

Examining Access to Nutrition Care in Outpatient Cancer Centers
Literature Review Summary of Key Articles

Contents – ctrl + click to go to any section below

I.	Benefits and Cost of Care	2
A.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON HOSPITAL LENGTH OF STAY	6
B.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON HOSPITAL ADMISSIONS AND READMISSIONS.....	9
C.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON QUALITY OF LIFE.....	10
D.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON RADIATION TREATMENT TOLERANCE.....	12
E.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON CHEMOTHERAPY TREATMENT TOLERANCE.....	13
F.	EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON MORTALITY.....	16
II.	Current Knowledge of Nutrition Practice	21
III.	Models of Care: National and International.....	22
IV.	Benefits of Outpatient Nutrition Care on Survival and Other Parameters.....	27
V.	Organized by Cancer Types.....	34
A.	GASTROINTESTINAL	34
B.	GYNECOLOGICAL.....	45
C.	HEAD AND NECK	50
D.	HEMATOLOGICAL.....	54
E.	LUNG	56
F.	MIXED CANCER TYPES.....	58
G.	RENAL.....	66
H.	RESPIRATORY	66
I.	THORACIC.....	67
J.	UROLOGICAL	67

I. Benefits and Cost of Care

Citation	Objective	Study Design	Outcome	Notes
Bauer JD, Capra S. 2005. Nutrition intervention improves outcomes in patients with cancer cachexia receiving chemotherapy – a pilot study. Support Care Cancer 13:270-274	Assess the effects of nutrition intervention with counseling by a dietitian and diet prescription on outcomes of dietary intake, body composition, nutritional status, functional capacity, and quality of life	Clinical trial measuring nutritional and quality of life outcomes of 7 adenocarcinoma patients receiving nutritional counseling, oral supplement, and nutritional assessment over 8 weeks of intervention	Significant improvement was found over the 8-week intervention trial for total protein, energy, and fiber intake; PG-SGA scores significantly improved for quality of life and Karnofsky performance status; use of oral supplements did not impair meal intake	EAL: Pos effect on QOL Pancreatic ca Lung ca
Boltong AG et al. 2013. Using a public hospital funding model to strengthen a case for improved nutritional care in a cancer setting. Australian Health Review 37:286-290	Measure the prevalence of malnutrition risk, assess malnutrition in cancer-specific setting; model funding opportunities associated with malnutrition screening	Point-prevalence audit of malnutrition risk and diagnosis; retrospective audit of hospital funding associated with malnutrition	Malnutrition prevalence was 52% overall. Including a diagnosis of malnutrition changed the casemix funding value of 12% of the audited patients; the study suggests a model for a cancer-specific nutrition service to improve identification and treatment of malnutrition.	Mixed cancer types
Carey S, et al. 2011. Long term nutritional status and quality of life following major upper gastrointestinal surgery – a cross-sectional study. Clinical Nutrition 30:774-779	Assess the long term nutritional status of patients who had major upper GI surgery and investigate associations between nutritional status and quality of life	Cross-sectional study of patients enrolled in surgical clinics in Australia; anthropometric and SGA data were collected, nutritional intake assessment and quality of life questionnaire administered; responses	Nutritional status and quality of life scores were significantly correlated; SGA and GI symptoms were significant variables in quality of life assessment	EAL: Pos effect on QOL Upper GI cancer

Citation	Objective	Study Design	Outcome	Assessment
Cong M-H, et al. 2015. An interdisciplinary nutrition support team improves clinical and hospitalized outcomes of esophageal cancer patients with concurrent chemoradiotherapy. Chinese Medical Journal 128(22):3003-3007	Investigate whether nutrition support team intervention can benefit esophageal cancer patients undergoing chemoradiotherapy (CRT) in Beijing, China	Randomized trial of esophageal cancer patients undergoing CRT; treatment group received nutrition support team (NST) intervention; control group received oral nutrition supplements and enteral nutrition only; nutritional status, completion of therapy, and length of hospital stay were evaluated	Laboratory indices of nutritional status were better in the NST group and medical complications were fewer compared to controls; Completion of CRT was significantly improved in the NST group and length of hospitalization was reduced by 4.5 days compared to controls.	Esophageal ca
Horsley P, et.al. 2005. Poor nutritional status prior to peripheral blood stem cell transplantation is associated with increased length of hospital stay. Bone Marrow Trans 35:1113-1116	Determine the nutritional status of patients prior to PBSCT and examine the impact of nutritional status on hospital length of stay	Consecutive case studies of 66 patients over 18 months; patients were assessed for malnutrition by a dietitian and given a PG-SGA score; medical records were reviewed for additional information including length of hospital stay	PG-SGA scores were significantly related to hospital stay and mortality.	EAL: Pos effect on hospital LOS Peripheral blood stem cell transplantation pts
Isenring E, et al. 2003. The scored patient-generated subjective global assessment (PG-SGA) and its association with quality of life in ambulatory patients receiving radiotherapy. Euro J Clin Nutr 57:305-309	Evaluate the use of the scored PG-SGA as a measure of nutritional status in ambulatory patients receiving radiotherapy to the head, neck, abdominal or rectal area and to test for association between PG-SGA score and quality of life	Prospective 4-week study to assess nutritional status and quality of life of H&N patients receiving radiotherapy in Australia	PG-SGA scores identified significant decrease in nutritional status between initiation and 4 weeks post radiotherapy; there was a significant correlation between change in PG-SGA score and global QoL score at 4 weeks.	EAL: Pos effect on QOL Head and neck ca GI cancer Ambulatory pts

Laky B, et. al. 2010. Pretreatment malnutrition and quality of life-association with prolonged length of hospital stay among patients with gynecological cancer: a cohort study. BMC Cancer Care 10:232	<p>Evaluate factors available prior to initial treatment to predict length of stay in patients with suspected or proven gynecological cancer</p>	<p>Observational cohort of patients with or suspected of having gynecological cancers; patients were assessed with PG-SGA to assess nutritional status and the Functional Assessment of Cancer Therapy-General (FACT-G) scale to determine quality of life and relationship to length of stay (LOS)</p>	<p>Evidence of malnutrition as determined by PG-SGA and low pre-tx FACT-G score was associated with greater LOS</p>	<p>EAL: Pos effect on Hospital LOS EAL: Pos effect on QOL Gynecological cancer</p>
Lim SL, et al. 2012. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. Clinical Nutrition 31:345-350	<p>Determine the prevalence of malnutrition and its impact on length of stay, readmission, mortality, and cost of hospitalization</p>	<p>Prospective cohort with a matched case-control; patients were assessed for malnutrition; hospital outcomes, cost, readmission and inpatient mortality were prospectively tracked; 1,2 and 3-year mortality from index admission was retrospectively tracked</p>	<p>No significant differences found in weight loss between the 2 cohorts, and no difference in NG feeding of high-risk patients; DLC was associated with significantly reduced nutrition-related admissions, unplanned NG feeding, and reduced radiation review post-treatment. High patient satisfaction was recorded for DLC.</p>	<p>Mixed cancer types</p>
Piquet M-A, et al. 2002. Early nutritional intervention in oropharyngeal cancer patients undergoing radiotherapy. Support Care Cancer 10:502-504	<p>Assess the effects of early and systematic nutritional intervention in patients undergoing radiotherapy for oropharyngeal carcinoma</p>	<p>Prospective study of outpatients undergoing radiotherapy; intervention group was managed by a nutritionist and those at high nutritional risk received PEG or NGT prior to treatment, both intervention and were</p>	<p>Early PEG was significantly associated with reduced weight loss and reduced hospital admission for dehydration.</p>	<p>EAL: Pos effect on hospital admissions and readmissions Head and Neck Cancer</p>

		followed by a nutritionist throughout; control group was a paired historical cohort		
Shahmoradi N, et al. 2009. Impact of nutritional status on the quality of life of advanced cancer patients in hospice home care. Asian Pacific J Cancer Prev 10:1003-1010	Determine the relationship between nutritional status and quality of life in cancer patients in home hospice care	Cross-sectional study of home hospice cancer patients; nutritional status was determined by PG-SGA and Hospice Quality of Life (HQLI) by in-person interview of patients at home	Significant association was found between nutritional status and quality of life; functional well-being was the domain most affected	EAL: Pos effect on QOL Mixed cancer types
Shulan M et al. 2013. Predicting 30-day all-cause hospital readmissions. Health Care Manag Sci 16:167-175	Explore the maximum discriminative ability of readmission predictive models and assess the predictive power of different independent variables	Inpatient administrative data from a data network was analyzed for 8,718 patients for readmission within 30 days of previous discharge; 4 independent variable categories were modeled and analyzed for predictive power: 1) demographics, 2) socioeconomic status, 3) prior utilization and cost, and 4) risk and co-morbidities	Approximately 1/3 of newly admitted patients were found to be malnourished; malnutrition was significantly associated with poor outcomes, increased mortality, and increased cost of care	Mixed pt population
Snider JT, et al. 2014. Economic burden of community-based disease-associated malnutrition in the U.S. JParenEnteralNutr 38(suppl 2):77S-85S	Estimate the prevalence of selected disease states and degree of malnutrition to model morbidity, mortality, and direct medical costs associated with community-based disease-associated malnutrition (DAM)	A model was constructed to measure the prevalence of DAM and its consequences for breast cancer, COPD, colorectal cancer, CHD, dementia, depression, musculoskeletal disorders, and stroke	Demographics, socioeconomic variables, prior utilization, and diagnosis-related group (DRG) had limited predictive power as a measure of quality and cost of care.	Breast cancer Colorectal cancer
Torres ML, et al. 2013. Nutritional status, CT body	Evaluate the role of CT body composition measures in	Retrospective search of medical records for	Individuals with breast cancer had the lowest	Ovarian ca

[composition measures and survival in ovarian cancer Gynecologic Oncology 129:548-553](#)

predicting morbidity and mortality, and length of hospital stay in women with ovarian cancer

preoperative, pathologic, and postoperative data

prevalence of malnutrition of the 8 diseases; the direct cost burden of malnutrition associated disease was much lower for breast and colorectal cancer than for other diseases, particularly CHD, COPD, and depression.

A. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON HOSPITAL LENGTH OF STAY

Citation	Objective	Study Design	Outcome	Assessment
Amaral TF, Antunes A, Cabral S, Alves P, Kent-Smith L. An evaluation of three nutritional screening tools in a Portuguese oncology centre. J Hum Nutr Diet. 2008; 21: 575-583.	To evaluate the ability of the Malnutrition Screening Tool (MST) and the Malnutrition Universal Screening Tool (MUST) to identify nutritionally at-risk cancer patients, compared to a reference screening tool (Nutritional Risk Screening 2002)	Diagnostic, Validity or Reliability Study	MUST agreed with NSR-2002 better than MST in hospitalized cancer patients and also predicted oncology patients at greater risk for longer length of stay.	Mixed cancer types
Antoun S, Rey A, Béal J, Montange F, Pressoir M, Vasson MP, Dupoirion D, Gourdiat-Borye A, Guillaume A, Maget B, Nitenberg G, Raynard B, Bachmann P. Nutritional risk factors in planned oncologic surgery: What clinical and biological parameters should be routinely used? World J Surg. 2009 Aug; 33(8): 1,633-1,640.	To determine the most relevant nutritional parameters not only in terms of an association with surgical morbidity but also of practical routine feasibility for cancer patients undergoing planned major surgery of any type.	Prospective Cohort Study	The prediction of not only major infectious but also major non-infectious complications seemed less accurate with anthropometric features and clinical score than with albumin levels less than 30g per L. With albumin level being the only variable found statistically linked to major complications in the multi-variable analysis, collecting these data before surgery is mandatory. Recognition	Mixed cancer types

			of severe malnutrition was most often not associated with an implementation of nutrition care or participial nutrition when required.	
Barlow R, Price P, Reid TD, Hunt S, Clark GW, Havard TJ, Puntis MC, Lewis WG. Prospective multicentre randomised controlled trial of early enteral nutrition for patients undergoing major upper gastrointestinal surgical resection. Clin Nutr. 2011 Oct; 30(5): 560-566.	To determine if early enteral nutrition (EEN) was well-tolerated, safe and improved clinical outcomes of post-operative morbidity, mortality and length of hospital stay.	Randomized Controlled Trial	EEN was associated with significantly shortened length of hospital stay and improved clinical outcomes.	Upper GI malignancy
Braga M, Gianotti L, Vignali A, Cestari A, Bisagni P, Di Carlo V. Artificial nutrition after major abdominal surgery: Impact of route of administration and composition of the diet. Crit Care Med.1998; 26(1): 24-30.	To evaluate the impact of the route of administration of artificial nutrition and the composition of the diet on outcome after major abdominal surgery in gastric and pancreatic cancer patients.	Randomized Controlled Trial	Although this study shows that early enteral feeding with a standard diet exerts only a slight improvement of clinical outcome compared with TPN, the lower cost, the safety and the good tolerance should encourage the routine use of jejunal infusion of nutrients after major surgery. Early enteral feeding is a suitable alternative to TPN after major abdominal surgery. The use of the enriched diet appears to be more beneficial in malnourished and transfused patients.	Gastric and pancreatic cancers

<u>Horsley 2005 (see above)</u>				
Ionescu D, Iancu C, Ion D, Al-Hajjar N, Margarit S, Mocan L, Mocan T, Deac D, Bodea R, Vasian H. Implementing fast-track protocol for colorectal surgery: A prospective randomized clinical trial. World J Surg. 2009 Nov; 33(11): 2,433-2,438.	To compare a fast-track protocol in colorectal surgery with conventional care in our university hospital with the goal of implementing such a protocol in our daily practice.	Randomized Controlled Trial	Our fast-track protocol was followed by a significantly reduced hospital stay and better outcome for patients from the point of view of early re-feeding and mobilization. Fast-track protocol did not increase the incidence of complications.	Colorectal cancer
<u>Laky 2010 (see above)</u>				
Pressoir M, Desne S, Berchery D, Rossignol G, Poiree B, Meslier M, Traversier S, Vittot M, Simon M, Gekiere JP, Meuric J, Serot F, Falewee MN, Rodriguez I, Senesse P, Vasson MP, Chelle F, Maget B, Antoun S, Bachmann P. Prevalence, risk factors and clinical implications of malnutrition in French comprehensive cancer centers. British Journal of Cancer. 2010: 102, 966-971.	To determine the prevalence of malnutrition during hospitalization in cancer centers and to identify potential risk factors for malnutrition.	Prospective Cohort Study	The prevalence of malnutrition, defined as a function of two anthropometric indicators BMI and weight loss, was 30.9%. This morbidity related to disease or to treatment is associated with an impaired functional status, more frequent use of antibiotics and higher mortality. The length of stay is 45% longer for malnourished patients than for others, most likely owing to poorer PS. This is the first report of obesity as possible risk factor for malnutrition.	EAL: also pos effect on mortality Mixed cancer types
Sorensen J, Kondrup J, Prokopowicz J, Schiesser M, Krähenbühl L, Meier R, Liberda M; EuroOOPS study group. EuroOOPS:	To implement nutritional risk screening (NRS-2002) in hospital departments in Europe and the Middle East and to demonstrate the association between	Prospective Cohort Study	Author concludes that this study shows that nutritional risk screening can be successfully implemented	EAL: pos effect on hospital LOS and mortality Mixed cancer types

[An international, multicentre study to implement nutritional risk screening and evaluate clinical outcome. Clin Nutr. 2008 Jun; 27\(3\): 340-349.](#)

nutritional risk and clinical outcome

internationally and that nutritional risk is associated with a poor clinical outcome, also when most other factors known to lead to a poor clinical outcome are allowed.

B. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON HOSPITAL ADMISSIONS AND READMISSIONS

Citation	Objective	Study Design	Outcome	Assessment
Capuano G, Grosso A, Gentile PC, Battista M, Bianciardi F, Di Palma A, Pavese I, Satta F, Tosti M, Palladino A, Coiro G, Di Palma M. Influence of weight loss on outcomes in patients with head and neck cancer undergoing concomitant chemoradiotherapy. Head Neck. 2008 Apr; 30(4): 503-508.	To determine the influence of weight loss on outcomes in patients with head and neck cancer undergoing concomitant chemoradiotherapy (CCRT): treatment interruption, infections, mortality, hospital readmission rate	Non-Controlled Trial	In patients with head and neck cancer undergoing CCRT, the early nutritional management reduced weight loss and improved outcomes. Nutrition intervention should be provided to these patients before, during and after treatment.	Head and neck cancer EAL: Pos effect on Hospital Admissions and Readmissions, Radiation Treatment Tolerance, Chemotherapy Treatment Tolerance, and Mortality
Hill A, Kiss N, Hodgson B, Crowe TC, Walsh AD. Associations between nutritional status, weight loss, radiotherapy treatment toxicity and treatment outcomes in gastrointestinal cancer patients. Clin Nutr. 2011; 30: 92-98.	To determine whether nutritional status at radiotherapy commencement or changes in nutritional status throughout radiotherapy were associated with treatment toxicity and outcomes in gastrointestinal (GI) cancer patients.	Prospective Cohort Study	Deterioration in nutritional status (as measured by weight loss) during radiotherapy may be associated with poorer short-term treatment outcomes in GI cancer patients. However, sample size was inadequate to determine effect of nutritional status on radiotherapy commencement or	GI cancer EAL: Pos effect on Hospital Admissions and Readmissions, Radiation Treatment Tolerance, and Chemotherapy Treatment Tolerance

			changes in nutritional status throughout radiotherapy (defined by PG-SGA) on treatment outcomes.	
Kathiresan AS, Brookfield KF, Schuman SI, Lucci JA 3rd. Malnutrition as a predictor of poor postoperative outcomes in gynecologic cancer patients. Arch Gynecol Obstet. 2011 Aug; 284(2): 445-451.	To evaluate nutritional correlates with increased post-operative morbidity and mortality regardless of other risk factors in the gynecologic cancer patient.	Retrospective Cohort Study	Malnutrition reflected by low albumin levels is associated with significantly higher post-operative morbidity in gynecologic cancer patients.	Gynecologic cancers
Piquet 2002 (see above)				

C. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON QUALITY OF LIFE

Citation	Objective	Study Design	Outcome	Assessment
Bauer 2005 (see above)				
Carey 2011 (see above)				
Correia M, Cravo M, Marques-Vidal P, Grimble R, Dias-Pereira A, Faias S, Nobre-Leitão C. Serum concentrations of TNF-alpha as a surrogate marker for malnutrition and worse quality of life in patients with gastric cancer. Clin Nutr. 2007 Dec; 26(6): 728-735.	To examine, in patients with gastric cancer, the correlation between nutritional status, QOL (quality of life) and serum levels of TNF-alpha, IL-1, and IL-6.	Diagnostic, Validity or Reliability Study	The prevalence of MN is high in patients with gastric cancer. A significant correlation was found between higher values of cytokines, especially TNF-alpha, MN and QOL.	Gastric cancer
Fearon KC, Voss AC, Hustead DS. Definition of cancer cachexia: Effect of weight loss, reduced food intake and systemic inflammation on functional status and	To evaluate in a homogeneous cohort of patients with cancer the role of weight loss, low food intake and the presence of systemic inflammation in a multiple factor profile of cachexia that aimed to reflect	Prospective Cohort Study	Cachexia is a multi-dimensional, multi-factorial syndrome and is not synonymous with weight loss alone. A profiling system for cachexia needs to reflect	Mixed cancer types

prognosis. American Society of Nutrition. 2006; 83: 1,345-1,350.	<p>patients' adverse function and survival duration.</p>		<p>such complexity, especially when considering the physical function sequelae for patients with cachexia. Inclusion of factors such as energy intake and the presence of systemic inflammation in addition to weight loss appears to provide a platform to further understanding of the important therapeutic targets for patients.</p>	
Hyltander A, Bosaeus I, Svedlund J, Liedman B, Hugosson I, Wallengren O, Olsson U, Johnsson E, Kostic S, Henningson A, Körner U, Lundell L, Lundholm K. Supportive nutrition on recovery of metabolism, nutritional state, health-related quality of life, and exercise capacity after major surgery: A randomized study. Clin Gastroenterol Hepatol. 2005 May; 3(5): 466-474.	<p>To follow up on their previous short-term kinetic studies of metabolism and resumption of oral eating after major surgery. They aimed to investigate whether long-term specialized EN and PN supportive feeding during convalescence has superior effects on recovery of nutritional state, physical functioning and health-related quality of life (HrQoL) post-operatively, leading to different outcome in patients with pre-operative weight loss and reduced physical functioning.</p>	<p>Randomized Controlled Trial</p>	<p>Post-operatively, little benefit is realized from intensive nutrition support as either EN or PN when normal gut function is expected to return soon. Post-operative EN or PN are not superior to oral intake guided by a dietitian, and EN and PN are more likely to cause harm. PN should be reserved for patients who cannot eat.no</p>	<p>Upper GI cancers</p>
<p>Isenring 2003 (see above) Laky 2010 (see above)</p>				
Nourissat A, Vasson MP, Merrouche Y, Bouteloup C, Goutte M, Mille D, Jacquin JP, Collard O, Michaud P, Chauvin F. Relationship between	<p>To assess the global quality of life and its different dimensions as a function of the nutritional status of patients with cancer.</p>	<p>Cross-Sectional Study</p>	<p>The association between weight loss and impaired quality of life in all areas was confirmed by this study. To improve the quality of life in patients</p>	<p>Mixed cancer types</p>

nutritional status and quality of life in patients with cancer. Eur J Cancer. 2008 Jun; 44(9): 1,238-1,242.			with cancer, a nutritional intervention should be implemented as soon as cancer is diagnosed. The nutritional therapy should form part of the integral oncological support.	
Ollenschläger G;Thomas W;Konkol K;Diehl V;Roth E. Nutritional behaviour and quality of life during oncological polychemotherapy: results of a prospective study on the efficacy of oral nutrition therapy in patients with acute leukaemia. Eur J Clin Invest 1992 Aug;22(8):546-53. Shahmoradi 2009 (see above)	To determine whether nutritional status (measured as body weight) has an effect on the quality of life for patients with acute leukemia undergoing polychemotherapy.	Prospective randomized study	Intensive oral nutrition therapy with continuous dietetic counselling and motivation is an effective adjunct to aggressive antitumor therapy -not only with respect to the nutritional status, but also to patients' quality of life.	Leukemia

D. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON RADIATION TREATMENT TOLERANCE

Citation	Objective	Study Design	Outcome	Assessment
Capuano 2008 (see above)				
Hill 2011 (see above)				
Odelli C, Burgess D, Bateman L, Hughes A, Ackland S, Gillies J, Collins CE. Nutrition support improves patient outcomes, treatment tolerance and admission characteristics in oesophagal cancer. Clinical Oncology. 2005;17:639-645.	To evaluate a nutrition pathway that promoted early and aggressive dietetic intervention in patients receiving definitive chemoradiation for esophageal cancer.	Non-Randomized Controlled Trial	Implementation of this nutrition pathway has been associated with improved clinical outcomes, including decreased weight loss, number of unplanned hospital admissions and length of stay during the treatment course, and a	Esophageal cancer

higher tolerance of planned treatment.

[Ravasco, 2003](#) (see section IV)

[Ravasco, 2005 JCO](#) (see section IV)

[Ravasco, 2005 H&N](#) (see section IV)

E. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON CHEMOTHERAPY TREATMENT TOLERANCE

Citation	Objective	Study Design	Outcome	Assessment
Alexandre J, Gross-Goupil M, Falissard B, Nguyen ML, Gornet JM, Misset JL, Goldwasser F. Evaluation of the nutritional and inflammatory status in cancer patients for the risk assessment of severe haematological toxicity following chemotherapy. Ann Oncol. 2003; 14: 36-41.	To assess the influence of nutritional and inflammatory status of cancer patients on chemotherapy tolerability.	Case Control Study	Altered nutritional and inflammatory status correlates with increased risk of severe hematological toxicity following anti-cancer treatment. Thus, encouraging use of NIS as a practical and reliable parameter to prospectively identify patients at risk of toxicity prior to initiation of a new chemotherapy regimen.	Mixed cancer types
Capuano 2008 (see above) Eriksson KM, Cederholm T, Palmblad JE. Nutrition and acute leukemia in adults: Relation between nutritional status and infectious complications during remission induction. Cancer. 1998; 82: 1,071-1,077.	To evaluate whether variables reflecting nutrition would be related to infections and neutropenia in adult patients with acute leukemia who were undergoing induction therapy for first remission. Significance of various infections and total parenteral nutrition was also assessed.	Retrospective Cohort Study	This study demonstrates that adult patients with acute leukemia undergoing intensive cytotoxic treatment for induction of first remission often have moderate weight loss and a high incidence of severe hypoalbuminemia, indicating a negative	Leukemia

			protein-energy balance. The presence of weight loss and severe hypoalbuminemia were closely related to the duration of patients' infections.	
Hill 2011 (see above)				
Phippen NT, Lowery WJ, Barnett JC, Hall LA, Landt C, Leath CA 3rd. Evaluation of the Patient-Generated Subjective Global Assessment (PG-SGA) as a predictor of febrile neutropenia in gynecologic cancer patients receiving combination chemotherapy: A pilot study. Gynecol Oncol. 2011; 123(2): 360-364.	To evaluate the reliability of a pre-chemotherapy Patient-Generated Subjective Global Assessment (PG-SGA) score as a predictor of febrile neutropenia (FN) in gynecologic cancer patients receiving primary combination chemotherapy.	Diagnostic, Validity or Reliability Study	PG-SGA scores were higher for patients experiencing FN and may be a reasonably predictive marker of FN in patients receiving multi-agent primary chemotherapy and likely benefactors of prophylactic CSF	Gynecological cancers
Prado CM, Baracos VE, McCargar JL, Mourtzakis M, Mulder KE, Reiman T, Butter CA, Scarfe AG, Sawyer MB. Body composition as an independent determinant of 5-fluorouracil-based chemotherapy toxicity. Clin Cancer Res. 2007 Jun 1; 13(11): 3,264-3,268.	To determine if the highest doses of 5-fluorouracil (5-FU) per kilogram (kg) lean body mass (LBM) were associated with dose-limiting toxicity in stage II or III colon cancer patients treated with 5-Fu and leucovorin.	Prospective Cohort Study	Mean 5-FU per kg LBM values of the population varied with regards to presence or absence of toxicity (P=0.036). A cut-point of 20mg 5-FU per kg LBM was identified as a threshold and predictor for developing toxicity (P=0.005) [odds ratio (OR), 16.5; P=0.013], specifically among women (OR, 16.73; P=0.021).	Colon cancer

<p>Prado CM, Baracos VE, McCargar LJ, Reiman T, Mourtzakis M, Tonkin K, Mackey JR, Koski S, Pituskin E, Sawyer MB. Sarcopenia as a determinant of chemotherapy toxicity and time to tumor progression in metastatic breast cancer patients receiving capecitabine treatment. Clin Cancer Res. 2009 Apr 15; 15(8):2,920-2,926.</p>	<p>The purpose of the study is to observe the relationship between sarcopenia or body composition and treatment toxicity of chemotherapy to further investigate clinical outcomes of metastatic breast cancer, using time to tumor progression (TTP) as a study end point.</p>	<p>Prospective Cohort Study</p>	<p>This study shows the potential need for body composition assessment to improve toxicity risk and to individualize drug dosing in a patient population with advanced cancer of the breast. Further studies should be conducted to validate drug dosing based on pre-treatment body composition and LBM analysis.</p>	<p>Breast cancer</p>
<p>Prado CM, Lima IS, Baracos VE, Bies RR, McCargar LJ, Reiman T, Mackey JR, Kuzma M, Damaraju VL, Sawyer MB. An exploratory study of body composition as a determinant of epirubicin pharmacokinetics and toxicity. Cancer Chemother Pharmacol. 2011; 67(1): 93-101.</p>	<p>To relate epirubicin pharmacokinetics (PK) and toxicity to specific features of body composition of patients with breast cancer, focusing on lean body mass and functional liver volume.</p>	<p>Cross-Sectional Study</p>	<p>Lean body mass predicts epirubicin clearance and may be a better measure with which to individualize treatment than the current convention of normalizing the dose to BSA. This warrants validation in prospective trials testing lean body mass based epirubicin dosing.</p>	<p>Breast cancer</p>
<p>Robinson DW Jr, Eisenberg DF, Cella D, Zhao N, de Boer C, DeWitte M. The prognostic significance of patient-reported outcomes in pancreatic cancer cachexia. J Support Oncol. 2008; 6(6): 283-290.</p>	<p>To explore the relationship between patient-reported outcomes (PROs) and survival in pancreatic cancer patients with involuntary, significant weight loss (cachexia).</p>	<p>Randomized Controlled Trial</p>	<p>The findings from this study support several features of an a priori clinical benefit model. Patient reported fatigue provided powerful prognostic information and tracking of this symptom may be useful for treatment planning</p>	<p>Pancreatic cancer EAL: Pos effect for chemotherapy treatment tolerance and mortality</p>

and medical monitoring of advanced stage pancreatic cancer patients with cachexia. The results need to be confirmed by larger trials.

Ross PJ, Norton A, Priest K, Waters JS, Eisen T, Smith IE, O'Brien MER. Do patients with weight loss have a worse outcome when undergoing chemotherapy for lung cancers? British Journal of Cancer. 2004; 90: 1,905-1,911.	<p>To assess whether weight loss at presentation had an influence on the toxicity patients suffered during chemotherapy and on whether weight loss altered the amount of chemotherapy delivered. To assess whether stabilization of weight during treatment had any effect on outcome.</p>	<p>Prospective Cohort Study</p>	<p>This study demonstrated that weight loss at presentation is an independent prognostic factor for survival of patients with NSCLC, SCLC, and mesothelioma. Weight loss also predicts toxicity from treatment.</p>	<p>Lung cancer EAL: Pos effect for chemotherapy treatment and mortality</p>
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F. EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECTS ON MORTALITY

Citation	Objective	Study Design	Outcome	Assessment
Capuano 2008 (see above)				
Dewys WD, Begg C, Lavin PT, Band PR, Bennett JM, Bertino JR, Cohen MH, Douglass HO Jr, Engstrom PF, Ezdinli EZ, Horton J, Johnson GJ, Moertel CG, Oken MM, Perlia C, Rosenbaum C, Silverstein MN, Skeel RT, Sponzo RW, Tormey DC. Prognostic effect of weight loss prior to chemotherapy in cancer patients. Eastern Cooperative Oncology Group. Am J Med. 1980; 69(4): 491-497.	<p>To evaluate the frequency of weight loss in a spectrum of tumor types. To evaluate the prognostic effect of weight loss on response to chemotherapy and on survival. To correlate weight loss with other prognostic factors.</p>	<p>Cross-Sectional Study</p>	<p>The authors mentioned that the analysis has relevance for the conduct of future trials of chemotherapy of cancer. In randomized trials, stratification by weight loss should be considered to assure a balance of this prognostic factor between treatment groups. Future trials should include sufficient numbers of patients in good performance and weight loss categories to provide a valid trial of the new agent.</p>	<p>Leukemia</p>

Fearon 2006 (see above)	To evaluate the correlation of the Mini Nutritional Assessment (MNA) with laboratory markers of inflammation or cachexia in patients with metastatic lung cancer.	Diagnostic, Validity or Reliability Study	Based on the MNA, the majority of patients were either malnourished or at nutritional risk. MNA correlated with laboratory parameters related to inflammation or cachexia and was independently associated with survival.	Lung cancer
Gioulbasanis I, Georgoulas P, Vlachostergios PJ, Baracos V, Ghosh S, Giannousi Z, Papandreou CN, Mavroudis D, Georgoulas V. Mini Nutritional Assessment (MNA) and biochemical markers of cachexia in metastatic lung cancer patients: Interrelations and associations with prognosis. Lung Cancer. 2011 Dec; 74(3): 516-520.	To investigate whether improvement in nutritional status after three months of treatment can impact survival in patients with ovarian cancer.	Retrospective Cohort Study	The results from this study show that improvement in nutritional status is associated with better survival. The findings also lend support to the importance of aggressive nutritional intervention in improving patient outcomes in oncology. It is important to accurately assess and calculate nutritional requirements, choose correct methods of nutritional delivery and monitor or recognize nutrition-related complications in patients with ovarian cancer.	Ovarian cancer

