

Question submitted to RapidInfo4U

How can the nutritional management of those recovering from COVID 19 be best supported and managed in the community setting? Is there any published evidence of nutrition care pathways and or specific interventions for patients Post Covid-19 transferring from acute to rehab, community settings?

Is there any evidence in relation to the specific nutritional considerations in Long COVID?

What evidence is available about the specific nutritional considerations in the management of long COVID-19, i.e. nutrition care pathways and/or interventions? What nutritional diagnosis are most commonly seen. What if any evidence for specific dietary management approaches?

What is the specific role of the dietitian in the management of post-COVID 19 recovery? What evidence supports the specific need for dietitians to be involved in the multi-disciplinary management of COVID-19? Is there any specific published evidence of interventions involving the dietitian, and or improved healthcare outcomes associated with dietetic interventions?

Answer

Guidelines make recommendations as to how nutrition in those recovering from COVID-19 can be managed in the community. The guidelines predominantly address how to manage malnutrition during intensive care unit (ICU) stay but increasingly also address nutrition management on movement to acute ward and from hospital discharge to community settings. There is limited evidence of the impact of nutrition management approaches on COVID-19 recovery. The guidelines draw from broader literature and expert consensus. Broader evidence of the impact of nutrition on the immune system and health suggests nutrition is a key aspect of recovery from COVID-19. Furthermore, there is evidence to support the role of nutrition in recovery from respiratory illness and ICU stay. The guidelines emphasise screening for malnutrition, developing a tailored nutrition care plan and ensuring ongoing nutritional support on discharge. Regular review and monitoring is encouraged to reduce nutritional risk.

The nutritional considerations in long COVID-19 are not easily distinguished from the considerations in COVID-19 recovery overall, except that they are prolonged in duration. The findings of long-term effects reinforce the recommendations for continued nutrition support until the nutrition risks have been addressed. Further research is needed to understand the impact of nutrition and dietetics interventions in recovery from COVID-19.

Details of answer

The repository previously produced a response to the following question in January 2021: “What is the impact of achieving adequate nutrition in the rehabilitation phase post COVID-19 infection?” (access [here](#)). This response will focus on updates to the literature since this response and on specific aspects of the questions posed including patients transferring from acute to community or rehabilitation settings; specific nutritional considerations for Long COVID and the role of the dietitian in recovery as part of a multidisciplinary team (MDT).

Nutritional considerations in recovery from COVID-19

Many studies have highlighted the risk of malnutrition from COVID-19 infection, though the rates vary between studies. Before data emerged, it was highlighted that an ICU stay would increase risk of malnutrition, impacting on swallow ability, muscle mass and function (1). A study was conducted of 268 patients hospitalised with COVID-19 in Italy (2). Overall 77% of patients were deemed at nutritional risk and 50% met the criteria for malnutrition. Hospital dietary intake was less than 50% for 39% of patients. The rates of nutritional risk tended to be higher for those in ICU. The risk of malnutrition was found to be 31.6% (24/76) in a study of hospitalised patients in Belgium and this was also more pronounced for ICU patients (8/15, 53.3%) than non-ICU patients (16/61; 26.2%)(3). There have also been studies of the prevalence of muscle wasting and cachexia in COVID-19; that is $\geq 5\%$ weight loss where functional impairment and metabolic derangement are present. The prevalence of weight loss $\geq 5\%$ varied between 29 and 52% (4).

Post COVID-19 infection, a study of 280 patients in China found 55.4% had loss of appetite and 40.4% had a need/high need of dietary instruction (5). A study published in February 2021 examined the nutritional status of 41 patients discharged from ICU post COVID-19 using the Mini Nutritional Assessment (6). The study reported that “42.5% were overweight, 61% had weight loss, 26.2% had weight loss greater than 10%, 14.6% of patients were undernourished, 65.9% were at risk of undernutrition” as well as further vitamin and mineral abnormalities. ICU length of stay was also related to poor nutritional status. A study by Hoyois and colleagues (7) of 15 patients who had a minimum of 14 days in the ICU with mechanical ventilation found that malnutrition was present in all patients. Dysphagia was also present in 60%. Further detail on dysphagia following COVID-19 infection can be found in another RapidInfo4U response ([here](#)).

