

# Nourishing quality of life

in Oncology





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## Early and continuous nutritional support

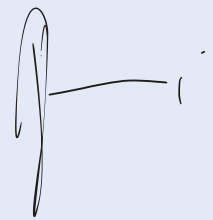
during the cancer patient's journey  
is crucial to prevent or delay cancer  
associated malnutrition and/or cachexia."

Today, patients diagnosed with cancer benefit from highly sophisticated treatment which includes a combination of surgery, radiotherapy and/or chemotherapy.

Yet, one component is too often not taken into account: an adequate nutrition therapy. This simple measure makes it possible to keep the patient in a good nutritional status and therefore in comparably good health - a fundamental basis for fighting cancer and enduring the anti-cancer treatment. This importance is emphasised by the fact that very often the optimal timing and dosing of

the treatment is limited by the patient's performance status.

With the effects on quality of life, treatment tolerance and outcome as well as on healthcare costs, we hope that in the future, the implementation of a good nutrition therapy will become a fundamental part of a more effective cancer therapy.




## As the pathophysiology of progressive cancer

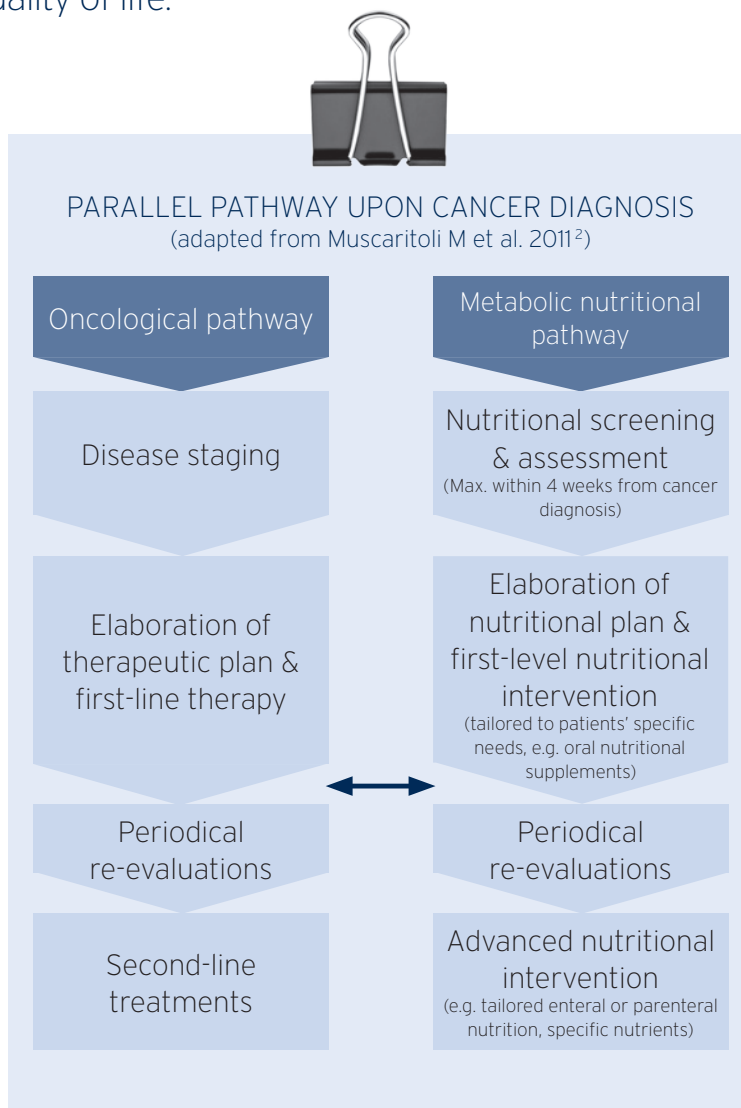
Cancer cachexia as multifactorial syndrome needs to be detected early because later it is difficult to regain lost weight, muscle mass and strength. It is important to start interventions including nutrition therapy as early as possible.<sup>1</sup>

# A good nutritional status does make a difference ...

Nutritional intervention increases tolerance and response to treatment and improves the patients quality of life.<sup>3-5</sup>

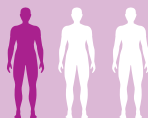
Provocatively, it could be said that the indication to nutritional support is just the diagnosis of cancer.<sup>3</sup>

Prevalence in malnutrition:  
 **83 %**  
in older cancer patients<sup>6</sup>



One of the greatest opportunities to improve patients' outcomes

will probably come not from discovering new treatments but from delivering existing therapies more effectively.<sup>7</sup>

About  
 **1 in 3**  
cancer patients dies from cachexia.<sup>7,9</sup>



# Malnutrition & cachexia – a challenge for professionals and patients

## Impairing Quality of Life (QoL)<sup>10-12</sup>

- QoL function scores were rated in **20% of patients by nutritional intake and in 30% by weight loss.**<sup>13</sup>
- Global QoL (EORTC QLQ C30 score) was significantly less decreased and recovered faster in the nutrition intervention group (nutritional counseling with weekly telephone reviews).<sup>5</sup>
- In a clinical trial with non small cell lung cancer it could be shown that with decreasing bodyweight a deteriorating QoL is associated which was significant (p= 0.0002).<sup>12</sup>

