



EMPOWERING ONCOLOGY CARE: CLINICAL EVIDENCE FOR IMPROVING PATIENT OUTCOMES

TOGETHER YOU & YOUR TEAM CAN MAKE A DIFFERENCE
**KEEP ON STRENGTHENING
THEIR RESILIENCE**

THIS INFORMATION IS INTENDED FOR HEALTHCARE PROFESSIONALS ONLY

All products mentioned are Foods for Special Medical Purposes for the dietary management of disease related malnutrition and must be used under medical supervision. Information is accurate as of April 2024.

**YOUR EXPERT PARTNER IN
NUTRITIONAL CANCER CARE**

EXECUTIVE SUMMARY

Cancer affects millions of people around the world each year and has one of the highest mortality rates globally.¹

Cancer leaves affected patients at very high risk of malnutrition and nutrient deficiencies, as the result of their disease and the treatments they undergo, yet this risk is often missed or insufficiently addressed by clinicians and patients.²



It is estimated that up to 80% of cancer patients will experience malnutrition at some stage during their illness.³



One of the most prevalent nutrition problems experienced by cancer patients is muscle wasting, which occurs commonly regardless of the patients' cancer stage.¹



Low muscle mass occurs in more than half of newly diagnosed cancer patients, and is associated with unfavourable clinical outcomes including reduced quality of life and shorter survival times.^{1,4}

Early and continuous high protein intervention is essential for both malnourished and non-malnourished patients to help maintain nutritional status and prevent post-surgery complications.⁵

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Executive summary

The importance of protein in patients with cancer

Targeted nutritional intervention improves outcomes

Timing - Early nutritional intervention improves outcomes

Taste changes in patients with cancer



**THE IMPORTANCE OF
PROTEIN IN PATIENTS
WITH CANCER**

PROTEIN IN CANCER

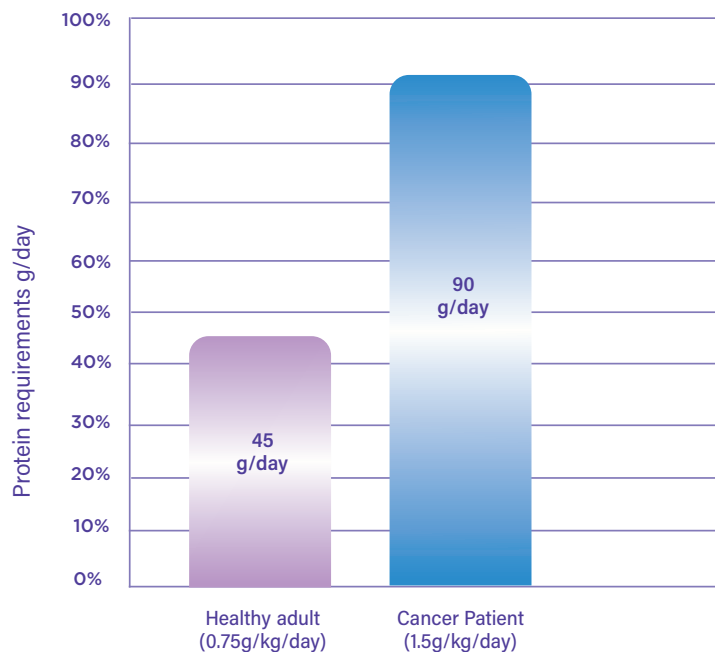
Some cancer patients may have increased protein requirements due to changes to their protein metabolism, meaning their protein stores are broken down faster and their rate of protein synthesis is slower. Without additional protein intake, this can result in muscle loss.⁶

Nutritional deficits that contribute to this problem are preventable and often reversible, with patients who consume more high-quality protein shown to be able to build up their protein stores again. Low muscle mass can happen at any stage of cancer and is associated with poorer tolerance of treatment, increased risk of complications and infections, and poorer survival rates.⁷

Preserving adequate nutritional status and muscle can support outcomes during cancer treatment. Therefore, prompt nutritional support to address energy and protein needs is recommended along the oncology journey.^{2,8}

ESPEN and ESMO recommend protein intake of at least 1.2g/kg/day in all cancer patients, and up to 2g/kg/day when patients are severely depleted.^{2,8}

Increased protein requirement +45g/day: Example in a 60kg adult



**"ESPEN & ESMO
recommend medical
nutrition in cancer care"**



Despite the increased protein requirements, **up to 66%** of cancer patients failed to meet their daily protein recommendations.⁹⁻¹¹

Low protein intake is associated with:

Low muscle mass^{12,13}



Cancer-related fatigue^{11,14}



Poorer survival^{11,15,16}



The role of oral nutritional supplements (ONS) in cancer

Where intake from food is insufficient, oral nutritional supplements can help patients meet their needs.^{2,8}

Specifically, **high protein ONS** have been demonstrated to:



↓ Reduce weight loss and help preserve muscle mass⁵



↑ Tolerance to anti-cancer treatment¹⁷



↑ Improve some quality of life measures^{4,17}



↓ Post-operative complications^{5,18}



↓ Length of hospital stay¹⁸

HIGH PROTEIN ORAL NUTRITIONAL SUPPLEMENTS ENABLE THE MAJORITY OF CANCER PATIENTS TO MEET ESPEN PROTEIN RECOMMENDATIONS DURING SYSTEMIC TREATMENT: RESULTS FROM THE PROTEOS STUDY¹⁹

Dingemans A, et al. Clinical Nutrition ESPEN. 2023;54:493.

