

**IL COUNSELLING NUTRIZIONALE
 DURANTE IL TRATTAMENTO
 ONCOLOGICO:
 STRATEGIE, APPLICABILITA' E
 PROVE DI EFFICACIA**



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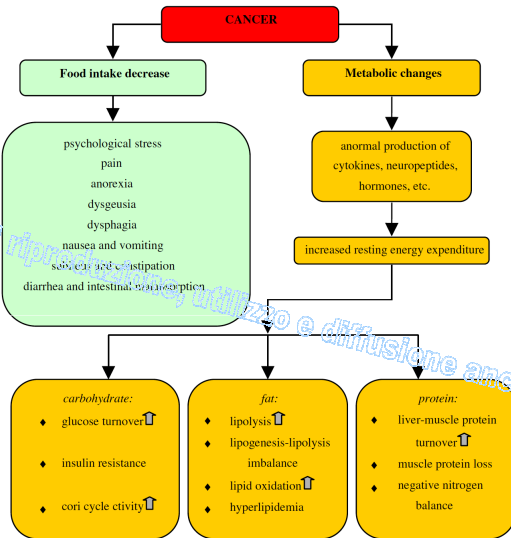


Figure 2 Multifactorial etiologies for body weight loss and metabolic abnormalities in cancer patients.

Why?
 Divieto di riproduzione, utilizzo e diffusione anche parziale

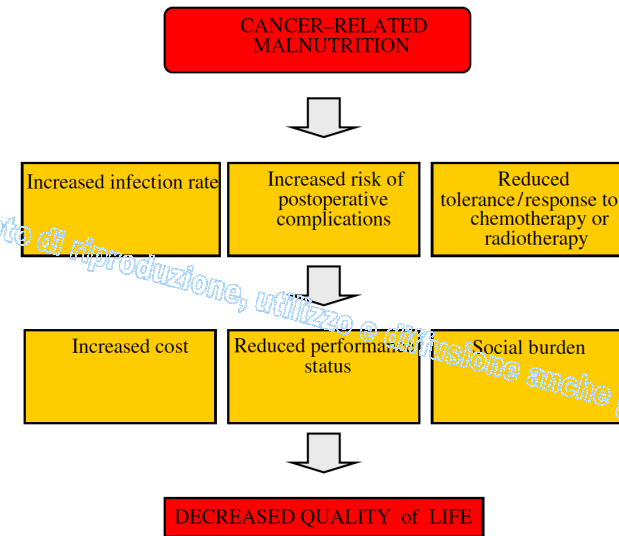
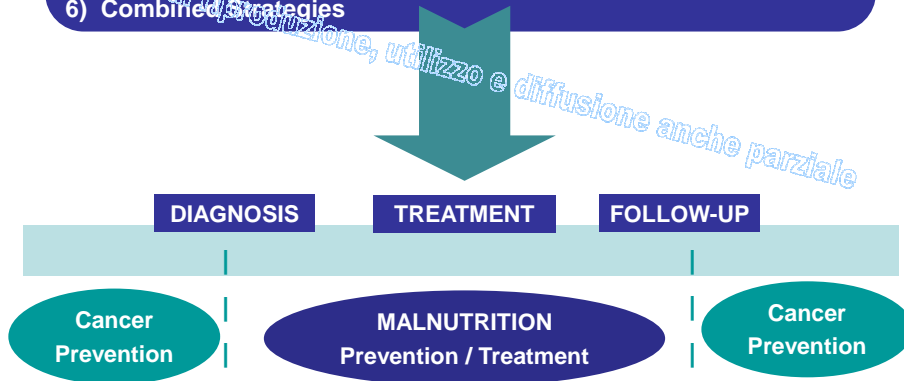


Figure 1 Cancer-related malnutrition has a major impact on clinical evolution and socioeconomic, and reduces quality of life.

- 1) Neoadjuvant / Adjuvant / Maintenance / Palliative Chemotherapy
- 2) Radiation Therapy / Brachytherapy
- 3) Surgery
- 4) Radiometabolic Therapy
- 5) Biopharmaceutical / Hormone Therapy
- 6) Combined modalities



Huebner J et al. Anticancer Research 34: 39-48 (2014)

What is Nutritional Counselling ?

Nutritional Counselling

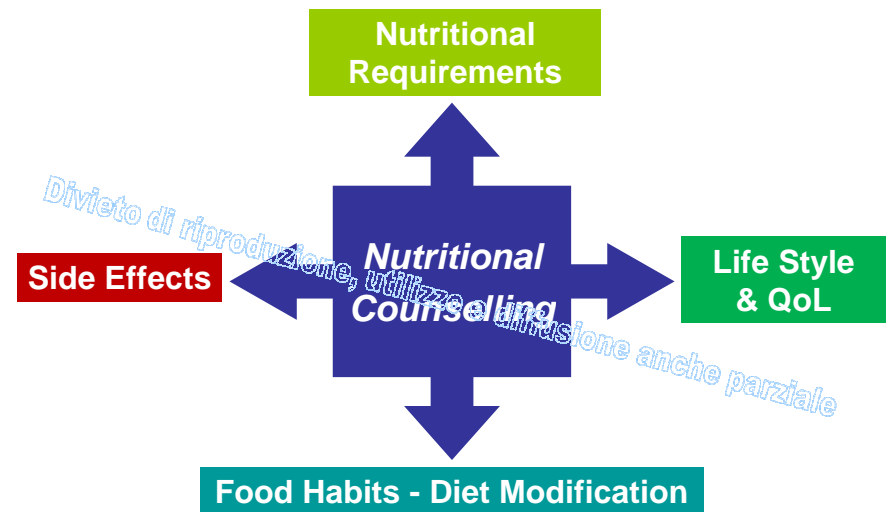
An ongoing interactive process between a patient and a dietitian that uses information from nutrition assessments to prioritize actions to improve nutritional status.

Counselling helps to identify patient preferences, barriers to behavior change, and possible solutions to overcome those barriers.

The patient and care provider jointly plan a feasible course of action to support healthy practices and to make and maintain dietary changes.



Academy of Nutrition and Dietetics, 2012



Academy of Nutrition and Dietetics, 2012

Reduced Intake

(> 50% Nutritional Requirements)

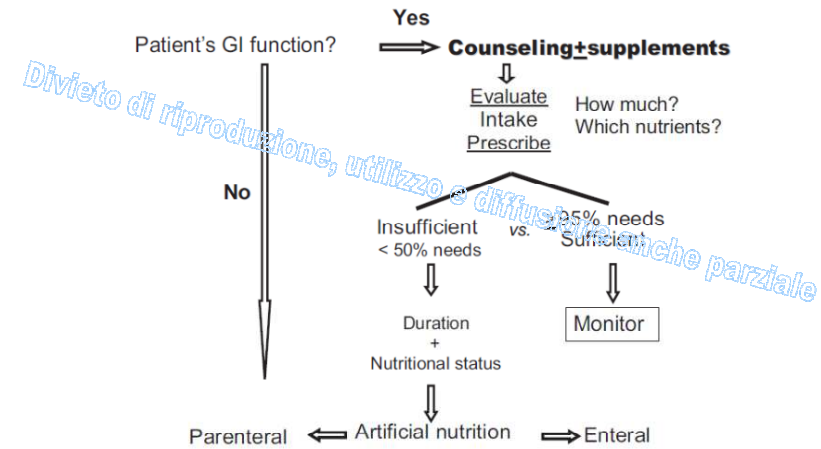
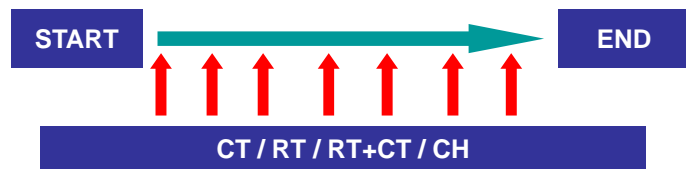


Fig. 1. Evidence-based decision-making plan.

