

# Value of addressing disease related malnutrition

Authors: A. Craveiro, S. Ferreira, R. Marinho, R. Pereira, F. Pichel, A. Marinho

## 01 Introduction

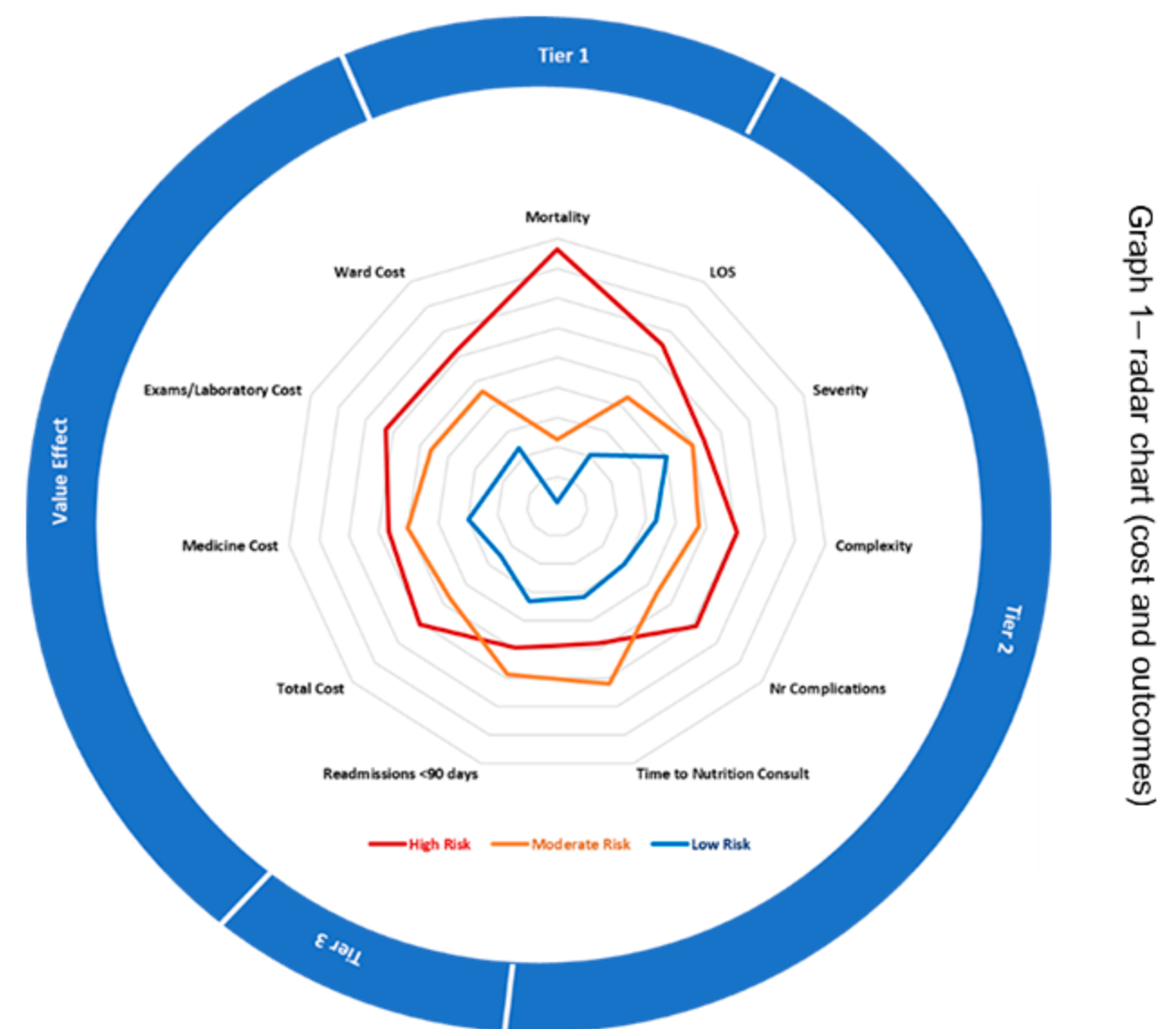
The focus of our investigation is on improving implementation and outcomes. Our objective is to improve outcomes by determining the real influence of disease related malnutrition risk on patient outcomes, by providing real, actual data to Portuguese clinicians and hospital boards. Despite the huge amount of existing literature on disease related malnutrition (DRM) influence on outcomes, clinicians and hospital managers have not fully embraced this knowledge. Our goal is to demonstrate that assessing the malnutrition risk within the first 48 hours of hospitalization and taking early action to address this condition can have a significant impact on patient outcomes and overall hospital performance. We want answers to questions such as [Is DRM a frequent and outcome influential comorbidity?](#) [Is it DRM a comorbidity to pay attention and manage appropriately in almost all Clinical Pathways?](#)

