# Medical Nutrition Benefits in Covid-19 Patients

**Medical nutrition may lead to decreased length-of-stay and readmissions, and to reduced associated costs in non-ventilated hospitalised Covid-19 patients**

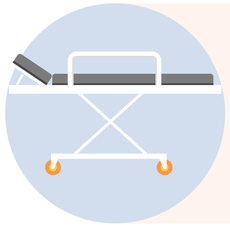



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## Providing medical nutrition to patients who are hospitalised but not on mechanical ventilation with Covid-19 may result in:



**Hospitalisation cost savings to the payer.**



**Reduction in hospital length of stay.**



**Reduced readmission rates.**

## Method



**A cost-consequence model was designed to analyse the impact of providing medical nutrition to patients with Covid-19 who are hospitalised but not on mechanical ventilation.**



**Data were sourced through the available scientific literature.**



**Example costs were sourced from a payer perspective and obtained from UK tariff costs.**

# Key findings



## Cost savings for the healthcare systems

**The introduction of medical nutrition to Covid-19 patients who were hospitalised but not on mechanical ventilation resulted in a saving of €6,013 per patient.**

- Total costs for a patient who was hospitalised, not on mechanical ventilation, and who did not receive medical nutrition for was estimated to be €16,135 per patient.
- Total costs for a patient who was hospitalised, not on mechanical ventilation, and who received medical nutrition was estimated to be €10,122 per patient.



## Reduced duration of hospital stay

**Administration of medical nutrition to Covid-19 patients who were hospitalised but not on mechanical ventilation led to a decrease in hospitalisation duration of up to 11.8 days.**

- Hospitalised patients who did not receive medical nutrition had a length of stay of approximately 27.5 days.
- Hospitalised patients who received medical nutrition had a length of stay of approximately 15.7 days.



## Costs of hospital stays

**The introduction of medical nutrition to Covid-19 patients who were hospitalised but not on mechanical ventilation resulted in a saving of €5,759 per patient, mainly due to shorter length of stay.**

- Total length of stay costs for patients that did not receive medical nutrition were €13,402 per patient.
- Total hospital length of stay costs for patients that received medical nutrition were €7,643 per patient.



## Costs of readmission within 3 months

**Readmission costs for patients receiving medical nutrition were €1,923 less than for those patients who did not.**

- Total readmission costs for hospitalised patients that did not receive medical nutrition were €2,734 per patient.
- Total readmission costs for hospitalised patients that received medical nutrition were €811 per patient.



## Readmission duration

**Each Covid-19 non-ventilated patient who received medical nutrition spent up to 4 days less being hospitalised, compared to those that did not receive medical nutrition.**

- Average readmission days per member of the patient population was approximately 6 days for hospitalised patients that had not received medical nutrition.
- Average readmission days per member of the patient population was approximately 2 days for hospitalised patients that had received medical nutrition.



## Total time spent hospitalised

**Total days hospitalised (original hospitalisation plus readmission stay) was up to 16 days shorter for patients that received medical nutrition compared to patients that did not.**

- Total hospitalisation days per member of the patient population was approximately 33 days for patients that had not received medical nutrition.
- Total hospitalisation days per member of the patient population was approximately 17 days for patients that had received medical nutrition.

Providing medical nutrition support to hospitalised patients not on mechanical ventilation, may lead to savings of approximately **€6000 (per patient)** to the payer, a **12 day reduction** in hospital length of stay and **reduced hospital readmission rates.**


**References**

- National Schedule of NHS costs 2019/20
- Yu, Y., et al 2020. Malnutrition Prolongs the Hospitalization of Patients with COVID-19 Infection: A Clinical Epidemiological Analysis. The journal of nutrition, health & aging, 25(3), pp.369-373.
- FICM,.2021. [online] Available at: <https://www.ficm.ac.uk/sites/default/files/economics-of-critical-care.pdf> [Accessed 3 November 2021].
- Lim SL, et al. Malnutrition and its impact on cost of hospitalization, length of stay, readmission and 3-year mortality. Clin Nutr 2012; 31(3):345-350.(MNI dossier)


**Assumptions**

- Patients are assumed to be split into 2 populations in the model:
  - Hospitalized patients not on mechanical ventilation that are not receiving medical nutrition
  - Hospitalized patients not on mechanical ventilation receiving medical nutrition
- It is assumed that patients who receive medical nutrition are not malnourished, and patients who do not receive medical nutrition will be malnourished. For example, if data is identified for a malnourished population, then the data is assumed to be representative of the 'Patients that are not receiving medical nutrition' population.
- The only resource use that is assumed to change beyond the length of stay in hospital is the readmission rate.
  - Assumed linear increase in readmission rates (%).
- The duration of medical nutrition treatment is assumed to be equal to the length of stay in hospital, and medical nutrition is assumed to start at day 1.
- For the length of stay in hospital, the cost of an ICU bed in the UK is assumed to include ventilator costs. This may not be the case for other country settings.
- Medical nutrition uptake is assumed to remain constant throughout the hospitalization period.
- The time horizon is assumed to be equal to the length of hospital stay.
- Duration of treatment assumed to be the midpoint of Enteral nutrition (8-10 days).
- The length of stay reported for the nutritional risk score (NRS) measurement scale is assumed to be the same as the reported Global Leadership Initiative on Malnutrition (GLIM) length of stay due to data limitations.

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