COLORECTAL CANCER
LUNG CANCER

HIGH PROTEIN ONS

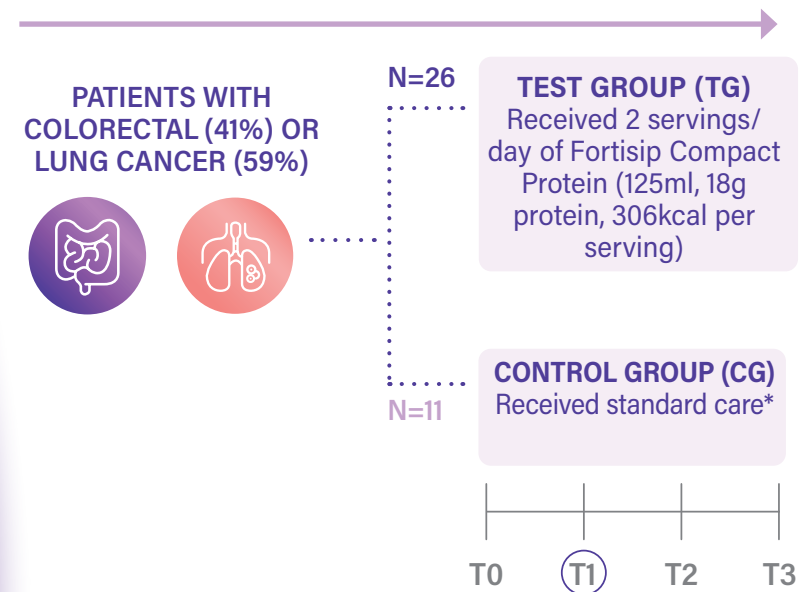
Introduction

This multi-centre, randomised, controlled, open-label, parallel-group study aimed to evaluate whether a low-volume, high-protein oral nutritional supplement (ONS) could make it easier for colorectal and lung cancer patients to meet their recommended protein intake of 1g/kg bodyweight per day while receiving anti-cancer treatment, compared to patients receiving standard nutritional care.

Preliminary analysis initially included 37 patients, but only 29 completed the study.

Study design

First line systematic anti-cancer treatment



*Allowing for any type of nutritional support according to hospital standard practice.

Table 1: Study population.

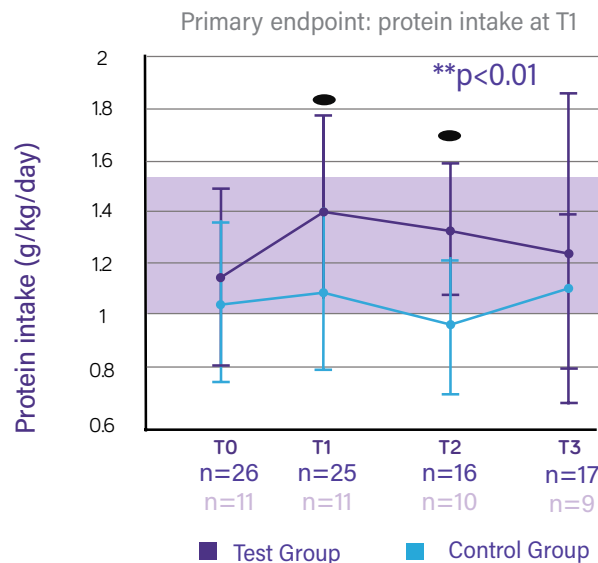
| Subject characteristics at baseline: mean \pm SD or n (%) | TG (n=26) | CG (n=11) |
|---|-----------------|-----------------|
| Sex (male) | 11 (42.3%) | 8 (72.7%) |
| Age (year) | 66.1 \pm 7.8 | 70.1 \pm 8.2 |
| Body mass index (kg/m ²) | 26.2 \pm 3.7 | 27.2 \pm 3.0 |
| Energy intake (kcal/kg/d) | 28.0 \pm 9.1 | 24.5 \pm 7.3 |
| Protein intake (g/kg/d) | 1.12 \pm 0.33 | 1.04 \pm 0.30 |

T0 = baseline T1 = end of 1st treatment cycle T2 = end of 2nd treatment cycle T3 = end of intervention (week 12).