Within mild to moderate presentations of COVID-19 there are also factors that could affect nutrition status and place those recovering from COVID-19 at risk of malnutrition such as increased nutritional demands and reduced intake due to coughing, fatigue, poor appetite and issues with accessing food (8). A multicentre European study of 417 patients with mild-to-moderate COVID-19 found that 85.6% reported olfactory dysfunctions and 88.0% gustatory dysfunctions (9). It is not yet fully clear how long these symptom persist (see previous RapidInfo4U question on taste changes [here](#)).

[Specific nutritional considerations for Long-COVID](#)

The UK National Institute for Health and Care Excellence (NICE) in the rapid guideline on [‘Managing the long-term effects of COVID-19’](#) states that the term 'long COVID' refers to both ongoing symptomatic COVID-19 (from 4 to 12 weeks) and post-COVID-19 syndrome (12 weeks or more). The UK National Institute for Health Research (NIHR) in a review in March 2021 have also acknowledged that the term ‘Long-COVID’ covers a wide range of symptoms that persist for varying durations following COVID-19 infection (see review [here](#)). In this sense, the nutritional considerations of long-COVID are not easily distinguished from those considered in

recovery from COVID-19, except that they may persist over a long period of time. As highlighted in the NIHR review, the nature of ‘Long-COVID’ symptoms vary and the causes are not well understood which underscores the importance of individual assessment and management.

Evidence on nutritional interventions for COVID-19 recovery

As described in the previous [RapidInfo4U response](#), guidelines were developed to manage nutrition during COVID-19 infection based on extrapolation from previous literature and expert input. These primarily refer to acute management but also have implications for nutrition management post ICU discharge. A review of guidelines has found that each placed emphasis on meeting energy (calories) requirements as well as ensuring adequate protein, vitamin and mineral intakes (8). Expert statements included the [ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection](#) (1) and [Nutrition management for critically and acutely unwell hospitalised patients with coronavirus disease 2019 \(COVID-19\) in Australia and New Zealand](#) (10). The latter guideline provides recommendations for the acute ward relevant to COVID-19 recovery as well as considerations for screening using validated screening tools. Some of the relevant recommendations for COVID-19 recovery in the acute ward are presented in Table 1. The recommendations should be read in full [here](#).

Table 1. Example recommendations for nutrition management of patients recovering from COVID-19 in the acute ward from Chapple and colleagues (p.432-434)(10).

For patients transferring to the ward from the ICU, we recommend that the ICU dietitian provides an appropriate handover to the ward dietitian within 24 h of ICU discharge.
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We recommend that nutritional monitoring is maintained, including the monitoring of intake and weight (where possible), and high-nutritional- risk patients are reviewed at least twice weekly and lower-risk patients at least weekly
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We recommend advocating for escalation to EN in patients who are meeting <50% of energy and protein targets orally for ≥ 5 – 7 days, or where a patient is assessed as malnourished and has a suboptimal oral intake (<65% of estimated requirements), despite provision of oral nutritional supplements or food fortification.
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In Ireland, a National Clinical Guideline was published in April 2020 on ‘Nutrition screening and use of oral nutrition support for adults in the acute care setting’ ((11); access [here](#)). This Clinical Guideline provides recommendations that are applicable to COVID-19 recovery in terms of screening for risk of malnutrition and oral nutrition support (Table 2). There are also further specific recommendations for patients with dysphagia and surgical patients.

