Oncology

ONC: Introduction (2013)

Guideline Overview

Guideline Title

Oncology (2013) Evidence-Based Nutrition Practice Guideline

Guideline Narrative Overview

The focus of this guideline is on oncology nutrition practice during the treatment of adult patients with cancer. Cancer is a complex group of multifactoral diseases that develops from interactions between genetics and environment. Screening for malnutrition risk and performing a comprehensive nutrition assessment are required to identify intervention to maximize adequate intake. The goals of nutrition care are to identify nutrition impact symptoms, to prevent or reverse nutrient deficiencies, and intervene early if cancer cachexia is identified, preserve lean body mass (LBM), minimize nutrition-related side effects and complications in order to help patients better tolerate treatments.

This edition lays the foundation to establish the need for Medical Nutrition Therapy (MNT) in the adult oncology population, since nutrition plays a key role in all cancers and cancer treatments. The aim of this guideline is to document the areas where more evidence exists in order to strengthen the rationale for MNT. Thus, the workgroup chose to principally target:

1. malnutrition screening and nutrition assessment using tools validated in this population,
2. the association between nutrition status and morbidity and mortality outcomes,
3. the effect of MNT on patients undergoing chemotherapy and radiation treatment, and
4. cancer cachexia and the effect of the interventions of dietary supplements and medical food supplements containing fish oil on LBM and weight.

This Oncology Guideline edition focuses on analysis where the recent literature pool was concentrated: screening, assessment and outcomes. To further expand the recommendation set, evidence-based guidelines published by external organizations were reviewed and included where appropriate.

The articles evaluated for the Academy's analysis in this edition were not concentrated on one particular type of cancer or therapy treatment. It is acknowledged that this is a departure from the first edition of the Oncology guideline, which presented evidence-based interventions for oncology patients with specific types of cancers and treatments. This change in organization highlights specific key topics where the stronger bodies of evidence exist.

Guideline Development

This guideline outlines the most current information on nutrition support practice in adults with cancer. The recommendations developed in this guideline were based upon a systematic review of the literature in multiple practice areas. A summary of the evidence analysis is below:

Topics include:

- ONC: Nutrition Status and Outcomes of Adult Oncology Patients (hospital admissions or re-admissions, length of hospital stay (LOS), quality of life (QoL), tolerance to chemotherapy and radiation treatment and mortality)
- ONC: Screening for Malnutrition Risk and Referral of Adult Oncology Patients
- ONC: Malnutrition Screening Tools for Adult Oncology Patients
- ONC: Medical Nutrition Therapy in Adult Oncology Patients Undergoing Chemotherapy or Radiation Therapy
- ONC: Nutrition Assessment Tools for Adult Oncology Patients
- ONC: Nutrition Assessment Criteria for Adult Oncology Patients
- ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients
- ONC: Nutrition Diagnosis of Malnutrition in Adult Oncology Patients
- ONC: Nutrition Intervention of Adult Oncology Patients with Cancer Cachexia
- ONC: Fish Oil, Lean Body Mass and Weight in Adult Oncology Patients
- ONC: Glutamine and Oral Mucositis in Adult Oncology Patients
- ONC: Parenteral Glutamine and Hematopoietic Cell Transplantation (HCT) in Adult Oncology Patients
- ONC: Neutropenic Dietary Precautions for Adult Oncology Patients
- ONC: Nutrition Substances and Chemotherapy-Induced Peripheral Neuropathy
- ONC: Nutrition Monitoring and Evaluation of Adult Oncology Patients

The number of supporting documents for these topics is below:

- Recommendations: 22
- Conclusion Statements: 16
- Evidence Summaries: 16
- Article Worksheets: 95

At the time of this publication, the majority of research has been completed in the adult population. This guideline was developed for adult oncology patients; therefore, clinical judgment is crucial in the application of these guidelines for individuals in other age groups and settings.

Application of the Guideline

This guideline will be accompanied by a set of companion documents (i.e., a toolkit) to assist the practitioner in applying the guideline. The toolkit will contain materials such as the Medical Nutrition Therapy protocol, documentation forms, outcomes management tools, client education resources and case studies. The toolkit is currently under development and will undergo pilot-testing through the A.N.D.'s Dietetic Practice-Based Research Network prior to publication.

Revision

All Academy guidelines are revised every five years. The literature search will begin for each guideline topic three years after publication to identify new research that has been published since the previous search was completed. An expert work group will convene to determine the need for new and revised recommendations. See Revision under Guideline Development for more information. The updated guideline will be developed using the Academy of Nutrition and Dietetics Evidence Analysis Process (see Methodology tab).

Medical Nutrition Therapy and Cancer

Scientific evidence supports the effectiveness of nutrition therapy to increase effectiveness of oncology therapy and to reduce nutrition impact symptoms among individuals who have cancer. Scientific evidence also supports the importance of the registered dietitian nutritionist (RDN) as a member of the interdisciplinary team caring for adult oncology patients.

The RDN plays an integral role on the interdisciplinary care team by determining the optimal nutrition prescription and developing the nutrition care plan for oncology patients in all phases of illness. Based on the patient's clinical status, plan for treatment, and comorbidities, the RDN monitors and evaluates the effectiveness of the nutrition care plan in promoting the patient's nutritional health and quality of life. The dietitian adjusts the nutrition care plan as necessary to achieve desired outcomes.

New research may warrant a revision to a specific question or recommendation prior to the full project or guideline revision. Once identified, information is gathered and the EAL oversight committee will make a decision on the appropriate action.

Populations to Whom This Guideline May Apply

This guideline applies to adult cancer patients prior to, during or immediately after cancer therapy.

Other Guideline Overview Material

For more details on the guideline components, **click** an item below:

- Scope of Guideline
- Statement of Intent and Patient Preference
- Guideline Methods
- Implementation of the Guideline
- Benefits and Harms of Implementing the Recommendations

Clinical judgment is critical. Careful consideration should be given to the application of these guidelines for patients receiving hospice, palliative care, or those with significant medical co-morbidities.

- Oncology
- Oncology (ONC) Guideline (2013)
- ONC: Introduction (2013)

Oncology

ONC: Scope of Guideline (2013)

Guideline Scope Characteristics

Below you will find a list of characteristics that describe the Scope of this Guideline.