Hammerlid E, Wirblad B, Sandin C, Mercke C, Edstrom S, Kaasa S, Sullivan M, Westin T. Malnutrition and food intake in relation to quality of life in head and neck cancer patients. Head & Neck. 1988; 20: 540-548.	<p>To investigate whether the clinical stage of head and neck cancer or the nutritional status of the patient is reflected by the patient's quality of life.</p>	<p>Descriptive Study</p>	<p>Eight of 23 (35%) malnourished patients were alive at the two-year follow-up. 14 of 22 (64%) well-nourished patients were alive at the two-years follow-up.</p>	<p>Head and Neck cancer</p>
Martin L, Lagergren P. Long-term weight change after oesophageal cancer surgery. B J Surg. 2009; 96 (11): 1,308-1,314.	<p>To investigate weight changes after esophageal cancer surgery and to determine whether pre-operative weight loss, sex, body mass index (BMI) at operation and mortality were associated with the risk of malnutrition</p>	<p>Prospective Cohort Study</p>	<p>Post-operative malnutrition negatively influences the chance of survival, as well as efficiency of treatment. Nutritional advice from dietitians has been shown to decrease weight loss. Dietitians should be involved in the management of patients with weight loss after esophageal cancer surgery.</p>	<p>Esophageal</p>
Martin L, Watanabe S, Fainsinger R, Lau F, Ghosh S, Quan H, Atkins M, Fassbender K, Downing GM, Baracos V. Prognostic factors in patients with advanced cancer: Use of the patient-generated subjective global assessment in survival prediction. J Clin Oncol. 2010 Oct 1; 28(28): 4,376-4,383.	<p>To define elements of the patient-generated Subjective Global Assessment (PG-SGA) independently prognostic of survival in patients with advanced cancer and to determine their prognostic accuracy. To compare the predictive accuracy of patient- and physician- reported performance status (PS).</p>	<p>Prospective Cohort Study</p>	<p>There is a high probability of concordance between predicted and observed survival for patients in distinct palliative care settings based on patient-reported information.</p>	<p>Mixed cancer types</p>

<p>Persson C, Sjoden PO, Glimellius B. The Swedish version of the patient-generated subjective global assessment of nutritional status: gastrointestinal vs urological cancers. Clin Nutr. 1999; 18 (2): 71-77. Pressoir 2010 (see above)</p>	<p>To determine if the PG-SGA could be used by different professionals, was easy for patients to respond to and whether it had prognostic capabilities.</p>	<p>Diagnostic, Validity or Reliability Study</p>	<p>The PG-SGA contributed to prognostic information.</p>	<p>GI and urological cancers</p>
<p>Prado CM, Lieffers JR, McCargar LJ, et al. Prevalence and clinical implications of sarcopenic obesity in patients with solid tumours of the respiratory and gastrointestinal tracts: A population-based study. Lancet Oncol. 2008; 9(7): 629-635.</p>	<p>To assess the prevalence and clinical implications of sarcopenic obesity (obesity with depleted muscle mass) in patients with cancer.</p>	<p>Prospective Cohort Study</p>	<p>Cancer patients with sarcopenic obesity had exceptionally lower functional status and their sarcopenia was an independent risk factor for poor survival. An apparently large bodyweight might mask sarcopenia. Men, patients aged over 65 years and those affected by colorectal cancer seem to be especially susceptible to sarcopenia. Body composition variability might introduce a variation of drug volume of distribution. If variation in toxicity can be partially explained by features of body composition, identification of clinical measure of body composition for a more refined delivery of chemotherapy dose is important.</p>	<p>Respiratory and GI cancers</p>

[Robinson 2008](#) (see above)

[Ross 2004](#) (see above)

[Sorenson 2008](#) (see above)

[Tan BH, Birdsell LA, Martin L, Baracos VE, Fearon KC. Sarcopenia in an overweight or obese patient is an adverse prognostic factor in pancreatic cancer. Clin Cancer Res. 2009 Nov 15; 15\(22\): 6,973-6,979.](#)

To evaluate if weight and body composition, specifically sarcopenia, assessed from diagnostic computed tomography (CT) scans, is of prognostic value in patients with pancreatic cancer.

Prospective Cohort Study

Sarcopenia in overweight/obese patients with advanced pancreatic cancer is an occult condition but can be identified using CT scans. This condition is an independent adverse prognostic indicator that should be considered for stratification of patients' entering clinical trials, systemic therapy or support care programs.

Pancreatic cancer

[Yoon H, Lewis M, Shi Q, Khan M, Cassivi S, Diasio R, Sinicrope F. Prognostic impact of body mass index stratified by smoking status in patients with esophageal adenocarcinoma. J Clin Oncol. 2011; 29: 4,561-4,567.](#)

To measure the relationship of obesity on survival from gastroesophageal junction (GEJ) and gastric cardia, collectively referred to as esophageal adenocarcinoma (EAC), after stratification by smoking status.

Retrospective Cohort Study

Obesity is independently associated with increased mortality among never smokers. This association is not found with ever smokers. The biological mechanisms underlying the interaction between smoking and obesity awaits further study. The findings from this study are relevant to patient management as they can provide prognostic information that can inform post-operative risk stratification.

Esophageal cancer

II. Current Knowledge of Nutrition Practice

Citation	Objective	Study Design	Outcome	Assessment
Antillon F, et al. 2013. Nutritional status of children during treatment for acute lymphoblastic leukemia in Guatemala. <i>Pediatr Blood Cancer</i> 60:911-915	Determine the prevalence and severity of malnutrition in children at diagnosis of ALL, and at 3 and 6 months post-chemotherapy in El Salvador	Anthropometric assessment administered by a nutritionist of ALL patients ages 1-18 years, over a period of 3 years	Risk group (high vs low) was the only parameter significantly associated had hazard of death; at 6 mo survival using nutrition status at 6 mo, those severely depleted had a 2.43 times hazard of death than adequately nourished or moderately depleted.	ALL
Bagan P, et al. 2013. Nutritional status and postoperative outcome after pneumonectomy for lung cancer. <i>Ann Thorac Surg</i> 95:392-396	Assess the nutritional status of patients referred for pneumonectomy and assess the value of malnutrition in predicting adverse events	Prospective observational multicenter study in France; data were collected on pathology stage and clinical characteristics, nutritional assessment, and morbidity/mortality outcomes	Malnutrition was significantly associated with morbidity and mortality, as well as longer hospital stay.	Lung cancer
Clavier J-B, et al. 2014. Baseline nutritional status is prognostic factor after definitive radiochemotherapy for esophageal cancer. <i>Dis Esophagus</i> 27:560-567	Identify prognostic factors focused on nutritional status for survival of esophageal cancer	Retrospective analysis of consecutive case series; data included tumor staging, weight loss, BMI, serum albumin, and treatment modality	Baseline nutritional status was a factor in the outcome of esophageal cancer patients treated by definitive radiochemotherapy; Nutritional Risk Index was an independent prognostic factor of both disease-free and overall survival.	Esophageal cancer
Drissi M, et al. 2015. Nutrition care in patients with cancer: a	Analysis of the use of parenteral nutrition (PN) in outpatient care	Observational study of outpatient oncology centers and characteristics	GI cancers and GI obstructions were commonly treated with	Outpt setting Mixed cancer types

retrospective multicenter analysis of current practice – indications for further studies? Clinical Nutrition 34:207-211		of 2 cohorts of patients receiving PN; cohort 1 included patients during one quarter; cohort 2 included patients throughout the study period	PN in the first and second cohorts, respectively; most patients received treatment at home; PN patients had stable or increasing BMI, independent of PN administration.	
Grasso S, et al. 2013. Hypokalemia during the early phase of refeeding in patients with cancer. Clinics 68(11):1413-1415	Investigate the presence of hypokalemia during early phase refeeding in patients with upper aerodigestive tract (UADT) tumors	Observational study of nutritional intake and anthropometric measures of patients receiving upfront radiotherapy who were concurrently receiving nutrition therapy	Early phase refeeding was associated with lower potassium and total protein and significant weight loss for parenteral compared to oral feeding.	Upper digestive tract cancer
Menon K, et al. 2014. Nutrient intake and nutritional status of newly diagnosed patients with cancer from the East Coast of Peninsular Malaysia. BMC Research Notes 7:680	Assess the nutrient intake and status of newly diagnosed patients with cancer in outpatient clinics in Malaysia	Cross-sectional study of a convenience sample of newly diagnosed cancer patients; data collected included anthropometric, dietary intake, and biochemical measures	The study found a high prevalence of malnutrition (underweight, anemia, poor macro- and micronutrient intake) in newly diagnosed cancer patients prior to initiation of treatment.	Mixed cancer types

III. Models of Care: National and International

Citation	Objective	Study Design	Outcome	Assessment
Aaldriks AA, et al. 2013. Frailty and malnutrition predictive of mortality risk in older patients with advanced colorectal cancer receiving chemotherapy. J Geriatr Oncol 4:218-226.	Assess the predictive value of a Geriatric Assessment (GA) as a tool in the management and follow up of elderly cancer patients, and the feasibility of treatment with adjuvant and palliative chemotherapy	Prospective study of older adults with colorectal cancer assessed before chemotherapy by Mini Nutritional Assessment (MNA), Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE), Groningen Frailty Indicator (GFI), and Mini	GA showed that 28% of all patients surveyed were at risk of malnutrition; 33% of patients with palliative chemotherapy, and 20% of patients with adjuvant chemotherapy were at risk of malnutrition; Poor MNA and GFI scores were significantly associated	Colorectal cancer

		Mental State Examination (MMSE), collectively referred to as Geriatric Assessment (GA)	with mortality among patients receiving palliative chemotherapy	
Bozzetti F, et al. 2012. The nutritional risk in oncology: a study of 1,453 cancer outpatients. Supp Care Cancer 20:1919-1928.	Define the pattern of scores of nutritional risk in a population of cancer outpatients and analyze factors associated with high nutritional risk	Prospective screening nutritional status of oncology outpatients using Nutritional Risk Screening (NRS 2002) tool	32% of outpatients were found to be at nutritional risk; primary tumor site, Eastern Cooperative Oncology Group performance status score, and anorexia/fatigue were significantly associated with poor NRS scores	Outpts Mixed cancer types
Hofbauer SL, et al. 2015. The preoperative prognostic nutritional index is an independent predictor of survival in patients with renal cell carcinoma. Urologic Oncology 33(2):68.e1-e7.	Assess the Prognostic Nutritional Index (PNI) as a predictor of poor outcomes in patients with cancer	Retrospective review of medical records of patients diagnosed with renal cell carcinoma; cancer-specific survival was the primary outcome measure	A low PNI score was significantly associated with lower cancer-free survival and lower disease-free survival in renal cell carcinoma patients	Renal cell carcinoma
Kabata P, et al. 2015. Preoperative nutritional support in cancer patients with no clinical signs of malnutrition – a prospective RCT. Supp Care Cancer 23:365-370.	Assess whether preoperative nutritional support should be routinely used in GI cancer patients without malnutrition	Prospective, 2-arm randomized controlled trial. Intervention group received an on-market nutritional supplement and two 20 ml bottles of a hypercaloric formula immediately prior to surgery; control group followed their usual diet; anthropometric and blood measures were taken for both groups; all patients were assessed for postoperative complications	At postoperative assessment (day 30) the number and severity of complications was significantly higher in the control group; at second assessment, median body weight was significantly lower in control group and compared to preoperative weight, but weight increased in the intervention group	Mixed cancer types

Kiss NK, et al. 2012. A dietitian-led clinic for patients receiving (chemo)radiotherapy for head and neck cancer. Support Care Cancer 20:2111-2120	Determine the impact of a dietitian-led clinic, guided by evidence-based nutrition care, on the frequency of dietitian review, weight loss, enteral feeding, nutrition-related admissions, and requirement for medical review	Prospective, 2-cohort study with a pre-post-test design; cohort 1 received standard care protocol; cohort 2 received dietitian-led consultation (DLC); DLC included collecting diet and anthropometric data, estimating nutritional requirements, and providing individualized counseling	Patient age, tumor stage, and body composition were significantly associated with poor survival; longer hospital stay was independently predicted by low serum albumin, poor surgery outcome, and low sub-q fat and muscular fat.	Head and neck cancer
Citation	Objective	Study Design	Outcome	Assessment
Langius JAE, et al. 2013. Critical weight loss is a major prognostic indicator for disease-specific survival in patients with head and neck cancer receiving radiotherapy. Br J Cancer 109:1093-1099.	Determine whether weight loss before or during radiotherapy is associated with disease-specific survival (DSS) in head and neck cancer patients	Data on weight change was collected on a consecutive cohort of H&N cancer patients before and during adjuvant radiotherapy; 5-year overall and DSS was assessed	Weight loss before radiotherapy was significantly associated with poorer survival; weight loss > 5-10% and > 10% was significantly associated with worse DSS; DSS was significantly worse for patients with critical weight loss during radiotherapy	Head and neck cancer
Lindman A, et al. 2013. Food caregivers influence on nutritional intake among admitted haematological cancer patients – a prospective study. Eur J Oncol Nursing 17:827-834	Determine whether establishing direct contact between food caregivers and patients would increase energy and protein intake and nutrition knowledge in haematological cancer patients	Quasi-experimental design comparing data from 2 cross-sectional studies before and after implementation of interaction between trained food caregivers and patients; a questionnaire about dietary counseling was administered pre-intervention;	Food caregivers significantly increased energy intake post-intervention; no significant difference was found for protein intake; no difference in symptomology was found between pre- and post-intervention; patients reported significant improvement in nutrition	Hematological cancer

			knowledge with food caregiver intervention	
Senesse P, et al. 2015. A prospective observational study assessing home parenteral nutrition in patients with gastrointestinal cancer: benefits for quality of life. J Pain Symptom Manage 49(2)L183-191	Evaluate the impact of home parenteral nutrition (HPN) on quality of life and changes in nutritional status and assess proxy perception of patient well-being	Prospective observational study of patients with GI cancer in France; questionnaires were given to physicians, patients, and families; data on physical status and Nutritional Risk Screening was collected by physicians; data from a Functional Assessment of Cancer Therapy-General as well as perceptions about body weight, HPN, and autonomy during HPN were collected from patients; an embedded proxy questionnaire about perception of well-being was	HPN was significantly associated with improved quality of life, but did not affect autonomy; nutritional status also showed improvement with HPN	Gastrointestinal cancer

		included for patients		
Silander E, et al. 2013. Energy intake and sources of nutritional support in patients with head and neck cancer – a RCT. Eur J Clin Nutr 67:47-52.	Explore when and for how long patients had dysphagia and weight loss due in inadequate dietary intake and whether a PEG had an impact on nutritional status	Randomized clinical trial of H&N patients; intervention group received prophylactic PEG and nutritional advice as needed; control group received standard nutritional care; patients were followed for 2 years	No significant differences were found in weight loss over the first 6 months; weight loss ceased for both groups by year 2; both groups transitioned to oral intake by year 2.	Head and neck cancer
Silvers MA, et al. 2014. Potential benefits of early nutritional intervention in adults with upper gastrointestinal cancer: a pilot randomized trial. Supp Care Cancer. 22:3035-3044.	Pilot study to test whether an intensive early nutrition intervention in newly diagnosed GI cancer patients was feasible	Randomized controlled trial; intervention group received weekly telephone contact from a dietitian that was continued in-person during clinical appointments; control group had no dietitian contact unless referred when admitted for surgery or chemotherapy	Baseline prevalence of malnutrition was similar for both groups; at mid-study, nutrition intervention group showed significantly higher global assessment and quality of life scores; nutrition risk scores decreased and weight loss was attenuated in intervention group compared to controls	Upper gastrointestinal cancer
Wall LR, et al. 2016. Evaluation of a weekly speech pathology/dietetic service model for providing supportive care intervention to head and neck cancer patients and their carers during chemoradiotherapy. Supp Care Cancer 24:1227-1234.	Evaluate the weekly, joint speech pathology (SP)/dietetic (DN) service delivery model given to H&N cancer patients at an outpatient clinic in Australia	Cross-sectional study of H&N patients, care-givers, and clinicians; data was collected across six 2-week collection periods on: service characteristics, the SP/DN sessions, and responses from consumer groups who either received or provided SP/DN services	Approximately 75% of SP/DN sessions were perceived as necessary by patients and/or clinicians (cancellations and non-attendance were low – 1-2 sessions/week); 24% of scheduled sessions were deemed “not required” by patients and clinicians; emergency and unplanned sessions were low; patient report and clinician judgement agreement was high	Head and neck cancer