Question of Strategy

1- Meais (N° / distribution)

2- Food Fortification

3- Specific nutrients modulation

4- Sostitution

5- Fluid Management



1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012

Evidence-Based Recommendations for Cancer Fatigue, Anorexia, Depression, and Dyspnea

Sydney M. D., Karl A. Lorenz, Arash Naeim, Homayoon Sanati, Anne Walling, and Steven M. Asch

- For anorexia, providers should screen at the initial visit for cancer affecting the oropharynx or gastrointestinal tract or advanced cancer
- Evaluate for associated symptoms, including constipation, nausea or vomiting, oral discomfort, depression, and dysphagia
- Provide nutritional counseling for patients undergoing treatment that may affect nutritional intake

Applied nutritional investigation

Influence of a nutritional intervention on dietary intake and quality of life in cancer patients: A randomized controlled trial

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Fig. 2. Energy and protein intake assessed by 3-d dietary recall in cancer patients with an NRS score of ≥ 3 receiving either nutritional therapy or usual care. Average energy intake: Nutritional therapy group > usual care group ($P = 0.007$). Average protein intake: Nutritional therapy group > usual care group ($P = 0.016$).

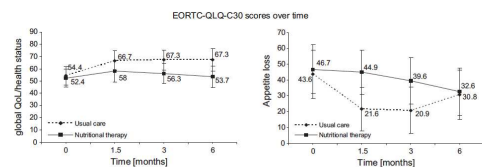


Fig. 3. Baseline and follow-up scores for global QoL/health status and the appetite loss assessed by EORTC-QLQ-C30. A higher score on global QoL/health status indicate better functioning, whereas higher scores on symptom scales (i.e., appetite loss) denote impaired functioning. Average scores for global QoL/health status: Nutritional therapy group > usual care group ($P = 0.046$).

Study or subgroup	Intervention			No intervention			Mean difference IV, Fixed, 95% CI	Mean differences IV, Fixed, 95% CI	
	Mean	SD	Total	Mean	SD	Total			
Baldwin et al. 2008a (17)	2.06	22.7	54	-2.85	20.5	20	4.91 [-5.92–15.74]		
Baldwin et al. 2008b (17)	0.66	24.8	59	-2.85	20.5	20	3.51 [-7.48–14.50]		
Baldwin et al. 2008c (17)	-0.63	21.9	46	-2.85	20.5	21	2.22 [-8.59–13.03]		
Isernring et al. 2004 (27)	5	20	25	-12.6	22.7	29	17.60 [6.21–28.99]		
Persson et al. 2002 (18)	15.2	25.5	50	13.8	24.6	50	1.40 [-8.42–11.22]		
Ravasco et al. 2005a (19)	32	6	25	-19	4	13	51.00 [47.80–54.20]		
Ravasco et al. 2005b (19)	20	4	25	-19	4	12	39.00 [36.25–41.75]		
Ravasco et al. 2005c (20)	35	8	37	-18	4	19	53.00 [49.86–56.14]		
Ravasco et al. 2005d (20)	15	4	37	-18	4	18	33.00 [30.75–35.25]		
Subtotal (95% CI)			234			140	100.0%	5.53 [0.73–10.33]	

Heterogeneity: $\chi^2 = 5.50$, $df = 4$ ($P = 0.24$), $I^2 = 27\%$
 Test for overall effect: $Z = 2.26$ ($P = .02$)

Test for subgroup differences: Not applicable

Results: nutritional intervention had a beneficial effect on some aspects of QoL (emotional functioning, dyspnea, loss of appetite, and global QoL) but had no effect on mortality (relative risk = 1.06, 95% CI = 0.92 to 1.22, $P = .43$; $I^2 = 0\%$; P heterogeneity = .56).

REVIEW

Oral Nutritional Interventions in Malnourished Patients With Cancer: A Systematic Review and Meta-Analysis

Christine Baldwin, Ayelet Spiro, Roger Ariam, Peter W. Emery

Manuscript received April 10, 2011; revised December 12, 2011; accepted December 19, 2011.

Correspondence to: Christine Baldwin, PhD, RD, Division of Diabetes and Nutritional Sciences, School of Medicine, King's College London, Franklin Wilkins Bldg, 150 Stamford St, London SE1 9NH, UK (e-mail: christine.baldwin@kcl.ac.uk).

Baldwin C. et al. J Natl Cancer Inst, 2012.

Study or subgroup	Intervention			No intervention			Mean Difference IV, Random, 95% CI	Mean difference IV, Random, 95% CI
	Mean	SD	Total	Mean	SD	Total		
Baldwin et al. 2008a (17)	-0.03	5.77	60	-0.05	6.27	21	9.5%	0.02 [-3.03–3.07]
Baldwin et al. 2008b (17)	0.29	5.93	58	-0.05	6.27	21	9.4%	0.34 [-2.75–3.43]
Baldwin et al. 2008c (17)	0.89	6.31	55	-0.05	6.27	22	9.4%	0.94 [-2.17–4.05]
Elkort et al. 1980 (25)	2.6	15	12	3.4	13	14	1.9%	-0.80 [-11.68–10.08]
Isernring et al. 2004 (27)	-0.38	3.42	25	-4.7	4.69	29	11.4%	4.32 [2.15–6.49]
Lovik et al. 1996 (28)	-0.9	3.1	24	-2	4.2	25	11.7%	1.10 [-0.96–3.16]
Ovesen et al. 1993 (30)	1	5.6	57	0.1	4.7	48	11.9%	0.90 [-1.07–2.87]
Persson et al. 2002 (18)	1	2.9	24	1.6	3.2	35	12.7%	-0.60 [-2.17–0.97]
Ravasco et al. 2005a (19)	4	3	25	0	0	13		Not estimable
Ravasco et al. 2005b (19)	0	0	25	0	0	12		Not estimable
Ravasco et al. 2005c (20)	5	2	37	-2	5	18	10.9%	7.00 [4.60–9.40]
Ravasco et al. 2005d (20)	4	1	37	-2	5	19	11.2%	3.00 [0.73–5.27]
Subtotal (95% CI)			438			277	100.0%	1.86 [0.25–3.47]

Heterogeneity: $\tau^2 = 4.69$; $\chi^2 = 37.15$, $df = 9$ ($P < .0001$), $I^2 = 76\%$
 Test for overall effect: $Z = 2.26$ ($P = .02$)

Results: nutritional intervention was associated with statistically significant improvements in weight and energy intake compared with routine care (mean difference in weight = 1.86 kg, 95% CI = 0.25 to 3.47, $P = .02$; and mean difference in energy intake = 432 kcal/d, 95% CI = 172 to 693, $P = .001$).

Surgery in Esophageal and Gastric Cancer Patients: What is the Role for Nutrition Support in your Daily Practice?

Christophe Mariette, MD, PhD^{1,2,3}, Marie-Laure De Botton, ANP¹, and Guillaume Piessen, MD, PhD^{1,2,3}

Department of Digestive and Oncological Surgery, University Hospital C. Huriez, Centre Hospitalier Régional Universitaire, Lille, Cedex, France; ¹University of Lille - Nord de France, Lille, Cedex, France; ²Inserm, UMR837, Team 5 "Mucins, epithelial differentiation and carcinogenesis", JPARC, Lille, Cedex, France

Diseases of the Esophagus (2013) 26, 587–593
DOI: 10.1111/doe.12008

**DISEASES OF THE
ESOPHAGUS**

Original article

Dietician-delivered intensive nutritional support is associated with a decrease in severe postoperative complications after surgery in patients with esophageal cancer

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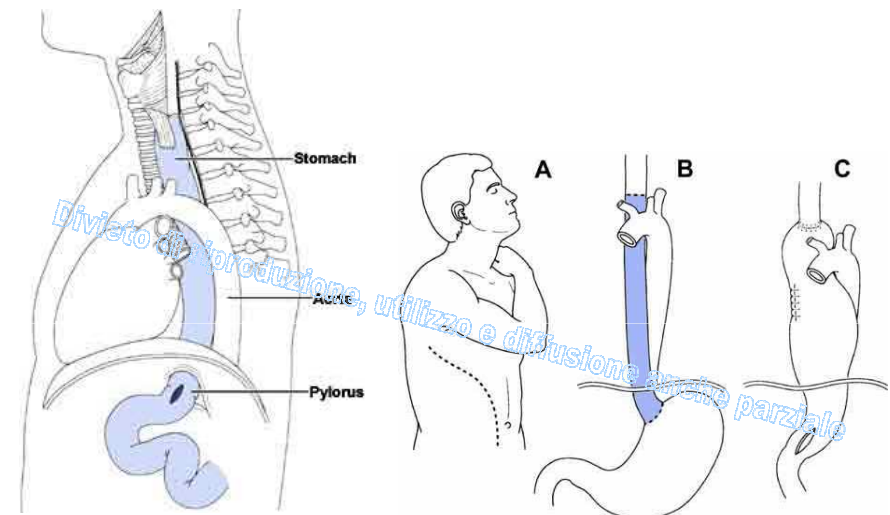
Gastric Cancer & Esophageal Cancer

