FONDAZIONE IRCCS
ISTITUTO NAZIONALE
DEI TUMORI

Dr.ssa Cecilia Gavazzi
Struttura Dipartimentale
Nutrizione Clinica

LA TERAPIA NUTRIZIONALE, DAL COUNSELING ALLA NUTRIZIONE ARTIFICIALE

Dichiarazione sul conflitto di interessi

- Relazioni indipendenti ad eventi educazionali/scientifici organizzati da industrie di prodotti nutrizionali.
- Nessun rapporto con soggetti portatori di interessi commercialiche possono influenzare il contenuto della mia relazione odierna.

Finalità della Terapia Nutrizionale nel paziente oncologico:

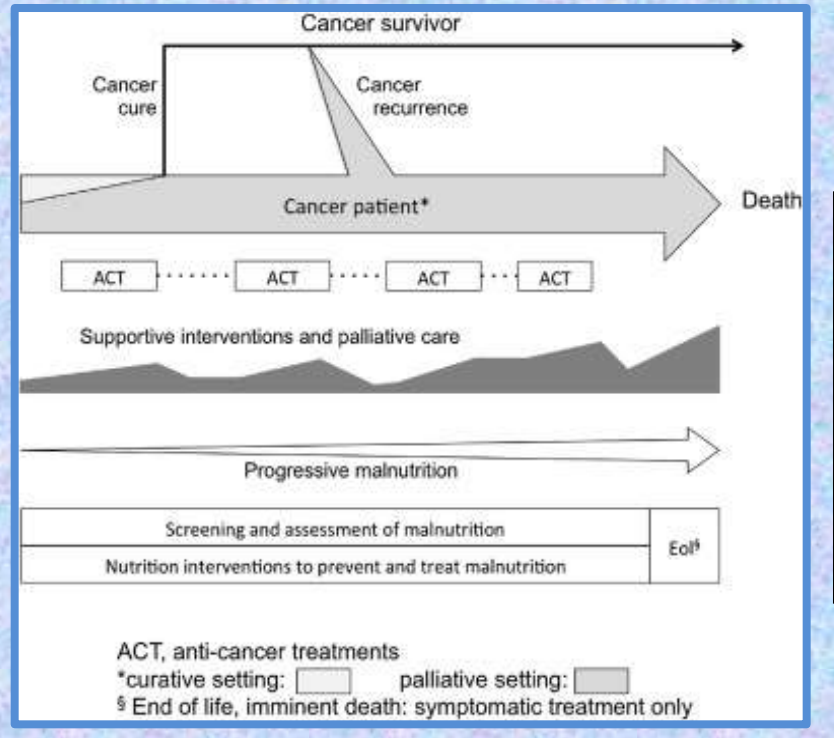
- ✓ prevenire - trattare la malnutrizione
- ✓ migliorare la tolleranza alla terapia antitumorale
- ✓ migliorare la qualità di vita

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients☆

Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Clinical Nutrition, Volume 36, Issue 1, 2017