## 02 Methods

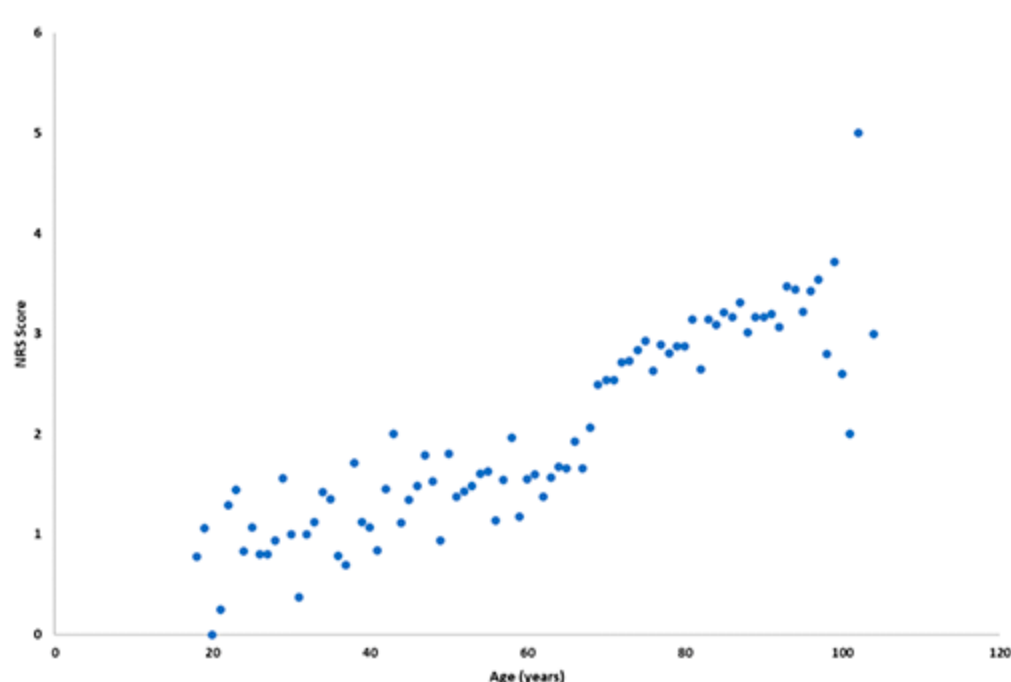
The recommended method for assessing disease-related malnutrition risk in Portuguese hospitals is the Nutritional Risk Screening 2002 questionnaire (NRS 2002). We collected data (Demographic, length of stay, comorbidities, case severity index), from DRG-APR (SIMH database) and from electronic records of inpatients screened using NRS 2002 in 2021 and 2022. 4345 inpatient episodes were classified based on the final NRS 2002 score as: No Nutritional Risk, Moderate Nutritional Risk, or High Nutritional Risk. To estimate the cost for each inpatient, and determine value effect we collected data on prescribed medicines and devices, using average cost prices. The cost of diagnostic and therapeutic procedures for inpatients was determined based on legally fixed prices, while indirect and human resources costs allocated based on average costs and the number of days of hospitalization. Data from IAMETRICS collected to determine Risk Adjusted Complication Index (RACI) for each inpatient