## Decreasing treatment tolerance and outcome<sup>14,15</sup>

- The occurrence of dose-related toxic side effects correlates to muscle mass.<sup>16</sup>
- Overall, gastrointestinal and hematological toxicity in metastatic colorectal cancer patients was shown to be significantly more frequent in severely malnourished patients (NRI < 83.5) in comparison to non or moderate malnourished patients.<sup>17</sup>

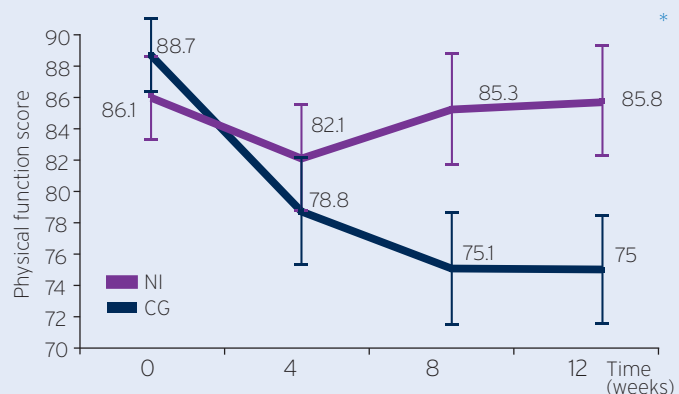
## Increasing health care related costs<sup>3,10,18</sup>

- Impaired treatment tolerance increases complications and morbidity leading to higher consultations and drug prescription rates.<sup>4</sup>
- **40-70% increased average length of hospital stay<sup>19</sup> and stays in hospital lasted longer and readmissions within 15 days were more probable<sup>20</sup> in malnourished patients.**

### \*Significant greater decrease (p=0.002)

in physical function scores and greater deterioration in weight and nutrition status in gastrointestinal or head & neck cancer patients receiving no specific nutrition intervention (control group CG, n=31) vs. patients receiving nutrition intervention (NI group, n=29), over the treatment period of 12 weeks<sup>5</sup>; (further details on this study are given on page 12)

Figure: Physical function of patients receiving no specific nutrition intervention vs. patients receiving nutrition intervention





**\*\*In metastatic colorectal cancer patients,** severe malnutrition is associated with greater chemotherapy toxicity.<sup>17</sup>

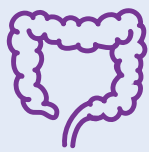
	Severe malnutrition (n=22)	Absent/moderate malnutrition (n=92)	p value
Highest grade of toxicity	86.4% (19)	57.6% (53)	0.01 <sup>a</sup>
Highest grade of GI toxicity	45.5% (10)	23.9% (22)	0.04 <sup>a</sup>
Highest grade of haematological toxicity	63.6% (14)	21.7% (20)	<0.001 <sup>a</sup>

(a)  $\chi^2$  test

Table: Chemotherapy related toxicity (grade  $\geq 2$ ) in severely malnourished patients vs. patients not or only moderately malnourished; nutrition status assessed by the nutritional risk index.

# Malnutrition – more cancer patients than you might expect are affected

Depending on tumor site, stage and treatment, weight loss & malnutrition are reported in 30% to >80% of patients, highest frequencies seen amongst patients with solid tumors.<sup>21,23</sup>



~ 40% **colorectal cancer**<sup>22</sup>



~ 45% **lung cancer**<sup>22</sup>



~ 50% **head & neck cancer**<sup>22</sup>



~ 60% **upper gastrointestinal cancer**<sup>22</sup>



~ 75% **pancreatic cancer**<sup>22</sup>

**Involuntary** weight loss is often the first sign of cancer<sup>23</sup> and at the time of diagnosis many cancer patients already suffer from malnutrition.<sup>24</sup>