Disease/Condition(s)

The purpose of this guideline is to provide an evidence-based summary of effective practice in the nutrition management of the adult oncology patient. Recommendations have been formulated for oncology within the context of the A.N.D. Nutrition Care Process.

The major focus of this guideline is screening for malnutrition risk, nutrition assessment and intervention.

This guideline is intended for use by dietetics practitioners involved in care for patients undergoing cancer treatment. The information in this guideline should be used to provide individualized nutrition care with practical nutrition recommendations that are based on the current state of the science for nutrition in cancer patients.

Below you will find a list of characteristics that describe the Scope of this Guideline.

Nomenclature

Please note that the terms "patient" and "client" are used interchangeably throughout this guideline to describe an individual receiving care.

Considerations

Clinical judgment is critical. Careful consideration should be given to the application of these guidelines for patients receiving hospice, palliative care, or those with significant medical co-morbidities. Advance directives may also indicate if treatment is desired or not.

Guideline Category

Assessment of Therapeutic Effectiveness, Treatment

Clinical Specialty

Oncology

Intended Users

Registered Dietitians, Advanced Practice Nurses, Health Care Providers, Health Plans, Hospitals, Managed Care Organizations, Nurses, Physician Assistants, Students

Guideline Objective(s)

Overall Objective

To provide MNT guidelines aimed at managing symptoms, preventing weight loss and maintaining optimal nutritional status during cancer treatment.

Specific Objectives

- To define evidence-based recommendations for registered dietitian nutritionists (RDNs) that are carried out in collaboration with other healthcare providers
- To guide practice decisions that integrate medical, nutritional and behavioral elements
- To reduce variations in practice among RDNs
- To promote self-management strategies that empower the patient to take responsibility for day-to-day management
- To enhance the quality of life for the patient, utilizing customized strategies based on the individual's preferences, lifestyle and goals
- To develop guidelines for interventions that have measureable clinical outcomes
- To define the highest quality of care within cost constraints of the current healthcare environment.

Target Population

Adult (19 to 44 years), Middle Age (45 to 64 years), Aged (65 to 79 years), Male, Female

Target Population Description

Adults who are receiving oncology treatment or care.

Interventions and Practices Considered

The Oncology guideline is based on the Academy of Nutrition and Dietetics' Nutrition Care Process and Model, which involves the following steps. Terms relevant to the treatment of critically ill patients come from the International Dietetics & Nutrition Terminology (IDNT) Reference Manual: Standardized Language for the Nutrition Care Process. Fourth Edition.

- Nutrition Assessment
- Nutrition Diagnosis
- Nutrition Intervention
- Nutrition Monitoring and Evaluation.

This guideline addresses topics that correspond to the following areas of the Nutrition Care Process. Please refer to the Algorithms in this guideline for a more detailed view of the recommendations and their application within the Nutrition Care Process.

I. Referral to a Registered Dietitian Nutritionist
II. Medical Nutrition Therapy

A. Nutritional Assessment and Treatment

Click here to view the complete list of nutrition assessment terms from International Dietetics & Nutrition Terminology Reference Manual: Standardized Language for the Nutrition Care Process, Fourth Edition.

B. Nutrition Diagnosis

Click here to view the complete list of nutrition dianoses related terms from International Dietetics & Nutrition Terminology Reference Manual: Standardized Language for the Nutrition Care Process, Fourth Edition.

C. Nutrition Intervention (Planning and Implementation)

Individualized prescription based on:

- Dietary interventions
- Physical activity interventions
- Behavioral interventions
- Pharmacotherapy or surgery, when indicated.

Click here to view the complete list of nutrition intervention terms from International Dietetics & Nutrition Terminology Reference Manual: Standardized Language for the Nutrition Care Process, Fourth Edition.

D. Monitoring and Evaluation

The monitoring of progress, measuring of outcomes, and evaluating of outcomes against criteria to determine changes in specific indicators of nutrition care outcomes.

Click here to view the complete list of nutrition monitoring and evaluation terms from International Dietetics & Nutrition Terminology Reference Manual: Standardized Language for the Nutrition Care Process, Fourth Edition.

Oncology

ONC: Nutrition and the Adult Oncology Patient (2013)

Nutrition and the Adult Oncology Patient

The Academy's Oncology Expert Work Group reviewed articles on screening and assessment in the oncology population in order to evaluate the available tools and provide evidence-based guidance for the oncology dietitian caring for those patients experiencing nutrition impact symptoms or those at risk for malnutrition.

At this time, the Work Group has chosen to limit the definition of malnutrition to under-nutrition, recognizing that other areas of practice have a broader interpretation that includes both under- and over-nutrition or nutrient imbalance, rather than inadequate caloric intake.

Poor nutritional intake and the effect of cancer or cancer treatment can lead to malnutrition. Malnutrition has been defined as "a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size and composition) and function and clinical outcome."[1] The consequences of malnutrition include impaired immune response, reduced muscle strength, increased fatigue, impaired wound healing, impaired psycho-social function, reduced quality of life (QoL), reduced response and tolerance to prescribed oncology treatment and may increase costs of health care and increase hospital length of stay (LOS).[1] Therefore, early and timely screening and identification of malnutrition, resulting in referral for nutrition assessment and intervention by a registered dietitian nutritionist (RDN) is imperative for improved outcomes.[2]

The work group also recognizes that patients may have a cachexia syndrome in addition to malnutrition. Cachexia does not mean end of life or hospice. There are several stages of cancer cachexia: Pre-cachexia, cachexia and refractory cachexia.[3] Nutrition assessment and intervention by an RDN should is most effective if provided in the stages of pre-cachexia and cachexia. The metabolic response to cancer is heterogeneous, so it is important to intervene and manipulate the factors that are behavior-related, to address the direct causes of decreased intake (obstruction, dysphagia) and address the secondary causes (depression, fatigue, pain, gastrointestinal function) because "symptom management alone can improve survival in patients with advanced cancer."[4]

In cancer-specific pre-cachexia, early clinical and metabolic signs such as loss of appetite and impaired glucose tolerance can precede substantial involuntary weight loss (i.e., up to 5%). The risk of progression is variable and depends on cancer type, stage, presence of systemic inflammation, low food intake and lack of response to anti-cancer therapy.[3]

⇒Cancer cachexia⇒ A multi-factorial syndrome characterized by an ongoing loss of skeletal muscle mass (with or without loss of fat mass) that cannot be fully reversed by conventional nutritional support and leads to progressive functional impairment. The pathophysiology is characterised by a negative protein and energy balance driven by a variable combination of reduced food intake and abnormal metabolism.[3]

⇒Pre-cachexia, *in general* ⇒ Defined by the presence of all of the following criteria:[5]

- Underlying chronic disease
- Unintentional weight loss of up to 5% usual body weight during the last six months
- Chronic or recurrent systemic inflammatory response
- Anorexia or anorexia-related symptoms.