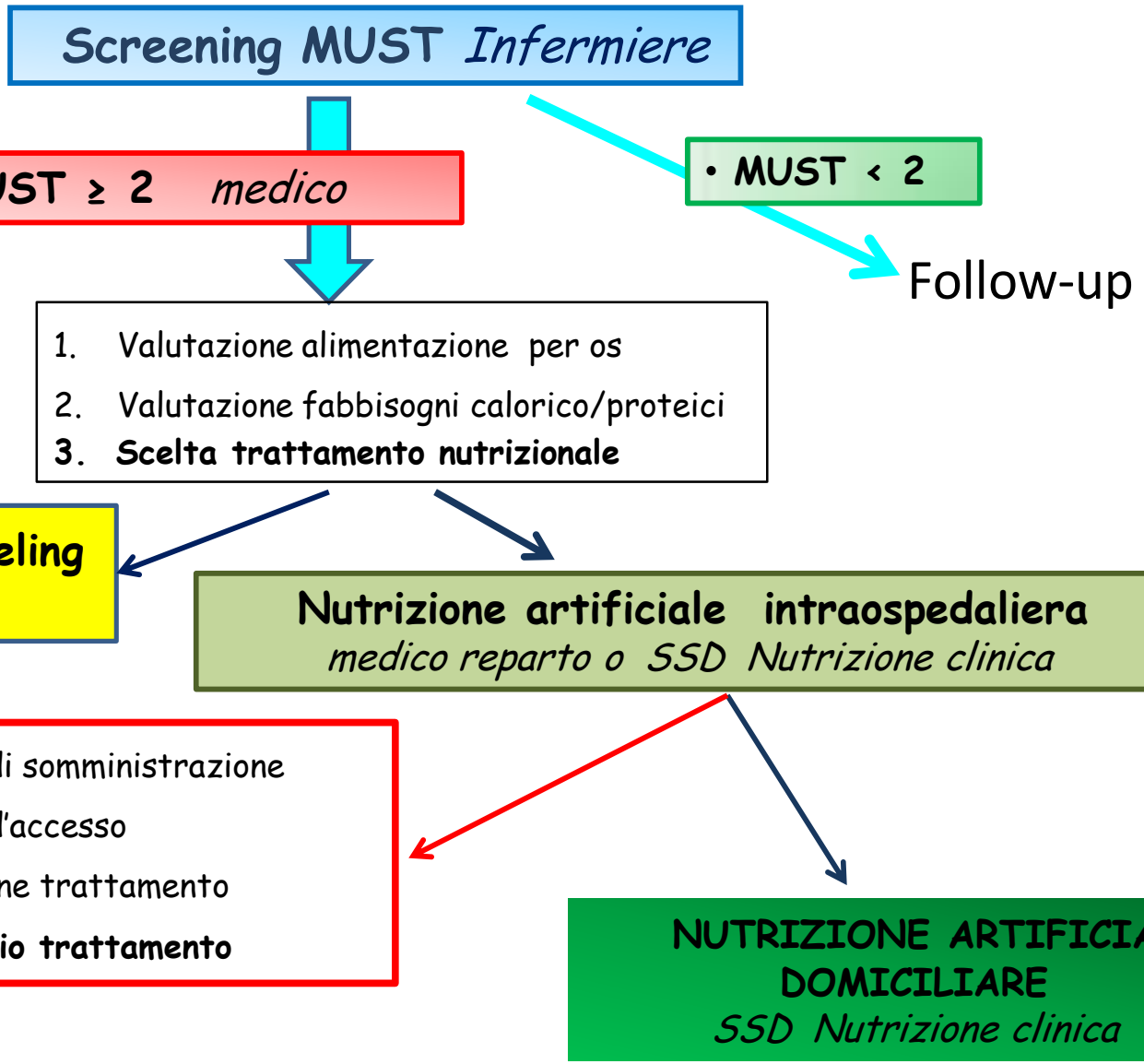


A3. Aims of nutrition therapy

7: Nutrition and metabolic interventions aim to maintain or improve food intake and mitigate metabolic derangements, maintain skeletal muscle mass and physical performance, reduce the risk of reductions or interruptions of scheduled anticancer treatments, and improve quality of life.

Fig. 1. Disease trajectories of cancer patients and survivors. Cancer recurrence in survivors usually results in incurable disease. During disease progression and repeated treatment cycles requirement for supportive and palliative care will vary.

Intervento Nutrizionale



Fabbisogni Macro e Micronutrienti

25 – 30 Kcal/Kg peso/die

B2 – 1	Energy requirements
Strength of recommendation STRONG	*We recommend, that total energy expenditure of cancer patients, if not measured individually, be assumed to be similar to healthy subjects and generally ranging between 25 and 30 kcal/kg/day.*
Level of evidence	Low
Questions for research	improve prediction of energy requirements in the individual patient

1-2 g /Kg peso/die

B2 – 2	Protein requirement
Strength of recommendation STRONG	*We recommend that protein intake should be above 1 g/kg/day and, if possible up to 1.5 g/kg/day*
Level of evidence	Moderate
Questions for research	effect on clinical outcome of increased supply (1–2 g/kg/day) and composition of protein/amino acids