Study results

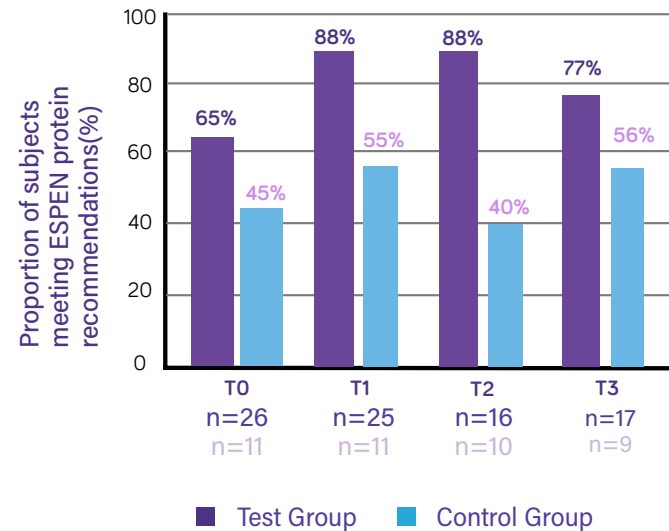


ESPEN recommendation for protein intake: 1.2-1.5g/kg/day



Protein intake was higher in TG and significantly higher at T1 and T2.

A higher proportion of subjects in the TG met minimum ESPEN protein recommendations of 1-1.5g/kg bodyweight/day



Average product compliance during intervention was approximately 73% (i.e., 1.5 serving/day)



Conclusions

- Without specific nutritional support, cancer patients often fail to meet the minimal protein intakes advised by ESPEN guidelines.
- Adequate protein intake is important to prevent nutritional deterioration, to support muscle mass/function and improve outcomes during treatment.^{2,8}
- Twice daily high-protein, low-volume ONS enabled significantly more patients to meet ESPEN protein recommendations.
- In view of the challenges of cancer patients to consume sufficient protein, high protein ONS should be considered early in the patient journey to enable patients to meet recommended intakes.

ESPEN: European Society for Clinical Nutrition and Metabolism; SD: standard deviation.



**TARGETED NUTRITIONAL
INTERVENTION IMPROVES
OUTCOMES**

PREVALENCE AND SURVIVAL IMPACT OF PRE-TREATMENT CANCER-ASSOCIATED WEIGHT LOSS: A TOOL FOR GUIDING EARLY PALLIATIVE CARE²⁰

Gannavarapu S, et al. Journal of Oncology Practice. 2018;14(4):e238-e250.

LUNG CANCER
GI CANCERS

CANCER- ASSOCIATED
WEIGHT LOSS

Introduction

This was a UK retrospective cohort study of >3000 adult patients with lung or gastrointestinal (GI) cancer. Patients were assessed using a tumour registry of patients treated between January 2006 and December 2013 at a single tertiary centre.

Study question: What is the prevalence and survival impact of cancer-associated weight loss at the time of diagnosis and prior to treatment?

Method

Survival was calculated from time of cancer diagnosis to death. The prevalence and survival impact of pre-treatment cancer associated weight loss were evaluated using the Kaplan-Meier method and compared with the log rank test.

Cancer-associated weight loss was assessed using the validated international consensus for cancer cachexia:

| Weight loss | Criteria |
|----------------------------|--|
| Overt weight loss | Unintentional weight loss >5% within 6 months preceding diagnosis in patients with body mass index (BMI) \geq 20 OR >2% in patients with BMI <20 |
| Minimal weight loss | Unintentional weight loss that doesn't reach the threshold for overt weight loss |
| No weight loss | Patients with stable weight, weight gain or purposeful weight loss |

Population characteristics:

- 3,180 consecutively treated adult patients with lung or GI (including colorectal, liver and pancreatic) cancer
- Median age: 62 years
- 57.4% men, 42.6% women
- Multiple tumour sites and stages of cancer represented including **non-small cell lung cancer** (NSCLC; n=1,369), **colorectal** (n=623) and **pancreatic** (n=267) primaries

Study results

Overt weight loss was observed in 34% of patients at cancer diagnosis.

Table 1. Prevalence of overt weight loss by tumour site (n=3,180).

| Tumour site | Prevalence (%) |
|----------------------------|----------------|
| Gastroesophageal | 56.5 |
| Pancreatic | 53.2 |
| Small-cell lung | 38 |
| Non-small cell lung cancer | 30.4 |
| Colorectal | 27.6 |
| Anal | 26.1 |
| Hepatobiliary | 24.3 |