50–80% of these patients
present with malnutrition at diagnosis

Therapy: Curative
surgery and neoadjuvant
/adjuvant chemotherapy

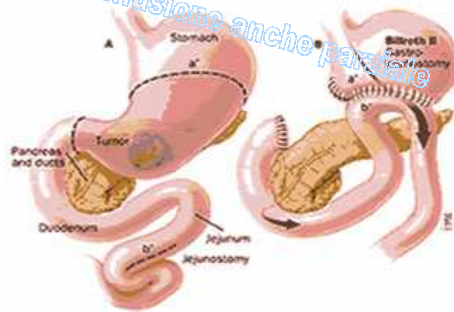
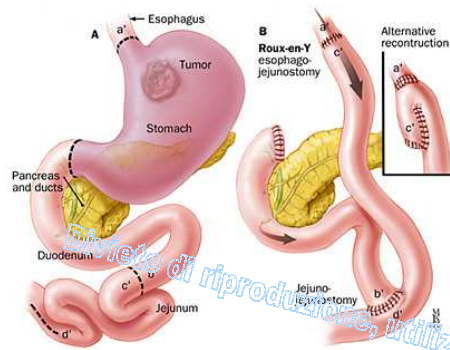
Less than 50% of the
patients with esophageal
cancer survive the first 5
years after surgery.

- Effects:
- Reduced gastric volume
 - Delayed gastric emptying
 - Early gastric fullness



Esofagectomia totale sec. Orringer con tre accessi (toracotomico, laparotomico e cervicotomico) e tubulizzazione dello stomaco, previa minima resezione di questo, con anastomosi gastro-esofago cervicale

Esofagectomia sub totale sec. di Ivor-Lewis con resezione dell'esofago distale, resezione polare dello stomaco e gastro-esofago anastomosi intratoracica.



Nutrition in Clinical Practice

<http://ncp.sagepub.com/>

Postgastrectomy Nutrition
Christie Rogers
Nutr Clin Pract 2011 26: 126
DOI: 10.1177/0884533611400070

The online version of this article can be found at:
<http://ncp.sagepub.com/content/26/2/126>

Published by:
SAGE
<http://www.sagepublications.com>

On behalf of:



The American Society for Parenteral & Enteral Nutrition



NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Gastric Cancer

(Including cancer in the proximal 5cm of the stomach)

Plannig Nutrition after surgery

Clear Fluids



Soft diet



Solid diet
6 meals/day

Designed to provide adequate calories and nutrients to support tissue healing and prevent weight loss and dumping syndrome after gastric/esophagel surgery, resulting in an inability to regulate normal emptying of the stomach

- by the 5th-7th day

1- Escott-Stump S. et al. *Nutrition and Diagnosis-related Care*. American Dietetic Association, 2012
2- *Nutrition for the Person with Cancer: A Guide for Patients and Families*. American Cancer Society, 2000.
3- *Eating Hints for Cancer Patients: Before, During, and After Treatment*, National Cancer Institute, 2011

Nutritional Counselling Strategy

Soft Diet



Solid Diet

Modifications

- Small, frequent meals (n^o → 6/day)
- Limit the intake of simple CHO
- Higher in complex carbohydrates and protein
- Moderate in fat
- Fiber restricted
- Limit beverages and liquids intake at meals
- Lactose restricted (if necessary)
- Food e drink moderate in temperature

Deficiency
Vit. B12 - Folic Acid - Ca - Fe - Vit. D
Supplementation, if necessary

Adequacy
25-35 kcal/kg/day
1,2-1,5g protein/kg/day

1- Escott-Stump S. et al. *Nutrition and Diagnosis-related Care*. American Dietetic Association, 2012
2- *Nutrition for the Person with Cancer: A Guide for Patients and Families*. American Cancer Society, 2000.
3- *Eating Hints for Cancer Patients: Before, During, and After Treatment*, National Cancer Institute, 2011



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journal homepage: www.elsevierhealth.com/journals/ctrv



GENERAL AND SUPPORTIVE CARE

Nutritional support during oncologic treatment of patients with gastrointestinal cancer: Who could benefit?

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Received 19 June 2007; received in revised form 10 March 2008; accepted 13 March 2008

“For patients undergoing radiochemotherapy, dietary counselling should be proposed to all patients.”

Divieto di riproduzione, utilizzo e diffusione anche parziale

Colorectal Cancer

VOLUME 23 · NUMBER 7 · MARCH 1 2005

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Dietary Counseling Improves Patient Outcomes: A Prospective, Randomized, Controlled Trial in Colorectal Cancer Patients Undergoing Radiotherapy

Paula Ravasco, Isabel Monteiro-Grillo, Pedro Marques Vidal, and Maria Ermelinda Camilo

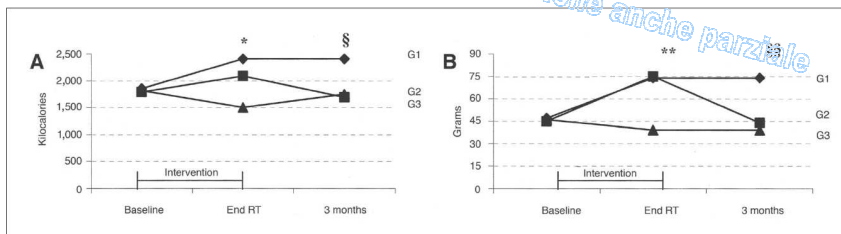


Fig 1. Energy and protein intake patterns during intervention and follow-up for the three study groups: G1, dietary counseling based on regular foods; G2, supplements; G3, ad libitum intake. Energy: *G1 > G2 > G3 (P = .002) and §G1 > G2 ≈ G3 (P = .001); protein: **G1 ≈ G2 > G3 (P = .006) and §§G1 > G2 ≈ G3 (P = .001).

Divieto di riproduzione, utilizzo e diffusione anche parziale

Table 3. RT-Induced Morbidity Categorized According to Severity Grades¹²

Symptoms	G1		G2		G3		P*	P†	P‡						
	Grade 1	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2									
	End RT	3 Months	End RT	3 Months	End RT	3 Months									
Anorexia	20	6	13	13	5	14	3	17	12	17	10	<.02	<.01	<.001	
Nausea or vomiting	27	0	7	0	23	7	10	3	18	9	16	6	<.001	.17	<.0001
Diarrhea	32	0	2	0	25	9	3	3	18	15	17	13	<.0001	<.05	<.0001

NOTE. Data are expressed as number of patients; grades 3 and 4 were never observed. Abbreviation: RT, radiation therapy. *Expresses the significance of statistical differences between intervention groups, regarding the reduction of grade 1 symptom incidence between the end of RT and 3 months. †Expresses the significance of statistical differences between intervention groups, regarding the reduction of grade 2 symptom incidence between the end of RT and 3 months. ‡Expresses the significance of statistical differences between intervention groups, regarding the reduction of grades 1 + 2 symptom incidence between the end of RT and 3 months.

Individualized nutrition intervention is of major benefit to colorectal cancer patients: long-term follow-up of a randomized controlled trial of nutritional therapy¹⁻³

Paula Ravasco, Isabel Monteiro-Grillo, and Maria Camilo

Am J Clin Nutr 2012;96:1346-53.

Divieto di riproduzione, utilizzo e diffusione anche parziale

Nutritional deterioration was higher (P < 0.001) in group 3 and group 2 than in group 1.

Adequate nutritional status was maintained in 91% of group 1 patients but not in any of the group 3 patients (P 0.002).