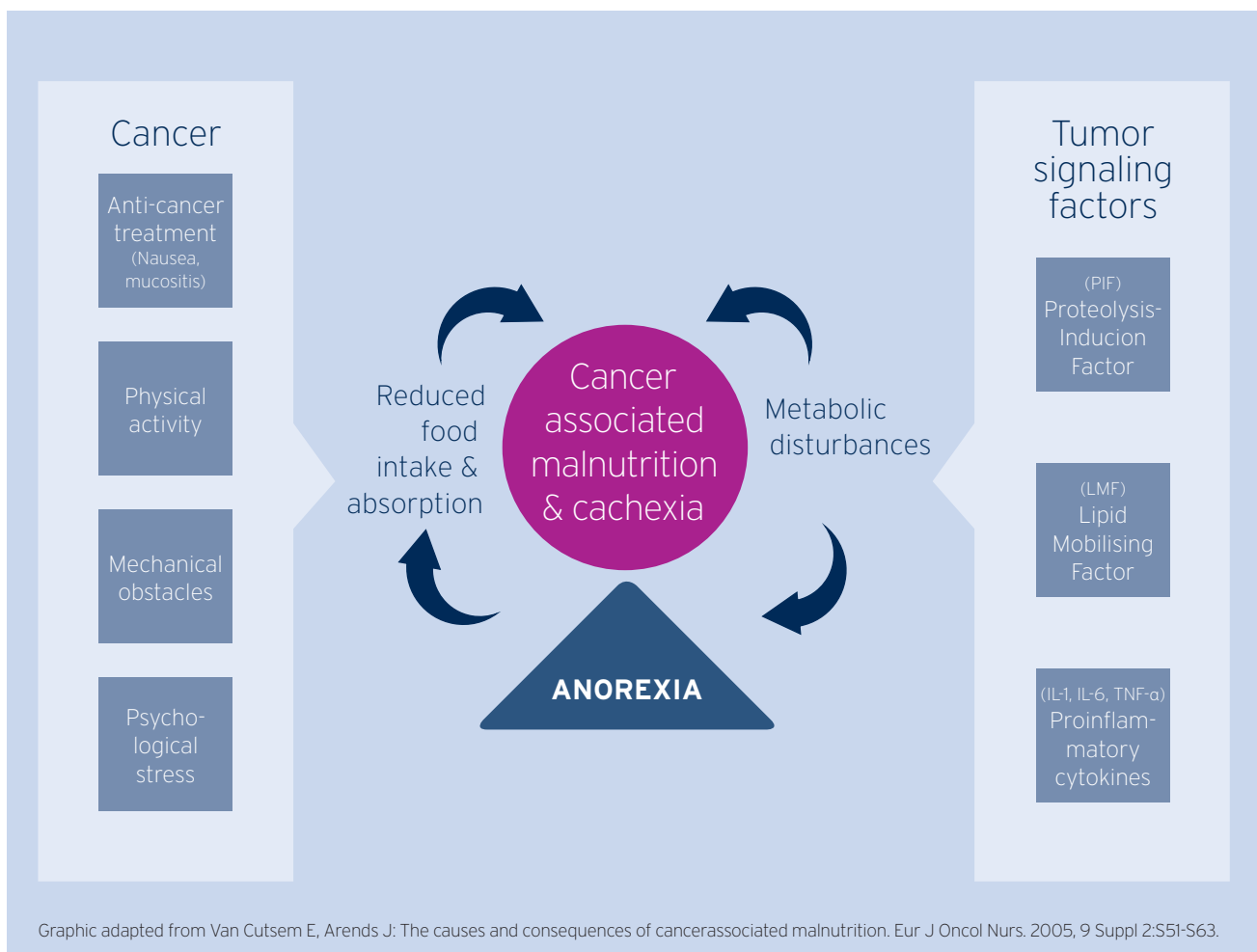
**Especially** in times of increasing prevalence of obesity, malnutrition often remains overlooked and untreated.<sup>21,25</sup>



“Provocatively, it could be said that the indication to nutritional support is just the diagnosis of cancer.”<sup>3</sup>

# Malnutrition & cancer cachexia – more than just a loss of appetite

Yet, characterised by a combination of reduced food intake and absorption (“exogenous starvation”) and metabolic disturbances (“endogenous starvation”).<sup>2,10,26,27</sup>



A current agreed diagnostic criterion for cachexia is ...

- weight loss >5%\* over past 6 months, or
- weight loss >2%\*\* and a BMI <20 kg/m<sup>2</sup> or
- weight loss >2%\*\* and skeletal muscle mass depletion (sarcopenia)

... often associated with reduced food intake and systemic inflammation.<sup>28</sup>

“Metabolic, biochemical and molecular disturbances, responsible for the phenotype of cachexia, are generally present at diagnosis of cancer.”<sup>2,29</sup>



As the pathophysiology of progressive cancer cachexia makes it later difficult to regain lost weight and muscle mass, it is important to start nutritional screening with cancer diagnosis.<sup>30</sup>

\*equivalent to > 4 kg in a patient with 80 kg body weight

\*\*equivalent to > 1.2 kg in a patient with 60 kg body weight

# Nutritional intervention – when is it indicated?

Four leading questions:



1. What is the current weight of the patient?    kg

2. Has the patient unintentionally lost weight? ☐ yes ☐ no

How much?

kg

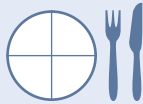
Since when?

.   .

Start nutritional therapy, when weight loss is >5% and/or food intake is less than 100%.