IV. Benefits of Outpatient Nutrition Care on Survival and Other Parameters

Citation	Objective	Study Design	Outcome	Assessment
Bourdel-Marchasson J, et al. 2014. Nutritional advice in older patients at risk of malnutrition during treatment for chemotherapy. Plos One 9(9):e108687	Examine effects of dietary advice vs. usual oral care to increase intake in older patients during chemotherapy	Multicenter superiority randomized controlled trial in 12 public and private settings in SW France	No significant difference in 1- and 2-year mortality. Rate of weight change and other secondary outcomes was similar between treatment groups	Mixed cancer types
Bozzetti F, et al 2012 (see section III)				
Brown T, et al. 2014. Nutrition outcomes following implementation of validated swallowing and nutrition guidelines for patients with head and neck cancer. Support Care Cancer 22:2381-2391	Report on adherence to the H&N cancer guidelines and impact on weight change during and after treatment.	Prospective observational audit of nutrition outcomes (weight, nutritional status, type of nutrition support) by nutrition risk category using self-completed questionnaire, dietitian assessment, and measured height/weight	Significant associations found between 10% weight loss and adherence to H&N guidelines, type of nutrition support, BMI at diagnosis, tumor site, stage, and treatment.	Head and neck cancer
Buntzel J, et al. 2012. Nutritional parameters for patients with head and neck cancer. Anticancer Res 32:2119-2124	Determine optimal nutritional parameters to assess nutritional status impact on prognosis in head and neck cancer	Retrospective analysis of survival and comparison of bioimpedance measures related to weight loss at diagnosis and at the end of RT	Nutritional status, as measured by weight loss and BMI, is related to prognosis in head and neck cancer patients	Head and neck cancer
Citation	Objective	Study Design	Outcome	Assessment
Dobriila-Dintinjana R, et al. 2013. Nutritional support in patients with colorectal cancer during chemotherapy: does it work? Hepato-	Investigate whether dietary counseling and oral nutrition with commercial supplements during chemotherapy influence nutritional status and survival in colorectal cancer patients	Prospective study assessing nutritional status and survival of colorectal cancer patients in Croatia; intervention group was monitored and received	Patients with nutritional support had reduced weight loss and improved appetite, and had significantly longer	

Gastroenterology 60:475-480		nutritional support and counseling; control group was data collected retrospectively over 5 years from patients without nutritional support	survival time than controls	
Drissi M, et al 2015 (see section II)				
Ehrsson YT, et al. 2012. Nutritional surveillance and weight loss in head and neck cancer patients. Support Cancer Care 20:757-765	Evaluate therapeutic approach, tumor site, stage, BMI, gender, age, and civil status as predictors of body weight loss and its effect on post-op infection and mortality	Retrospective cohort study of data from medical records of head and neck cancer outpatients. Dietitian counseling, nutritional supplements were provided; advanced cancer patients received NG or PEG enteral nutrition	Weight loss was not significantly associated with post-op infection and mortality. Enteral nutrition patients lost significantly more weight than those with oral feeding at 1-2 year follow-up. Tumor stage was significant for weight loss.	Head and neck
Greenlee HA, et al. 2013. A pilot randomized controlled trial of a commercial diet and exercise weight loss program in minority breast cancer survivors. Obesity 21(1):65-76	Examine the effects and feasibility of the Curves weight loss program with Hispanic, African American, and Afro-Caribbean breast cancer survivors	Randomized controlled trial of breast cancer survivors into two study arms: (1) 6 months of Curves program (diet, exercise, anthropometric and cardiovascular monitoring) then 6 months of observation only; (2) 6 months of observation only then 6 months of Curves program	Participation in the Curves program in the immediate arm resulted in modest but significant weight loss that was mostly regained in the 6 month observation period.	Breast cancer
Citation	Objective	Study Design	Outcome	Assessment
Hofbauer SL, et al. 2015. The preoperative prognostic nutritional index is an independent	Examine whether Prognostic Nutritional Index (PNI) is an independent prognostic factor in	Retrospective study of medical records of RCC patients; patient outcomes were determined over 40	Each 1 unit increase in PNI was associated with a decreased risk of death from RCC by 7%; PNI was	Renal cell carcinoma

predictor of survival in patients with renal cell carcinoma. Urologic Oncology 33 (2):68.e1-68.e7	patients with renal cell carcinoma (RCC)	months; PNI was calculated from laboratory data; preoperative tumor staging and cancer-specific (CSS) and disease-free (DFS) survival were determined	an independent prognostic factor for CSS and DFS	
Kwok A, et al. 2015. Dietary experiences and support needs of women who gain weight following chemotherapy for breast cancer. Support Care Cancer 23:1561-1568	Explore experiences, dietary information, and support needs of women who gain weight during chemotherapy for breast cancer	Qualitative, semi-structured interviews about dietary changes, weight gain, physical activity, dietary concerns, and sources of information and support	Key themes emerging from interviews were: (1) undesirable impact of treatment on diet and activity; (2) concern about changes in weight and diet; (3) insufficient dietary information and support.	Breast cancer
Lee AH, et al. 2006. The incidence of potential interactions between dietary supplements and prescription medications in cancer patients at a VA hospital. Am J Clin Oncol 29(2):178-182	Examine potential interactions between supplement use and prescription meds in a VA hospital cancer population	Administered survey on demographic info, disease profile, use of herbal remedies and dietary supplements, interaction with physician about supplement use	Supplement use among VA cancer patients is similar to the general population; potential supplement/drug interactions were identified.	Mixed cancer types
De Luis DA, et al. 2014. Clinical effects of a hypercaloric and hyperproteic oral supplement enhanced with w3 fatty acids and dietary fiber in postsurgical ambulatory head and neck cancer patients. Nutr Hosp 31(2):759-763	Evaluate the effects of hypercaloric hyperproteic oral supplement with w3 fatty acids and fiber on clinical parameters in post-surgical head and neck cancer patients	Clinical trial of 37 ambulatory H&N patients in 3 groups (all patients, radiotherapy; no radiotherapy). All received the supplement and diet instruction	Consuming the supplement improved serum protein levels in all patients. Weight, fat mass, and fat-free mass improved in the non-radiotherapy group compared to the radiotherapy group.	Head and neck cancer
McCarroll ML, et al. 2015. Feasibility of a lifestyle intervention for	Assess the feasibility of a 1-month lifestyle intervention delivered by web-based mobile	Prospective intervention trial in overweight/obese endometrial and breast	The web-based lifestyle intervention achieved significant reductions in	Endometrial and breast cancer

overweight/obese endometrial and breast cancer survivors using an interactive mobile application. Gynecologic Oncology 137:508-515	application as a weight loss intervention in endometrial and breast cancer survivors	cancer survivors. Users tracked food choices, exercise, and weight change using a mobile app	weight, BMI, and waist circumference from pre- to post-intervention. WEL scores also showed significant improvement.	
Percival C, et al. 2013. Providing nutritional support to patients with thoracic cancer. Resp Med 107:753-761	Evaluate effectiveness of a screening tool and dietary intervention on patient outcomes and dietetic workload	Patient-completed questionnaire, dietitian-administered screening tool, dietetic intervention, and follow-up	No significant difference in pattern, magnitude, or % change in weight between malnourished and not malnourished groups.	Thoracic cancer
Poulsen GM, et al. 2014. Randomized trial of the effects of individual nutritional counseling in cancer patients. Clin Nutr 33:749-753	Investigate the effect of intensive, individual dietary counseling of patients in radiotherapy and/or chemotherapy for gynecologic-, gastric-, or esophageal cancer	Prospective, randomized, controlled, unblinded, trial conducted in outpatients receiving chemo- and/or radiotherapy; intervention group received a nutritional supplement and nutrition counseling at baseline, and 1X weekly during treatment, and at 3 month follow-up; control group was instructed by nurses and instructed to call a dietitian as needed	Patients receiving nutrition counseling had significantly less weight loss and significantly higher energy and protein intake compared to controls; the intervention had no effect on quality of life or incidence of side effects from tx	Mixed cancer types
Citation	Objective	Study Design	Outcome	Assessment
Rodrigues CS, Villaca Chaves G. 2015. Patient-generated subjective global assessment in relation to site, stage of	Identify factors related to illness and oncological treatment as determinants of nutritional status using PG-SGA in patients with gynecological tumors	Retrospective cohort analysis of survey participants with gynecological tumors in Rio de Janeiro	PG-SNA is a useful tool for nutritional assessment and identification of nutritional risk in	Gynecological cancer

the illness, reason for hospital admission, and mortality in patients with gynecological tumors. Support Care Cancer 23:871-879.	<p>Examine whether the type of diet plan for weight loss has any deleterious effects in a cohort of breast cancer survivors</p>	<p>Non-randomized, controlled trial examining two dietary patterns at the extremes of macronutrient composition against a nonintervention control on weight loss, body composition, and biomarkers of metabolic and hormonal processes relevant to breast cancer</p>	<p>gynecological cancer patients.</p>	<p>Breast cancer</p>
Thompson HJ, et al. 2012. Effect of dietary patterns differing in carbohydrate and fat content on blood lipid and glucose profiles based on weight-loss success of breast-cancer survivors. Br Cancer Res 14(1):R1	<p>Examine whether the type of diet plan for weight loss has any deleterious effects in a cohort of breast cancer survivors</p>	<p>Non-randomized, controlled trial examining two dietary patterns at the extremes of macronutrient composition against a nonintervention control on weight loss, body composition, and biomarkers of metabolic and hormonal processes relevant to breast cancer</p>	<p>Both arms of treatment achieved beneficial effects of weight loss on lipid biomarkers and fasting glucose; negative effects on outcomes was not observed for either dietary pattern. Effects of both dietary patterns on long-term survival were not determined.</p>	<p>Breast cancer</p>
Tu M-Y, et al. 2012. Effects of an intervention on nutrition consultation for cancer patients. Eur J Cancer Care 22:370-376	<p>Examine whether a personalized nutrition intervention can preserve body weight and food intake and prevent nutrient deficiencies in post-discharge cancer patients</p>	<p>Randomized trial of post-discharge cancer patients in Taiwan, China; SGA was used to evaluate nutritional status; intervention group received nutrition counseling and meal planning; control group did not have counseling</p>	<p>Nutrition counseling significantly increased food intake recovery and decreased weight loss from initial consultation while only food intake recovery increased for control groups; cancer stage but not cancer type affected nutritional status for both groups.</p>	<p>Mixed cancer types</p>
<p>Citation</p>	<p>Objective</p>	<p>Study Design</p>	<p>Outcome</p>	<p>Assessment</p>
Um MH, et al. 2014. Intensive nutritional counseling improves PG-SGA scores and nutritional symptoms during and after radiotherapy in Korean	<p>Evaluate the use of the scored PG-SGA as a measure of nutritional status in ambulatory patients undergoing RT and evaluate the effect of nutrition intervention on nutritional status and quality of life</p>	<p>Randomized trial of 87 cancer outpatients into control (single nutrition counseling) or intervention (ongoing intensive nutrition counseling) groups; anthropometric and blood</p>	<p>No significant difference from baseline for body weight, BMI, energy, and protein intake or blood parameters for both groups. Protein intake significantly decreased at</p>	<p>Mixed cancer types</p>

cancer patients. Support Care Cancer. 22:2997-3005		values were assessed at baseline, end of RT, and 1 month follow-up	follow-up for control group; quality of life significantly improved for intervention group.	
Villarini A, et al. 2012. Preventing weight gain during adjuvant chemotherapy for breast cancer: a dietary intervention study. Breast Cancer Res Treat 135:581-589	Examine whether a diet to lower insulin levels could prevent weight gain during adjuvant chemotherapy in breast cancer patients	Randomized controlled trial of adjuvant diet intervention in breast cancer patients in Milan, Italy; intervention group received diet information and 1 meal 2 times weekly; control group received baseline counseling only	A significant decrease in weight, anthropometric measures and fat mass were seen in the intervention group compared to control group.	Breast cancer
Denmark-Wahnefried W, et al. 2012. Reach out to enhance wellness home-based diet-exercise intervention promotes reproducible and sustainable long-term improvements in health behaviors, body weight, and physical functioning in older, overweight/obese cancer survivors. J Clin Oncol 30(19):2354-2361	Assessment of diet and exercise interventions for long-term adherence health outcomes	A cross-over design intervention trial (RENEW) consisting of a personally tailored workbook, quarterly newsletters, and telephone counseling, along with exercise equipment and nutrition guidance was administered to long-term cancer survivors either immediately or following a delay for 1 year.	The immediate intervention arm showed no significant relapse in diet quality, physical activity, and BMI, but did show declines in physical function when the intervention was stopped. Significant improvements were found for all measures in the delayed intervention. Both arms showed significant improvements from baseline to year 2.	Colorectal, breast and prostate cancer
Zhang L, et al. 2014. Nutritional status and related factors of patients with advanced gastrointestinal cancer. Br J Nutr 111:1239-1244	Assess nutritional status and related factors among patients with GI cancer	Cross-sectional study using PG-SGA to assess nutritional status of 498 patients with advanced GI cancer in Beijing, China	Only 2% of patients screened did not require nutritional intervention; 57.4% required urgent nutritional intervention. Malnutrition in cancer patients was related to age, hospitalization, frequency, sex, and tumor location. Elderly	Gastrointestinal cancer

patients were especially vulnerable.

EVIDENCE ANALYSIS LIBRARY – POSITIVE EFFECT ON QUALITY OF LIFE

Citation	Objective	Study Design	Outcome	Assessment
Ravasco P, Monteiro-Grillo I, Camilo ME. Does nutrition influence quality of life in cancer patients undergoing radiotherapy? Radiother Oncol. 2003 May; 67(2): 213-220.	The purpose of the research was to investigate in cancer patients referred for radiotherapy: quality of life (QOL), nutrition status and nutrient intake at onset and end of radiotherapy (RT); effect of individualized nutrition counseling on nutrient intake over time, and whether nutrient intake influenced the patient's QOL; which symptoms might be indicative of poorer QOL and reduced nutritional intake.	Before-After Study	The authors concluded that improved nutritional intake in high-risk cancer patients undergoing radiotherapy contributes to better quality of life, and that nutrition counseling during radiation therapy is a feasible and effective intervention to achieve improved nutritional intake.	Mixed cancer types EAL: Pos effect for QOL and radiation treatment tolerance
Ravasco P, Monteiro-Grillo I, Vidal P, Camilo M. Dietary counseling improves patient outcomes: A prospective, randomized, controlled trial in colorectal cancer patients undergoing radiotherapy. J Clin Oncology. 2005; 23: 1,431-1,438	To investigate the impact of dietary counseling or nutrition supplements on outcomes in cancer patients on nutrition, morbidity and quality of life (QoL) both during and three months after radiotherapy (RT) for colorectal cancer (CRC).	Randomized Controlled Trial	Radiotherapy induced toxicity as it relates to symptom incidence and severity was lowest in those patients who received dietary counseling and education specific to their individual needs. Dietary counseling significantly improved all quality of life function scores. Concurrent individualized dietary counseling, based on regular foods, is the most effective means of improving patients' nutritional intake, status and quality of life, thereby lessening	Colorectal cancer EAL: Pos effect for QOL and radiation treatment tolerance

Ravasco P, Monteiro-Grillo I, Vidal PM, Camilo ME. Impact of nutrition on outcome: A prospective randomized controlled trial in patients with head and neck cancer undergoing radiotherapy. Head and Neck. 2005 Aug; 27(8):659-668.	<p>The researchers' purpose was to determine if a cause-and-effect relationship exists between nutrition interventions, including dietary counseling or the use of oral nutritional supplements, and function and clinical outcomes in head and neck cancer patients receiving radiotherapy (RT).</p>	<p>Randomized Controlled Trial</p>	<p>radiation therapy-induced morbidity</p> <p>Nutrition is a key determinant of quality of life in patients with cancer. Both at end of RT and at three months' follow-up, dietary counseling resulted in significantly improved QOL function scores, in conjunction with sufficient intake and adequate nutritional status. The benefits of dietary counseling for QOL scores included improved physiological and clinical outcomes.</p>	<p>Head and neck cancer</p> <p>EAL: Pos effect for QOL and radiation treatment tolerance</p>
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V. Organized by Cancer Types

Citation	Objective	Study Design	Outcome	Assessment
A. GASTROINTESTINAL				
Clavier J-B, et al. 2014. Baseline nutritional status is prognostic factor after definitive radiochemotherapy for esophageal cancer. Dis Esophagus 27:560-567	<p>Identify prognostic factors focused on nutritional status for survival of esophageal cancer</p>	<p>Retrospective analysis of consecutive case series; data included tumor staging, weight loss, BMI, serum albumin, and treatment modality</p>	<p>Baseline nutritional status was a factor in the outcome of esophageal cancer patients treated by definitive radiochemotherapy; Nutritional Risk Index was an independent prognostic factor of both disease-free and overall survival.</p>	<p>Esophageal cancer</p>