Vitamine e oligoelementi secondo RDA

B2 – 4	Vitamins and trace elements
Strength of recommendation STRONG	*We recommend that vitamins and minerals be supplied in amounts approximately equal to the RDA and discourage the use of high-dose micronutrients in the absence of specific deficiencies.*
Level of evidence	Low
Questions for research	Assessment of micronutrient status in cancer patients and effect of supplementation

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients*

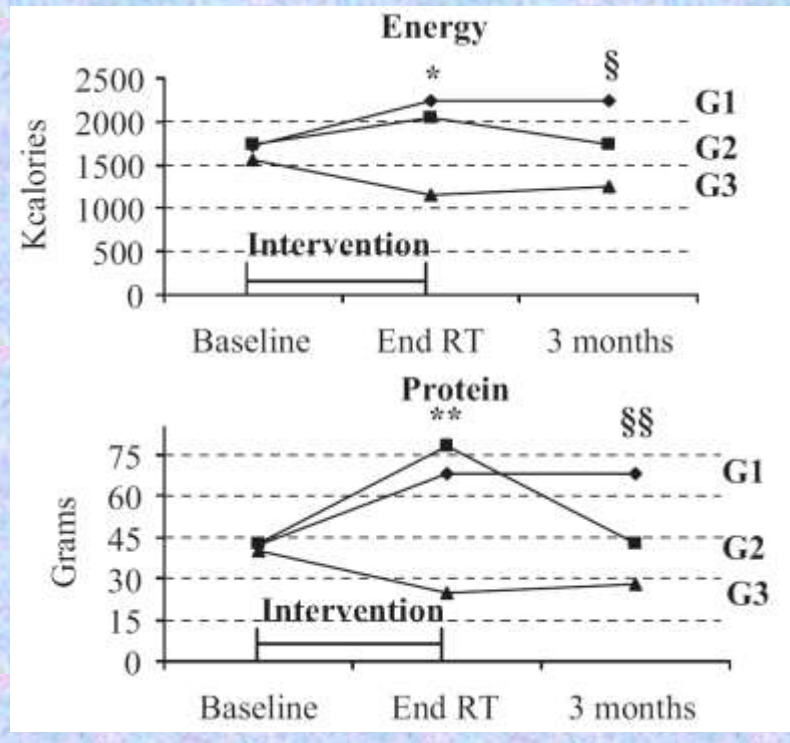
Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Counseling

✓Molto richiesto da paziente e parenti
✓ Necessita di dietista specializzata e tempo dedicato
✓Risultati dipendenti dalla compliance del paziente, limitati da patofisiologia
✓ Risultati durevoli nel tempo

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, PhD[1]



Section B3 Nutrition interventions

B3 – 1	Efficacy of nutritional intervention
Strength of recommendation STRONG	*We recommend nutritional intervention to increase oral intake in cancer patients who are able to eat but are malnourished or at risk of malnutrition. This includes dietary advice, the treatment of symptoms and derangements impairing food intake (nutrition impact symptoms), and offering oral nutritional supplements.*
Level of evidence	Moderate
Questions for research	effect of dietary advice and ONS on clinical outcome

Counseling nutrizionale

- ✓ Dietista
- ✓ Alimenti e bevande naturali
- ✓ Piano dietetico individualizzato
- ✓ Follow-up regolare e frequente
- ✓ Adattamento continuo del piano dietetico

Adeguato intake alimentare
Mantenimento del peso corporeo

Nutrition 31 (2015) 603–604

Contents lists available at ScienceDirect

Nutrition

journal homepage: www.nutritionjrnl.com

Special article

Nutritional approaches in cancer: Relevance of individualized counseling and supplementation

Paula Ravasco M.Sc., R.D., M.D., Ph.D. *

Laboratório de Nutrição of the Faculdade de Medicina de Lisboa and Hospital Universitário de Santa Maria, Lisboa, Portugal

Intensive individualized nutritional counseling requires nutrition professionals with specific experience in oncology. If the patient is unable to achieve his or her nutritional requirements via regular foods, nutritional supplements may be prescribed, the composition of which is based on detection of dietary deficits as well as a detailed intake questionnaire. Any nutritional interventio must be based on the need for an adequate intake and also must take into consideration other relevant factors such as digestive and absorptive capacity, the need for alleviation or arrest of symptoms, and any psychological issues.