3. Has the patient eaten less last week?

Compared to an earlier normal portion she or he eats:



☐ <25%

☐ 25-50%

☐ 50-75%

☐ 75-100%

☐ 100%

4. What are the patient's reasons for eating less?

☐ Less appetite

☐ Feeling of fullness

☐ Swallowing disorders

☐ Fatigue

☐ Nausea & vomiting

☐ Alterations in taste & smell

☐ Constipation

☐ Mucositis & stomatitis

☐ Others \_\_\_\_\_

☐ Diarrhoea

☐ Pain

☐ Obstructions

☐ Dryness of mouth

» ... as the validity of the BMI as an indicator of nutrition status in cancer patients is limited, the decision to start nutrition therapy should instead be based on involuntary weight loss.<sup>28</sup>

**Recording** of weight development, nutritional intake and general conditions can easily be done by the patient at home in a patient diary.

## Benefits for doctor and patient:

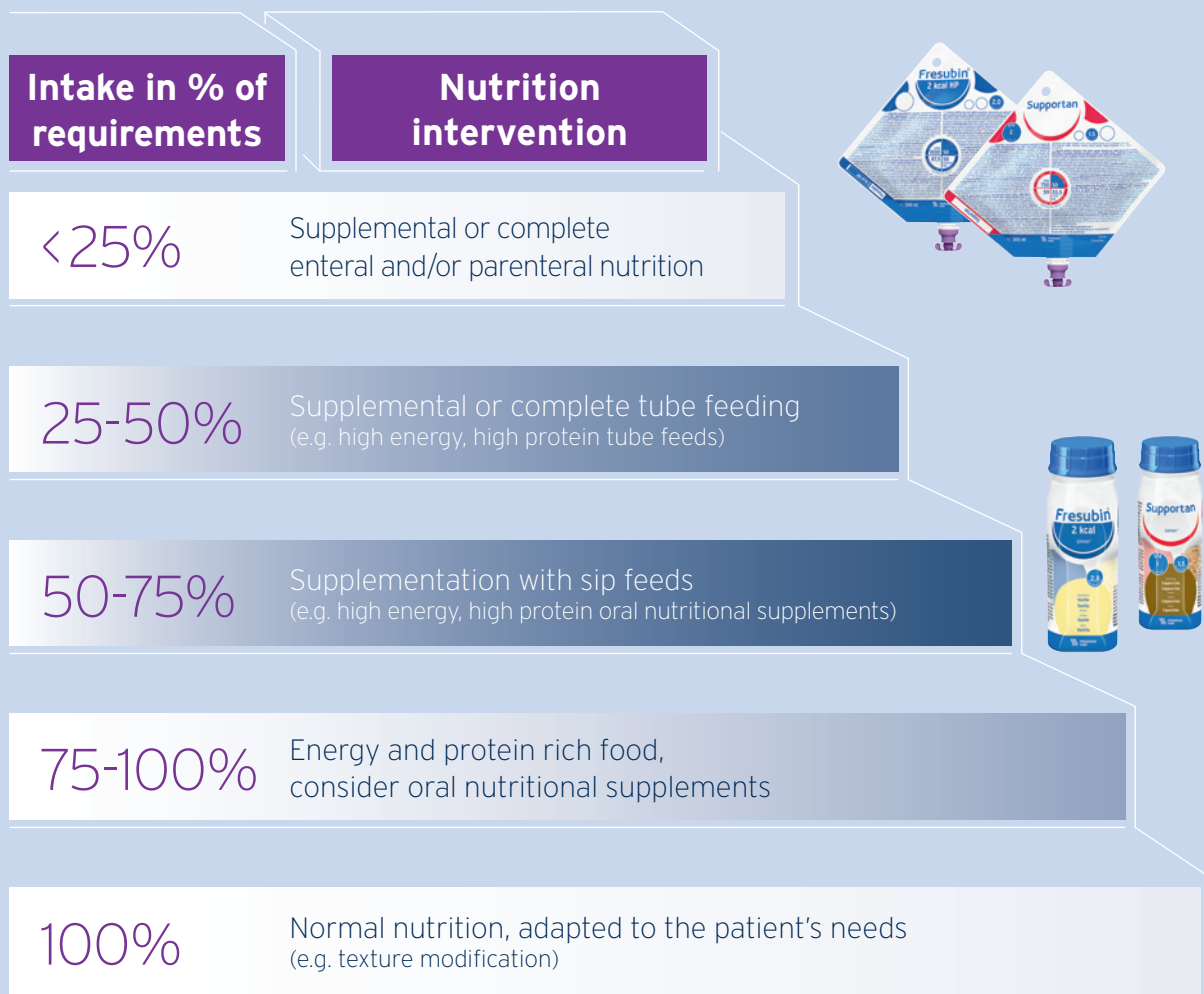
- Saves time in the practice/during consultation.
- Regular and frequent recording under same conditions (e.g. in the morning, undressed).
- The patient can actively do something and is involved in the therapy.