Table 2. National Clinical Guideline Recommendations on nutrition support for adults in the acute care setting (p.3-4) (11)

Recommendation 4	Healthcare professionals should consider using oral, enteral or parenteral nutrition support, alone or in combination, for people who are either malnourished or at risk of malnutrition. Potential swallowing problems (dysphagia) should be taken into account.
Recommendation 5	Healthcare professionals should ensure that people having nutrition support, and their carers, are kept fully informed about their treatment. They should also have access to appropriate information and be given the opportunity to discuss diagnosis and treatment options.
Recommendation 6	Healthcare professionals should consider oral nutrition support to improve nutritional intake for people who can swallow safely and are malnourished or at risk of malnutrition.
Recommendation 7	Healthcare professionals should ensure that the overall nutrient intake of oral nutrition support offered contains a balanced mixture of protein, energy, fibre, electrolytes, vitamins and minerals.
Recommendation 8	If there is concern about the adequacy of micronutrient intake, a complete oral multivitamin and mineral supplement providing standard requirements, should be considered by healthcare professionals with the relevant skills and training in nutrition support who are able to determine the nutritional adequacy of a patient’s dietary intake.
Recommendation 9	The prescription should be reviewed according to the person’s progress, and care should be taken when: - using food fortification which tends to supplement energy and/or protein without adequate micronutrients and minerals - using supplements that meet full energy and protein needs, as they may not provide adequate micronutrients and minerals.
Recommendation 10	Oral nutrition support should be stopped when the patient is established on adequate oral intake from normal food.

However, evidence of the impact of nutritional interventions for COVID-19 recovery is limited. The NICE guideline on Covid-19 and vitamin D ([here](#)) has not been further updated since December 2020. The finding of this review was that the evidence of the impact of vitamin D was mixed and of low quality. The guideline recommended vitamin D supplementation in contexts where a person is at risk of vitamin D deficiency but not as part of routine practice to prevent or treat COVID-19. A review published in May 2021 has examined the role of nutrition in susceptibility to COVID-19 and severity of disease (12). The review included 22 published articles, 38 articles in preprint and additional trials. The conclusion was that there is limited evidence that susceptibility to COVID-19 or recovery from disease is affected by supplements of micronutrients. However, considering the broader understanding of the impact of nutrition on the immune system, the authors highlight that malnutrition and micronutrient deficiencies must be addressed. This review also highlights the need to consider underlying conditions that increase the risk of serious outcomes following COVID-19 including obesity and type 2 diabetes.

In terms of impact of nutritional strategies following ICU, there are small scale studies in the context of COVID-19. Studies applying early nutrition care following ICU have found many substantial improvements in nutrition but these are limited in terms of evidence because there are no controls and they contain only a small number of participants. For example, the study of 15 patients who spent at least 14 days in ICU with mechanical ventilation found that malnutrition was present in all patients (7). Dysphagia was also present in 60% and thus enteral nutrition was administered. After 2 months, improvements were seen in hand grip strength and weight gain. Looking to broader literature on nutrition support following ICU admission, a review by van Zanten and colleagues (13) supports the need to ensure high protein targets are met following hospital discharge through prolonged tube feeding or oral nutrition supplements (ONS). Studies reviewed suggest that ONS reduce length of stay and mortality among hospitalised patients and that high protein ONS following hospital discharge reduced mortality.

There are also exploratory studies being conducted to identify strategies to manage appetite from the perspective of patients with long-term COVID-19 symptoms. The study identified four themes including a focus on “well-functioning senses”, “familiar foods”, “the eating environment”, and “post-ingestive well-being” (14).

[Nutrition care pathways post COVID-19, acute to community settings](#)

A review of COVID-19 nutrition support guidelines for people recovering from COVID-19 in the community in October 2020 identified information relevant to continuity between acute and community settings (8). There was particular emphasis on those who had been hospitalised with COVID-19 whose nutritional requirements will remain high from weeks to months post-discharge. The documents reviewed “consistently stated that a clear pathway from acute to community teams needs to be identified, and requires accessible and often rapid communication” (p.8). A second key message was that each patient requires a hospital discharge plan which includes malnutrition risk, details of continued nutrition care plans and details of ICU admission.