<p>Cong M-H, et al. 2015. An interdisciplinary nutrition support team improves clinical and hospitalized outcomes of esophageal cancer patients with concurrent chemoradiotherapy. Chinese Medical Journal 128(22):3003-3007</p>	<p>Investigate whether nutrition support team intervention can benefit esophageal cancer patients undergoing chemoradiotherapy (CRT) in Beijing, China</p>	<p>Randomized trial of esophageal cancer patients undergoing CRT; treatment group received nutrition support team (NST) intervention; control group received oral nutrition supplements and enteral nutrition only; nutritional status, completion of therapy, and length of hospital stay were evaluated</p>	<p>Laboratory indices of nutritional status were better in the NST group and medical complications were fewer compared to controls; Completion of CRT was significantly improved in the NST group and length of hospitalization was reduced by 4.5 days compared to controls.</p>	<p>Esophageal ca</p>
<p>Martin L, Lagergren P. Long-term weight change after oesophageal cancer surgery. B J Surg. 2009; 96 (11): 1,308-1,314.</p>	<p>To investigate weight changes after esophageal cancer surgery and to determine whether pre-operative weight loss, sex, body mass index (BMI) at operation and mortality were associated with the risk of malnutrition</p>	<p>Prospective Cohort Study</p>	<p>Post-operative malnutrition negatively influences the chance of survival, as well as efficiency of treatment. Nutritional advice from dietitians has been shown to decrease weight loss. Dietitians should be involved in the management of patients with weight loss after esophageal cancer surgery.</p>	<p>Esophageal</p>
<p>Odelli C, Burgess D, Bateman L, Hughes A, Ackland S, Gillies J, Collins CE. Nutrition support improves patient outcomes, treatment tolerance and admission characteristics in oesophagel cancer.</p>	<p>To evaluate a nutrition pathway that promoted early and aggressive dietetic intervention in patients receiving definitive chemoradiation for esophageal cancer.</p>	<p>Non-Randomized Controlled Trial</p>	<p>Implementation of this nutrition pathway has been associated with improved clinical outcomes, including decreased weight loss, number of unplanned hospital admissions and length of stay during the treatment course, and a</p>	<p>Esophageal cancer</p>

<p>Clinical Oncology. 2005;17:639-645.</p>	<p>To measure the relationship of obesity on survival from gastroesophageal junction (GEJ) and gastric cardia, collectively referred to as esophageal adenocarcinoma (EAC), after stratification by smoking status.</p>	<p>Retrospective Cohort Study</p>	<p>higher tolerance of planned treatment.</p>	<p>Esophageal cancer</p>
<p>Yoon H, Lewis M, Shi Q, Khan M, Cassivi S, Diasio R, Sinicrope F. Prognostic impact of body mass index stratified by smoking status in patients with esophageal adenocarcinoma. J Clin Oncol. 2011; 29: 4,561-4,567.</p>			<p>Obesity is independently associated with increased mortality among never smokers. This association is not found with ever smokers. The biological mechanisms underlying the interaction between smoking and obesity awaits further study. The findings from this study are relevant to patient management as they can provide prognostic information that can inform post-operative risk stratification.</p>	
<p>Carey S, et al. 2011. Long term nutritional status and quality of life following major upper gastrointestinal surgery – a cross-sectional study. Clinical Nutrition 30:774-779</p>	<p>Assess the long term nutritional status of patients who had major upper GI surgery and investigate associations between nutritional status and quality of life</p>	<p>Cross-sectional study of patients enrolled in surgical clinics in Australia; anthropometric and SGA data were collected, nutritional intake assessment and quality of life questionnaire administered; responses were compared by type of surgery</p>	<p>Nutritional status and quality of life scores were significantly correlated; SGA and GI symptoms were significant variables in quality of life assessment</p>	<p>Upper GI cancer EAL: Pos effect on QOL</p>
<p>Barlow R, Price P, Reid TD, Hunt S, Clark GW, Havard TJ, Puntis MC, Lewis WG. Prospective multicentre randomised controlled trial of early enteral nutrition for patients</p>	<p>To determine if early enteral nutrition (EEN) was well-tolerated, safe and improved clinical outcomes of post-operative morbidity, mortality and length of hospital stay.</p>	<p>Randomized Controlled Trial</p>	<p>EEN was associated with significantly shortened length of hospital stay and improved clinical outcomes.</p>	<p>Upper GI malignancy</p>

[undergoing major upper gastrointestinal surgical resection. Clin Nutr. 2011 Oct; 30\(5\): 560-566.](#)

[Grasso S, et al. 2013. Hypokalemia during the early phase of refeeding in patients with cancer. Clinics 68\(11\):1413-1415](#)

Investigate the presence of hypokalemia during early phase refeeding in patients with upper aerodigestive tract (UADT) tumors

Observational study of nutritional intake and anthropometric measures of patients receiving upfront radiotherapy who were concurrently receiving nutrition therapy

Early phase refeeding was associated with lower potassium and total protein and significant weight loss for parenteral compared to oral feeding.

Upper digestive tract cancer

[Hyltander A, Bosaeus I, Svedlund J, Liedman B, Hugosson I, Wallengren O, Olsson U, Johnsson E, Kostic S, Henningson A, Körner U, Lundell L, Lundholm K. Supportive nutrition on recovery of metabolism, nutritional state, health-related quality of life, and exercise capacity after major surgery: A randomized study. Clin Gastroenterol Hepatol. 2005 May; 3\(5\): 466-474.](#)

To follow up on their previous short-term kinetic studies of metabolism and resumption of oral eating after major surgery. They aimed to investigate whether long-term specialized EN and PN supportive feeding during convalescence has superior effects on recovery of nutritional state, physical functioning and health-related quality of life (HrQoL) post-operatively, leading to different outcome in patients with pre-operative weight loss and reduced physical functioning.

Randomized Controlled Trial

Post-operatively, little benefit is realized from intensive nutrition support as either EN or PN when normal gut function is expected to return soon. Post-operative EN or PN are not superior to oral intake guided by a dietitian, and EN and PN are more likely to cause harm. PN should be reserved for patients who cannot eat.no

Upper GI cancers

[Silvers MA, et al. 2014. Potential benefits of early nutritional intervention in adults with upper gastrointestinal cancer: a pilot randomized trial.](#)

Pilot study to test whether an intensive early nutrition intervention in newly diagnosed GI cancer patients was feasible

Randomized controlled trial; intervention group received weekly telephone contact from a dietitian that was continued in-person during clinical appointments; control group had no

Baseline prevalence of malnutrition was similar for both groups; at mid-study, nutrition intervention group showed significantly higher global assessment

Upper gastrointestinal cancer

Supp Care Cancer. 22:3035-3044.		dietitian contact unless referred when admitted for surgery or chemotherapy	and quality of life scores; nutrition risk scores decreased and weight loss was attenuated in intervention group compared to controls	
Isenring E, et al. 2003. The scored patient-generated subjective global assessment (PG-SGA) and its association with quality of life in ambulatory patients receiving radiotherapy. Euro J Clin Nutr 57:305-309	Evaluate the use of the scored PG-SGA as a measure of nutritional status in ambulatory patients receiving radiotherapy to the head, neck, abdominal or rectal area and to test for association between PG-SGA score and quality of life	Prospective 4-week study to assess nutritional status and quality of life of H&N patients receiving radiotherapy in Australia	PG-SGA scores identified significant decrease in nutritional status between initiation and 4 weeks post radiotherapy; there was a significant correlation between change in PG-SGA score and global QoL score at 4 weeks.	GI cancer Head and neck ca EAL: Pos effect on QOL Ambulatory pts
Hill A, Kiss N, Hodgson B, Crowe TC, Walsh AD. Associations between nutritional status, weight loss, radiotherapy treatment toxicity and treatment outcomes in gastrointestinal cancer patients. Clin Nutr. 2011; 30: 92-98.	To determine whether nutritional status at radiotherapy commencement or changes in nutritional status throughout radiotherapy were associated with treatment toxicity and outcomes in gastrointestinal (GI) cancer patients.	Prospective Cohort Study	Deterioration in nutritional status (as measured by weight loss) during radiotherapy may be associated with poorer short-term treatment outcomes in GI cancer patients. However, sample size was inadequate to determine effect of nutritional status on radiotherapy commencement or changes in nutritional status throughout radiotherapy (defined by PG-SGA) on treatment outcomes.	GI cancer EAL: Pos effect on Hospital Admissions and Readmissions, Radiation Treatment Tolerance, and Chemotherapy Treatment Tolerance
Correia M, Cravo M, Marques-Vidal P, Grimble R, Dias-Pereira	To examine, in patients with gastric cancer, the correlation between nutritional	Diagnostic, Validity or Reliability Study	The prevalence of MN is high in patients with gastric cancer. A	Gastric cancer

<p>A, Faias S, Nobre-Leitão C. Serum concentrations of TNF-alpha as a surrogate marker for malnutrition and worse quality of life in patients with gastric cancer. Clin Nutr. 2007 Dec; 26(6): 728-735.</p>	<p>status, QOL (quality of life) and serum levels of TNF-alpha, IL-1, and IL-6.</p>	<p>significant correlation was found between higher values of cytokines, especially TNF-alpha, MN and QOL.</p>		
<p>Persson C, Sjoden PO, Glimellius B. The Swedish version of the patient-generated subjective global assessment of nutritional status: gastrointestinal vs urological cancers. Clin Nutr. 1999; 18 (2): 71-77.</p>	<p>To determine if the PG-SGA could be used by different professionals, was easy for patients to respond to and whether it had prognostic capabilities.</p>	<p>Diagnostic, Validity or Reliability Study</p>	<p>The PG-SGA contributed to prognostic information.</p>	<p>GI and urological cancers</p>
<p>Senesse P, et al. 2015. A prospective observational study assessing home parenteral nutrition in patients with gastrointestinal cancer: benefits for quality of life. J Pain Symptom Manage 49(2)L183-191</p>	<p>Evaluate the impact of home parenteral nutrition (HPN) on quality of life and changes in nutritional status and assess proxy perception of patient well-being</p>	<p>Prospective observational study of patients with GI cancer in France; questionnaires were given to physicians, patients, and families; data on physical status and Nutritional Risk Screening was collected by physicians; data from a Functional Assessment of Cancer Therapy-General as well as perceptions about body weight, HPN, and autonomy during HPN were collected from patients; an embedded proxy questionnaire about</p>	<p>HPN was significantly associated with improved quality of life, but did not affect autonomy; nutritional status also showed improvement with HPN</p>	<p>Gastrointestinal cancer</p>

		perception of well-being was included for patients		
Zhang L, et al. 2014. Nutritional status and related factors of patients with advanced gastrointestinal cancer. Br J Nutr 111:1239-1244	Assess nutritional status and related factors among patients with GI cancer	Cross-sectional study using PG-SGA to assess nutritional status of 498 patients with advanced GI cancer in Beijing, China	Only 2% of patients screened did not require nutritional intervention; 57.4% required urgent nutritional intervention. Malnutrition in cancer patients was related to age, hospitalization, frequency, sex, and tumor location. Elderly patients were especially vulnerable.	Gastrointestinal cancer
Braga M, Gianotti L, Vignali A, Cestari A, Bisagni P, Di Carlo V. Artificial nutrition after major abdominal surgery: Impact of route of administration and composition of the diet. Crit Care Med.1998; 26(1): 24-30.	To evaluate the impact of the route of administration of artificial nutrition and the composition of the diet on outcome after major abdominal surgery in gastric and pancreatic cancer patients.	Randomized Controlled Trial	Although this study shows that early enteral feeding with a standard diet exerts only a slight improvement of clinical outcome compared with TPN, the lower cost, the safety and the good tolerance should encourage the routine use of jejunal infusion of nutrients after major surgery. Early enteral feeding is a suitable alternative to TPN after major abdominal surgery. The use of the enriched diet appears to be more beneficial in malnourished and transfused patients.	Gastric and pancreatic cancers
Bauer JD, Capra S. 2005. Nutrition intervention improves	Assess the effects of nutrition intervention with counseling by a dietitian and diet prescription on	Clinical trial measuring nutritional and quality of life outcomes of 7	Significant improvement was found over the 8-week intervention trial	Pancreatic ca Lung ca

outcomes in patients with cancer cachexia receiving chemotherapy – a pilot study. Support Care Cancer 13:270-274	<p>outcomes of dietary intake, body composition, nutritional status, functional capacity, and quality of life</p>	<p>adenocarcinoma patients receiving nutritional counseling, oral supplement, and nutritional assessment over 8 weeks of intervention</p>	<p>for total protein, energy, and fiber intake; PG-SGA scores significantly improved for quality of life and Karnofsky performance status; use of oral supplements did not impair meal intake</p>	<p>EAL: Pos effect on QOL</p>
Robinson DW Jr, Eisenberg DF, Cella D, Zhao N, de Boer C, DeWitte M. The prognostic significance of patient-reported outcomes in pancreatic cancer cachexia. J Support Oncol. 2008; 6(6): 283-290.	<p>To explore the relationship between patient-reported outcomes (PROs) and survival in pancreatic cancer patients with involuntary, significant weight loss (cachexia).</p>	<p>Randomized Controlled Trial</p>	<p>The findings from this study support several features of an a priori clinical benefit model. Patient reported fatigue provided powerful prognostic information and tracking of this symptom may be useful for treatment planning and medical monitoring of advanced stage pancreatic cancer patients with cachexia. The results need to be confirmed by larger trials.</p>	<p>Pancreatic cancer EAL: Pos effect for chemotherapy treatment tolerance and mortality</p>
Tan BH, Birdsell LA, Martin L, Baracos VE, Fearon KC. Sarcopenia in an overweight or obese patient is an adverse prognostic factor in pancreatic cancer. Clin Cancer Res. 2009 Nov 15; 15(22): 6,973-6,979.	<p>To evaluate if weight and body composition, specifically sarcopenia, assessed from diagnostic computed tomography (CT) scans, is of prognostic value in patients with pancreatic cancer.</p>	<p>Prospective Cohort Study</p>	<p>Sarcopenia in overweight/obese patients with advanced pancreatic cancer is an occult condition but can be identified using CT scans. This condition is an independent adverse prognostic indicator that should be considered for stratification of patients' entering clinical trials,</p>	<p>Pancreatic cancer</p>

<p>Prado CM, Baracos VE, McCargar JL, Mourtzakis M, Mulder KE, Reiman T, Butter CA, Scarfe AG, Sawyer MB. Body composition as an independent determinant of 5-fluorouracil-based chemotherapy toxicity. Clin Cancer Res. 2007 Jun 1; 13(11): 3,264-3,268.</p>	<p>To determine if the highest doses of 5-fluorouracil (5-FU) per kilogram (kg) lean body mass (LBM) were associated with dose-limiting toxicity in stage II or III colon cancer patients treated with 5-Fu and leucovorin.</p>	<p>Prospective Cohort Study</p>	<p>systemic therapy or support care programs. Mean 5-FU per kg LBM values of the population varied with regards to presence or absence of toxicity (P=0.036). A cut-point of 20mg 5-FU per kg LBM was identified as a threshold and predictor for developing toxicity (P=0.005) [odds ratio (OR), 16.5; P=0.013], specifically among women (OR, 16.73; P=0.021).</p>	<p>Colon cancer</p>
<p>Snider JT, et al. 2014 Economic burden of community-based disease-associated malnutrition in the U.S. JParenEnteralNutr 38(suppl 2):77S-85S</p>	<p>Estimate the prevalence of selected disease states and degree of malnutrition to model morbidity, mortality, and direct medical costs associated with community-based disease-associated malnutrition (DAM)</p>	<p>A model was constructed to measure the prevalence of DAM and its consequences for breast cancer, COPD, colorectal cancer, CHD, dementia, depression, musculoskeletal disorders, and stroke</p>	<p>Demographics, socioeconomic variables, prior utilization, and diagnosis-related group (DRG) had limited predictive power as a measure of quality and cost of care.</p>	<p>Colorectal cancer Breast cancer</p>
<p>Prado CM, Lieffers JR, McCargar LJ, et al. Prevalence and clinical implications of sarcopenic obesity in patients with solid tumours of the respiratory and gastrointestinal tracts: A population-based study. Lancet Oncol. 2008; 9(7): 629-635.</p>	<p>To assess the prevalence and clinical implications of sarcopenic obesity (obesity with depleted muscle mass) in patients with cancer.</p>	<p>Prospective Cohort Study</p>	<p>Cancer patients with sarcopenic obesity had exceptionally lower functional status and their sarcopenia was an independent risk factor for poor survival. An apparently large bodyweight might mask sarcopenia. Men, patients aged over 65 years and those affected by colorectal cancer</p>	<p>GI cancers and Respiratory cancers</p>

seem to be especially susceptible to sarcopenia. Body composition variability might introduce a variation of drug volume of distribution. If variation in toxicity can be partially explained by features of body composition, identification of clinical measure of body composition for a more refined delivery of chemotherapy dose is important.

