ANALYSIS OF THE CLINICAL AND ECONOMIC IMPACT OF HIGH PROTEIN CONCENTRATION ORAL NUTRITIONAL SUPPLEMENTS FROM A TYPICAL SPANISH HOSPITAL PERSPECTIVE

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INTRODUCTION

In 2009 several EU bodies stated, in the Prague Declaration, that malnutrition, including disease-related malnutrition, is an urgent healthcare problem in Europe[1]. In the hospital setting, the management of disease-related malnutrition via oral nutritional supplements (ONS) improves the nutritional status of hospitalized patients and reduces their management costs by impacting length of hospital stay, bed-day costs and complication costs[2]. These beneficial effects mainly depend on patients' adherence to ONS prescription, which can be enhanced with highly concentrated ONS.

OBJECTIVE

This research aims to quantify the incremental clinical and economic benefit of highly concentrated vs traditional ONS from a typical large Spanish hospital perspective.

MATERIALS & METHODS

Table 1:
Patient mix and prevalence of malnutrition

Underlying condition	Patient mix *(model assumption)*	Malnutrition prevalence
Heart diseases	15%	65% [4,5]
Respiratory diseases	5%	26% [6,7]
Cancer (advanced tumors)	10%	85% [8]
Cancer (non-adv. tumors)	10%	18% [8]
Neurological diseases	30%	37% [9]
Diabetes	10%	30% [9]
Other	20%	0%

Table 2:
Changes to patients' nutritional status during their hospitalization, when consuming t-ONS[9]

		At discharge	
		Malnourished	Not maln.
At admission	Malnourished	72%	28%
	Not malnourished	10%	90%

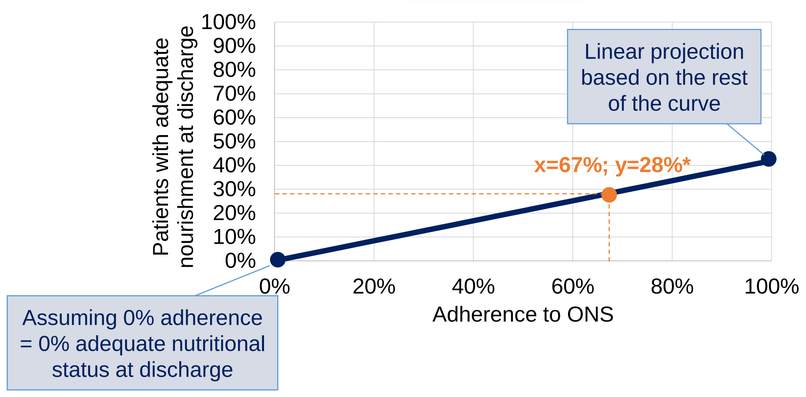
Table 3:
Mean patient adherence to ONS usage by ONS type[10,*]

t-ONS	67%
hp-ONS	76%**

** Under the hypothesis that adherence = amount of consumed ONS vs amount of prescribed ONS.*
*** Extrapolation from Hubbard et al., 2012, based on mean compliance to ONS with high energy density in the community setting.*

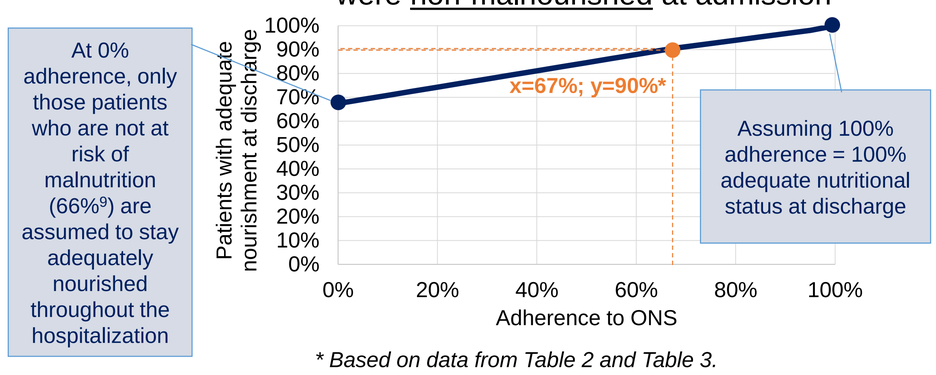
Health economic model: a model was developed to assess the impact of replacing traditional ONS (t-ONS, defined here as ~0.10 g/ml) with high protein concentration ONS (hp-ONS, ~0.16 g/ml). The analysis was conducted from the perspective of a typical large hospital in Spain (1,200 hospital beds). Patients were assumed to receive ONS if they were malnourished at hospital admission (Table 1) or at risk of developing malnutrition during their hospital stay (33% of the non-malnourished patients, based on the use of NRS-2002® -Nutritional Risk Screening 2002- screening tool within the EuroOOPS Study on 5,051 patients in Europe[3]).