⇒Pre-cachexia, *in cancer* ⇒ Characterized by early clinical and metabolic signs such as loss of appetite and impaired glucose tolerance; can precede substantial involuntary weight loss (i.e., up to 5%). The risk of progression is variable and depends on cancer type, stage, presence of systemic inflammation, low food intake and lack of response to anti-cancer therapy.[3]

⇒Refractory cachexia⇒ May be a result of very advanced cancer (pre-terminal) or the presence of rapidly progressive cancer unresponsive to anti-cancer therapy. This stage is associated with active catabolism or the presence of factors that make active management of weight loss no longer possible or appropriate. Refractory cachexia is characterized by a low performance score (e.g., WHO grade 3 or 4) and a life expectancy of less than three months.[3]

There are additional articles on cancer cachexia and inflammatory response, but this was not part of the scope of this question.

To view data regarding nutrition intervention and protection of QoL and outcomes data, click this link.

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Oncology

ONC: Screening Adult Oncology Patients for Malnutrition Risk (2013)

Screening Adult Oncology Patients for Malnutrition Risk

Timely screening for nutrition impact symptoms and identification of malnutrition can facilitate referral for nutrition management and lead to improved outcomes.[1] Screening tools should be quick, easy to use, valid and reliable for the patient population or setting. Screening and re-screening should occur within an appropriate time-frame for the setting.[2]

The screening tool should be a valid identifier of malnutrition risk for adult oncology patients who may benefit from nutrition assessment and intervention by a registered dietitian nutritionist (RDN). This tool should be able to detect a measurable adverse effect on body composition, function or clinical outcome.[3]

Screening and assessment in the oncology population has been shown to improve outcomes in oncology patients. Nutrition intervention enables these patients to complete treatment regimens intended to give the best control of disease with fewer treatment interruptions.[4,5,6,7]

Literature evaluated by the Oncology Work Group identified the following tools as effective in identifying nutrition risk in the oncology population in ambulatory and acute care settings:

- Patient-Generated Subjective Global Assessment (PG-SGA)
- Malnutrition Screening Tool (MST)
- MSTC
- MUST.

Click this link for screening tools found to be effective in identifying patients at risk.

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Oncology

ONC: Nutrition Assessment for Adult Oncology Patients (2013)

Nutrition Assessment for Adult Oncology Patients

An adult oncology nutrition assessment should characterize and document the presence of (or expected potential for) altered nutrition status and nutrition impact symptoms that may result in a measurable adverse effect on body composition, function, QoL or clinical outcome and may also include indicators of malnutrition.

Nutrition impact symptoms are those symptoms that impede intake, digestion or absorption. They include (but are not limited to) anorexia, nausea, vomiting, diarrhea, constipation, stomatitis, mucositis, dysphagia, alterations in taste and smell, pain, depression, anxiety and fatigue. They can be caused by the cancer itself or the oncology treatment.[1,2,3]

Laboratory values currently suggested to be a part of a nutrition assessment include glucose, white blood cell (WBC) and C-reactive protein (CRP). Careful interpretation may be required in oncology patients, as they can experience wide variations in glucose and WBC values due to type and timing of treatment. An elevated CRP may indicate inflammation. Other lab values determined to be outside of normal may indicate a need for diet modification of nutrients.

In order to evaluate the clinical characteristics used to document malnutrition, it is important to identify any presence and degree of inflammation. This information is used to differentiate between chronic disease related malnutrition (lung, pancreatic and GI cancer, sarcopenic obesity and organ failure) and acute disease and injury-related malnutrition (major infection and surgery). Determining the presence and degree of inflammation determines the significance of any patient weight loss.[4,5]

The etiology-based malnutrition definitions are located at this link: Etiology-Based Malnutrition Definitions.[4]

While there is no universally accepted approach to the diagnosis and documentation of adult malnutrition, the AND/ASPEN consensus document attempts to provide evidence-based guidance. See Clinical Characteristics to Document Malnutrition.[5]

The working group has provided additional interpretations specific to the diagnosis of malnutrition in oncology patients:

- Insufficient energy intake[5]
- Unintended weight loss[5]
  - For the purposes of the Oncology Evidence Analysis Library, any weight loss has potential significance, as oncology patients often experience weight loss prior to admission to oncology services. Because weight loss is demonstrated to lead to poor outcomes, it is important to accurately determine a baseline weight.
  - Weight loss or change should be defined as current weight compared to baseline weight. Baseline weight* is defined as:
    - Usual body weight from medical records
    - Weight taken when admitted to oncology service or, if not available:
      - Self-report of recent healthy weight
      - Consider rate of weight loss over specified time frame[4]
      - *Include presence of under- or over-hydration.
  - Because the presence and degree of inflammation determines the significance of any patient weight loss, first assess markers of inflammation such as an elevated* CRP,[4,5] then refer to etiology-based malnutrition definition flowchart located at this link: Etiology-Based Malnutrition Definitions.[4]
    - ***Note:** Past interpretation of >10mg/L CRP has been used to indicate inflammation.[6] However, further research will elucidate more specific markers for use.