Esigenze cliniche:
- Stato nutrizionale
- Fabbisogni
- Sede di malattia
- Terapia oncologica

Esigenze personali:
- Abitudini alimentari
- Condizioni familiari
- Condizioni socio-economiche

THE OFFICIAL JOURNAL OF THE BRITISH DIETETIC ASSOCIATION

Journal of Human Nutrition and Dietetics

Simple nutritional intervention in patients with advanced cancers of the gastrointestinal tract, non-small cell lung cancers or mesothelioma and weight loss receiving chemotherapy: a randomised controlled trial

C. Baldwin,*† A. Spiro,* C. McGough,* A. R. Norman,‡ A. Gillbanks,* K. Thomas,‡ D. Cunningham,* M. O'Brien* & H. J. N. Andreyev*

*Department of Medicine Royal Marsden Hospital, London and Sutton, UK
†Diabetes and Nutritional Sciences Division, School of Medicine, King's College London, London, UK
‡Department of Computing, Royal Marsden Hospital, London and Sutton, UK

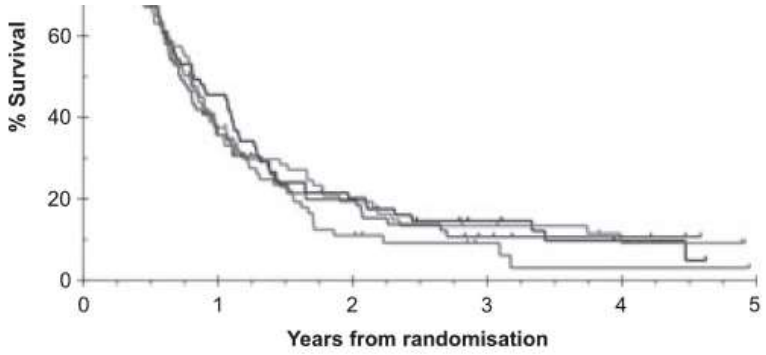


Figure 2 Percentage survival according to group allocation.

358 pazienti, 277 GI cancer
Randomizzati in 4 gruppi (controllo, counseling, supplementi, counseling + supplementi)
Non differenza significativa sulla sopravvivenza con il solo intervento dietetico, necessaria un'integrazione con Nutrizione Artificiale dove indicata

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients☆

Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Clinical Nutrition, Volume 36, Issue 1, 2017

B3 – 2	Potentially harmful diets
Strength of recommendation STRONG	*We recommend to not use dietary provisions that restrict energy intake in patients with or at risk of malnutrition.*
Level of evidence	Low
Questions for research	Effects of fasting or fasting mimicking diets on wanted and unwanted effects of anticancer agents

Sconsigliate diete restrittive

B3 – 3	Modes of nutrition: when to escalate
Strength of recommendation STRONG	*If a decision has been made to feed a patient, we recommend enteral nutrition if oral nutrition remains inadequate despite nutritional interventions (counselling, ONS), and parenteral nutrition if enteral nutrition is not sufficient or feasible.*
Level of evidence	Moderate
Questions for research	effect of EN or PN or combinations on clinical outcome in patients with inadequate food intake

Nutrizione artificiale

Intervento Nutrizionale

Screening MUST *Infermiere*

- **MUST ≥ 2** *medico*
- **MUST < 2**

Follow-up

1. Valutazione alimentazione per os
2. Valutazione fabbisogni calorico/proteici
3. **Scelta trattamento nutrizionale**

Nutritional counseling
dietista

Nutrizione artificiale intraospedaliera
medico reparto o SSD Nutrizione clinica

1. Scelta via di somministrazione
2. Scelta via d'accesso
3. Impostazione trattamento
4. **Monitoraggio trattamento**

NUTRIZIONE ARTIFICIALE DOMICILIARE
SSD Nutrizione clinica

Parenterale o Enterale?

Criteri per nutrizione enterale vs parenterale

Intestino funzionante?