# Improving nutritional status – which measures can be taken?

Early detection and nutritional intervention should start as early as possible.<sup>30</sup>

## Stepping up from Dietary Counselling to Clinical Nutrition<sup>31</sup>

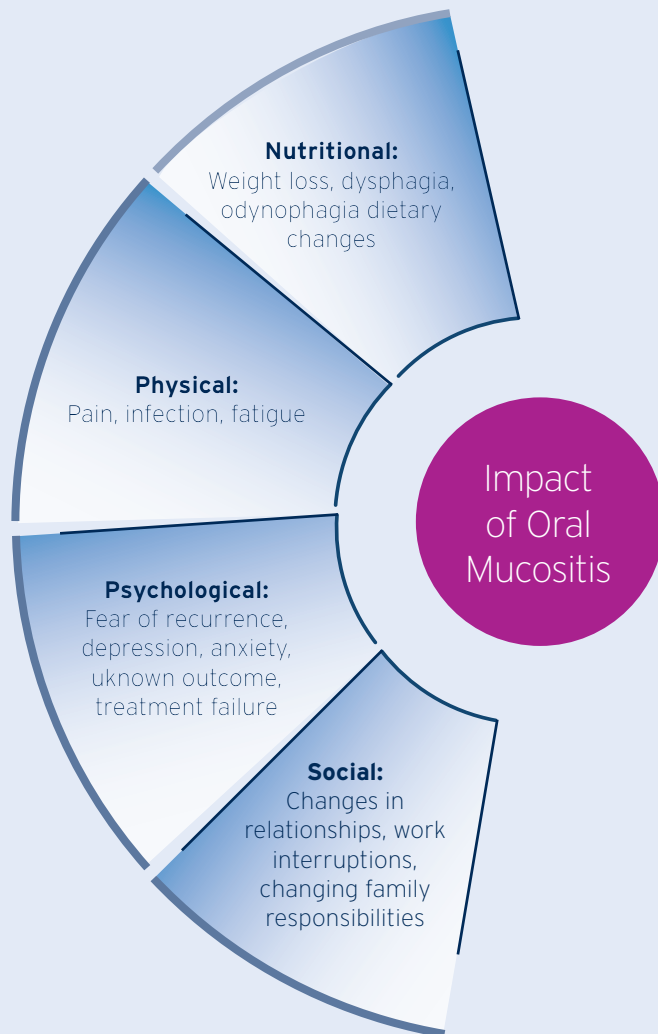


### ESPEN recommendations<sup>30</sup>:

- Cancer patients who are malnourished or at risk of malnutrition should get a nutrition intervention to increase oral intake. Oral intake may be enhanced by nutritional counseling, treatment of symptoms, and the intake of ONS.
- If oral intake is inadequate enteral nutrition is recommended.
- Enteral nutrition is recommended in radiation induced severe mucositis or in obstructive tumors of the head neck or thorax.

# Mucositis – a significant side effect of anticancer treatment

Currently the most significant adverse effect of anticancer treatment appears to be mucositis.<sup>32</sup> Interruptions of anticancer treatment and hospitalization can be possible implications.<sup>33</sup>



## 35 to 60 %

of patients are affected by treatment delays and dose reductions due to mucositis during anticancer therapy.<sup>34</sup>

Figure: Impact of Oral Mucositis – OM induced by chemotherapy and/or radiotherapy can have multiple negative effects on patients.

Graphic adapted from Haas ML: Oral Mucositis in Radiation/Chemotherapy: Treatment Similarities. Oncology 2009, 23:23-26.

Risk of grade 3-4 oral mucositis in relation to cancer diagnosis is<sup>35</sup>

- 6% Colorectal cancer
- 6-9% Lung cancer
- 42% Head and neck cancer, esophageal cancer
- 8-53% Gastrointestinal tumors & gastric cancer
- 14% Pancreatic cancer

Mucositis (oral and gastrointestinal) occurs in head and neck cancer patients.<sup>33</sup>

- 22% of patients receiving conventional chemotherapy
- 80% of patients receiving anti cancer therapy
- Nearly all patients receiving head and neck radiation therapy alone or in combination with other therapies.

# Nutritional intervention improves tolerance & outcome of treatment

Significant reduction of weight loss, interruptions in radiation treatment (RT) and unplanned hospitalization in head and neck cancer patients.<sup>4</sup>

## Head and neck (HN) cancer patients receiving chemoradiotherapy (CRT)<sup>4</sup>

	NI (n=33)	CG (n=33)	p value
Patients who had RT breaks (>5 days) for toxicity	30.3%	63.6%	0.007
Days of RT delayed for toxicity <sup>a</sup>	4.4 ± 5.2	7.6 ± 6.5	0.038
Patients who had a hospital admission for mucositis	16.1%	41.4%	0.030
Patients who completed the planned chemotherapy	96.7%	93.9%	ns
Weight loss from baseline during CRT <sup>a</sup>	-4.6 ± 4.1%	-8.1 ± 4.8%	< 0.01

(a) Data expressed as mean ± standard deviation (SD)

Table: Comparison of treatment tolerance and outcomes for nutrition intervention group (NI) and control group (CG).