Interpretation of Weight Loss[5]

Time		**Acute Illness or Injury** *(Major infection and surgery)*		**Chronic Illness** (*Lung, pancreatic and GI cancer, sarcopenic obesity and organ failure)*		**Social or Environmental Circumstances**	
		Moderate Malnutrition	*Severe Malnutrition*	*Moderate Malnutrition*	*Severe Malnutrition*	*Moderate Malnutrition*	*Severe Malnutrition*
% Weight Loss Over Time	*1 week*	1-2	>2				
	1 month	5	>5	5	>5	5	>5
	3 months	7.5	>7.5	7.5	>7.5	7.5	>7.5
	6 months	-	-	10	>10	10	>10
	1 year	-	-	20	>20	20	>20

- Weight loss in elderly patients may have additional impact. Usual adult cutoff is BMI of 18.5kg/m^2, however studies of the elderly support an association between increased mortality and underweight (BMI under 20kg/m^2 or current weight compared with usual or desired body weight) or UWL (5% in 30 days or any further weight loss after meeting this criteria).[7,8,9]
- Loss of muscle mass [5,10]
    - Low muscle mass is a common and independent predictor of immobility and mortality,[11] is a particularly adverse prognostic indicator in obese patients[9] and is associated with greater toxicities of chemotherapy leading to treatment interruptions including dose reductions, treatment delays and treatment termination.[8,10,12,13,14,15,16]
    - As 50% of patients with advanced cancer have frank sarcopenia,[16] and the shortest survival times are among obese patients with sarcopenia,[9] reducing weight at the possible expense of lean muscle mass, in obese cancer patients should not be a priority.

Body weight has been used as an outcome in clinical trials in cancer-induced weight loss and only recently has research begun to focus on lean body mass as a primary outcome. Existing computerized tomography (CT) images used to diagnose and monitor disease progression are readily available and provide an opportunistic means for body composition analysis. Although this type of analysis is relatively new, its use will be common in the near future and offers the dietitian the ability to demonstrate value. Other methods of measuring muscle mass are bioelectrical impedence analysis (BIA), dual-energy X-ray absorptiometry (DXA) and anthropometry. Patients with loss of muscle mass experience greater treatment toxicity and shorter survival.[13,17]

- Loss of subcutaneous fat:[5,9,16] With the increase in obesity in Western society and patients with cancer in particular, reducing fat tissue should not be a priority. The important problem remains low muscle mass, since up to 50% of patients with advanced cancer have frank sarcopenia.[16] The shortest survival times are among obese patients with sarcopenia.[9]
- Localized or generalized fluid accumulation (that may mask weight loss)[5]
- Reduced grip strength* or diminished functional status, as measured by Karnofsky score[5]
    - *Consult normative standards per device manufacturer.

The following tools have been found to be valid and reliable in assessing the nutritional status of adult oncology patients in ambulatory and acute care settings:

- PG-SGA
- SGA.

The MNA was found to have the sensitivity to diagnose oncology patients with malnutrition in the ambulatory setting, but was only moderately specific in identifying malnutrition when compared with the PG-SGA. The MNA was not evaluated in the acute care setting.

Click this link for the summary.

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Oncology

ONC: Statement of Intent (2013)

Statement of Intent

Evidence-based nutrition practice guidelines are developed to help dietetic practitioners, patients and consumers make shared decisions about health care choices in specific clinical circumstances. If properly developed, communicated and implemented, guidelines can improve care.

While they represent a statement of best practice based on the latest available evidence at the time of publishing, they are not intended to overrule professional judgment. Rather, they may be viewed as a relative constraint on individual clinician discretion in a particular clinical circumstance. The independent skill and judgment of the health care provider must always dictate treatment decisions. These nutrition practice guidelines are provided with the express understanding that they do not establish or specify particular standards of care, whether legal, medical or other.

The Role of Patient Preference

This guideline recognizes the role of patient preferences for possible outcomes of care, when the appropriateness of a clinical intervention involves a substantial element of personal choice or values. With regard to types of evidence that are associated with particular outcomes, Shaughnessy and Slawson (1-3) describe two major classes. Patient-oriented evidence that matters (POEM) deals with outcomes of importance to patients, such as changes in morbidity, mortality or quality of life. Disease-oriented evidence (DOE) deals with surrogate end-points, such as changes in laboratory values or other measures of response. Although the results of DOE sometimes parallel the results of POEM, they do not always correspond.

When possible, A.N.D. recommends using POEM-type evidence rather than DOE. When DOE is the only guidance available, the guideline indicates that key clinical recommendations lack the support of outcomes evidence.

References

1. Slawson DC, Shaughnessy AF. Becoming an information master: using POEMs to change practice with confidence. Patient-Oriented Evidence that Matters. *J Fam Pract*. 2000 Jan;49(1):63-7. Erratum in: *J Fam Pract* 2000 Mar;49(3):276.
2. Slawson DC, Shaughnessy AF, Ebell MH, Barry HC. Mastering medical information and the role of POEMs--Patient-Oriented Evidence that Matters. *J Fam Pract*. 1997 Sep;45(3):195-6.
3. Shaughnessy AF, Slawson DC. POEMs: patient-oriented evidence that matters. *Ann Intern Med*. 1997 Apr 15;126(8):667.

- Oncology
- Oncology (ONC) Guideline (2013)
- ONC: Introduction (2013)

Oncology

ONC: Guideline Methods (2013)

General and Specific Methods for Oncology Update Guideline

Below are links to both the general methods that the Academy of Nutrition and Dietetics has put in place for evidence analysis and creating the guidelines, as well as the specific search methods and criteria for each question.

General Methods

Click here to view a description of the Academy's process of evidence analysis and guideline creation.

Methods for Specific Topics

To view descriptions of search criteria and findings for each topic covered in this guideline click on Specific Methods page in the Introduction section.

History of the Development of This Guideline

This guideline is the second edition of the Academy's Oncology Update Evidence-Based Nutrition Practice Guideline.

Oncology

ONC: Specific Topic Search Methods (2013)

Each evidence analysis topic has a link to supporting evidence, where the **Search Plan and Results** can be found. Here, you can view when the search plan was performed, inclusion and exclusion criteria, search terms, databases that were searched and the excluded articles.

Below are a list of the recommendations and the related evidence analysis questions, with the link to each search plan.

ON: Nutrition Status and Outcomes of Adult Oncology Patients Search Plan and Results

Nutrition Screening and Referral

ON: Screening for Malnutrition Risk and Referral of Adult Oncology Patients Search Plan and Results

None.