<p>Aaldriks AA, et al. 2013. Frailty and malnutrition predictive of mortality risk in older patients with advanced colorectal cancer receiving chemotherapy. J Geriatr Oncol 4:218-226.</p>	<p>Assess the predictive value of a Geriatric Assessment (GA) as a tool in the management and follow up of elderly cancer patients, and the feasibility of treatment with adjuvant and palliative chemotherapy</p>	<p>Prospective study of older adults with colorectal cancer assessed before chemotherapy by Mini Nutritional Assessment (MNA), Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE), Groningen Frailty Indicator (GFI), and Mini Mental State Examination (MMSE), collectively referred to as Geriatric Assessment (GA)</p>	<p>GA showed that 28% of all patients surveyed were at risk of malnutrition; 33% of patients with palliative chemotherapy, and 20% of patients with adjuvant chemotherapy were at risk of malnutrition; Poor MNA and GFI scores were significantly associated with mortality among patients receiving palliative chemotherapy</p>	<p>Colorectal cancer</p>
<p>Denmark-Wahnefried W, et al. 2012. Reach out to enhance wellness home-based diet-exercise intervention promotes reproducible and</p>	<p>Assessment of diet and exercise interventions for long-term adherence health outcomes</p>	<p>A cross-over design intervention trial (RENEW) consisting of a personally tailored workbook, quarterly newsletters, and telephone counseling, along with exercise equipment and</p>	<p>The immediate intervention arm showed no significant relapse in diet quality, physical activity, and BMI, but did show declines in physical function when the</p>	<p>Colorectal, breast and prostate cancer</p>

<p>sustainable long-term improvements in health behaviors, body weight, and physical functioning in older, overweight/obese cancer survivors. J Clin Oncol 30(19):2354-2361</p>		<p>nutrition guidance was administered to long-term cancer survivors either immediately or following a delay for 1 year.</p>	<p>intervention was stopped. Significant improvements were found for all measures in the delayed intervention. Both arms showed significant improvements from baseline to year 2.</p>	
<p>Ionescu D, Iancu C, Ion D, Al-Hajjar N, Margarit S, Mocan L, Mocan T, Deac D, Bodea R, Vasian H. Implementing fast-track protocol for colorectal surgery: A prospective randomized clinical trial. World J Surg. 2009 Nov; 33(11): 2,433-2,438.</p>	<p>To compare a fast-track protocol in colorectal surgery with conventional care in our university hospital with the goal of implementing such a protocol in our daily practice.</p>	<p>Randomized Controlled Trial</p>	<p>Our fast-track protocol was followed by a significantly reduced hospital stay and better outcome for patients from the point of view of early re-feeding and mobilization. Fast-track protocol did not increase the incidence of complications.</p>	<p>Colorectal cancer</p>
<p>Ravasco P, Monteiro-Grillo I, Vidal P, Camilo M. Dietary counseling improves patient outcomes: A prospective, randomized, controlled trial in colorectal cancer patients undergoing radiotherapy. J Clin Oncology. 2005; 23: 1,431-1,438</p>	<p>To investigate the impact of dietary counseling or nutrition supplements on outcomes in cancer patients on nutrition, morbidity and quality of life (QoL) both during and three months after radiotherapy (RT) for colorectal cancer (CRC).</p>	<p>Randomized Controlled Trial</p>	<p>Radiotherapy induced toxicity as it relates to symptom incidence and severity was lowest in those patients who received dietary counseling and education specific to their individual needs. Dietary counseling significantly improved all quality of life function scores. Concurrent individualized dietary counseling, based on regular foods, is the most effective means of</p>	<p>Colorectal cancer EAL: Pos effect for QOL and radiation treatment tolerance</p>

improving patients' nutritional intake, status and quality of life, thereby lessening radiation therapy-induced morbidity

B. GYNECOLOGICAL

<p>Laky B, et. al. 2010. Pretreatment malnutrition and quality of life- association with prolonged length of hospital stay among patients with gynecological cancer: a cohort study. BMC Cancer Care 10:232</p>	<p>Evaluate factors available prior to initial treatment to predict length of stay in patients with suspected or proven gynecological cancer</p>	<p>Observational cohort of patients with or suspected of having gynecological cancers; patients were assessed with PG-SGA to assess nutritional status and the Functional Assessment of Cancer Therapy-General (FACT-G) scale to determine quality of life and relationship to length of stay (LOS)</p>	<p>Evidence of malnutrition as determined by PG-SGA and low pre-tx FACT-G score was associated with greater LOS</p>	<p>Gynecological cancer EAL: Pos effect on Hospital LOS EAL: Pos effect on QOL</p>
<p>Phippen NT, Lowery WJ, Barnett JC, Hall LA, Landt C, Leath CA 3rd. Evaluation of the Patient-Generated Subjective Global Assessment (PG-SGA) as a predictor of febrile neutropenia in gynecologic cancer patients receiving combination chemotherapy: A pilot study. Gynecol Oncol. 2011; 123(2): 360-364.</p>	<p>To evaluate the reliability of a pre-chemotherapy Patient-Generated Subjective Global Assessment (PG-SGA) score as a predictor of febrile neutropenia (FN) in gynecologic cancer patients receiving primary combination chemotherapy.</p>	<p>Diagnostic, Validity or Reliability Study</p>	<p>PG-SGA scores were higher for patients experiencing FN and may be a reasonably predictive marker of FN in patients receiving multi-agent primary chemotherapy and likely benefactors of prophylactic CSF</p>	<p>Gynecological cancers</p>
<p>Prado CM, Baracos VE, McCargar LJ, Reiman T,</p>	<p>The purpose of the study is to observe the relationship between</p>	<p>Prospective Cohort Study</p>	<p>This study shows the potential need for body</p>	<p>Breast cancer</p>

<p>Mourtzakis M, Tonkin K, Mackey JR, Koski S, Pituskin E, Sawyer MB. Sarcopenia as a determinant of chemotherapy toxicity and time to tumor progression in metastatic breast cancer patients receiving capecitabine treatment. Clin Cancer Res. 2009 Apr 15; 15(8):2,920-2,926.</p>	<p>sarcopenia or body composition and treatment toxicity of chemotherapy to further investigate clinical outcomes of metastatic breast cancer, using time to tumor progression (TTP) as a study end point.</p>		<p>composition assessment to improve toxicity risk and to individualize drug dosing in a patient population with advanced cancer of the breast. Further studies should be conducted to validate drug dosing based on pre-treatment body composition and LBM analysis.</p>	
<p>Prado CM, Lima IS, Baracos VE, Bies RR, McCargar LJ, Reiman T, Mackey JR, Kuzma M, Damaraju VL, Sawyer MB. An exploratory study of body composition as a determinant of epirubicin pharmacokinetics and toxicity. Cancer Chemother Pharmacol. 2011; 67(1): 93-101.</p>	<p>To relate epirubicin pharmacokinetics (PK) and toxicity to specific features of body composition of patients with breast cancer, focusing on lean body mass and functional liver volume.</p>	<p>Cross-Sectional Study</p>	<p>Lean body mass predicts epirubicin clearance and may be a better measure with which to individualize treatment than the current convention of normalizing the dose to BSA. This warrants validation in prospective trials testing lean body mass based epirubicin dosing.</p>	<p>Breast cancer</p>
<p>Greenlee HA, et al. 2013. A pilot randomized controlled trial of a commercial diet and exercise weight loss program in minority breast cancer survivors. Obesity 21(1):65-76</p>	<p>Examine the effects and feasibility of the Curves weight loss program with Hispanic, African American, and Afro-Caribbean breast cancer survivors</p>	<p>Randomized controlled trial of breast cancer survivors into two study arms: (1) 6 months of Curves program (diet, exercise, anthropometric and cardiovascular monitoring) then 6 months of observation only; (2) 6</p>	<p>Participation in the Curves program in the immediate arm resulted in modest but significant weight loss that was mostly regained in the 6 month observation period.</p>	<p>Breast cancer</p>

months of observation only
then 6 months of Curves
program

Kwok A, et al. 2015. Dietary experiences and support needs of women who gain weight following chemotherapy for breast cancer. Support Care Cancer 23:1561-1568	Explore experiences, dietary information, and support needs of women who gain weight during chemotherapy for breast cancer	Qualitative, semi-structured interviews about dietary changes, weight gain, physical activity, dietary concerns, and sources of information and support	Key themes emerging from interviews were: (1) undesirable impact of treatment on diet and activity; (2) concern about changes in weight and diet; (3) insufficient dietary information and support.	Breast cancer
Snider JT, et al. 2014 Economic burden of community-based disease-associated malnutrition in the U.S. JParenEnteralNutr 38(suppl 2):77S-85S	Estimate the prevalence of selected disease states and degree of malnutrition to model morbidity, mortality, and direct medical costs associated with community-based disease-associated malnutrition (DAM)	A model was constructed to measure the prevalence of DAM and its consequences for breast cancer, COPD, colorectal cancer, CHD, dementia, depression, musculoskeletal disorders, and stroke	Demographics, socioeconomic variables, prior utilization, and diagnosis-related group (DRG) had limited predictive power as a measure of quality and cost of care.	Breast cancer Colorectal cancer
Thompson HJ, et al. 2012. Effect of dietary patterns differing in carbohydrate and fat content on blood lipid and glucose profiles based on weight-loss success of breast-cancer survivors. Br Cancer Res 14(1):R1	Examine whether the type of diet plan for weight loss has any deleterious effects in a cohort of breast cancer survivors	Non-randomized, controlled trial examining two dietary patterns at the extremes of macronutrient composition against a nonintervention control on weight loss, body composition, and biomarkers of metabolic and hormonal processes relevant to breast cancer	Both arms of treatment achieved beneficial effects of weight loss on lipid biomarkers and fasting glucose; negative effects on outcomes was not observed for either dietary pattern. Effects of both dietary patterns on long-term survival were not determined.	Breast cancer
McCarroll ML, et al. 2015. Feasibility of a lifestyle intervention	Assess the feasibility of a 1-month lifestyle intervention delivered by web-based mobile	Prospective intervention trial in overweight/obese endometrial and breast	The web-based lifestyle intervention achieved significant reductions in	Breast and endometrial

for overweight/obese endometrial and breast cancer survivors using an interactive mobile application. Gynecologic Oncology 137:508-515	application as a weight loss intervention in endometrial and breast cancer survivors	cancer survivors. Users tracked food choices, exercise, and weight change using a mobile app	weight, BMI, and waist circumference from pre- to post-intervention. WEL scores also showed significant improvement.	
Villarini A, et al. 2012. Preventing weight gain during adjuvant chemotherapy for breast cancer: a dietary intervention study. Breast Cancer Res Treat 135:581-589	Examine whether a diet to lower insulin levels could prevent weight gain during adjuvant chemotherapy in breast cancer patients	Randomized controlled trial of adjuvant diet intervention in breast cancer patients in Milan, Italy; intervention group received diet information and 1 meal 2 times weekly; control group received baseline counseling only	A significant decrease in weight, anthropometric measures and fat mass were seen in the intervention group compared to control group.	Breast cancer
Denmark-Wahnefried W, et al. 2012. Reach out to enhance wellness home-based diet-exercise intervention promotes reproducible and sustainable long-term improvements in health behaviors, body weight, and physical functioning in older, overweight/obese cancer survivors. J Clin Oncol 30(19):2354-2361	Assessment of diet and exercise interventions for long-term adherence health outcomes	A cross-over design intervention trial (RENEW) consisting of a personally tailored workbook, quarterly newsletters, and telephone counseling, along with exercise equipment and nutrition guidance was administered to long-term cancer survivors either immediately or following a delay for 1 year.	The immediate intervention arm showed no significant relapse in diet quality, physical activity, and BMI, but did show declines in physical function when the intervention was stopped. Significant improvements were found for all measures in the delayed intervention. Both arms showed significant improvements from baseline to year 2.	Breast, colorectal, and prostate cancer
Rodrigues CS, Villaca Chaves G. 2015. Patient-generated subjective global assessment in relation to site, stage of the	Identify factors related to illness and oncological treatment as determinants of nutritional status using PG-SGA in patients with gynecological tumors	Retrospective cohort analysis of survey participants with gynecological tumors in Rio de Janeiro	PG-SNA is a useful tool for nutritional assessment and identification of nutritional risk in	Gynecological cancer

<p>illness, reason for hospital admission, and mortality in patients with gynecological tumors. Support Care Cancer 23:871-879.</p>	<p>Evaluate the role of CT body composition measures in predicting morbidity and mortality, and length of hospital stay in women with ovarian cancer</p>	<p>Retrospective search of medical records for preoperative, pathologic, and postoperative data</p>	<p>gynecological cancer patients.</p>	<p>Ovarian ca</p>
<p>Torres ML, et al. 2013. Nutritional status, CT body composition measures and survival in ovarian cancer Gynecologic Oncology 129:548-553</p>	<p>Evaluate the role of CT body composition measures in predicting morbidity and mortality, and length of hospital stay in women with ovarian cancer</p>	<p>Retrospective search of medical records for preoperative, pathologic, and postoperative data</p>	<p>Individuals with breast cancer had the lowest prevalence of malnutrition of the 8 diseases; the direct cost burden of malnutrition associated disease was much lower for breast and colorectal cancer than for other diseases, particularly CHD, COPD, and depression.</p>	<p>Ovarian ca</p>
<p>Gupta D, Lis CG, Vashi PG, Lammersfeld CA. Impact of improved nutritional status on survival in ovarian cancer. Support Care Cancer. 2010 Mar; 18(3): 373-381.</p>	<p>To investigate whether improvement in nutritional status after three months of treatment can impact survival in patients with ovarian cancer.</p>	<p>Retrospective Cohort Study</p>	<p>The results from this study show that improvement in nutritional status is associated with better survival. The findings also lend support to the importance of aggressive nutritional intervention in improving patient outcomes in oncology. It is important to accurately assess and calculate nutritional requirements, choose correct methods of nutritional delivery and monitor or recognize nutrition-related complications in patients with ovarian cancer.</p>	<p>Ovarian cancer</p>

Kathiresan AS, Brookfield KF, Schuman SI, Lucci JA 3rd. Malnutrition as a predictor of poor postoperative outcomes in gynecologic cancer patients. Arch Gynecol Obstet. 2011 Aug; 284(2): 445-451.	To evaluate nutritional correlates with increased post-operative morbidity and mortality regardless of other risk factors in the gynecologic cancer patient.	Retrospective Cohort Study	Malnutrition reflected by low albumin levels is associated with significantly higher post-operative morbidity in gynecologic cancer patients.	Gynecologic cancers
C. HEAD AND NECK				
Brown T, et al. 2014. Nutrition outcomes following implementation of validated swallowing and nutrition guidelines for patients with head and neck cancer. Support Care Cancer 22:2381-2391	Report on adherence to the H&N cancer guidelines and impact on weight change during and after treatment.	Prospective observational audit of nutrition outcomes (weight, nutritional status, type of nutrition support) by nutrition risk category using self-completed questionnaire, dietitian assessment, and measured height/weight	Significant associations found between 10% weight loss and adherence to H&N guidelines, type of nutrition support, BMI at diagnosis, tumor site, stage, and treatment.	Head and neck cancer
Buntzel J, et al. 2012. Nutritional parameters for patients with head and neck cancer. Anticancer Res 32:2119-2124	Determine optimal nutritional parameters to assess nutritional status impact on prognosis in head and neck cancer	Retrospective analysis of survival and comparison of bioimpedance measures related to weight loss at diagnosis and at the end of RT	Nutritional status, as measured by weight loss and BMI, is related to prognosis in head and neck cancer patients	Head and neck cancer
De Luis DA, et al. 2014. Clinical effects of a hypercaloric and hyperproteic oral supplement enhanced with w3 fatty acids and dietary fiber in postsurgical	Evaluate the effects of hypercaloric hyperproteic oral supplement with w3 fatty acids and fiber on clinical parameters in post-surgical head and neck cancer patients	Clinical trial of 37 ambulatory H&N patients in 3 groups (all patients, radiotherapy; no radiotherapy). All received the supplement and diet instruction	Consuming the supplement improved serum protein levels in all patients. Weight, fat mass, and fat-free mass improved in the non-radiotherapy group	Head and neck cancer

ambulatory head and neck cancer patients. Nutr Hosp 31(2):759-763			compared to the radiotherapy group.	
Ehrsson YT, et al. 2012. Nutritional surveillance and weight loss in head and neck cancer patients. Support Cancer Care 20:757-765	Evaluate therapeutic approach, tumor site, stage, BMI, gender, age, and civil status as predictors of body weight loss and its effect on post-op infection and mortality	Retrospective cohort study of data from medical records of head and neck cancer outpatients. Dietitian counseling, nutritional supplements were provided; advanced cancer patients received NG or PEG enteral nutrition	Weight loss was not significantly associated with post-op infection and mortality. Enteral nutrition patients lost significantly more weight than those with oral feeding at 1-2 year follow-up. Tumor stage was significant for weight loss.	Head and neck
Isenring E, et al. 2003. The scored patient-generated subjective global assessment (PG-SGA) and its association with quality of life in ambulatory patients receiving radiotherapy. Euro J Clin Nutr 57:305-309	Evaluate the use of the scored PG-SGA as a measure of nutritional status in ambulatory patients receiving radiotherapy to the head, neck, abdominal or rectal area and to test for association between PG-SGA score and quality of life	Prospective 4-week study to assess nutritional status and quality of life of H&N patients receiving radiotherapy in Australia	PG-SGA scores identified significant decrease in nutritional status between initiation and 4 weeks post radiotherapy; there was a significant correlation between change in PG-SGA score and global QoL score at 4 weeks.	Head and neck ca GI cancer EAL: Pos effect on QOL Ambulatory pts
Piquet M-A, et al. 2002. Early nutritional intervention in oropharyngeal cancer patients undergoing radiotherapy. Support Care Cancer 10:502-504	Assess the effects of early and systematic nutritional intervention in patients undergoing radiotherapy for oropharyngeal carcinoma	Prospective study of outpatients undergoing radiotherapy; intervention group was managed by a nutritionist and those at high nutritional risk received PEG or NGT prior to treatment, both intervention and were followed by a nutritionist throughout; control group was a paired historical cohort	Early PEG was significantly associated with reduced weight loss and reduced hospital admission for dehydration.	Head and Neck Cancer EAL: Pos effect on hospital admissions and readmissions