Similar to nutrition interventions, there are recommendations around nutrition care pathways but there is limited evidence to demonstrate their effectiveness in recovery from COVID-19. In terms of the community settings, [‘A Community Healthcare Professional Guide to the Nutritional Management of Patients During and After COVID-19 Illness’](#) was published in June 2020. The guide offers points in relation to screening using ‘MUST’ and management of nutrition in those with or recovering from COVID-19 in the community depending on the level of malnutrition risk. The guidance considers addressing the range of symptoms that can inhibit intake during or following COVID-19 infection, the role of underlying conditions, the use of ONS, goal setting and monitoring. This document links to a series of patient leaflets and resources. The guide extrapolates from previous evidence and is not specifically evaluated with COVID-19 patients.

A document published by the Intensive Care Society (ICS) in August 2020 'Dietetics for COVID-19 patients in ICU and beyond' includes recommendations for practice including the transfer between care settings. The document from the ICS recommends that dietetics are included post-ICU follow-up MDTs clinics after discharge from acute care. Then at regular intervals (every three months) following ICU admission, there should be a comprehensive nutrition assessment by a dietitian and nutrition specific recommendations developed. From here, the team and patient could decide if the patient needs to continue to see the MDT or if they can be referred onto community services. This document also highlighted the need to develop a standardised post-ICU nutrition follow-up pathway that could be used for COVID-19 and non-COVID-19 patients. This should detail: "Screening questions and referral criteria for clinics; online self-screening; full nutrition assessment; onwards referral" (p.5)

A survey conducted with 37 UK dietitians involved in the nutritional care of patients with COVID-19 sought to understand the nutrition care pathways used for patients both prior to and following hospital discharge (15). 19 responders had a new COVID-19 pathway. The findings related to these responses were as follows:

"74% reported involvement of dietetic services, 47% reported > 1 eligibility criteria for pathway inclusion and 53% accepted all positive or suspected cases. All respondents used nutritional screening, first-line dietary advice (food first) and referral for further advice and monitoring. Weight and food intake were the most used outcome measure. All pathways addressed symptoms related to nutrition, with the most common being weight loss with poor appetite, not being hungry and skipping meals in 84% of pathways." (p.1)

[Evidence on role of dietetics within multidisciplinary team in COVID-19 recovery](#)

There is little direct evidence of the impact of including dietetics components in COVID-19 rehabilitation. Points from the broader literature on recovery from acute respiratory illness or ICU have been used to examine the role of dietetics. A review was conducted on rehabilitation

contributing to recovery from COVID-19 (16). This review encompassed interventions with many aspects of rehabilitation. Nutritional interventions were identified as potentially improving ADL in those post-ICU in the hospital setting. The nutritional interventions consisted of a range various components including lectures, counselling, ONS, PN, EN). Further research on the role of nutritional interventions is needed. The authors note that the evidence for the role of nutrition in rehabilitation after discharge from hospital is inconclusive (16). A study of hospital rehabilitation from ICU stay to hospital discharge showed that a complex intervention combining physiotherapy, nutritional care (from a dietician) and information with case management resulted in better patient experience (17).

Conclusion

Recommendations exist on managing nutrition in patients recovering from COVID-19 in the community which may also be pertinent to those experiencing long COVID. The recommendations are primarily based on related literature and expert consensus. This literature includes the role of nutrition for the immune system and recovery from respiratory illnesses as well as nutrition in recovery from ICU stay and related conditions. Further evidence is needed on the impact of nutritional interventions in COVID-19.

Disclaimer

This document has not been peer-reviewed; it should not replace individual clinical judgement. The views expressed in this document are not a substitute for professional medical advice. The content of this document is correct as of 31/05/21.

Rapid Evidence Search & Summary (RESS)

Our team of multidisciplinary researchers and clinicians in conjunction with the University of Limerick Library and Information Services have developed a detailed protocol for conducting a Rapid Evidence Search & Summary (RESS) to answer questions submitted to RapidInfo4U. Our RESS protocol uses PICO or PEO methods to refine your question and follows a detailed search procedure capturing guidance documents from governments, institutions and professional bodies; searching clinical and COVID

specific repositories; and identifying the most recent reviews and RCTs in the scientific literature using established databases.

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