ON: Malnutrition Screening Tools for Adult Oncology Patients Search Plan and Results

Medical Nutrition Therapy

ON: Medical Nutrition Therapy in Adult Oncology Patients Undergoing Chemotherapy and Radiation Therapy

Medical Nutrition Therapy in Adult Oncology Patients Undergoing Chemotherapy Search Plan and Results

Medical Nutrition Therapy in Adult Oncology Patients Undergoing Radiation Therapy Search Plan and Results

Nutrition Assessment

ON: Nutrition Assessment Tools for Adult Oncology Patients Search Plan and Results

ON: Nutrition Assessment Criteria in Adult Oncology Patients Search Plan and Results

None.

ON: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients Search Plan and Results

None.

Nutrition Diagnosis

ON: Nutrition Diagnosis of Malnutrition in Adult Oncology Patients Search Plan and Results

None.

Nutrition Intervention

ON: Nutrition Intervention for Adult Oncology Patients with Cancer Cachexia Search Plan and Results

None.

ON: Fish Oil, Weight and Lean Body Mass in Adult Oncology Patients Search Plan and Results

ON: Glutamine and Oral Mucositis in Adult Oncology Patients with Solid Tumors and Hematological Malignancies Search Plan and Results

None.

ON: Parenteral Glutamine and Hematopoietic Cell Transplant (HCT) in Adult Oncology Patients Search Plan and Results

None.

ON: Nutrition Substances and Chemotherapy-Induced Peripheral Neuropathy in Adult Oncology Patients Search Plan and Results

None.

ON: Neutropenic Dietary Precautions for Adult Oncology Patients Search Plan and Results

None.

Nutrition Monitoring and Evaluation

None.

Oncology

ONC: Implementation of the Guideline (2013)

Implementation of the Guideline

The publication of this guideline is an integral part of the plans for disseminating the Academy of Nutrition and Dietetics evidence-based recommendations on oncology nutrition to all dietetics practitioners engaged in, teaching about or researching oncology nutrition as quickly as possible. National implementation workshops at various sites around the country and during the Academy Food Nutrition Conference Expo (FNCE) are planned. Additionally, there are recommended dissemination and adoption strategies for local use of the Academy Oncology Evidence-Based Nutrition Practice Guideline.

The guideline development team recommended multi-faceted strategies to disseminate the guideline and encourage its implementation. Management support and learning through social influence are likely to be effective in implementing guidelines in dietetic practice. However, additional interventions may be needed to achieve real change in practice routines.

Implementation of the Oncology Guideline will be achieved by announcement at professional events, presentations and training. Some strategies include:

- *National and local events:* Practice Group. State dietetic association meetings and media coverage will help launch the guideline
- *Local feedback adaptation:* Presentation by members of the work group at peer review meetings and opportunities for CEUs for courses will be provided
- *Education initiatives:* The guideline and supplementary resources will be freely available for use in the education and training of dietetic interns and students in approved Accreditation Council for Education in Nutrition and Dietetics (ACEND) programs
- *Champions:* Local champions will be identified and expert members of the guideline team will prepare articles for publications. Resources will be provided that include PowerPoint presentations, full guidelines and pre-prepared case studies
- *Practical tools:* Some of the tools that will be developed to help implement the guideline include specially designed resources such as clinical algorithms, a toolkit, and a slide presentation.

Specific distribution strategies include:

- *Publication in full:* The guideline will be available electronically at the Academy Evidence Analysis Library website (www.andevidencelibrary.com) and will be announced to all the dietetic practice groups. The Academy Evidence Analysis Library will also provide downloadable supporting information.

- Oncology
- Oncology (ONC) Guideline (2013)
- ONC: Introduction (2013)

Oncology

ONC: Benefits and Risks/Harms of Implementation (2013)

Benefits and Risks/Harms of Implementing the Recommendations

Safety issues should be considered for each form of treatment recommended. A description of the general benefits and risk associated with the implementation of this guideline must be addressed.

When using these treatment recommendations:

- Review the patient's age, socioeconomic status, cultural issues and other health conditions.
- Consider a referral to social services to assist patients with financial arrangements if economic issues are a concern.
- Use clinical judgment when evaluating patients with co-morbid conditions or those receiving palliative care. Such conditions may include: cancer cachexia, renal dysfunction, diabetes, food allergies, pregnancy, HIV/AIDS, psychiatric disorders, metabolic diseases and hepatic encephalopathy or endstage chronic kidney disease.

Potential Benefits

- The primary goal of implementing these recommendations includes improving the percentage of individuals who are able to meet their nutritional needs, reducing incidence of treatment interruptions, and positively impacting the patient's treatment and clinical outcomes.
- Identification of malnutrition using standardized language within the NCP may lead to reimbursement for RDNs.

Risk/Harm Considerations

To view more information, select the link to the topic listed after each potential risk/harm.

- Failure to assess for the stages of cancer cachexia may lead to lack of nutrition intervention and increased risk of mortality. (ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients)
- Failure to make a malnutrition diagnosis may lead to lack of nutrition intervention and increased risk of mortality. (ONC: Diagnosis of Malnutrition in Adult Oncology Patients)
- Risks associated with parenteral glutamine administration are similar to those of parenteral nutrition (i.e., increased risk of infection). (ONC: Glutamine and Oral Mucositis in Adult Oncology Patients)
- As with all supplement use, there are potential interactions with treatment that may be unknown. (ONC: Nutrition Substances and Chemotherapy-Induced Peripheral Neuropathy)
- Use caution when considering provision of parenteral glutamine to adult oncology patients who have hepatic failure or insufficiency and are receiving hematopietic cell transplantation. (ONC: Parenteral Glutamine and Hematopoietic Cell Transplantation (HCT) in Adult Oncology Patients)

Factors to consider when exploring treatment options include:

- Although costs of MNT sessions and reimbursement vary, MNT sessions including collaboration with other healthcare professionals are essential for improved outcomes.
- RDNs should be appropriately trained to conduct a nutrition-focused physical exam. (ONC: Nutrition Assessment Criteria for Adult Oncology Patients)
- Costs include staff time to complete screening and referral (ONC: Screening for Malnutrition Risk and Referral of Adult Oncology Patients; ONC: Malnutrition Screening Tools for Adult Oncology Patients)
- If necessary data are not available, the RDN should use professional judgment to request or obtain additional data. (ONC: Diagnosis of Malnutrition in Adult Oncology Patients; ONC: Nutrition Assessment Criteria for Adult Oncology Patients; ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients).
- For some individuals, unintended weight loss may be irreversible due to underlying medical conditions. (ONC: Diagnosis of Malnutrition in Adult Oncology Patients ; ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients)
- Consider advance directives when planning nutrition intervention.
- Accessibility and costs of additional laboratory or other testing should be considered. (ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients; ONC: Diagnosis of Malnutrition in Adult Oncology Patients; ONC: Nutrition Assessment Criteria for Adult Oncology Patients)
- Availability of medical food supplements containing fish oil in the United States is limited. (ONC: Fish Oil, Lean Body Mass and Weight in Adult Oncology Patients)
- Additional costs may be incurred with use of supplemental IV glutamine and other nutrition substances. (ONC: Parenteral Glutamine and Hematopoietic Cell Transplantation (HCT) in Adult Oncology Patients; ONC: Glutamine and Oral Mucositis in Adult Oncology Patients; ONC: Nutrition Substances and Chemotherapy-Induced Peripheral Neuropathy)
- Ability and access to supplemental IV glutamine (ONC: Glutamine and Oral Mucositis in Adult Oncology Patients; ONC: Parenteral Glutamine and Hematopoietic Cell Transplantation (HCT) in Adult Oncology Patients)
- There may be an increased cost for intake of dietary supplements and MFS containing fish oil (ONC: Fish Oil, Lean Body Mass and Weight in Adult Oncology Patients)

Oncology

ONC: Executive Summary of Recommendations (2013)

Executive Summary of Recommendations

Below are the major recommendations and ratings for the Academy of Nutrition and Dietetics Oncology (ONC) Evidence-Based Nutrition Practice Guideline 2013. View the Guideline Overview from the Introduction section. More detail (including the evidence analysis supporting these recommendations) is available on this website to Academy members and EAL subscribers under the Major Recommendations section.

To see a description of the Academy Recommendation Rating Scheme (Strong, Fair, Weak, Consensus, Insufficient Evidence), click here.

The ONC 2013 Recommendations are listed below. *[Note: If you mouse-over underlined acronyms and terms, a definition will pop up.]*

- Screening and Referral
  ONC: Malnutrition Screening Tools for Adult Oncology Patients
  Adult oncology patients should be screened using a malnutrition screening tool validated in the setting (inpatient or ambulatory/outpatient) in which the tool is intended for use. Research indicates that the following tools are valid and reliable for identifying malnutrition risk in oncology patients. The following have been shown to be valid and reliable for identifying malnutrition risk in adult oncology patients in the inpatient setting:
  - Patient-generated Subjective Global Assessment (PG-SGA)
  - Malnutrition Screening Tool (MST)
  - Malnutrition Screening Tool for Cancer Patients (MSTC)
  - Malnutrition Universal Screening Tool (MUST)

The following have been shown to be valid and reliable for identifying malnutrition risk in adult oncology patients in the ambulatory/outpatient setting:

- Patient-generated Subjective Global Assessment (PG-SGA)
- Malnutrition Screening Tool (MST).

Strong
Imperative
ONC: Screening for Malnutrition Risk and Re-Screening of Adult Oncology Patients
All adult patients should be screened for malnutrition risk on entry into oncology services. Early identification and management of malnutrition risk improves and protects nutrition status and quality of life (QoL), which leads to improved outcomes. Re-screening should be repeated routinely throughout treatment to facilitate referral as needed.

Consensus
Imperative
ONC: Referral of Adult Oncology Patients Identified at Malnutrition Risk to the RDN
If an adult oncology patient has been identified at screening to be at risk for malnutrition, the patient should be referred to a registered dietitian nutritionist (RDN) for evaluation. If indicated, the RDN conducts a nutrition assessment and provides medical nutrition therapy (MNT) including the nutrition care process: Nutrition assessment, nutrition diagnosis, nutrition intervention, nutrition monitoring and evaluation. Management of malnutrition risk improves and protects nutrition status and quality of life (QoL), which leads to improved outcomes.

Consensus
Conditional
ONC: Medical Nutrition Therapy (MNT) in Adult Oncology Patients Undergoing Chemotherapy or Radiation Treatment
If an adult oncology patient is undergoing chemotherapy or radiation treatment, the registered dietitian nutritionist (RDN) should provide medical nutrition therapy (MNT). MNT has been shown to be effective in improving multiple treatment outcomes in patients undergoing chemotherapy, radiation or chemoradiotherapy in ambulatory or outpatient and inpatient oncology settings.

Strong
Conditional
ONC: Medical Nutrition Therapy (MNT) As Part of Multi-modal Therapy in Adult Oncology Patients Undergoing Chemotherapy or Radiation Treatment
The RDN should be a member of the interdisciplinary team providing multi-modal therapy to adult oncology patients undergoing chemotherapy or radiation treatment. Multi-modal therapy includes coordinated interventions from a variety of health care disciplines. Multi-modal therapy that includes MNT demonstrates positive outcomes.

Fair
Conditional

- Nutrition Assessment

ONC: Nutrition Assesssment Tools for Adult Oncology Patients
The registered dietitian nutritionist (RDN) should use an assessment tool validated in the setting (inpatient or ambulatory/outpatient) in which the tool is intended for use as part of the complete nutrition assessment. Research indicates that the following tools have been shown to elicit valid and reliable data as part of a comprehensive nutrition assessment of adult oncology patients in ambulatory and acute care settings:

- Patient-Generated Subjective Global Assessment (PG-SGA)
- Subjective Global Assessment (SGA).