Table 4. Median QoL Dimensions Scores

Items	Group 1			Group 2			Group 3		
	Onset	End	3 Months	Onset	End	3 Months	Onset	End	3 Months
Function scales									
Global QoL	48	75*	82††	46	70*	62†	47	35*	30†
Physical function	49	74*	79†	48	65*	60†	45	25*	22†
Role function	50	78*	80†	52	65*	58	48	20*	19†
Emotional function	55	79*	83†	50	48	50	51	38*	28††
Social function	52	82*	85†	51	48	51	49	30*	26†
Cognitive function	64	73*	70†	62	62	54	62	65*	46††
Symptoms, scales									
Fatigue	30	55*	26†	31	75*	78†	29	78*	79†
Pain	25	63*	15††	22	74*	30††	23	78*	73†
Nausea and vomiting	15	50*	10††	14	71*	37††	12	72*	68††
Symptoms, single items									
Dyspnea	5	8	8	6	13	5	6	15	
Sleep disturbance	30	40*	29†	28	65*	35††	32	60*	78††
Appetite	45	57*	48†	40	59*	72††	42	65*	75††
Constipation	12	10	10	11	8	8	8	8	8
Diarrhea	38	45	39	35	61*	72††	33	62*	78††
Finance	14	14	14	11	11	11	12	12	12

NOTE. Higher scores on function scales indicate better functioning; higher scores on symptom scales or single items denote increased symptomatology or worse financial impairment. (—) Highlights overall significant improvement; (---) highlights overall significant deterioration; (- - -) highlights overall nonsignificant deterioration.

Abbreviations: QoL, quality of life; RT, radiation therapy.

*Significant differences between baseline and end of RT.

†Significant differences between baseline and at 3 months.

††Significant differences between end of RT and at 3 months.

Ravasco P et al, J Clin Oncol, 2005

Ravasco P. et al. Am J Clin Nutr, 2012.

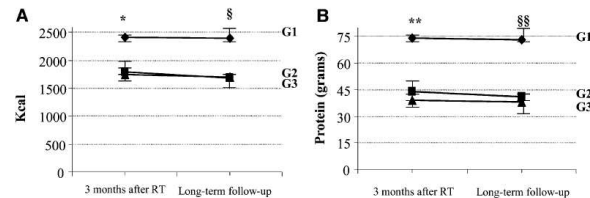


FIGURE 2. Changes in energy (A) and protein (B) intakes during the follow-up period in the 3 study groups: G1 (n = 34), individualized counseling; G2 (n = 29), supplements + usual diet; G3 (n = 26), usual diet. A: *Group 1 > group 2 = group 3 (P = 0.002); †group 1 > group 2 = group 3 (P = 0.001). B: **Group 1 > group 2 = group 3 (P = 0.002); ††group 1 > group 2 = group 3 (P = 0.001). Wilcoxon rank-sum tests were used for the statistical analysis. For all analyses, within-group and between-group comparisons were adjusted for cancer stage, age, follow-up time, disease recurrence, adjuvant treatments, survival, and number of patients in each group. Data shown are medians with minimum and maximum values. G, group; RT, radiotherapy.

Intakes in group 1 were similar to reference values, and the patients adhered to the prescribed recommendations.

Intakes in groups 2 and 3 were lower than recommended intakes - group 3 = group 2, group 1 (P = 0.001).

Ravasco P. et al. Am J Clin Nutr, 2012.

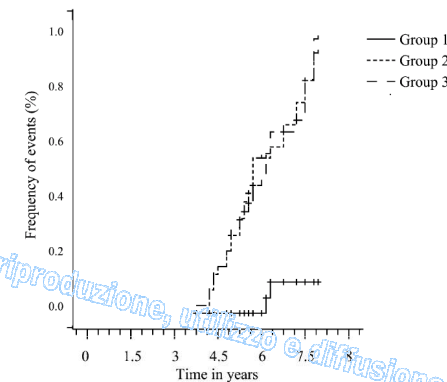


FIGURE 3. Incidence of late radiotherapy toxicity symptoms was calculated with Kaplan-Meier and log-rank tests and by Cox regression: group 1 (n = 34), individualized counseling; group 2 (n = 29), supplements + usual diet; group 3 (n = 26), usual diet. The incidence of late symptoms in the 3 groups was as follows: group 3 = group 2 > group 1 (P = 0.002). For all analyses, within-group and between-group comparisons were adjusted for cancer stage, age, follow-up time, disease recurrence, adjuvant treatments, survival, and number of patients in each group.

Late radiotherapy toxicity was higher in group 3 and group 2 than in group 1: group 3 = group 2 > group 1 (P 0.001).

Ravasco P. et al. Am J Clin Nutr, 2012.

Median quality-life dimensions scores[†]

Items	Grade 1 (n = 34)		Grade 2 (n = 29)		Grade 3 (n = 26)	
	3 mo	Long-term	3 mo	Long-term	3 mo	Long-term
Function scales						
Global quality of life	82	80	62	50*	35	30
Physical function	79	78	60	42*	22	26
Role function	80	81	58	41*	19	20
Emotional function	83	82	50	35*	28	18
Social function	85	84	51	35*	26	25
Cognitive function	70	73	54	41*	46	40
Symptoms scales						
Fatigue	26	5*	78	69*	79	75
Pain	15	2*	30	49*	73	70
Nausea and vomiting	10	0	27	25	68	45
Symptoms, single items						
Dyspnea	8	0	13	5	15	6
Sleep disturbance	29	2*	75	62	78	65
Appetite	48	2*	72	68	75	69
Constipation	10	0*	8	0*	8	0*
Diarrhea	39	2*	72	76	78	79
Financial impact	14	3*	11	2*	12	7

**QoL was worse in groups 3 and 2 than in group 1
Group 3 = group 2 < group 1 (P, 0.002).**

Ravasco P. et al. Am J Clin Nutr, 2012.

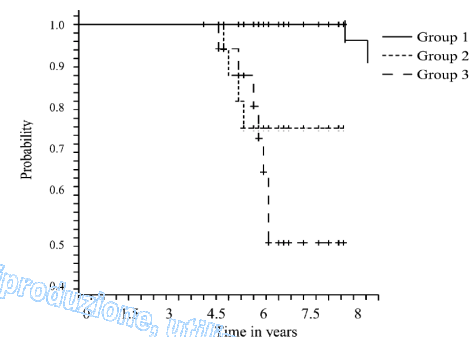


FIGURE 1. Disease-specific survival was calculated by Kaplan-Meier and log-rank tests, and the patients were divided by randomization group: group 1 (n = 34), individualized counseling; group 2 (n = 29), supplements + usual diet; group 3 (n = 26), usual diet. Survival time in group 3 < group 2 < group 1 (P < 0.05). For all analyses, within-group and between-group comparisons were adjusted for cancer stage, age, follow-up time, disease recurrence, adjuvant treatments, survival, and number of patients in each group.

Worse radiotherapy toxicity, QoL, and mortality were associated with deteriorated nutritional status and intake (P 0.001).

Likewise, depleted intake, nutritional status and QoL predicted shorter survival and late toxicity (HR: 8.25; 95% CI: 2.74, 1.47; P 0.001).

Ravasco P. et al. Am J Clin Nutr, 2012.

Nutritional interventions for reducing gastrointestinal toxicity in adults undergoing radical pelvic radiotherapy (Review)