SI'
Nutrizione Enterale

- Ostruzione neoplastica del distretto testa-collo
- Occlusione neoplastica del tratto gastroenterico superiore
- Disfagia (iatrogena, neurologica)

Non funzionante:
Nutrizione Parenterale

- Insufficienza intestinale con malassorbimento grave **HD CT – GVHD – diarrea G4**
- Occlusione, sub-occlusione intestinale: **carcinosi peritoneale – enterite post-attinica**
- Sindrome da Intestino corto : **post-resezioni chirurgiche**
- Fistola ad elevato output: **intestinale – linfatica**
- NE insufficiente a coprire fabbisogni

SINPE ESPEN Guidelines

10: Nutrition, and especially artificial nutrition, are associated with **risks, burdens, and costs** that need to be weighed against the expected benefits, with the knowledge and consent of the patient. In advanced cancer, the expected benefits of nutrition therapy

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients☆

Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Rischi e benefici della Nutrizione Artificiale

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients☆

Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Clinical Nutrition, Volume 36, Issue 1, 2017

B3 – 4	Refeeding syndrome
Strength of recommendation STRONG	*If oral food intake has been decreased severely for a prolonged period of time, we recommend to increase (oral, enteral or parenteral) nutrition only slowly over several days and to take additional precautions to prevent a refeeding syndrome.*
Level of evidence	Low
Questions for research	Assessment of phosphate, potassium and magnesium levels in malnourished cancer patients and response to artificial feeding

Refeeding syndrome

Quadro clinico

- alterazioni elettrolitiche (ipo K, ipo P, ipo Mg, ipo Ca)
- ritenzione sodio e liquidi
- iperglicemia, glicosuria
- sovraccarico idrico
- scompenso cardio circolatorio
- obnubilamento del sensorio

Cause

- pre-esistente malnutrizione grave
- eccessiva somministraz di liquidi e di glucosio
- carente somministraz di ioni intracellulari
- carente somministraz. di vitamina B1

Original Article

Enteral and parenteral nutrition in cancer patients: a systematic review and meta-analysis

Ronald Chow[1], Eduardo Bruera[2], Leonard Chiu[1], Selina Chow[1], Nicholas Chiu[1], Henry Lam[1], Rachel McDonald[1], Carlo DeAngelis[1], Sherlyn Vuong[1], Vithusha Ganesh[1], Edward Chow[1]

[1]Sunnybrook Odette Cancer Centre, University of Toronto, Toronto, ON, Canada; [2]The University of Texas MD Anderson Cancer Center, Houston, Texas, USA

Ann Palliat Med 2016;5(1):30-41

Results: The literature search yielded 674 articles of which 36 were included for the meta-analysis. There were no difference in the endpoints between the two study interventions except that PN resulted in more infection when compared with EN (RR =1.09, 95% CI: 1.01–1.18; P=0.03).

Conclusions: Other than increased incidence of infection, PN has not resulted in prolonging the survival, increasing nutrition support complications, or major complications when compared with EN in cancer patients.

Rischi : Iperglicemia, infezione degli accessi, aumentata morbidità e mortalità, accanimento terapeutico

Review

Epidemiology of catheter-related infections in adult patients receiving home parenteral nutrition: A systematic review☆

Mira Dreesen[a,*], Veerle Foulon[b], Isabel Spriet[a], Godelieve Alice Goossens[c], Martin Hiele[d], Lutgart De Pourcq[a], Ludo Willems[a]

Clinical Nutrition 2013

Corretta gestione

Review Article Gastroenterology Research and Practice 2011

Hyperglycemia in Hospitalized Patients Receiving Parental Nutrition Is Associated with Increased Morbidity and Mortality: A Review

Puja Rajender Kumar, Pam Crotty, and Maitreyi Raman

Corretto controllo e monitoraggio

Home parenteral nutrition (HTPN) for incurable patients with cancer with gastrointestinal obstruction: do the benefits outweigh the risks?