**Conclusion:** Nutritional intervention should be started early prior to CRT and continued after treatment completion.

### Study design

Retrospective analysis of HN cancer patients receiving early nutrition intervention\* prior to CRT nutrition intervention (NI group, n=33) vs. HN cancer patients without any specific nutrition support (control group CG, n=33).

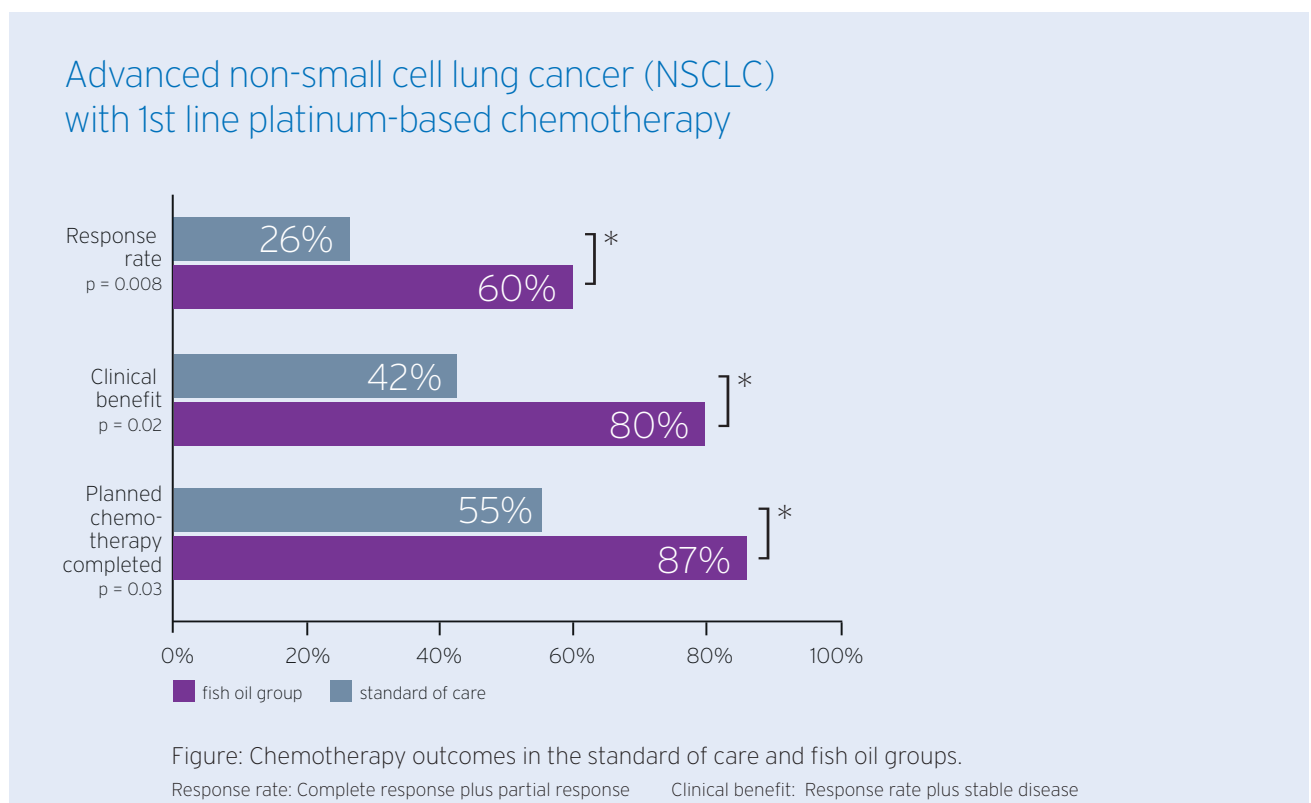
### \* Nutrition intervention

Implementation of an intensive nutrition support program:

- Patients receive a nutritional assessment before therapy
- Patients at low nutritional risk (stable weight & adequate food intake) receive individualised nutritional counselling
- Patients at higher nutritional risk (inadequate food intake for >5 days or BMI <18.5 kg/m<sup>2</sup> or weight loss >10% in the last 3-6 months or weight loss >5% in the last 3-6 months and BMI <20 kg/m<sup>2</sup>) receive oral supplements or enteral nutrition via tube if supplements are not sufficient.

# Nutritional intervention with **fish oil** improves palliative chemotherapy efficacy

Nutritional intervention\* with fish oil provides a benefit over standard of care. Patients in the fish oil group showed an increased response rate & greater clinical benefit: Number of CT cycles significantly higher in the fish oil group ( $p=0.02$ ) and time on CT (days) significantly longer.<sup>36</sup>



**Conclusion:** "Compared with standard-of-care, supplementation with fish oil results in increased chemotherapy efficacy without affecting the toxicity profile and may contribute to increased survival."<sup>36</sup>

## Study design

Open label trial with forty-six patients completed the study,  $n = 31$  in the SOC group and  $n=15$  in the FO group (2.2 g EPA + 240-500 mg DHA/day). Response to chemotherapy was determined on clinical examination and imaging. Response rate was defined as the sum of complete response plus partial response, and clinical benefit was defined as the sum of complete response, partial response, and stable disease divided by the number of patients. Toxicities were graded before each chemotherapy cycle. Survival was defined as 1 year survival rate.