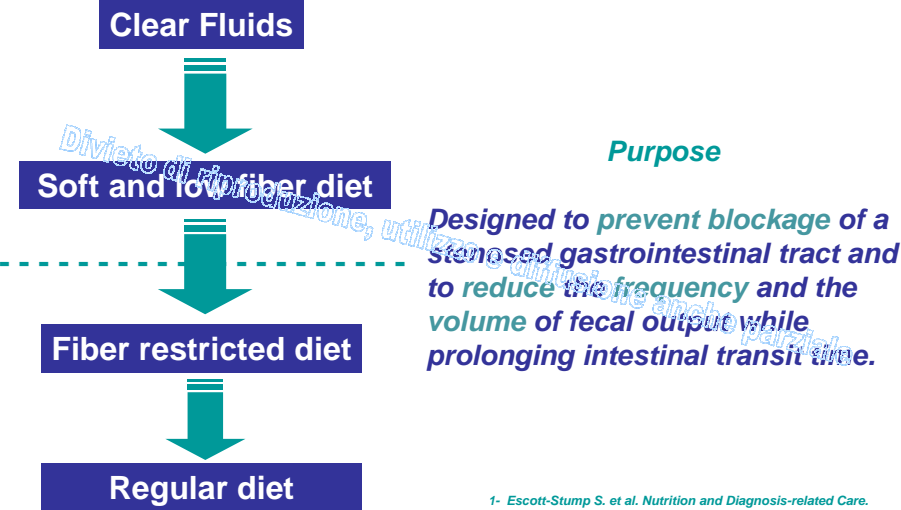
Henson CC, Burden S, Davidson SE, Lal S



**THE COCHRANE
COLLABORATION®**

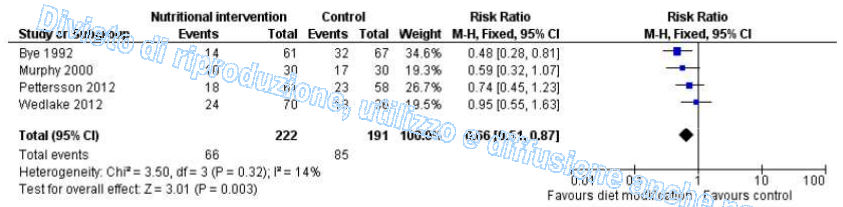
During Pelvic RT

Planning nutrition after intestinal surgery



1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012
 2- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 3- Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Figure 4. Forest plot of comparison: I Nutritional intervention versus no nutritional intervention, outcome: I.I Diarrhoea.



A reduction in diarrhoea was demonstrated with nutritional intervention risk ratio (RR) 0.66; 95% confidence interval (CI) 0.51 to 0.87.

Nutritional Counselling Strategy

Fiber restricted diet



Modifications

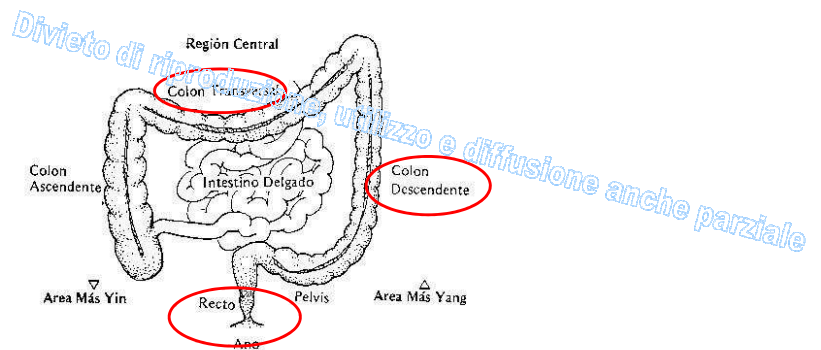
- Indigestible carbohydrate intake is reduced ($\leq 10g/die$)
- Using high water-soluble fiber and low water-insoluble fiber
- Legumes, seed and nuts are omitted
- Lactose controlled
- Moderate fat intake
- Fluids: $>1500ml/day$

1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012
 2- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 3- Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Fiber restricted diet



Regular diet

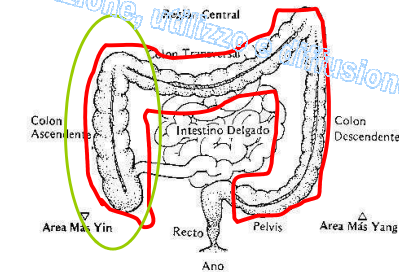


and during pelvic RT

1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012
 2- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 3- Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Fiber restricted diet

< 10g/day high water-soluble fiber
 Fluids at least 1500-2000ml/die
 N°5-6 meals/day



INTESTINO GRUESO (COLON)

- 1- Escott-Stump S. et al. *Nutrition and Diagnosis-related Care*. American Dietetic Association, 2012
- 2- *Nutrition for the Person with Cancer: A Guide for Patients and Families*. American Cancer Society, 2000.
- 3- *Eating Hints for Cancer Patients: Before, During, and After Treatment*, National Cancer Institute, 2011

Treatment includes surgery, chemotherapy, chemoradiation, or a combination of therapies.

Only 15%–20% of patients present with resectable disease, surgery is the mainstay treatment and the only hope for a cure.

The 5-year relative survival is only 21.5%, with potential improvement to 30% in specialized centers.

Only localized tumors are resectable; once the tumor has metastasized to distant sites (superior mesenteric artery, liver, or peritoneum - stage IV), surgery is no longer an option.

- 1- Reddy SK. *Oncologist*. 2007
- 2- Garcea G. *JOP*, 2008
- 3- Hidalgo M. *N Engl J Med*, 2010
- 4- Winter JM. *J Gastrointest Surg*, 2006

Pancreatic Cancer

Review

Pancreatic Surgery: Indications, Complications, and Implications for Nutrition Intervention

Amy J. Berry, MS, RD, CNSC



Nutrition in Clinical Practice
 Volume 28 Number 3
 June 2013 330-357
 © 2013 American Society
 for Parenteral and Enteral Nutrition
 DOI: 10.1177/0884533612470845
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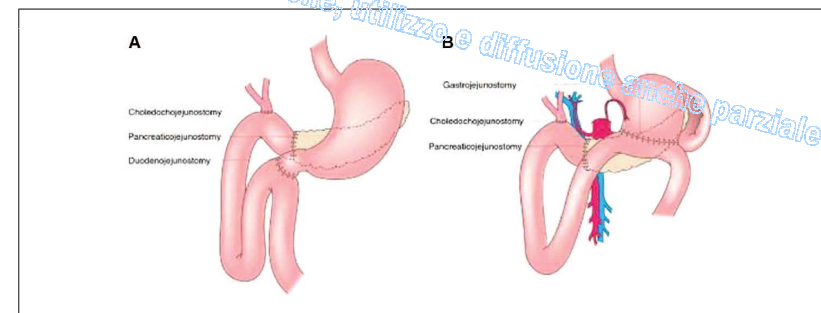
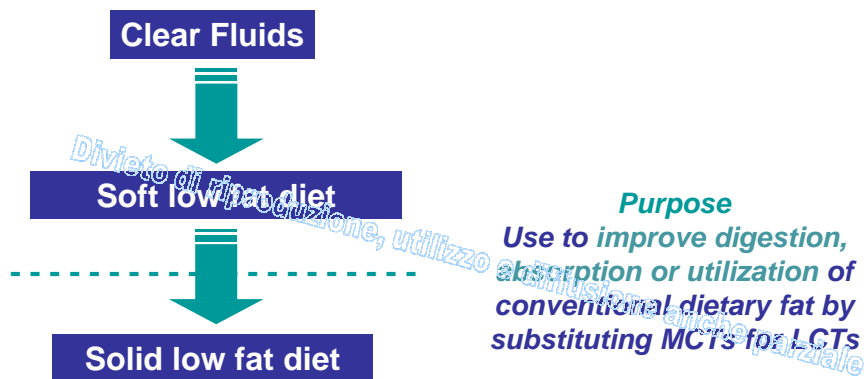


Figure 2. (A) Pylorus preserving pancreaticoduodenectomy. (B) Classic pancreaticoduodenectomy or Whipple procedure. Reprinted with permission from Matsuoka et al.¹⁴³

Plannig nutrition after pancreatic resection I



Purpose
Use to improve digestion, absorption or utilization of conventional dietary fat by substituting MCTs for LCTs

- 1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012
- 2- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
- 3- Amy J. et al. Nutrition in clinical practice, 2013

Nutritional Counselling Strategy



- Small, frequent feedings (n°5→6/day)
- Low fat intake (<25% of total kcal – 25-35g/day)
- High in complex carbohydrates
- Limit foods that contain LCTs
- Supplementary feedings containing MCTs (8.3 kcal/g)
- Flavorings can be added to enhance palatability
- Limit the intake of simple CHO (if diabetes)

Deficiency
Steatorrhea: vit. A D E K, weigh loss, vit B12 e folic acid

- Adequacy**
25-35 kcal/kg/day
1,2-1,5g protein/kg/day
- 1- Escott-Stump S. et al. Nutrition and Diagnosis-related Care. American Dietetic Association, 2012
 - 2- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 - 3- Amy J. et al. Nutrition in clinical practice, 2013

British Journal of Cancer (2004) 90, 1905–1911
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www.bjcancer.com

Do patients with weight loss have a worse outcome when undergoing chemotherapy for lung cancers?