Irit Chermesh · Tania Mashiach · Amnon Amit · Nissim Haim · Irina Papier · Ruthi Efergan · Jesse Lachter · Rami Eliakim

Med oncol 2011

Corretta indicazione

Review Article Gastroenterology Research and Practice

Hyperglycemia in Hospitalized Patients Receiving Parental Nutrition Is Associated with Increased Morbidity and Mortality: A Review

Puja Rajender Kumar, Pam Crotty, and Maitreyi Raman

Table 1 Adverse outcomes significantly associated with hyperglycemia after adjustment for multiple factors in patients receiving TPN

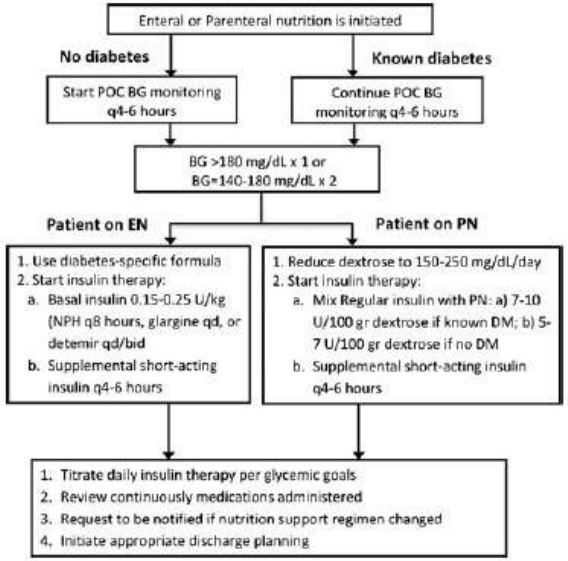
	N	BG level, mg/dL	Odds ratio (95 % CI), $P<0.05$		
			Death	Any infection	Renal failure
Cheung et al. [23]	111	<125 vs >164	10.9 (2.0–60.5)	3.9 (1.2–12.0)	10.9 (1.2–98.1)
Lin et al. [32]	457	<114 vs 137–180	2.3 (1.2–4.5)	2.7 (1.5–4.9)	NS
Pasquel et al. [27]	276	≤120 vs >180	2.8 (1.2–6.8)	3.6* (1.6–8.4)	2.2 (1.02–4.81)
Sarkisian et al. [31]	100	≤180 vs >180	7.22 (1.1–48.3)	NS	NS

*Data reported for pneumonia only

BG blood glucose; *NS* nonsignificant

Management of Hyperglycemia During Enteral and Parenteral Nutrition Therapy

Aidar R. Gosmanov · Guillermo E. Umpierrez Curr Diab Rep (2013) 13:155–162



Glicemia 100 – 140 mg/dL
in corso di Nutrizione Artificiale

Controindicazioni assolute

- *Prognosi inferiore a due mesi**
- *Karnofsky Perfomance status $\subset$ 50*
- *grave insufficienza d'organo*
- *dolore incontrollabile con analgesici*
- *ascite intrattabile*
- *confusione mentale*

*** 3 mesi per francesi: Standards, Options et Recommandations: Nutrition artificielle à domicile du malade cancéreux adulte. Bull Cancer 2001**

ESPEN Guideline

ESPEN guidelines on nutrition in cancer patients☆

Jann Arends [a], Patrick Bachmann [b], Vickie Baracos [c], Nicole Barthelemy [d], Hartmut Bertz [a],

Clinical Nutrition, Volume 36, Issue 1, 2017

Section B4: Exercise training

B4 – 1	Exercise in combination with nutrition
Strength of recommendation STRONG	*We recommend maintenance or an increased level of physical activity in cancer patients to support muscle mass, physical function and metabolic pattern.*
Level of evidence	High
Questions for research	effect of physical activity before, during and after anticancer treatment on clinical outcome, effect of combining an exercise program with nutritional support in curative and palliative settings

B4 – 2	Type of exercise recommended
Strength of recommendation WEAK	*We suggest individualized resistance exercise in addition to aerobic exercise to maintain muscle strength and muscle mass.*
Level of evidence	Low
Questions for research	Differential and combined effects of resistance and endurance exercise on clinical outcome during anticancer therapy, in survivors and as a component of supportive and palliative care

B3 – 5	Home artificial nutrition
Strength of recommendation STRONG	*In patients with chronic insufficient dietary intake and/or uncontrollable malabsorption, we recommend home artificial nutrition (either enteral or parenteral) in suitable patients*
Level of evidence	Low
Questions for research	Effect of long-term EN and PN on clinical outcome

GRAZIE DELL'ATTENZIONE E DELL'OSPITALITÀ!!!!