Strong
Imperative
ONC: Assessment of Food/Nutrition-related History of Adult Oncology Patients
The registered dietitian nutritionist (RDN) should assess the food, beverage and nutrient intake and related history of adult oncology patients including, but not limited to the following:

- Energy and protein intake
- Changes in food and fluid/beverage intake
- Adequacy and appropriateness of nutrient intake or nutrient administration
- Actual daily intake from enteral nutrition (EN) and parenteral nutrition (PN) and other nutrient sources
- Changes in type, texture, or temperature of food and liquids
- Use of medical food supplements (MFS)
- Food avoidance and intolerances
- Meal or snack pattern changes
- Prescription medications, over-the-counter medications, herbal preparations and complementary or alternative medicine products
- Factors affecting access to food.

Assessment of the above factors is needed to effectively determine nutrition diagnoses and plan the nutrition interventions. Inability to achieve optimal nutrient intake may contribute to poor outcomes.

Consensus
Imperative
ONC: Assessment of Anthropometric Measurement in Adult Oncology Patients
The RDN should assess the following anthropometric measurements in adult oncology patients:

- Height and weight
- Weight change
- Body Mass Index (BMI).

Any weight loss that is unintended in adult oncology patients has potential significance, as oncology patients often experience weight loss prior to admission to oncology services. Low muscle mass is a common and independent predictor of immobility and mortality, is a particularly adverse prognostic indicator in obese patients and is associated with greater toxicities of chemotherapy leading to treatment interruptions including dose reductions, treatment delays and treatment termination. Assessment of the above factors is needed to effectively determine nutrition diagnoses and plan the nutrition interventions.

Consensus
Imperative
ONC: Assessment of Biochemical Data, Medical Tests, and Procedures on Adult Oncology Patients
The RDN should evaluate available data and recommend as indicated: Biochemical data, medical tests and procedures of adult oncology patients. Examples include:

- Glucose
- White blood cell (WBC)
- Nutritional anemia profile (hemoglobin, hematocrit, folate, B_{12}, iron)
- Electrolyte and renal profile
- Liver function

- Inflammatory profile, including C-reactive protein (CRP)
- Gastrointestinal (GI) function tests (i.e., swallowing study, abdominal films, gastric emptying, transit time).

Assessment of these factors is needed to effectively determine nutrition diagnoses and plan the nutrition interventions.

Consensus
Imperative
ONC: Assessment of Nutrition-Focused Physical Findings and Client History of Adult Oncology Patients
The RDN should evaluate available data regarding the nutrition-focused physical findings and client history of adult oncology patients including, but not limited to: Nutrition-focused physical findings:

- Age greater than 65 years
- Loss of muscle mass
- Loss of subcutaneous fat
- Presence of pressure ulcers or wounds
- Nutrition impact symptoms including but not limited to: Nausea, vomiting, diarrhea, constipation, stomatitis, mucositis, alterations in taste and smell and anxiety
- Changes in appetite
- Vital signs
- Functional indicators (i.e., Karnofsky score, grip strength)
- Localized or generalized fluid accumulation.

Client history:

- Patient/Family/Client Medical/Health history:
  - Nutrition impact symptoms including but not limited to: Dysphagia, depression and pain fatigue
  - Medical treatment or therapy
  - Other diseases, conditions and illnesses including cancer cachexia.

Social history: Psychological/socioeconomic factors (e.g., social support). Assessment of the above factors is needed to effectively determine nutrition diagnoses and plan the nutrition interventions.

Consensus
Imperative
ONC: Nutrition Assessment for the Stages of Cancer Cachexia in Adult Oncology Patients
As part of the nutrition assessment, in patients with lung, pancreatic or head and neck and gastrointestinal (GI) cancers or those who are at high risk for weight loss or have experienced unintended weight loss, the registered dietitian nutritionist (RDN) should assess for nutrition impact symptoms, markers of inflammation [e.g., elevated C-reactive protein (CRP)] and other signs of wasting, which may indicate pre-cachexia or cancer cachexia. The presence of cachexia does not always indicate end of life or need for hospice. Therefore, the identification of cachexia leading to intervention can positively impact clinical outcomes.

Consensus
Conditional

- Nutrition Diagnosis

ONC: Nutrition Diagnosis of Malnutrition in Adult Oncology Patients
The registered dietitian nutritionist (RDN) should use clinical judgment in interpreting nutrition assessment data to diagnose malnutrition in adult oncology patients. Early identification and diagnosis of malnutrition leading to intervention can positively impact body composition, function, quality of life (QoL), treatment tolerance and clinical outcomes. The presence of two or more of the following criteria or characteristics supports a nutrition diagnosis of malnutrition in the adult oncology patient (See Clinical Characteristics to Document Malnutrition).

- Insufficient energy intake
- Unintended weight loss
- Loss of subcutaneous fat
- Loss of muscle mass
- Localized or generalized fluid accumulation (that may mask weight loss)
- Reduced grip strength.

Consensus
Imperative

- Nutrition Intervention

ONC: Nutrition Intervention of Adult Oncology Patients with Cancer Cachexia
In adult oncology patients who have been identified to have pre-cachexia or cancer cachexia, prompt and aggressive intervention to address nutrition impact symptoms and preserve or prevent loss of lean body mass (LBM) and weight should be initiated by the registered dietitian nutritionist (RDN). Early rather than later intervention to prevent weight loss in this population is more likely to be effective. The metabolic derangements in cancer cachexia that promote wasting can lead to loss of weight and LBM and poor outcomes.

Consensus
Conditional
ONC: Dietary Supplements Containing Fish Oil for the Adult Oncology Patient
If sub-optimal symptom control or inadequate dietary intake has been addressed and the adult oncology patient is still experiencing loss of weight and lean body mass (LBM), the registered dietitian nutritionist (RDN) may consider use of dietary supplements containing eicosapentaenoic acid (EPA) as a component of nutrition intervention. Research indicates that dietary supplements containing fish oil (actual consumption, 0.26g to 6.0g of EPA per day), resulted in a significant effect on preservation or improvement of weight and LBM in adult oncology patients with weight loss.

Strong
Imperative
ONC: Medical Food Supplements Containing Fish Oil for the Adult Oncology Patient
If sub-optimal symptom control or inadequate dietary intake has been addressed and the adult oncology patient is still experiencing loss of weight and LBM, the RDN may consider use of a medical food supplement (MFS) containing EPA as a component of nutrition intervention. Research indicates that MFS containing fish oil (actual consumption, 1.1 g to 2.2g of EPA per day) resulted in significant weight stabilization or weight gain and preservation or improvement of LBM in adult oncology patients with weight loss.