PJ Ross¹, S Ashley¹, A Norcan¹, K Priest¹, JS Waters¹, T Eisen¹, IE Smith¹ and MER O'Brien*¹
¹Lung Unit, Royal Marsden Hospital, Downs Road, Sutton SM2 3PT, UK

Table 2 (a) Completion of at least three cycles of chemotherapy and its relationship to weight loss, and (b) relationship between cessation of chemotherapy due to toxicity and weight loss

	No weight loss		Weight loss		P
	Number	Percentage	Number	Percentage	
(a)					
SCLC	100	84	131	77	0.1
NSCLC	135	78	155	64	0.003
Mesothelioma	14	72	29	53	0.05
(b)					
All patients	24	8	32	7	0.7
SCLC	3	3	8	5	0.5
NSCLC	18	10	18	7	0.3
Mesothelioma	3	18	6	11	0.4

Lung Cancers

Divieto di riproduzione, utilizzo e diffusione anche parziale

The Effect of Nutrition Intervention in Lung Cancer Patients Undergoing Chemotherapy and/or Radiotherapy: A Systematic Review

Nicole K. Kiss and Meinir Krishnasamy

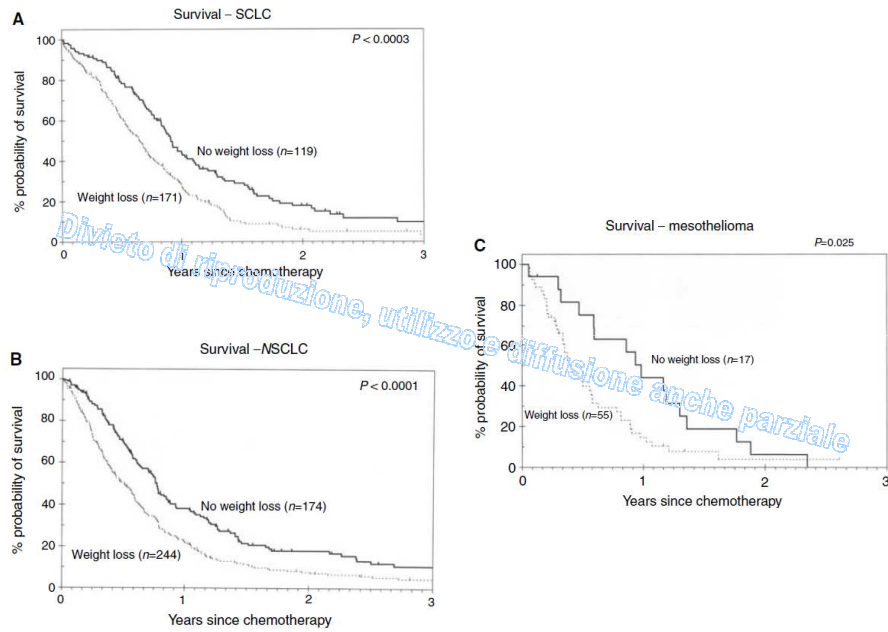
Department of Cancer Experiences Research, Peter MacCallum Cancer Centre, Melbourne, Australia; and Faculty of Medicine, Dentistry and Health Sciences, Melbourne School of Health Sciences, The University of Melbourne, Melbourne, Victoria, Australia

Elisabeth A. Isenring

Centre for Dietetics Research, School of Human Movement Studies, The University of Queensland, Brisbane, Australia; and Princess Alexandra Hospital, Department of Nutrition and Dietetics, Queensland Health, Brisbane, Australia

“These studies suggest dietary counseling improves energy and protein intake during chemotherapy in patients with lung cancer but has no benefit to other outcomes during chemotherapy.”

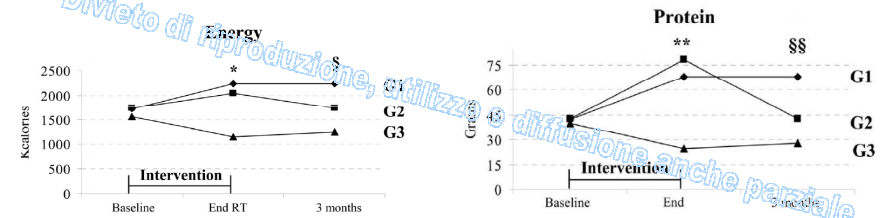
“Randomized trials examining dietary counseling in patients with lung cancer during radiotherapy ARE REQUIRED.”



Ross PJ et al. *British Journal of Cancer*, 2004

IMPACT OF NUTRITION ON OUTCOME: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL IN PATIENTS WITH HEAD AND NECK CANCER UNDERGOING RADIOTHERAPY

Paula Ravasco, MD,¹ Isabel Monteiro-Grillo, MD, PhD,^{1,2}
 Pedro Marques Vidal, MD, PhD,¹ Maria Ermelinda Camilo, MD, PhD¹



During RT, nutritional interventions positively influenced outcomes, and counseling was of similar/higher benefit; in the medium term, only counseling exerted a significant impact on patient outcomes.

Divieto di riproduzione, utilizzo e diffusione anche parziale
Head & Neck Cancers
 Divieto di riproduzione, utilizzo e diffusione anche parziale

PRETREATMENT NUTRITIONAL STATUS AND LOCOREGIONAL FAILURE IN PATIENTS WITH HEAD AND NECK CANCER UNDERGOING DEFINITIVE CONCURRENT CHEMORADIATION THERAPY

Mary E. Platek, PhD,¹ Mary E. Reid, PhD,² Gregory E. Wilding, PhD,³ Wainwright Jaggernauth, MD,^{4,5} Nestor R. Rigual, MD,⁶ Wesley L. Hicks Jr, MD, DDS,⁶ Saurin R. Popat, MD,⁶ Graham W. Warren, MD,⁴ Maureen Sullivan, DDS,⁷ Wade L. Thorstad, MD,⁸ Mohammed K. Khan, MD, PhD,⁴ Thom R. Loree, MD,⁶ Anurag K. Singh, MD⁴

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² Departments of Medicine and Cancer Prevention, Roswell Park Cancer Institute, Buffalo, New York

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⁴ Department of Radiation Medicine, Roswell Park Cancer Institute, Buffalo, New York

⁵ Department of Radiation Oncology, Toledo Radiation Oncology, Toledo, Ohio

⁶ Department of Radiation Oncology, Toledo Radiation Oncology, Toledo, Ohio

Table 4. Risk of treatment failure by selected exposures

Exposure	Locoregional failure: Yes/No	Crude OR (95% CI)	Adjusted OR (95% CI)
Pretreatment percentage IBW			
≥90%	8/54	1.00	1.00
<90%	7/9	5.25 (1.53–18.06) <i>p</i> < .01	4.35 (1.05–18.0) <i>p</i> = .04*
RT duration, days			
≤56	8/56	1.00	1.00
≥57	7/7	7.00 (1.94–25.26) <i>p</i> < .01	8.25 (1.75–39.04) <i>p</i> < .01†
Pretreatment hemoglobin, g/dL			
≥12 (females), 14 (males)	4/36	1.00	1.00
<12 (females), 14 (males)	11/27	3.67 (1.05–12.78) <i>p</i> = .04	2.09 (0.52–8.36) <i>p</i> = .30†

Abbreviations: IBW, ideal body weight; g/dL, grams per deciliter; OR, odds ratio; CI, confidence interval; RT, radiation therapy.

*Odds ratio was adjusted by age, pretreatment hemoglobin, and treatment duration.

†Odds ratio was adjusted by age, pretreatment hemoglobin, and pretreatment percentage of IBW.

‡Odds ratio was adjusted by age, pretreatment percentage of IBW, and treatment duration.

Head & Neck, 2011

RELATIONSHIP OF PROTEIN AND CALORIE INTAKE TO THE SEVERITY OF ORAL MUCOSITIS IN PATIENTS WITH HEAD AND NECK CANCER RECEIVING RADIATION THERAPY

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Accepted 22 February 2011

Published online 20 June 2011 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/hed.21795

Head & Neck, 2012

Table 4. Adjusted odds of mucositis being less severe among patients meeting calorie and protein goals relative to patients not meeting goals.