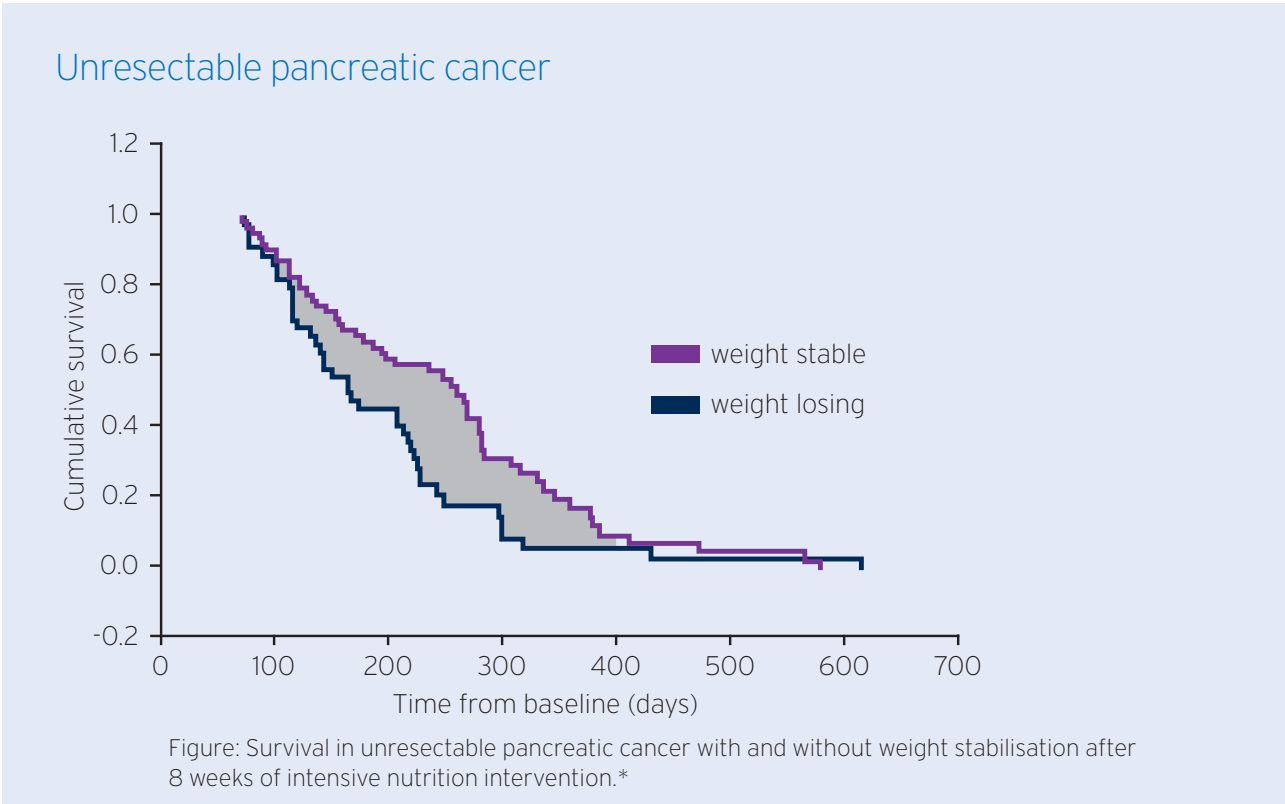
## \*Nutrition intervention

Patients on the FO arm could choose between 2 formats of supplementation:

- 1) 41 g gelatin-capsules per day containing 2.2 g EPA and 240 mg DHA or
- 2) 7.5 ml liquid fish oil per day (2.2 g EPA and 500 mg DHA). The number of capsules or the amount of liquid remaining at the end of the study was measured to determine compliance.

# Nutritional intervention **improves QoL and prolongs survival time**

Significantly improved QoL and longer survival time (median values: 259 days vs. 164 days,  $p=0.019$ ) in patients with weight stabilisation.<sup>37</sup>



**>> Conclusion:** Attenuation of weight loss by intensive nutrition intervention is associated with better outcome.

**Study design**

Post hoc analysis of 107 patients included in an international, multicentre, randomised, double-blind trial, in which weight losing pancreatic cancer patients were randomised to receive 8 weeks of intensive nutrition intervention\* including a protein and energy dense ONS with or without n-3 fatty acids; for secondary analyses patients were categorised as weight losing (>1 kg loss, n=44) or weight stable (≤1 kg loss, n=63) after 8 weeks of nutrition intervention.

**\*Nutrition intervention**

Intensive nutrition intervention included the provision of protein and energy dense ONS (620 kcal/day) and weekly monitoring via telephone.



