of cancer patients needs to be established.

4. ***Nutritional interventions and cost of outpatient care.***

In the U.S., malnutrition is associated with longer LOS, and increased health care costs, including cost of oncology care.⁵¹ Demonstrating cost savings for nutritional care of cancer patients is an important step toward establishing nutrition access in outpatient cancer centers and thus compels further examination.

Statement of Task

The Institute of Medicine will convene an ad hoc planning committee to plan a one-day public workshop exploring evolving interactions between nutritional care, cancer, and health outcomes. Specifically, the workshop will examine how the following parameters affect the health outcomes and survival of cancer patients in outpatient cancer centers: current standards for nutritional services; the role of nutritional intervention in nutritional status and morbidity and mortality in oncology patients; and benefits associated with access of oncology patients to medical nutrition therapy. The workshop also will explore nutritional interventions and cost of outpatient care.

The workshop discussions will take into account a range of analytical approaches, including use of aggregate data from electronic medical records, to assess cost-benefit relationships between oncology nutrition services and health outcomes and survival. A rapporteur will prepare a summary of the workshop.

Work Plan

The IOM will convene a planning committee with expertise in oncology nutrition, medical oncology, medical data analysis, cost-benefit analysis, and healthcare administration. The planning committee will meet in person at least once and will participate in regular conference calls to plan a one-day workshop. The planning committee will develop the workshop agenda, identify topics and speakers, and participate as discussion moderators during the workshop. The workshop will include approximately 10-15 speakers, moderators, and discussants.

Following the workshop, a summary will be prepared by a rapporteur and will undergo an independent review in accordance with the policies and procedures of the National Research Council. A glossy bound copy and a PDF file of the workshop summary will be prepared and delivered to the sponsor. The summary also will be made available to the public and widely disseminated through the IOM and National Academies Press websites. Following the workshop and based on the presentations and discussions at the workshop, a planning meeting will be held to explore the need for a consensus study to further examine issues raised in the workshop. Specific tasks for validating the need for a consensus study will include: clearly articulating key questions; providing guidance on specific tasks to be undertaken by a study committee; and identifying areas of expertise needed.

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