	Odds ratio	Lower 95% confidence limit	Upper 95% confidence limit	<i>p</i> value
Met goal current week				
Calories	1.80	0.76	4.29	.18
Protein	2.49	1.42	4.36	.002
Calories and protein	1.49	0.70	3.14	.30
Met goal previous week				
Calories	1.15	0.48	2.78	.76
Protein	2.73	1.50	5.15	.001
Calories and protein	1.80	0.83	4.08	.16
Met goal current and previous week				
Calories	1.71	0.57	5.10	.34
Protein	5.26	2.78	9.97	<.0001
Calories and protein	3.38	1.43	8.04	.006

Patients who met protein-related goals during radiotherapy for head and neck cancer had less severe oral mucositis.

Nutritional counseling during radiotherapy, with emphasis on protein goals, may reduce oral mucositis severity.

Zahl KL et al. Head & Neck, 2012

Evidence based practice guidelines for the nutritional management of adult patients with head and neck cancer

Information on authorship and revision	
First published:	April 2011
Page last modified:	6 June 2014 - 04:49:15
Author(s):	Merran Findlay (Project Director), A/Prof Judy Bauer (Project Director), Teresa Brown (Project Dietitian) Wendy Davidson, Jan Hill, Dr Elisabeth Isenring, Bella Taiwar, Katherine Bell, Nicole Kiss, Rochelle Kurmis, Jenelle Loeliger, Ashley Sandison, Kelly Taylor



Evidence based practice guidelines for the nutritional management of adult patients with head and neck cancer

During radiotherapy and chemotherapy

Does nutrition intervention improve outcomes?

Recommendation	Grade
Nutrition intervention (dietary counselling and/or supplements) improves/maintains nutritional status.	A
Nutrition intervention (dietary counselling and/or supplements and/or tube feeding) improves patient-centred outcomes (quality of life, physical function and patient satisfaction).	B
Tube feeding can improve protein and energy intake when oral intake is inadequate.	B



Review

Effect of nutritional interventions on nutritional status, quality of life and mortality in patients with head and neck cancer receiving (chemo)radiotherapy: a systematic review[☆]



Jacqueline A.E. Langius^{a,*}, Myrna C. Zandbergen^c, Simone E.J. Eerenstein^b, Maurits W. van Tulder^c, C. René Leemans^b, Mark H.H. Kramer^d, Peter J.M. Weijs^a

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^d Department of Internal Medicine, VU University Medical Center Amsterdam, PO Box 7057, 1007 MB Amsterdam, The Netherlands

Conclusions: This review shows beneficial effects of individualized dietary counseling on nutritional status and QoL, compared to no counseling or standard nutritional advice. Effects of ONS and tube feeding were inconsistent.

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Nutritional Counselling Strategy

Thickness (liquid → solid)
 Viscosity
 Cohesion
 Smooth

Thickener - Thinner - Lubricant

Taste - Flavour

Temperature

Colour

Kcal & protein density



Taste & Smell Alterations

Taste Alteration in Cancer Patients

High prevalences of taste disorders have been reported - range 46%-77%¹

Presence of a metallic aftertaste, sensitivity and insensitivity to sweetness, and intolerance to bitterness²⁻³



The likelihood of experiencing a taste abnormality was found to increase with disease advancement, but not with histological type of neoplasm⁴



Alterations in the perceived taste of food a major cause of food aversion, resulting in decreased energy intake⁵

- 1- Bernhardson B-M et al. Support Care Cancer, 2008.
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- 3- Grant, M., Kravits K. Seminars in Oncology Nursing, 2000

- 4-Trant, A.S. Et All. Am J Clin Nutr 1982
- 5- Epstein JB, Oral Oncology, 2010.

Taste Disorders - Chemotherapy

36-75% of patients receiving chemotherapy¹⁻²



The chemotherapeutic agents most commonly associated with taste changes include carboplatin, cisplatin, cyclophosphamide, doxorubicin, 5-fluorouracil, levamisole, methotrexate and paclitaxel³⁻⁴

Cisplatin and doxorubicin were most often reported as being associated with severe taste changes⁵

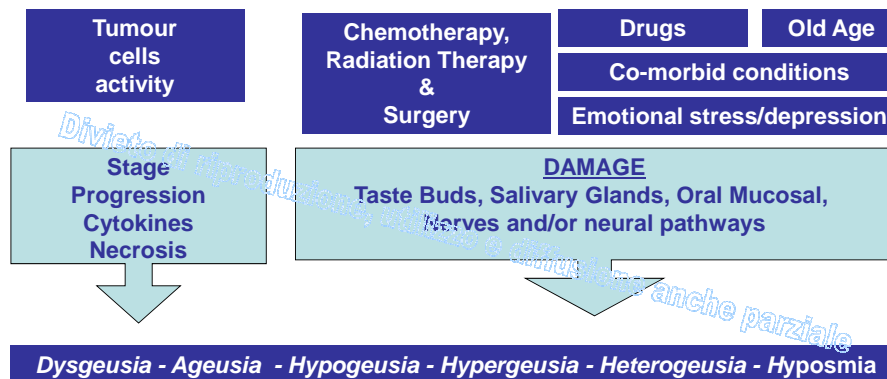
Kind of taste disorders: ↑ sourness e saltiness - metallic taste³⁻⁴

Length: hours, days, weeks and months³⁻⁴



- 1- Berteretche, M.V. Supportive Care in Cancer, 2004
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- 3- Comeau T.B. Support Care Cancer, 2001
- 4- Grant B. American Dietetic Association, 2006
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Pathogenesis



- 1- Epstein JB. Oral Oncology, 2010.
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- 3- Zabernigg A. et al. The oncologist, 2010
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- 5- Berteretche MV. Support Care Cancer, 2004
- 6- Comeau TB et al. Support Care Cancer, 2001

Original Article

Chemosensory Dysfunction Is a Primary Factor in the Evolution of Declining Nutritional Status and Quality of Life in Patients With Advanced Cancer

Joanne L. Hutton, RD, MSc, Vickie E. Baracos, PhD, and Wendy V. Wismer, PhD
Department of Agricultural Food & Nutritional Science (J.L.H., V.E.B., W.V.W.), and Department of Oncology (V.E.B.), University of Alberta, Edmonton, Alberta, Canada

Table 3
Nutrient Intake, Weight Loss, and BMI By Chemosensory Complaint Group

Nutritional Indices	Chemosensory Complaint Group								P-value	P-value ^d	
	Insignificant, n = 17		Mild, n = 15		Moderate, n = 18		Severe, n = 16				
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
Energy intake											
kcal/day	2,175	714	1,822	666	1,734	770	1,272	603	0.0050	1.2 > 4	—
kcal/kg BW/day	30.8	10.0	27.4	11.0	25.9	11.2	19.3	8.7	0.0192	1.2 > 4	—
Protein intake											
g/day			71	19	66	30	49	27	0.0051	1.2 > 4	0.8091 (NS)
g/kg BW/day	1.2	0.4	1.1	0.4	1.0	0.5	0.7	0.4	0.0294	1.2 > 4	0.8430 (NS)
Energy by macronutrient											
Carbohydrate (% kcal)	53.3	7.9	50.7	5.8	57.6	6.7	58.9	6.7	0.0059	3.4 > 1.2	—
Fat (% kcal)	32.6	5.9	33.6	6.5	28.8	5.9	27.2	5.5	0.0190	1.2 > 3.4	—
Protein (% kcal)	15.5	2.6	16.7	2.9	15.0	2.8	15.2	3.2	0.3403	(NS)	—
Age	67.9	11.3	67.5	13.5	67.1	12.3	58.4	10.9	0.1006	(NS)	—
Weight loss ^{a,b}	2.3	3.1	8.5	0.0	7.1	5.2	10.0	11.7	0.0372	(NS)	—
BMI	23.8	7.4	24.7	5.9	24.1	5.5	24.4	5.1	0.8202	(NS)	—

SD = standard deviation; kcal = kilocalories; BW = body weight; NS = not significant at $\alpha = 0.05$.
Study participants stratified by self-assessed chemosensory complaint score, where insignificant = 0, mild = 2–4, moderate = 5–9, and severe = 10–16.
^aStatistical model adjusted for energy intake.
^bPercent weight loss over previous 6 months.