## 03 Results

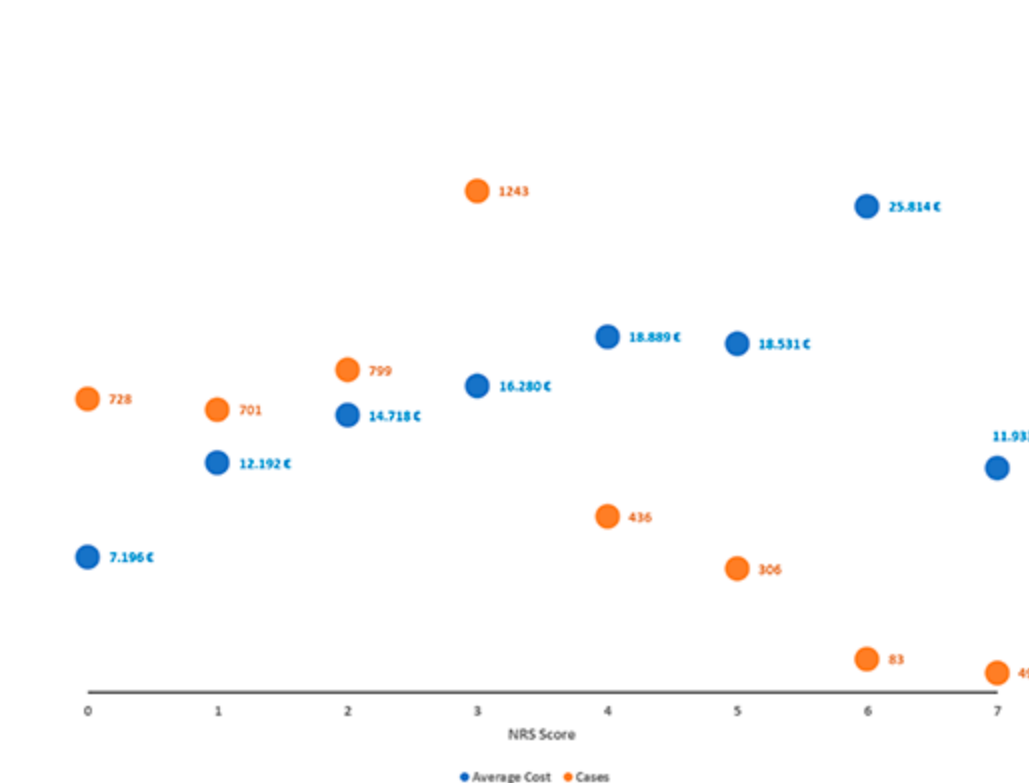
At CHUdSA, in 2021-2022, 48% of inpatients screened for nutritional risk were at high risk of malnutrition, 34,5% moderate and 16,7% no risk. 27% of inpatients with high risk were aged 70-79, 32% on moderate risk aged 60-69 and 32% of no risk were aged 60-69 years. The mortality rate was 27% for high-risk inpatients, 7% for moderate-risk inpatients, and 0.41% for no-risk inpatients. The average length of stay was of 26, 2 days on high risk, 17,6 on moderate and 8,3 on no risk. Average medicines consumption was of 4.380, 54€ for high risk, of 3.896,09€ for moderate and 2.314,63€ for no risk. Inpatient diagnostic and therapeutic procedures cost was of 1.382,10 € for high risk, 1.017, 22€ for moderate and 484, 90€ for no risk. Cost of specific materials for pressure ulcers was of 20, 98€ for no risk, and 74 € for risk inpatients. RACI was of 1,7 for high risk, 1, 55 for moderate and 1, 39 for no risk. Severity index was of 3, 0 for high, 2, 3 for moderate and 1, 6 for no risk. Total episode cost was of 17.415,72€ for high risk, 13.537,48€ for moderate and 7.195,73€ for no risk. The time to the first visit from dietitian professionals was more than 5 days for 18% of high-risk inpatients and 8% of moderate-risk inpatients. Additionally, 76% of high-risk inpatients and 87% of moderate-risk inpatients did not receive a visit from a dietitian.