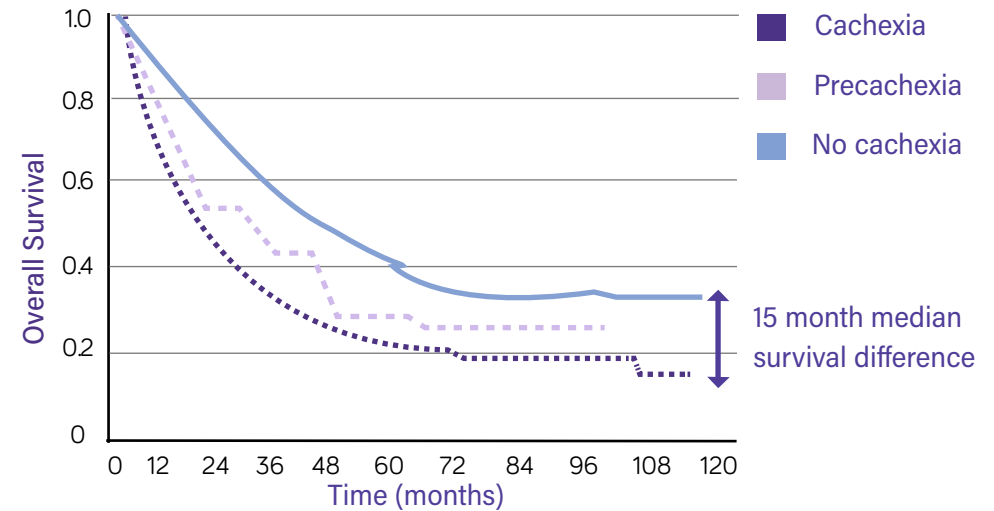
Table 2. Prevalence of overt weight loss by disease stage (n=3,180).

| Disease stage | Prevalence (%) |
|---------------|----------------|
| Stage I | 17.6 |
| Stage II | 25.8 |
| Stage III | 36.6 |
| Stage IV | 43.3 |

Across the entire cohort, weight loss at the time of cancer diagnosis was strongly linked to reduced survival time, even after factors including age, sex, comorbidities, tobacco use, stage, size and grade of cancer were controlled.

Median survival time for patients without weight loss at diagnosis was 28.2 months, compared to 17.5 months for those with minimal weight loss, and 13.6 months for those with overt weight loss at diagnosis.

CI. confidence interval, NSCLC = Non-small-cell lung cancer



Graph 1. Overall survival rates of all patients with lung or GI malignancies.

Table 3. Median survival of patients (months) with no weight loss and with overt weight loss, characterised by tumour site (n=3,180).

| Tumour site | Median survival (months) | |
|------------------|--------------------------|-------------------|
| | No weight loss | Overt weight loss |
| NSCLC | 20.5 | 9.9 |
| Gastroesophageal | 37.9 | 13.9 |
| Hepatobiliary | 25.1 | 7.6 |

The link between cancer-associated weight loss at diagnosis and reduced survival was evident across all types of cancer studied, but was particularly strong in NSCLC, gastroesophageal and hepatobiliary cancers ($p < 0.001$).

Discussion

All patients who experienced weight loss at diagnosis had shorter survival times than those who hadn't lost weight at the time of diagnosis. Patients with overt weight loss saw the greatest reduction in survival. This suggests even minimal weight loss associated with cancer needs to be addressed as early as possible to prevent further muscle and fat wastage, and avoid worsening clinical outcomes in patients.

Conclusions

The presence of early, minimal weight loss alone is predictive of worse survival outcomes across a range of cancer pathologies and even in early-stage disease. These results highlight the need for early detection and intervention for cancer cachexia to improve prognosis.



NUTRITIONAL SUPPORT DURING THE HOSPITAL STAY REDUCES MORTALITY IN PATIENTS WITH DIFFERENT CANCER TYPES: SECONDARY ANALYSIS OF A PROSPECTIVE RANDOMISED TRIAL⁴

Bargetzi L, et al. Annals of Oncology. 2021;32(8):1025-1033.

LUNG CANCER
GI CANCERS

HAEMATOLOGICAL
CANCERS

ONS

Introduction

This study is a secondary analysis of cancer patients included in the EFFORT trial, a prospective, open-label, randomised, controlled multicentre trial conducted across 8 hospitals in Switzerland, which compared the effects of individualised nutritional support to standard hospital food on clinical outcomes in patients with different types of cancer.

Study Design

Intervention: 255 patients received individualised nutritional support to meet energy and protein goals. The plan was based on food fortification, between meal snacks and oral nutritional supplements (ONS). On discharge, patients received dietary counselling and an ONS prescription, if necessary.

Control: 251 patients received standard hospital food with no nutritional counselling or recommendation for additional support.

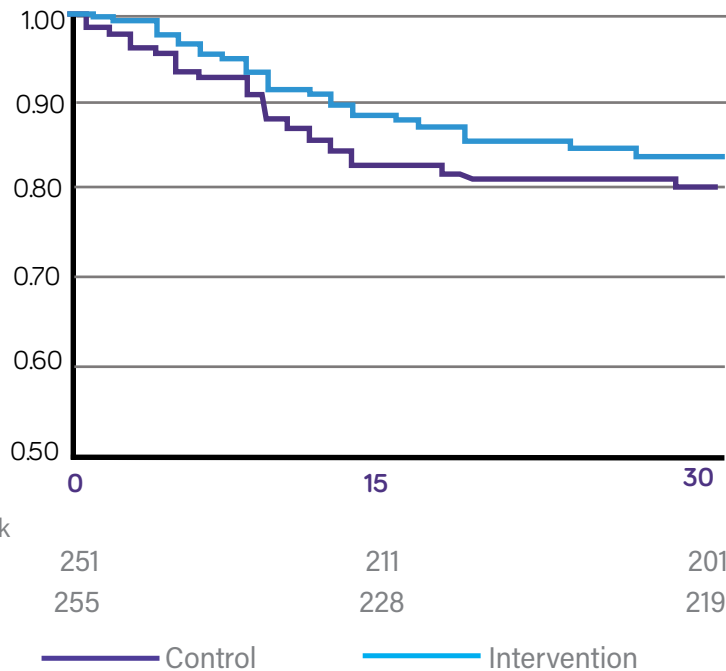
Population Characteristics:

- 506 adult patients with a main admission diagnosis of cancer, including:
 - Lung cancer (n=113)
 - Haematological malignancies (n=108)
 - Gastrointestinal tumours (n=84)
 - Other types of cancer (n=201)
- Patients with increased nutritional risk and expected hospital stay >4 days
- 60.6% of the control group and 57.3% of the intervention group were male
- Mean age of control group = 71.5 years; mean age of intervention group = 69.2 years

Study results

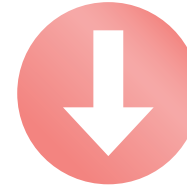
Patients in the intervention group receiving nutritional support had a 5% decrease in mortality over time (19.9% to 14.1%, $p=0.027$), regardless of their cancer type and activity.

Kaplan-Meier survival estimates

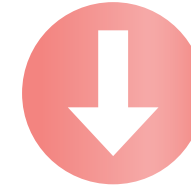


Graph 1. Kaplan-Meier estimates of cumulative incidence of all-cause mortality within 30 days according to randomisation group.

Patients in the intervention group had:



Mortality



Risk of functional decline



Quality of life

- Patients had a higher risk of functional decline in activities of daily living in the control group compared to the intervention group (OR-0.59; 95% CI-0.38-0.93; $p=0.021$).
- Patients receiving individualised nutritional support showed significant improvements in their quality of life scores, measured by the EQ-5D Index, compared to the control group.

Conclusions

Individualised nutritional support reduces the risk of mortality and improves functional and quality of life outcomes in patients with cancer with an increased nutritional risk. This study supports malnutrition screening on admission followed by an individualised nutrition support strategy to meet energy and protein requirements in this vulnerable patient group.

A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE EFFECTS OF COMMUNITY USE OF ORAL NUTRITIONAL SUPPLEMENTS ON CLINICAL OUTCOMES²¹

Cawood A L, et al. Ageing Research Reviews. 2023;88:101953.

DISEASES OF ANY NUTRITIONAL STATUS
ONCOLOGY, FRAILITY AND DRM

ONS

30% OF THE STUDIES IN THIS TRIAL USED A NUTRICIA ONS

40% OF THE STUDIES IN THIS TRIAL WERE CONDUCTED IN CANCER PATIENTS

Introduction

This systematic review and meta-analysis reviewed evidence from 44 randomised control trials analysing the effects of oral nutritional supplements (ONS) in community settings on the incidence of complications. Complications included infections, pressure ulcers, post-operative complications and poor wound and fracture healing.

Study Design

44 studies were conducted in a variety of regions; Europe (n=15), UK (n=11), North and South America (n=4), Asia (n=10), multi-country (n=2) and others (n=2).

Study Characteristics:

- Mean prescribed energy and protein intakes were 588kcal/day and 22g/day, respectively
- Mean energy density of ONS was 1.5kcal/ml with 23% energy from protein
- Mean intervention period was 74 days
- Control groups varied between studies; standard diet (n=25), placebo (n=10) and dietary advice (n=9)

Population characteristics:

- 5,716 adult patients with disease of any nutritional status in the community (**including oncology, frailty and disease related malnutrition**)
- Mean age 67 years
- 47% female
- In 64% of studies, patients received intervention in the community only; 36% in both community and hospital settings
- 66% of the studies were conducted on patients undergoing surgery, and 34% on medical patients including head and neck cancer patients

Study Results

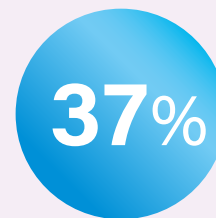
Oral nutritional supplements used in the community, in addition to diet, significantly reduced complications compared with the control (OR-0.68; 95% CI-0.59-0.79; $p<0.001$).



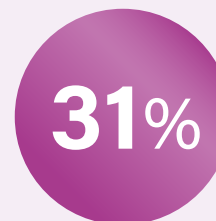
Table 1. Subgroup analysis showing that for all ages, settings, patient types and nutritional status, the reduction in complications with ONS was significant.

| Meta-analysis subgroup results | | |
|--------------------------------|-------------------------------|--|
| Age | >65 years | OR, 0.79; 95% CI 0.66-0.94; $p=0.007$ |
| | <65 years | OR, 0.49; 95% CI, 0.38-0.64; $p<0.000$ |
| Setting | Community | OR, 0.65; 95% CI, 0.52-0.80; $p<0.001$ |
| | Community + hospital | OR, 0.72; 95% CI, 0.59-0.87; $p=0.001$ |
| Groups | Surgical | OR, 0.65; 95% CI, 0.55-0.77; $p<0.000$ |
| | Medical | OR, 0.76; 95% CI, 0.59-0.98; $p=0.037$ |
| Nutritional status | Malnourished | OR, 0.73; 95% CI, 0.57-0.94; $p=0.013$ |
| | Well nourished + malnourished | OR, 0.67; 95% CI, 0.53-0.83; $p=0.000$ |
| High protein ONS | | OR, 0.66; 95% CI, 0.54-0.80; $p<0.001$ |

CI: confidence interval; OR: odds ratio.