<p>Capuano G, Grosso A, Gentile PC, Battista M, Bianciardi F, Di Palma A, Pavese I, Satta F, Tosti M, Palladino A, Coiro G, Di Palma M. Influence of weight loss on outcomes in patients with head and neck cancer undergoing concomitant chemoradiotherapy. <i>Head Neck</i>. 2008 Apr; 30(4): 503-508.</p>	<p>To determine the influence of weight loss on outcomes in patients with head and neck cancer undergoing concomitant chemoradiotherapy (CCRT): treatment interruption, infections, mortality, hospital readmission rate</p>	<p>Non-Controlled Trial</p>	<p>In patients with head and neck cancer undergoing CCRT, the early nutritional management reduced weight loss and improved outcomes. Nutrition intervention should be provided to these patients before, during and after treatment.</p>	<p>Head and neck cancer EAL: Pos effect on Hospital Admissions and Readmissions, Radiation Treatment Tolerance, Chemotherapy Treatment Tolerance, and Mortality</p>
<p>Hammerlid E, Wirblad B, Sandin C, Mercke C, Edstrom S, Kaasa S, Sullivan M, Westin T. Malnutrition and food intake in relation to quality of life in head and neck cancer patients. <i>Head & Neck</i>. 1988; 20: 540-548.</p>	<p>To investigate whether the clinical stage of head and neck cancer or the nutritional status of the patient is reflected by the patient's quality of life.</p>	<p>Descriptive Study</p>	<p>Eight of 23 (35%) malnourished patients were alive at the two-year follow-up. 14 of 22 (64%) well-nourished patients were alive at the two-years follow-up.</p>	<p>Head and Neck cancer</p>
<p>Kiss NK, et al. 2012. A dietitian-led clinic for patients receiving (chemo)radiotherapy for head and neck cancer. <i>Support Care Cancer</i> 20:2111-2120</p>	<p>Determine the impact of a dietitian-led clinic, guided by evidence-based nutrition care, on the frequency of dietitian review, weight loss, enteral feeding, nutrition-related admissions, and requirement for medical review</p>	<p>Prospective, 2-cohort study with a pre-post-test design; cohort 1 received standard care protocol; cohort 2 received dietitian-led consultation (DLC); DLC included collecting diet and anthropometric data, estimating nutritional requirements, and providing individualized counseling</p>	<p>Patient age, tumor stage, and body composition were significantly associated with poor survival; longer hospital stay was independently predicted by low serum albumin, poor surgery outcome, and low sub-q fat and muscular fat.</p>	<p>Head and neck cancer</p>

Langius JAE, et al. 2013. Critical weight loss is a major prognostic indicator for disease-specific survival in patients with head and neck cancer receiving radiotherapy. Br J Cancer 109:1093-1099.	<p>Determine whether weight loss before or during radiotherapy is associated with disease-specific survival (DSS) in head and neck cancer patients</p>	<p>Data on weight change was collected on a consecutive cohort of H&N cancer patients before and during adjuvant radiotherapy; 5-year overall and DSS was assessed</p>	<p>Weight loss before radiotherapy was significantly associated with poorer survival; weight loss > 5-10% and > 10% was significantly associated with worse DSS; DSS was significantly worse for patients with critical weight loss during radiotherapy</p>	<p>Head and neck cancer</p>
Ravasco P, Monteiro-Grillo I, Vidal PM, Camilo ME. Impact of nutrition on outcome: A prospective randomized controlled trial in patients with head and neck cancer undergoing radiotherapy. Head and Neck. 2005 Aug; 27(8):659-668.	<p>The researchers' purpose was to determine if a cause-and-effect relationship exists between nutrition interventions, including dietary counseling or the use of oral nutritional supplements, and function and clinical outcomes in head and neck cancer patients receiving radiotherapy (RT).</p>	<p>Randomized Controlled Trial</p>	<p>Nutrition is a key determinant of quality of life in patients with cancer. Both at end of RT and at three months' follow-up, dietary counseling resulted in significantly improved QOL function scores, in conjunction with sufficient intake and adequate nutritional status. The benefits of dietary counseling for QOL scores included improved physiological and clinical outcomes.</p>	<p>Head and neck cancer</p> <p>EAL: Pos effect for QOL and radiation treatment tolerance</p>
Silander E, et al. 2013. Energy intake and sources of nutritional support in patients with head and neck cancer – a RCT. Eur J Clin Nutr 67:47-52.	<p>Explore when and for how long patients had dysphagia and weight loss due in inadequate dietary intake and whether a PEG had an impact on nutritional status</p>	<p>Randomized clinical trial of H&N patients; intervention group received prophylactic PEG and nutritional advice as needed; control group received standard nutritional care; patients were followed for 2 years</p>	<p>No significant differences were found in weight loss over the first 6 months; weight loss ceased for both groups by year 2; both groups transitioned to oral intake by year 2.</p>	<p>Head and neck cancer</p>

Wall LR, et al. 2016. Evaluation of a weekly speech pathology/dietetic service model for providing supportive care intervention to head and neck cancer patients and their carers during chemoradiotherapy. Supp Care Cancer 24:1227-1234.	Evaluate the weekly, joint speech pathology (SP)/dietetic (DN) service delivery model given to H&N cancer patients at an outpatient clinic in Australia	Cross-sectional study of H&N patients, care-givers, and clinicians; data was collected across six 2-week collection periods on: service characteristics, the SP/DN sessions, and responses from consumer groups who either received or provided SP/DN services	Approximately 75% of SP/DN sessions were perceived as necessary by patients and/or clinicians (cancellations and non-attendance were low – 1-2 sessions/week); 24% of scheduled sessions were deemed “not required” by patients and clinicians; emergency and unplanned sessions were low; patient report and clinician judgement agreement was high	Head and neck cancer
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D. HEMATOLOGICAL

Antillon F, et al. 2013. Nutritional status of children during treatment for acute lymphoblastic leukemia in Guatemala. Pediatr Blood Cancer 60:911-915	Determine the prevalence and severity of malnutrition in children at diagnosis of ALL, and at 3 and 6 months post-chemotherapy in El Salvador	Anthropometric assessment administered by a nutritionist of ALL patients ages 1-18 years, over a period of 3 years	Risk group (high vs low) was the only parameter significantly associated had hazard of death; at 6 mo survival using nutrition status at 6 mo, those severely depleted had a 2.43 times hazard of death than adequately nourished or moderately depleted.	ALL
Dewys WD, Begg C, Lavin PT, Band PR, Bennett JM, Bertino JR, Cohen MH, Douglass HO Jr, Engstrom PF, Ezdinli EZ, Horton J, Johnson GJ, Moertel CG, Oken MM, Perlia C, Rosenbaum C,	To evaluate the frequency of weight loss in a spectrum of tumor types. To evaluate the prognostic effect of weight loss on response to chemotherapy and on survival. To correlate weight loss with other prognostic factors.	Cross-Sectional Study	The authors mentioned that the analysis has relevance for the conduct of future trials of chemotherapy of cancer. In randomized trials, stratification by weight loss should be considered to assure a balance of	Leukemia

<p>Silverstein MN, Skeel RT, Sponzo RW, Tormey DC. Prognostic effect of weight loss prior to chemotherapy in cancer patients. Eastern Cooperative Oncology Group. Am J Med. 1980; 69(4): 491-497.</p>			<p>this prognostic factor between treatment groups. Future trials should include sufficient numbers of patients in good performance and weight loss categories to provide a valid trial of the new agent.</p>	
<p>Eriksson KM, Cederholm T, Palmblad JE. Nutrition and acute leukemia in adults: Relation between nutritional status and infectious complications during remission induction. Cancer. 1998 ; 82: 1,071-1,077.</p>	<p>To evaluate whether variables reflecting nutrition would be related to infections and neutropenia in adult patients with acute leukemia who were undergoing induction therapy for first remission. Significance of various infections and total parenteral nutrition was also assessed.</p>	<p>Retrospective Cohort Study</p>	<p>This study demonstrates that adult patients with acute leukemia undergoing intensive cytotoxic treatment for induction of first remission often have moderate weight loss and a high incidence of severe hypoalbuminemia, indicating a negative protein-energy balance. The presence of weight loss and severe hypoalbuminemia were closely related to the duration of patients' infections.</p>	<p>Leukemia</p>
<p>Horsley P, et.al. 2005. Poor nutritional status prior to peripheral blood stem cell transplantation is associated with increased length of hospital stay. Bone</p>	<p>Determine the nutritional status of patients prior to PBSCT and examine the impact of nutritional status on hospital length of stay</p>	<p>Consecutive case studies of 66 patients over 18 months; patients were assessed for malnutrition by a dietitian and given a PG-SGA score; medical records were reviewed for additional information including length of hospital stay</p>	<p>PG-SGA scores were significantly related to hospital stay and mortality.</p>	<p>Peripheral blood stem cell transplantation pts EAL: Pos effect on hospital LOS</p>

[Marrow Trans 35:1113=1116](#)

[Lindman A, et al. 2013. Food caregivers influence on nutritional intake among admitted haematological cancer patients – a prospective study. Eur J Oncol Nursing 17:827-834](#)

Determine whether establishing direct contact between food caregivers and patients would increase energy and protein intake and nutrition knowledge in haematological cancer patients

Quasi-experimental design comparing data from 2 cross-sectional studies before and after implementation of interaction between trained food caregivers and patients; a questionnaire about dietary counseling was administered pre-intervention;

Food caregivers significantly increased energy intake post-intervention; no significant difference was found for protein intake; no difference in symptomology was found between pre- and post-intervention; patients reported significant improvement in nutrition knowledge with food caregiver intervention

Hematological cancer

[Ollenschläger G;Thomas W;Konkol K;Diehl V;Roth E. Nutritional behaviour and quality of life during oncological polychemotherapy: results of a prospective study on the efficacy of oral nutrition therapy in patients with acute leukaemia. Eur J Clin Invest 1992 Aug;22\(8\):546-53.](#)

To determine whether nutritional status (measured as body weight) has an effect on the quality of life for patients with acute leukemia undergoing polychemotherapy.

Prospective randomized study

Intensive oral nutrition therapy with continuous dietetic counselling and motivation is an effective adjunct to aggressive antitumor therapy -not only with respect to the nutritional status, but also to patients' quality of life.

Leukemia

E. LUNG

[Bagan P, et al. 2013. Nutritional status and postoperative outcome after pneumonectomy for lung cancer. Ann](#)

Assess the nutritional status of patients referred for pneumonectomy and assess the value of malnutrition in predicting adverse events

Prospective observational multicenter study in France; data were collected on pathology stage and clinical characteristics, nutritional

Malnutrition was significantly associated with morbidity and mortality, as well as longer hospital stay.

Lung cancer

Thorac Surg 95:392-396		assessment, and morbidity/mortality outcomes		
Bauer JD, Capra S. 2005. Nutrition intervention improves outcomes in patients with cancer cachexia receiving chemotherapy – a pilot study. Support Care Cancer 13:270-274	Assess the effects of nutrition intervention with counseling by a dietitian and diet prescription on outcomes of dietary intake, body composition, nutritional status, functional capacity, and quality of life	Clinical trial measuring nutritional and quality of life outcomes of 7 adenocarcinoma patients receiving nutritional counseling, oral supplement, and nutritional assessment over 8 weeks of intervention	Significant improvement was found over the 8-week intervention trial for total protein, energy, and fiber intake; PG-SGA scores significantly improved for quality of life and Karnofsky performance status; use of oral supplements did not impair meal intake	Lung ca Pancreatic ca EAL: Pos effect on QOL
Gioulbasanis J, Georgoulas P, Vlachostergios PJ, Baracos V, Ghosh S, Giannousi Z, Papandreou CN, Mavroudis D, Georgoulas V. Mini Nutritional Assessment (MNA) and biochemical markers of cachexia in metastatic lung cancer patients: Interrelations and associations with prognosis. Lung Cancer. 2011 Dec; 74(3): 516-520.	To evaluate the correlation of the Mini Nutritional Assessment (MNA) with laboratory markers of inflammation or cachexia in patients with metastatic lung cancer.	Diagnostic, Validity or Reliability Study	Based on the MNA, the majority of patients were either malnourished or at nutritional risk. MNA correlated with laboratory parameters related to inflammation or cachexia and was independently associated with survival.	Lung cancer
Ross PJ, Norton A, Priest K, Waters JS, Eisen T, Smith IE, O'Brien MER. Do patients with weight loss have a worse	To assess whether weight loss at presentation had an influence on the toxicity patients suffered during chemotherapy and on whether weight loss altered the amount of chemotherapy	Prospective Cohort Study	This study demonstrated that weight loss at presentation is an independent prognostic factor for survival of patients with NSCLC,	Lung cancer EAL: Pos effect for chemotherapy treatment and mortality

outcome when undergoing chemotherapy for lung cancers? British Journal of Cancer. 2004; 90: 1,905-1,911.	delivered. To assess whether stabilization of weight during treatment had any effect on outcome.		SCLC, and mesothelioma. Weight loss also predicts toxicity from treatment.	
F. MIXED CANCER TYPES				
Alexandre J, Gross-Goupil M, Falissard B, Nguyen ML, Gornet JM, Misset JL, Goldwasser F. Evaluation of the nutritional and inflammatory status in cancer patients for the risk assessment of severe haematological toxicity following chemotherapy. Ann Oncol. 2003; 14: 36-41.	To assess the influence of nutritional and inflammatory status of cancer patients on chemotherapy tolerability.	Case Control Study	Altered nutritional and inflammatory status correlates with increased risk of severe hematological toxicity following anti-cancer treatment. Thus, encouraging use of NIS as a practical and reliable parameter to prospectively identify patients at risk of toxicity prior to initiation of a new chemotherapy regimen.	Mixed cancer types
Boltong AG et al. 2013. Using a public hospital funding model to strengthen a case for improved nutritional care in a cancer setting. Australian Health Review 37:286-290	Measure the prevalence of malnutrition risk, assess malnutrition in cancer-specific setting; model funding opportunities associated with malnutrition screening	Point-prevalence audit of malnutrition risk and diagnosis; retrospective audit of hospital funding associated with malnutrition	Malnutrition prevalence was 52% overall. Including a diagnosis of malnutrition changed the casemix funding value of 12% of the audited patients; the study suggests a model for a cancer-specific nutrition service to improve identification and treatment of malnutrition.	Mixed cancer types
Bozzetti F, et al. 2012. The nutritional risk in	Define the pattern of scores of nutritional risk in a population of	Prospective screening nutritional status of	32% of outpatients were found to be at nutritional	Outpts