Strong
Imperative
ONC: Glutamine and Oral Mucositis in Adult Oncology Patients with Solid Tumors and Hematological Malignancies
If use of parenteral glutamine is proposed to prevent or treat oral mucositis in oncology patients with solid tumors, the registered dietitian nutritionist (RDN) should advise that its use may or may not be beneficial. Limited research in head and neck and stem cell transplantation patients receiving parenteral glutamine has not established the effectiveness of L-Alanyl-L-Glutamine in treating or preventing oral mucositis. Enteral or oral provision of glutamine was not evaluated.

Weak
Conditional

ONC: Parenteral Glutamine and Hematopoietic Cell Transplantation (HCT) in Adult Oncology Patients
When parenteral nutrition (PN) is required for patients undergoing hematopoietic cell transplantation (HCT), the registered dietitian nutritionist (RDN) may or may not recommend parenteral glutamine (GLN) in doses ranging from 0.2g to 0.5g per kg per day. Research indicates parenteral GLN should be initiated early in the treatment course. Parenteral GLN is associated with improved nitrogen balance and decreased morbidity. However, decreased hospital length of stay (LOS) was found only when data from allogeneic and autologous transplants were combined.

Fair
Conditional

ONC: Nutrition Substances and Chemotherapy-Induced Peripheral Neuropathy
If an adult oncology patient is at risk for or has chemotherapy-induced peripheral neuropathy (CIPN), the registered dietitian nutritionist (RDN) should advise the patient that the use of nutrition substances (vitamin E, calcium and magnesium infusions, acetyl-L-carnitine, glutamine, glutathione) may or may not be beneficial as a means of preventing or improving CIPN. Research indicates that these substances have had only limited success in preventing or improving CIPN in oncology patients receiving specific chemotherapeutic agents.

Weak
Conditional

ONC: Neutropenic Dietary Precautions for Adult Oncology Patients with Neutropenia (non-Bone Marrow Transplant)
If an adult oncology patient has neutropenia, the registered dietitian nutritionist (RDN) should provide dietary counseling on safe food handling and foods which may pose infectious risks during the period of neutropenia. A neutropenic diet is not necessary, but safe food counseling is recommended as a prudent precaution. Research has not demonstrated the effectiveness of low-microbial diets.

Fair
Conditional

ONC: Neutropenic Dietary Precautions for Adult Oncology Patients Undergoing Bone Marrow Transplant
If an adult oncology patient is undergoing bone marrow transplant, the RDN should provide dietary counseling on safe food handling and foods which may pose infectious risks during the period of neutropenia. A neutropenic diet is not necessary, but safe food counseling is recommended as a prudent precaution. There is conflicting research regarding the effectiveness of neutropenic diets in the bone marrow transplant population.

Weak
Conditional

- Nutrition Monitoring and Evaluation

ONC: Monitoring and Evaluation of Adult Oncology Patients
Following the nutrition intervention, to check progress, the registered dietitian (RDN) should monitor and evaluate the following components of adult oncology patients at each visit and compare to desired individual outcomes relevant to the nutrition diagnosis and intervention. This may include, but is not limited to:

Anthropometric measurements:
- Weight change
- BMI

Food/Nutrition-related history:
- Energy and protein intake
- Changes in food and fluid/beverage intake
- Adequacy and appropriateness of nutrient intake/nutrient administration
- Actual daily intake from enteral nutrition (EN) and parenteral nutrition (PN) and other nutrient sources
- Changes in type, texture, or temperature of food and liquids
- Use of medical food supplements (MFS)
- Food avoidance and intolerances
- Meal/snack pattern changes
- Prescription medications, over-the-counter medications, herbal preparations and complementary alternative medicine products
- Factors affecting access to food
- Feeding method or need for placement (e.g., oral, enteral or parenteral)

Biochemical data, medical tests and procedures:
- Biochemical indices
- Implications of diagnostic tests and therapeutic procedures

Nutrition-focused physical findings:
- Vital signs
- Loss of muscle mass
- Loss of subcutaneous fat
- Nutrition impact symptoms including but not limited to: Nausea, vomiting, diarrhea, constipation, stomatitis, mucositis, alterations in taste and smell, and anxiety
- Presence of pressure ulcers or wounds
- Functional indicators (i.e., Karnofsky score, grip strength)
- Localized or generalized fluid accumulation

Client history:
- Patient/Family/Client Medical/Health History:
  - Nutrition impact symptoms including but not limited to: Dysphagia, depression and pain fatigue
  - Medical treatment/therapy
  - Other diseases, conditions and illnesses including cancer cachexia

Social history:
- Psychological/socioeconomic issues (e.g., social support)

Monitoring and evaluation of the above factors is needed to correctly/effectively diagnose nutrition problems that should be the focus of further nutrition interventions. Inability to achieve optimal nutrient intake may contribute to poor outcomes.

Consensus
Imperative

ONC: Monitoring and Evaluating Adult Oncology Patients with Cancer Cachexia
As part of monitoring and evaluation, in patients with lung, pancreatic or head and neck and gastrointestinal (GI) cancers, or those who are at high risk for weight loss or have experienced unintended weight loss, the registered dietitian nutritionist (RDN) should monitor and evaluate nutrition impact symptoms, markers of inflammation [e.g., elevated C-reactive protein (CRP)] and other signs of wasting, which may indicate pre-cachexia or cancer cachexia.

Consensus
Conditional

- Outcomes Management

ONC: Nutrition Status and Outcomes in Adult Oncology Patients

The registered dietitian nutritionist (RDN) should collaborate with other health care professionals, administrators and public policy decision-makers to ensure that the evaluation of nutrition status is a key component of the adult oncology patient care process. Research indicates that poor nutrition status is associated with higher rates of hospital admissions or re-admissions, increased length of hospital stay (LOS), lower quality of life (QoL) and mortality in adult oncology patients. Poor nutrition status is also associated with decreased tolerance to chemotherapy and radiation treatment in adult oncology patients undergoing these therapies.

Strong
Imperative