A significant reduction in the incidence of complications was only seen when adherence to ONS was good $\geq 80\%$ ($p=0.001$).



The significant reduction in the incidence of complications was only seen in patients using ready-to-drink ONS ($p<0.001$) and was not evident when using powdered forms of ONS.

Conclusions

Current research suggests that the use of ONS in community settings can lead to clinically meaningful reductions in complications. We also know from previous research that a reduction in complications can have benefits on the healthcare system^{22,23}



**TIMING - EARLY
NUTRITIONAL
INTERVENTION
IMPROVES
OUTCOMES**

ESPEN AND ESMO RECOMMEND MEDICAL NUTRITION IN CANCER CARE

Main recommendations for nutritional care are consistent across both guidelines.

| Recommendations | ESPEN guideline ² | ESMO guideline ⁸ | Notes |
|---|------------------------------|-----------------------------|---|
| Malnutrition risk screening | ✓ | ✓ | In all patients, at regular intervals, using a validated tool |
| At-risk patients undergo nutritional assessment | ✓ | ✓ | Objective measures very clearly defined in ESPEN and ESMO guidance |
| In patients with inadequate food intake, personalised nutritional intervention is recommended | ✓ | ✓ | Emphasis on increasing nutritional intake and physical activity, and reducing inflammation, with dietary guidance and counselling as needed |
| Guidance provided on nutritional requirements | ✓ | ✓ | For energy, protein, micronutrients |
| ONS recommended as part of nutritional counselling as needed²⁶ to improve energy intake, bodyweight and quality of life | ✓ | ✓ | ESMO guidance highlights that this advice should be delivered by an adequately trained professional |

ESPEN: European Society for Clinical Nutrition and Metabolism; ESMO: European Society for Medical Oncology.

PREHABILITATION

The necessity for prehabilitation, a component of the continuum to rehabilitation, begins from the moment of diagnosis with the goal of enhancing a patient's health. Prehabilitation helps cancer patients in the lead up to treatment, by encouraging the adoption of healthy habits and prescribing nutrition, exercise and psychological interventions as needed.²⁴

Prehabilitation aims to support patients' tolerance of treatment and their long-term health.²⁴