oncology: a study of 1,453 cancer outpatients. Supp Care Cancer 20:1919-1928.	cancer outpatients and analyze factors associated with high nutritional risk	oncology outpatients using Nutritional Risk Screening (NRS 2002) tool	risk; primary tumor site, Eastern Cooperative Oncology Group performance status score, and anorexia/fatigue were significantly associated with poor NRS scores	Mixed cancer types
Drissi M, et al. 2015. Nutrition care in patients with cancer: a retrospective multicenter analysis of current practice – indications for further studies? Clinical Nutrition 34:207-211	Analysis of the use of parenteral nutrition (PN) in outpatient care	Observational study of outpatient oncology centers and characteristics of 2 cohorts of patients receiving PN; cohort 1 included patients during one quarter; cohort 2 included patients throughout the study period	GI cancers and GI obstructions were commonly treated with PN in the first and second cohorts, respectively; most patients received treatment at home; PN patients had stable or increasing BMI, independent of PN administration.	Outpt setting Mixed cancer types
Kabata P, et al. 2015. Preoperative nutritional support in cancer patients with no clinical signs of malnutrition – a prospective RCT. Supp Care Cancer 23:365-370.	Assess whether preoperative nutritional support should be routinely used in GI cancer patients without malnutrition	Prospective, 2-arm randomized controlled trial. Intervention group received an on-market nutritional supplement and two 20 ml bottles of a hypercaloric formula immediately prior to surgery; control group followed their usual diet; anthropometric and blood measures were taken for both groups; all patients were assessed for postoperative complications	At postoperative assessment (day 30) the number and severity of complications was significantly higher in the control group; at second assessment, median body weight was significantly lower in control group and compared to preoperative weight, but weight increased in the intervention group	Mixed cancer types
Lee AH, et al. 2006. The incidence of potential interactions between dietary supplements and prescription	Examine potential interactions between supplement use and prescription meds in a VA hospital cancer population	Administered survey on demographic info, disease profile, use of herbal remedies and dietary supplements, interaction	Supplement use among VA cancer patients is similar to the general population; potential supplement/drug	Mixed cancer types

medications in cancer patients at a VA hospital. Am J Clin Oncol 29(2):178-182		with physician about supplement use	interactions were identified.	
Lim SL, et al. 2012. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. Clinical Nutrition 31:345-350	Determine the prevalence of malnutrition and its impact on length of stay, readmission, mortality, and cost of hospitalization	Prospective cohort with a matched case-control; patients were assessed for malnutrition; hospital outcomes, cost, readmission and inpatient mortality were prospectively tracked; 1,2 and 3-year mortality from index admission was retrospectively tracked	No significant differences found in weight loss between the 2 cohorts, and no difference in NG feeding of high-risk patients; DLC was associated with significantly reduced nutrition-related admissions, unplanned NG feeding, and reduced radiation review post-treatment. High patient satisfaction was recorded for DLC.	Mixed cancer types
Ravasco P, Monteiro-Grillo I, Camilo ME. Does nutrition influence quality of life in cancer patients undergoing radiotherapy? Radiother Oncol. 2003 May; 67(2): 213-220.	The purpose of the research was to investigate in cancer patients referred for radiotherapy: quality of life (QOL), nutrition status and nutrient intake at onset and end of radiotherapy (RT); effect of individualized nutrition counseling on nutrient intake over time, and whether nutrient intake influenced the patient's QOL; which symptoms might be indicative of poorer QOL and reduced nutritional intake.	Before-After Study	The authors concluded that improved nutritional intake in high-risk cancer patients undergoing radiotherapy contributes to better quality of life, and that nutrition counseling during radiation therapy is a feasible and effective intervention to achieve improved nutritional intake.	Mixed cancer types EAL: Pos effect for QOL and radiation treatment tolerance
Shahmoradi N, et al. 2009. Impact of nutritional status on the quality of life of advanced cancer patients in hospice	Determine the relationship between nutritional status and quality of life in cancer patients in home hospice care	Cross-sectional study of home hospice cancer patients; nutritional status was determined by PG-SGA and Hospice Quality of Life (HQLI) by in-person	Significant association was found between nutritional status and quality of life; functional well-being was the domain most affected	EAL: Pos effect on QOL Mixed cancer types

home care. Asian Pacific J Cancer Prev 10:1003-1010		interview of patients at home		
Shulan M et al. 2013. Predicting 30-day all-cause hospital readmissions. Health Care Manag Sci 16:167-175	Explore the maximum discriminative ability of readmission predictive models and assess the predictive power of different independent variables	Inpatient administrative data from a data network was analyzed for 8,718 patients for readmission within 30 days of previous discharge; 4 independent variable categories were modeled and analyzed for predictive power: 1) demographics, 2) socioeconomic status, 3) prior utilization and cost, and 4) risk and co-morbidities	Approximately 1/3 of newly admitted patients were found to be malnourished; malnutrition was significantly associated with poor outcomes, increased mortality, and increased cost of care	Mixed pt population
Tu M-Y, et al. 2012. Effects of an intervention on nutrition consultation for cancer patients. Eur J Cancer Care 22:370-376	Examine whether a personalized nutrition intervention can preserve body weight and food intake and prevent nutrient deficiencies in post-discharge cancer patients	Randomized trial of post-discharge cancer patients in Taiwan, China; SGA was used to evaluate nutritional status; intervention group received nutrition counseling and meal planning; control group did not have counseling	Nutrition counseling significantly increased food intake recovery and decreased weight loss from initial consultation while only food intake recovery increased for control groups; cancer stage but not cancer type affected nutritional status for both groups.	Mixed cancer types
Um MH, et al. 2014. Intensive nutritional counseling improves PG-SGA scores and nutritional symptoms during and after radiotherapy in Korean cancer patients. Support Care Cancer. 22:2997-3005	Evaluate the use of the scored PG-SGA as a measure of nutritional status in ambulatory patients undergoing RT and evaluate the effect of nutrition intervention on nutritional status and quality of life	Randomized trial of 87 cancer outpatients into control (single nutrition counseling) or intervention (ongoing intensive nutrition counseling) groups; anthropometric and blood values were assessed at baseline, end of RT, and 1 month follow-up	No significant difference from baseline for body weight, BMI, energy, and protein intake or blood parameters for both groups. Protein intake significantly decreased at follow-up for control group; quality of life	Mixed cancer types

<p>Amaral TF, Antunes A, Cabral S, Alves P, Kent-Smith L. An evaluation of three nutritional screening tools in a Portuguese oncology centre. J Hum Nutr Diet. 2008; 21: 575-583.</p>	<p>To evaluate the ability of the Malnutrition Screening Tool (MST) and the Malnutrition Universal Screening Tool (MUST) to identify nutritionally at-risk cancer patients, compared to a reference screening tool (Nutritional Risk Screening 2002)</p>	<p>Diagnostic, Validity or Reliability Study</p>	<p>significantly improved for intervention group. MUST agreed with NSR-2002 better than MST in hospitalized cancer patients and also predicted oncology patients at greater risk for longer length of stay.</p>	<p>Mixed cancer types</p>
<p>Antoun S, Rey A, Béal J, Montange F, Pressoir M, Vasson MP, Dupoiron D, Gourdiat-Borye A, Guillaume A, Maget B, Nitenberg G, Raynard B, Bachmann P. Nutritional risk factors in planned oncologic surgery: What clinical and biological parameters should be routinely used? World J Surg. 2009 Aug; 33(8): 1,633-1,640.</p>	<p>To determine the most relevant nutritional parameters not only in terms of an association with surgical morbidity but also of practical routine feasibility for cancer patients undergoing planned major surgery of any type.</p>	<p>Prospective Cohort Study</p>	<p>The prediction of not only major infectious but also major non-infectious complications seemed less accurate with anthropometric features and clinical score than with albumin levels less than 30g per L. With albumin level being the only variable found statistically linked to major complications in the multi-variable analysis, collecting these data before surgery is mandatory. Recognition of severe malnutrition was most often not associated with an implementation of nutrition care or participial nutrition when required.</p>	<p>Mixed cancer types</p>
<p>Bourdel-Marchasson J, et al. 2014. Nutritional advice in older patients</p>	<p>Examine effects of dietary advice vs. usual oral care to increase</p>	<p>Multicenter superiority randomized controlled trial</p>	<p>No significant difference in 1- and 2-year mortality. Rate of weight</p>	<p>Mixed cancer types</p>

at risk of malnutrition during treatment for chemotherapy. Plos One 9(9):e108687	intake in older patients during chemotherapy	in 12 public and private settings in SW France	change and other secondary outcomes was similar between treatment groups	
Martin L, Watanabe S, Fainsinger R, Lau F, Ghosh S, Quan H, Atkins M, Fassbender K, Downing GM, Baracos V. Prognostic factors in patients with advanced cancer: Use of the patient-generated subjective global assessment in survival prediction. J Clin Oncol. 2010 Oct 1; 28(28): 4,376-4,383.	To define elements of the patient-generated Subjective Global Assessment (PG-SGA) independently prognostic of survival in patients with advanced cancer and to determine their prognostic accuracy. To compare the predictive accuracy of patient- and physician- reported performance status (PS).	Prospective Cohort Study	There is a high probability of concordance between predicted and observed survival for patients in distinct palliative care settings based on patient-reported information.	Mixed cancer types
Poulsen GM, et al. 2014. Randomized trial of the effects of individual nutritional counseling in cancer patients. Clin Nutr 33:749-753	Investigate the effect of intensive, individual dietary counseling of patients in radiotherapy and/or chemotherapy for gynecologic-, gastric-, or esophageal cancer	Prospective, randomized, controlled, unblinded, trial conducted in outpatients receiving chemo- and/or radiotherapy; intervention group received a nutritional supplement and nutrition counseling at baseline, and 1X weekly during treatment, and at 3 month follow-up; control group was instructed by nurses and instructed to call a dietitian as needed	Patients receiving nutrition counseling had significantly less weight loss and significantly higher energy and protein intake compared to controls; the intervention had no effect on quality of life or incidence of side effects from tx	Mixed cancer types
Pressoir M, Desne S, Berchery D, Rossignol G, Poiree B, Meslier M, Traversier S, Vittot M, Simon M, Gekiere JP, Meuric J, Serot F,	To determine the prevalence of malnutrition during hospitalization in cancer centers and to identify potential risk factors for malnutrition.	Prospective Cohort Study	The prevalence of malnutrition, defined as a function of two anthropometric indicators BMI and weight loss, was 30.9%.	EAL: also pos effect on mortality Mixed cancer types

<p>Falewee MN, Rodriquez I, Senesse P, Vasson MP, Chelle F, Maget B, Antoun S, Bachmann P. Prevalence, risk factors and clinical implications of malnutrition in French comprehensive cancer centers. British Journal of Cancer. 2010; 102, 966-971.</p>			<p>This morbidity related to disease or to treatment is associated with an impaired functional status, more frequent use of antibiotics and higher mortality. The length of stay is 45% longer for malnourished patients than for others, most likely owing to poorer PS. This is the first report of obesity as possible risk factor for malnutrition.</p>	
<p>Sorensen J, Kondrup J, Prokopowicz J, Schiesser M, Krähenbühl L, Meier R, Liberda M; EuroOOPS study group. EuroOOPS: An international, multicentre study to implement nutritional risk screening and evaluate clinical outcome. Clin Nutr. 2008 Jun; 27(3): 340-349.</p>	<p>To implement nutritional risk screening (NRS-2002) in hospital departments in Europe and the Middle East and to demonstrate the association between nutritional risk and clinical outcome</p>	<p>Prospective Cohort Study</p>	<p>Author concludes that this study shows that nutritional risk screening can be successfully implemented internationally and that nutritional risk is associated with a poor clinical outcome, also when most other factors known to lead to a poor clinical outcome are allowed.</p>	<p>EAL: pos effect on hospital LOS and mortality Mixed cancer types</p>
<p>Fearon KC, Voss AC, Hustead DS. Definition of cancer cachexia: Effect of weight loss, reduced food intake and systemic inflammation on functional status and</p>	<p>To evaluate in a homogeneous cohort of patients with cancer the role of weight loss, low food intake and the presence of systemic inflammation in a multiple factor profile of cachexia that aimed to reflect patients'</p>	<p>Prospective Cohort Study</p>	<p>Cachexia is a multi-dimensional, multi-factorial syndrome and is not synonymous with weight loss alone. A profiling system for cachexia needs to reflect such complexity,</p>	<p>Mixed cancer types</p>

prognosis. American Society of Nutrition. 2006; 83: 1,345-1,350.	<p>adverse function and survival duration.</p>		<p>especially when considering the physical function sequelae for patients with cachexia. Inclusion of factors such as energy intake and the presence of systemic inflammation in addition to weight loss appears to provide a platform to further understanding of the important therapeutic targets for patients.</p>	
Menon K, et al. 2014. Nutrient intake and nutritional status of newly diagnosed patients with cancer from the East Coast of Peninsular Malaysia. BMC Research Notes 7:680	<p>Assess the nutrient intake and status of newly diagnosed patients with cancer in outpatient clinics in Malaysia</p>	<p>Cross-sectional study of a convenience sample of newly diagnosed cancer patients; data collected included anthropometric, dietary intake, and biochemical measures</p>	<p>The study found a high prevalence of malnutrition (underweight, anemia, poor macro- and micronutrient intake) in newly diagnosed cancer patients prior to initiation of treatment.</p>	<p>Mixed cancer types</p>
Nourissat A, Vasson MP, Merrouche Y, Bouteloup C, Goutte M, Mille D, Jacquin JP, Collard O, Michaud P, Chauvin F. Relationship between nutritional status and quality of life in patients with cancer. Eur J Cancer. 2008 Jun; 44(9): 1,238-1,242.	<p>To assess the global quality of life and its different dimensions as a function of the nutritional status of patients with cancer.</p>	<p>Cross-Sectional Study</p>	<p>The association between weight loss and impaired quality of life in all areas was confirmed by this study. To improve the quality of life in patients with cancer, a nutritional intervention should be implemented as soon as cancer is diagnosed. The nutritional therapy should form part of the integral oncological support.</p>	<p>Mixed cancer types</p>

G. RENAL

Hofbauer SL, et al. 2015. The preoperative prognostic nutritional index is an independent predictor of survival in patients with renal cell carcinoma. Urologic Oncology 33(2):68.e1-e7.	Assess the Prognostic Nutritional Index (PNI) as a predictor of poor outcomes in patients with cancer	Retrospective review of medical records of patients diagnosed with renal cell carcinoma; cancer-specific survival was the primary outcome measure	A low PNI score was significantly associated with lower cancer-free survival and lower disease-free survival in renal cell carcinoma patients	Renal cell carcinoma
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H. RESPIRATORY

Prado CM, Lieffers JR, McCargar LJ, et al. Prevalence and clinical implications of sarcopenic obesity in patients with solid tumours of the respiratory and gastrointestinal tracts: A population-based study. Lancet Oncol. 2008; 9(7): 629-635.	To assess the prevalence and clinical implications of sarcopenic obesity (obesity with depleted muscle mass) in patients with cancer.	Prospective Cohort Study	Cancer patients with sarcopenic obesity had exceptionally lower functional status and their sarcopenia was an independent risk factor for poor survival. An apparently large bodyweight might mask sarcopenia. Men, patients aged over 65 years and those affected by colorectal cancer seem to be especially susceptible to sarcopenia. Body composition variability might introduce a variation of drug volume of distribution. If variation in toxicity can be partially explained by features of body composition,	Respiratory and GI cancers
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identification of clinical measure of body composition for a more refined delivery of chemotherapy dose is important.

I. THORACIC

<p>Percival C, et al. 2013. Providing nutritional support to patients with thoracic cancer. Resp Med 107:753-761</p>	<p>Evaluate effectiveness of a screening tool and dietary intervention on patient outcomes and dietetic workload</p>	<p>Patient-completed questionnaire, dietitian-administered screening tool, dietetic intervention, and follow-up</p>	<p>No significant difference in pattern, magnitude, or % change in weight between malnourished and not malnourished groups.</p>	<p>Thoracic cancer</p>
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J. UROLOGICAL

<p>Persson C, Sjoden PO, Glimellius B. The Swedish version of the patient-generated subjective global assessment of nutritional status: gastrointestinal vs urological cancers. Clin Nutr. 1999; 18 (2): 71-77.</p>	<p>To determine if the PG-SGA could be used by different professionals, was easy for patients to respond to and whether it had prognostic capabilities.</p>	<p>Diagnostic, Validity or Reliability Study</p>	<p>The PG-SGA contributed to prognostic information.</p>	<p>GI and urological cancers</p>
<p>Denmark-Wahnefried W, et al. 2012. Reach out to enhance wellness home-based diet-exercise intervention promotes</p>	<p>Assessment of diet and exercise interventions for long-term adherence health outcomes</p>	<p>A cross-over design intervention trial (RENEW) consisting of a personally tailored workbook, quarterly newsletters, and telephone counseling, along with</p>	<p>The immediate intervention arm showed no significant relapse in diet quality, physical activity, and BMI, but did show declines in physical</p>	<p>Prostate, colorectal, breast cancer</p>

[reproducible and sustainable long-term improvements in health behaviors, body weight, and physical functioning in older, overweight/obese cancer survivors. J Clin Oncol 30\(19\):2354-2361](#)

exercise equipment and nutrition guidance was administered to long-term cancer survivors either immediately or following a delay for 1 year.

function when the intervention was stopped. Significant improvements were found for all measures in the delayed intervention. Both arms showed significant improvements from baseline to year 2.