# Nutritional intervention **improves tolerance & outcome** of treatment

Significantly decreased weight loss, higher radiotherapy delivery and completion rates, fewer unplanned hospital admissions and shorter length of stays during treatment period.<sup>14</sup>

## Oesophageal (OES) cancer patients undergoing CRT

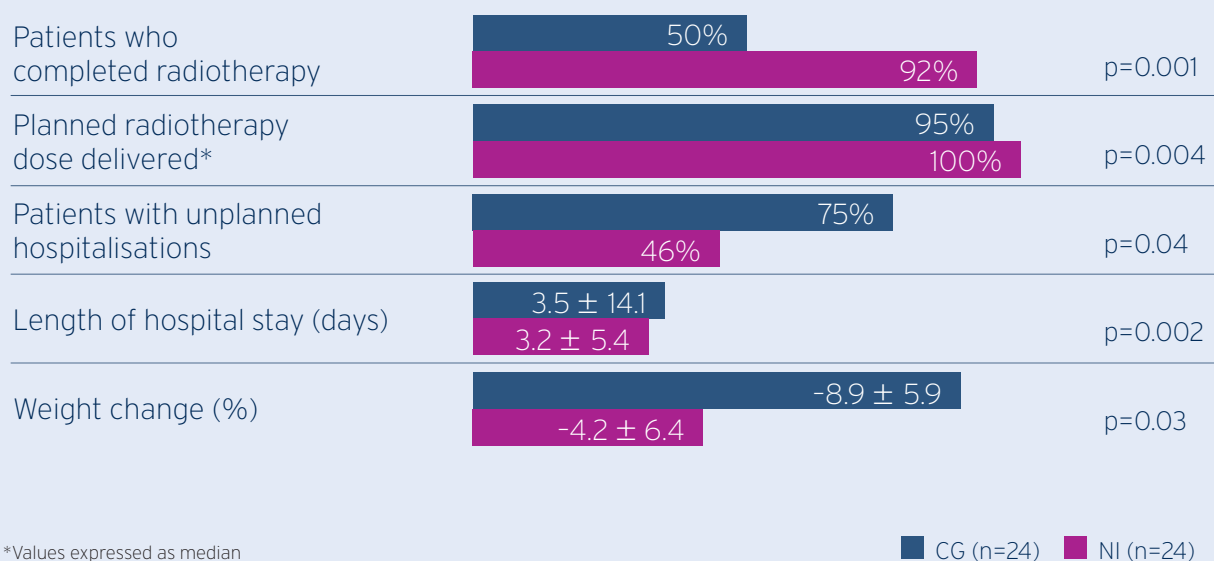


Table: Treatment tolerance, weight loss and outcome of patients undergoing the newly implemented nutrition pathway (NI) vs. historical controls (CG).



**Conclusion:** Patients with OES cancer who receive early nutritional assessment, appropriate nutritional support and follow-up show an improved CRT treatment tolerance.

### Study design

Retrospective analysis of OES cancer patients undergoing a proactive nutrition support program guaranteeing an early patient-tailored nutrition intervention\* (NI group, n=24) vs. historical patients only referred to dieticians reactively, if nutrition related problems occurred (control group CG, n=24).

### \*Nutrition intervention

Nutrition pathway for a patient-tailored intervention:

- Screening at initial presentation in clinic
- Patients at low risk receive information and support to help to maintain nutrition status
- Patients at moderate risk receive a texture-modified, high protein, high energy diet
- Patients at severe risk are tube feed
- All patients are reviewed weekly

# Product information

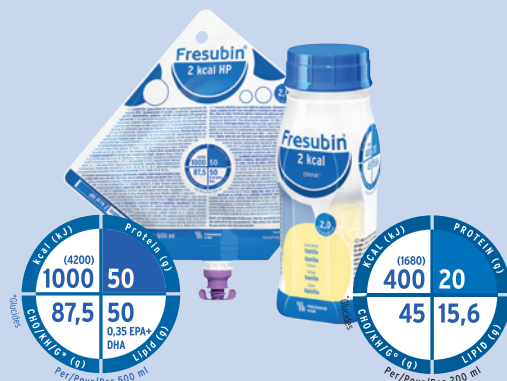
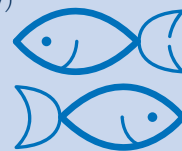
Nutritional management as integral part of the treatment improves patient outcome!



## Life support in oncology

**for patients with cancer, chronic catabolic disease and cachexia**

- High in energy density (1.5 kcal / ml)
- High in protein (10 g /100 ml) and fat (6.7 g/100 ml)
- High in eicosapentaenoic acid (EPA) from fish oil (2 g per day)
- Low in carbohydrates



## The nutritional boost

**for patients with highly increased energy and protein needs**

- High protein content (10 g /100 ml)
- High energy density (2.0 kcal /ml)
- With fish oil in tube feed
- Fibre and fibre free version

# Nourishing quality of life

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