Prehabilitation has been shown to:²⁴



Reduce time in hospital



Support heart health



Improve post-treatment recovery



Elevate nutritional status



Prevent complication after surgery

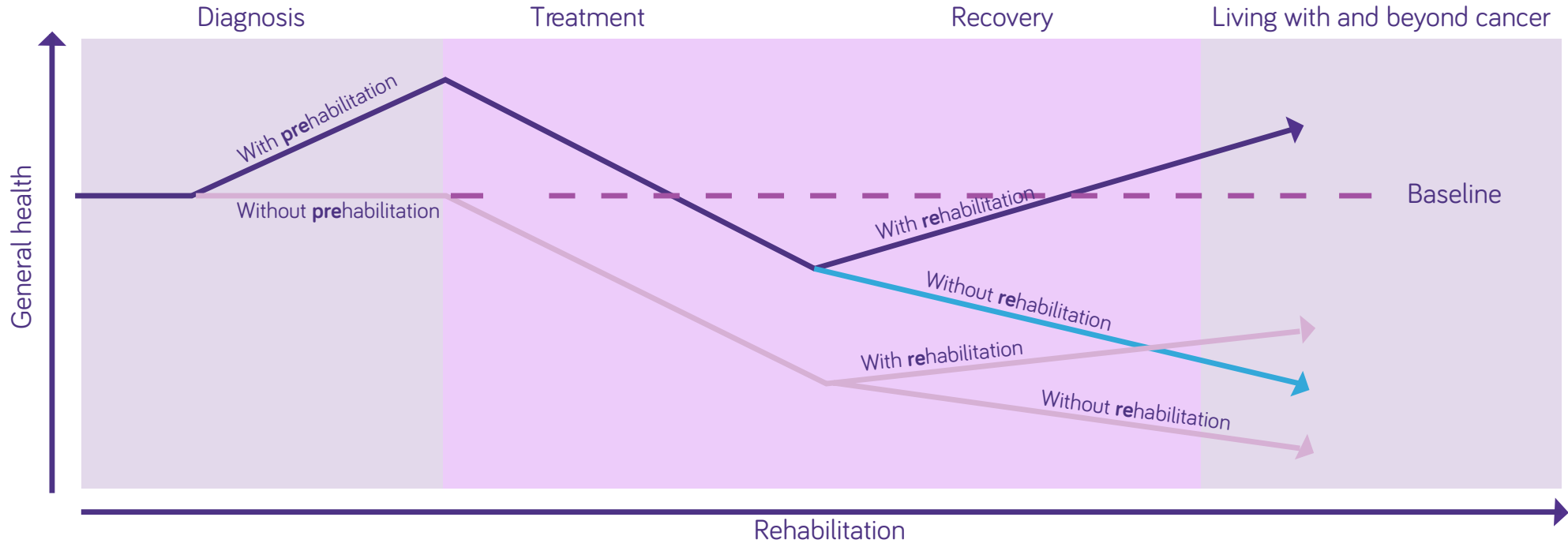


Support some aspects of brain function



Optimise quality of life

The cancer patient journey



Adapted from Macmillan Cancer Support, 2021²⁴



**TASTE CHANGES
IN PATIENTS WITH
CANCER**

SELF-REPORTED TASTE AND SMELL ALTERATIONS AND THE LIKING OF ORAL NUTRITIONAL SUPPLEMENTS WITH SENSORY-ADAPTED FLAVOURS IN CANCER PATIENTS RECEIVING SYSTEMIC ANTITUMOUR TREATMENT²⁵

De Haan J J, et al. Supportive Care Cancer. 2021;29(10):5691-5699.

VARIOUS CANCERS

FORTISIP COMPACT PROTEIN

Introduction

Taste and smell alterations (TAs and SAs) are commonly experienced by cancer patients receiving treatment, which can have consequences on food intake, increasing their risk of malnutrition and cachexia. This exploratory study aimed to assess the prevalence of taste and smell changes in cancer patients receiving anticancer treatment, and determine the impacts on patients' tolerance and enjoyment of oral nutritional supplements (ONS) formulated with warming and cooling sensations.

Study Design

Patients were randomly selected and approached at the oncology ward or outpatient clinic at the University Medical Center Groningen. Patients were asked to complete a product questionnaire to ascertain their overall preference for 5 different ONS flavours, including questions on flavour, sweetness, texture, warming/cooling sensation and colour.

ONS tested: ONS were a variety of flavours of Fortisip Compact Protein; a low volume, high protein, energy dense ONS. Each bottle contained 125ml, 306kcal and 18g of protein. 5 prototype flavours, designed for patients with TAs were tested:

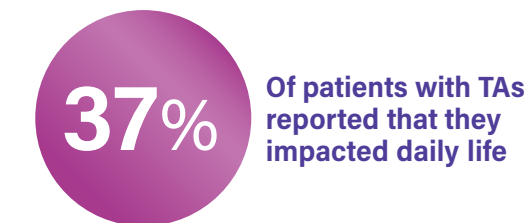
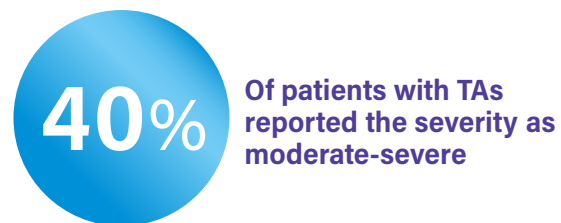
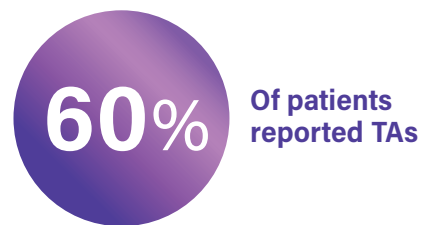
- 2 warming sensation flavours: hot tropical ginger (HTG) and hot mango (HM)
- 2 cooling sensation flavours: cool red fruits (CRF) and cool lemon (CL)
- 1 neutral flavour (N)

Population characteristics:

- 50 patients
- 60% male
- 72% >55 years old
- 68% were treated with chemotherapy
- Median duration since the start of treatment was 2 months
- 16% of patients used ONS daily

| Cancer type | Proportion of patients (%) |
|--|----------------------------|
| Urogenital | 26 |
| Colorectal | 20 |
| Sarcoma | 10 |
| Oesophageal/gastric | 8 |
| Gynaecological | 8 |
| Other (brain, breast, hepatobiliary, lung, neuroendocrine etc) | 28 |

Study Results



30% and 16% of patients experiencing TAs reported a weaker taste for salty and sweet flavours, respectively. 17% and 10% reported a stronger taste for sweet and sour flavours, respectively.

Of the 5 flavours assessed, 3 were positively received by patients with TAs (with and without SAs), with 93% of patients recording liking scores >6 for cool red fruits, 73% for neutral, and 67% for hot tropical ginger.

(Note: Values are averages of patients with TAs with and without SAs)



High acceptability amongst cancer patients for sensory adapted oral nutritional supplements (ONS).