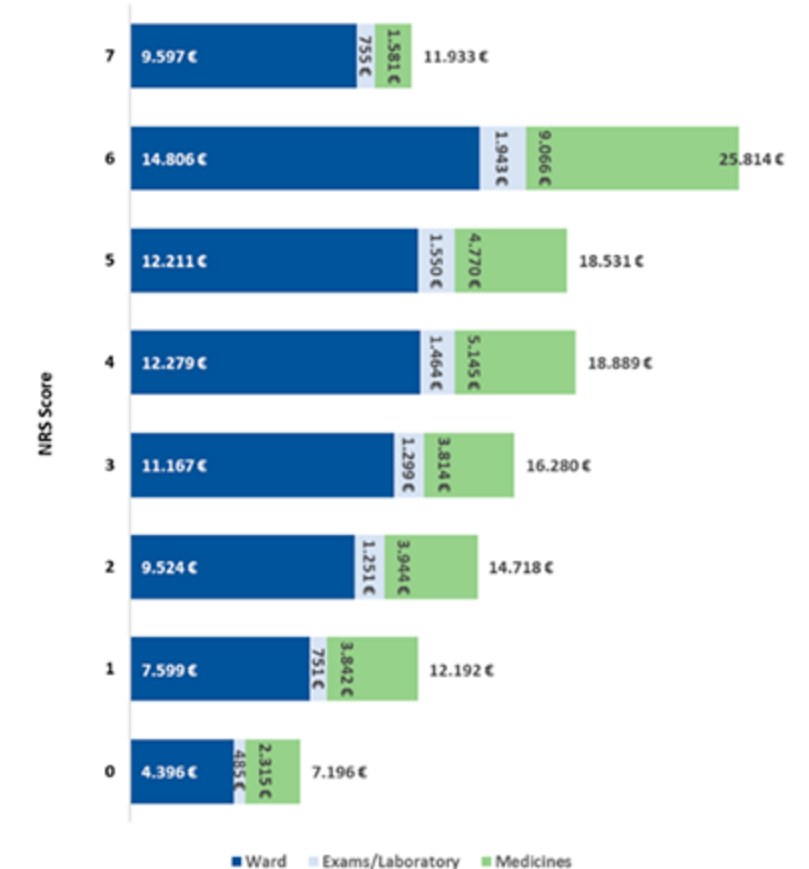
Graph 1 – radar chart (cost and outcomes)



Graph 2 – Age dispersion on NRS Score



Graph 3 – average cost and number of cases / NRS score



Graph 4 – Average cost compounding / NRS score

## 04 Conclusions

Nutritional risk is associated to poorer outcomes and higher hospitalization costs, at CHUdSA. We are demonstrating this relationship to clinical multidisciplinary teams and hospital management. Our next step is to evaluate the compliance rate of each ward with nutritional risk screening, using our business information system to create a "hospital nutritional barometer." Our Enteral and Parenteral Nutrition Hospital Group is now in better condition to promote cultural change, based on our real world evidence.

We also invited another big Portuguese hospital (Hospital Garcia da Orta) to reply our study in their organizational setting, as we want to achieve conclusions with a larger number of inpatients, and different geographical environment. We plan to implement a follow-up program to conduct clinical and nutritional evaluations and collect data on patient experience and quality of life related to nutritional status. Portuguese Health System will have a huge reform, planned to happen in 2024, where primary and hospital care will have organizational integration, and financing will change to a capitation population based system. That will be a huge opportunity to address DRM before hospitalization occurs, and avoid the large prevalence of malnutrition risk on hospitalized population. In addition, that will allow following and measuring Tier 3 results and Patient Reported Outcomes in an easier way. With enough evidence, we aim to emphasize the importance of including nutritional status assessment, in almost all clinical pathways, also in the ICHOM standard sets, across various healthcare settings.