1- Hutton JL. J. Pain Sympt Manag, 2007

Table 4
Global and Subscale Measures of Quality of Life Generated Using the FAACT Instrument by Chemosensory Complaint Group

Quality-of-Life Subscale	Chemosensory Complaint Group								P-value	
	Insignificant, n = 17		Mild, n = 15		Moderate, n = 18		Severe, n = 16			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Global quality of life	116	19	95	17	95	19	93	16	0.0022	
Physical well-being	23	5	20	4	18	6	14	6	0.0015	
Functional well-being	17	6	14	4	17	7	17	6	0.6249	
Social/family well-being	21	4	21	4	20	5	22	5	0.2905	
Emotional well-being	18	5	16	6	15	5	17	4	0.1299	
Anorexia-cachexia-related	38	6	34	5	31	9	28	8	0.0004	
Nutritional well-being										

FAACT = Functional Assessment of Anorexia/Cachexia Therapy.
Study participants stratified by self-assessed chemosensory complaint score, where insignificant = 0, mild = 2–4, moderate = 5–9, and severe = 10–16.

1- Hutton JL. J. Pain Sympt Manag, 2007

The Oncologist

CME: The Oncologist CME Program is located online at <http://cme.theoncologist.com/>. To take the CME activity related to this article, you must be a registered user.

Symptom Management and Supportive Care

Taste Alterations in Cancer Patients Receiving Chemotherapy: A Neglected Side Effect

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GEORG KEMMLER,^b KLAUS GATTRINGER,^a BARBARA SPERNER-UNTERWEGER,^b BERNHARD HOLZNER^b

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Table 2. Prevalence of taste alterations in different diagnostic groups

	Taste alteration			
	None	Mild	Moderate	Severe
Pancreatic cancer	58.9%	28.9%	9.3%	2.8%
Lung cancer	58.6%	25.1%	8.9%	7.5%
Colorectal cancer	49.6%	25.4%	12.3%	12.7%

Percentages refer to total number of assessment times (n = 1,024).

Colorectal cancer patients show stronger taste alterations than both lung cancer patients (6.7-point difference; $p .003$) and pancreatic cancer patients (9.2-point difference; $p .001$)

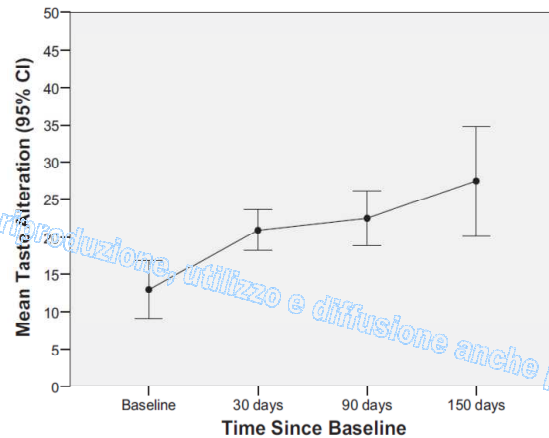


Figure 1. Course of taste alterations over time. Abbreviations: CI, confidence interval.

Taste alterations increased significantly (1.5 points per month; p .009) with time since study enrollment.

Zabernigg A. *The Oncologist*, 2010

Table 3. Mixed-effect model for multivariate prediction of taste alterations

Parameter	β	SE	t/F	p
Intercept	-0.9	4.2	-0.22	.829
Age, yrs	-0.653	0.098	-6.66	<.001
Time since study inclusion, days	0.058	0.020	2.89	.004
Nicotine abuse			21.235	<.001
No	12.8	2.8	4.61	<.001
Yes	0			
Chemotherapy regimen			4.550	<.001
Platinum agent plus etoposide	10.8	5.6	1.93	.054
FOLFOX	12.3	4.2	2.90	.004
Gemcitabine	10.7	4.3	2.51	.012
Gemcitabine plus capecitabine	7.9	5.4	1.47	.141
Vinorelbine	2.7	6.6	0.41	.677
Vinorelbine plus a platinum agent	7.2	4.1	1.76	.080
Irinotecan	39.5	7.2	5.52	<.001
Other regimen	12.5	4.7	2.65	.008
Gemcitabine plus a platinum agent	0			

For calculating adjusted estimates for mean taste alterations with different chemotherapy regimens, age and time since study inclusion were set to their respective mean and nicotine abuse was set to "no."
Abbreviations: FOLFOX, 5-fluorouracil, leucovorin, and oxaliplatin; SE, standard error.

Zabernigg A. *The Oncologist*, 2010

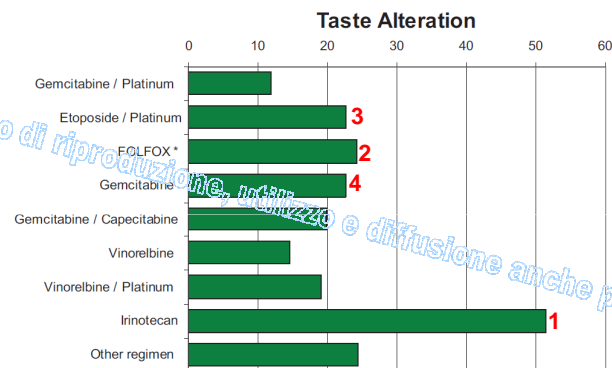


Figure 2. Adjusted means for taste alterations with various chemotherapy regimens (adjusted to mean age, mean time since study inclusion, no nicotine abuse). Abbreviation: FOLFOX, 5-fluorouracil, leucovorin, and oxaliplatin.

Zabernigg A. *The Oncologist*, 2010

Taste alterations are significantly associated with a reduction in various aspects of QOL.

The strongest correlations found for taste alterations were with appetite loss (r 0.33), fatigue (r 0.40), nausea/vomiting (r 0.35), and cognitive functioning (r 0.37).

Correlations between taste alterations and all other EORTC QLQC30 scales were 0.35.

All correlations were significant at p 0.001.

Zabernigg A. *The Oncologist*, 2010

Management of taste alterations: behaviour strategy

- Choose foods that look and smell good.
- Extend dietary choice (protein, energy)
- Marinate foods.
- Try tart foods and drinks (oranges, lemonade). Not Use if sore mouth or sore throat.
- Strong taste vs not strong taste



- Make foods sweeter. If foods have a salty, bitter, or acid taste, adding sugar or sweetener to make them sweeter might help.

- Add extra flavor to your foods (herbs, sauces, spices)

- Eat with plastic forks and spoons if metal taste



- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 - Farmer GA. The American Dietetic Association, 1994.
 - Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Management of smell alterations: behaviour strategy

Avoid foods and drinks with smells that bother you.

Reduce food smells:

- Serve foods at room temperature
- Keep foods covered
- Drink through a straw
- Use a kitchen fan when cooking
- Cook outdoors
- When cooking, lift lids away from you



- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 - Farmer GA. The American Dietetic Association, 1994.
 - Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Management of dry mouth: behaviour strategy

- Sip water throughout the day
- Have very sweet or tart foods and drinks
- Chew gums or suck on hard candy, popples, and ice chips
- Eat foods easy to swallow
- Moisten food with sauce, gravy or dressing
- Do not drink beer, wine, or any type of alcohol
- Avoid foods that can hurt your mouth (spicy, sour, salty, hard or crunchy foods)



- Nutrition for the Person with Cancer: A Guide for Patients and Families. American Cancer Society, 2000.
 - Farmer GA. The American Dietetic Association, 1994.
 - Eating Hints for Cancer Patients: Before, During, and After Treatment, National Cancer Institute, 2011

Take Home Messages

- Cancer-related weight loss and tolerance to antineoplastic therapies, QoL and prognosis of patients
- Nutritional counselling and the improvement of nutritional intake, nutritional status, outcome e QoL
- Nutrition counselling and post surgery complication, chemotherapy / radiotherapy toxicity
- Intensive individualized nutritional counseling requires nutrition professionals with specific experience in oncology
- Research



“Il piacere della tavola è di tutte le età, di tutte le condizioni sociali, di tutti i paesi e di tutti i giorni; può associarsi a tutti gli altri piaceri, e resta ultimo a consolarcì della loro perdita.”

*Antoine Brillant-Savarin.
Physiologie du Goût - Méditations de Gastronomie
Transcendante, 1825*

Grazie

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