Of all flavours, 3 were rated highly with average scores >6 out of 10:



Cool Red Fruits

6.8 ± 1.7



Neutral

6.5 ± 1.9



Hot Tropical Ginger

6.0 ± 2.0

Conclusions

Patients experiencing TAs were more discerning when choosing flavours of ONS they deemed palatable, appearing to prefer sensory-adapted flavours. Patients without TAs were more agreeable to the full flavour range of ONS. This suggests that TAs should be accounted for when developing and selecting ONS flavours for oncology patients.





References

1. Prado C M, et al. Nutrition interventions to treat low muscle mass in cancer. *J Cachexia Sarcopenia Muscle*. 2020;11(2);366-380.
2. Arends J, et al. ESPEN expert group recommendations for action against cancer-related malnutrition. *Clin Nutr*. 2017;36(5):1187-1196.
3. Ravasco P, Nutrition in cancer patients. *J Clin Med*. 2019;8(8):1211.
4. Bargetzi L, et al. Nutritional support during the hospital stay reduces mortality in patients with different types of cancers: secondary analysis of a prospective randomized trial. *Ann Oncol*. 2021;32(8):1025-1033.
5. Kabata P, et al. Pre-operative nutritional support in cancer patients with no clinical signs of malnutrition - prospective randomised controlled trial. *Support Cancer Care*. 2015; 23(2):365-70.
6. Baracos V E, et al. Cancer-associated cachexia. *Nat Rev Dis Primers*. 2018;4:17105.
7. Daly L E, et al. A window beneath the skin: how computed tomography assessment of body composition can assist in the identification of hidden wasting conditions in oncology that profoundly impact outcomes. *Proc Nutr Soc*. 2018;77(2):135-51.
8. Arends J, et al. Cancer cachexia in adult patients: ESMO clinical practice guidelines. *ESMO open*. 2021;6(3):100092.
9. Prado C M, et al. Dietary patterns of patients with advanced lung or colorectal cancer. *Can J Diet Pract Res*. 2012;73(4):e298-303.
10. McCurdy B, et al. Meeting minimum ESPEN energy recommendations is not enough to maintain muscle mass in head and neck cancer patients. *Nutrients*. 2019;11(11):2743.
11. Stobäus N, et al. Low recent protein intake predicts cancer-related fatigue and increased mortality in patients with advanced tumor disease undergoing chemotherapy. *Nutr Cancer*. 2015;67(5):818-24.
12. Tobberup R, et al. Exploring the dietary protein intake and skeletal muscle during first-line anti-neoplastic treatment in patients with non-small cell lung cancer. *Clin Nutr ESPEN*. 2019;34:94-100.
13. Capitão C, et al. Protein intake and muscle mass maintenance in patients with cancer types with high prevalence of sarcopenia: a systematic review. *Support Care Cancer*. 2022;30(4):3007-15.
14. Regueme S C, et al. Protein intake, weight loss, dietary intervention, and worsening of quality of life in older patients during chemotherapy for cancer. *Support Care Cancer*. 2021;29(2):687-96.
15. Hasegawa Y et al. Protein intake after the initiation of chemotherapy is an independent prognostic factor for overall survival in patients with unresectable pancreatic cancer: A prospective cohort study. *Clin Nutr*. 2021;40(7):4792-8.
16. Pimentel G D, et al. High protein diet improves the overall survival in older adults with advanced gastrointestinal cancer. *Clin Nutr*. 2021;40(3):1376-80.
17. Meng Q, et al. Post-discharge oral nutritional supplements with dietary advice in patients at nutritional risk after surgery for gastric cancer: A randomized clinical trial. *Clin Nutr*. 2021;40(1):40-6.
18. Manasek V, et al. The impact of high protein nutritional support on clinical outcomes and treatment costs of patients with colorectal cancer. *Klin Onkol* 2016;29(5):351-357.
19. Dingemans A, et al. High protein oral nutritional supplements enable the majority of cancer patients to meet ESPEN protein recommendations during systemic treatment. *Clinical Nutrition ESPEN*. 2023;54:493.
20. Gannavarapu S, et al. Prevalence and survival impact of pretreatment cancer-associated weight loss: A tool for guiding early palliative care. *J Oncol Pract*. 2018;14(4):e238-e250.
21. Cawood A L, et al. A systematic review and meta-analysis of the effects of community use of oral nutritional supplements on clinical outcomes. *Ageing Res Rev*. 2023;88:101953.
22. Stratton R, et al. Managing malnutrition to improve lives and save money. On behalf of BAPEN 2018.
23. Brown F, et al. Economic impact of implementing malnutrition screening and nutritional management in older adults in general practice. *J Nutr Health Aging*. 2020;24(3):305-311.
24. Principles and guidance for prehabilitation within the management and support of people with cancer: Macmillan Cancer Support. November 2021. Available from: <https://www.macmillan.org.uk/healthcare-professionals/news-and-resources/guides/principles-and-guidance-for-prehabilitation>. [Accessed April 2024].
25. De Haan J J, et al. Self-reported taste and smell alterations and the liking of oral nutritional supplements with sensory-adapted flavours in cancer patients receiving systemic antitumor treatment. *Supportive Care in Cancer*. 2021;29(10):5691-5699.