Chart 1:
Malnutrition status at discharge for patients who were malnourished at admission



To extrapolate malnutrition status at discharge by patient type, a linear relationship was assumed between adherence and nutritional status improvement during the hospitalization course (**Chart 1, Chart 2**).

Chart 2:
Malnutrition status at discharge for patients who were non-malnourished at admission

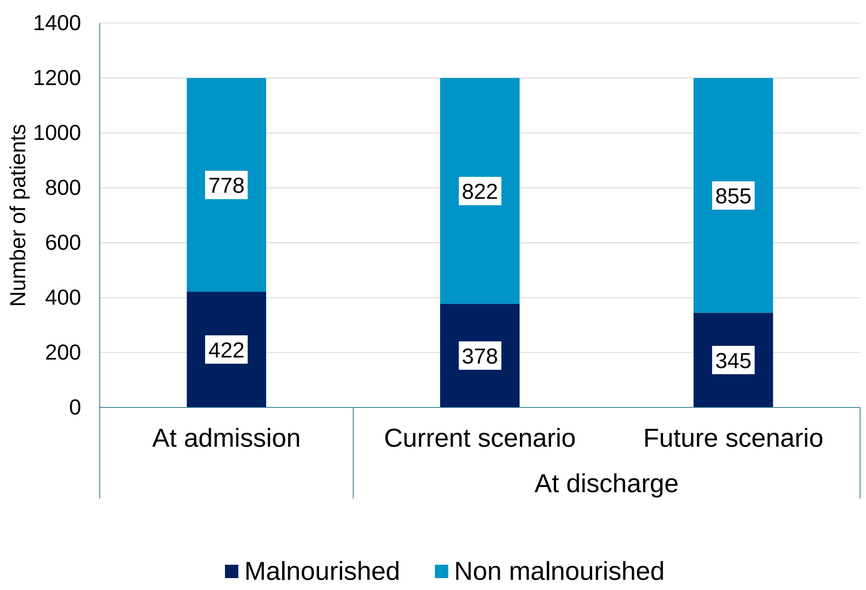


** Based on data from Table 2 and Table 3.*

In line with the Spanish pricing regulations, which are calorie-based, hp-ONS and t-ONS daily costs for target consumption were assumed to be similar (and therefore omitted from the analysis).

RESULTS

Chart 3:
Patients' nutritional status at admission vs discharge



- Out of 1,200 modelled patients, it was estimated that 676 required ONS during their hospital stay, based on nutritional status at hospital admission.
- Of these, 345 patients were malnourished at time of discharge in the hp-ONS scenario vs 378 patients in the t-ONS scenario (-8.7%, **Chart 3**).
- In the hp-ONS scenario, the average length of stay and the total number of hospital days were reduced by 1.2% (1.9% if focusing on ONS-consuming patients). The hospital budget saving was € 127K, out of over € 10 mio spent (**Table 4**).

Table 4:
Length of stay, hospital days and hospitalization costs in the two scenarios

	Current scenario	Future scenario	Delta
Total days of hospitalization (n)	11,658	11,518	-139
Average length of stay (days)	9.7	9.6	-0.1
Hospitalization costs (€)	10.66 mio	10.54 mio	-0.127 mio

CONCLUSIONS

- ✓ Results of the health economic model confirm that switching from traditional ONS to **high protein concentration ONS offers additional value** by positively impacting the patients' nutritional status at discharge and reducing length of stay and hospitalization costs.
- ✓ An **expansion of this analysis to additional countries in Europe** might add to the current understanding of the clinical and economic benefits of using high protein concentration ONS in malnourished patients.

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