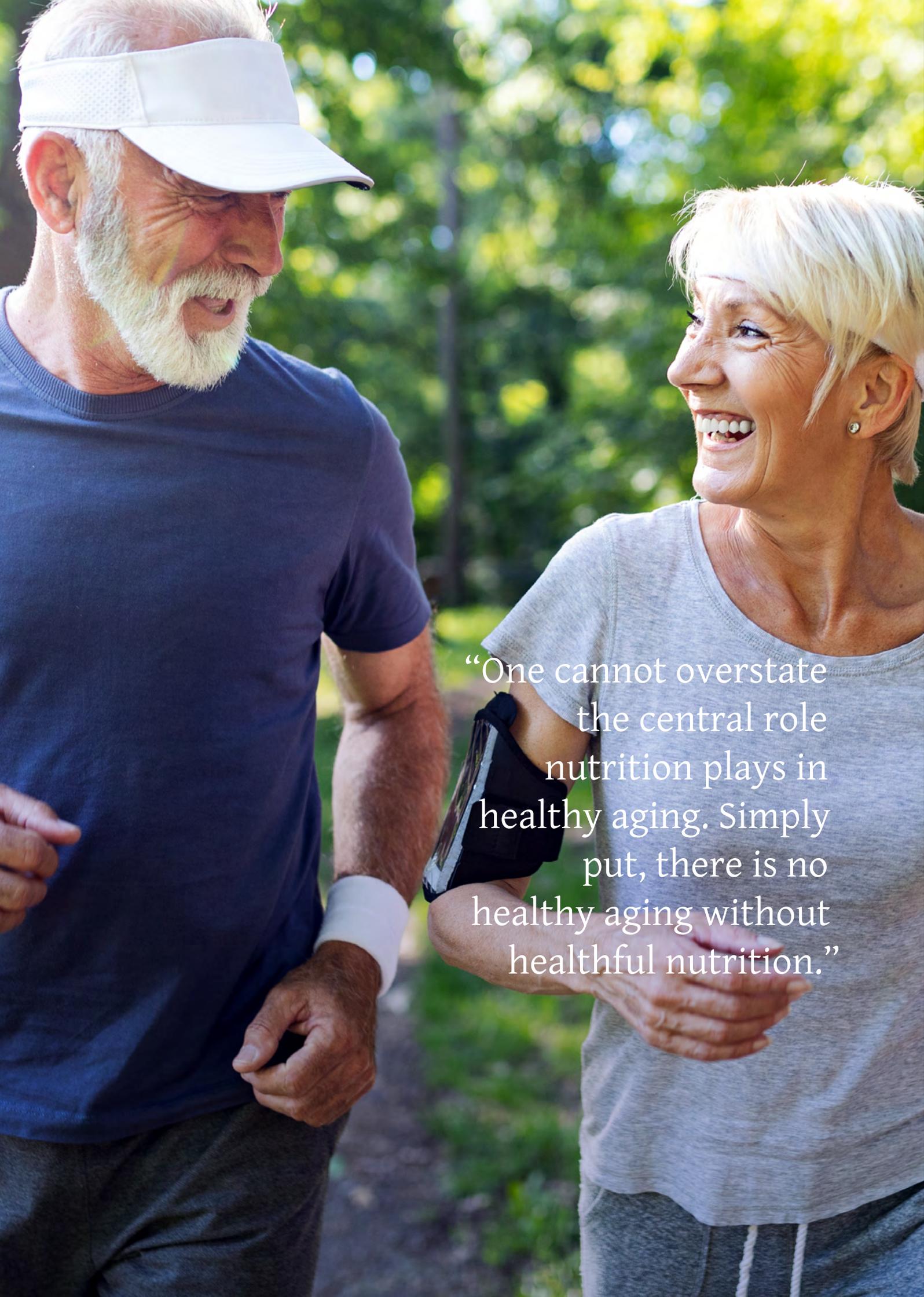




LEARNINGS FROM A GLOBAL PANDEMIC:

# The Role of Nutrition in COVID-19 Recovery and the Ongoing Pursuit of Healthy Aging





“One cannot overstate the central role nutrition plays in healthy aging. Simply put, there is no healthy aging without healthful nutrition.”



The complexities of healthy aging—and the urgency of addressing the challenges of healthy aging—have been illustrated vividly as the world has responded to the COVID-19 pandemic, which poses urgent challenges for public health and the health of societies and economies. Some aspects of responses to the pandemic, such as increased use of telehealth and remote care options and the reentry of many retired health professionals to the workforce, have yielded positive results where they have been deployed. Because COVID-19 has disproportionately affected older adults, we must take and adapt learnings from the pandemic to ensure our older population is not left behind and that healthy aging remains an achievable goal for people of all ages, in a time of pandemic and beyond.

During the pandemic, the role of nutrition in healthy aging has come into sharper focus but is still well under-addressed. As we wrote in our 2018 report, *Nutrition: A Solution for the Unprecedented Challenge of 21st Century Aging*, “One cannot overstate the central role nutrition plays in healthy aging. Simply put, there is no healthy aging without healthful nutrition.”<sup>1</sup> That truth resonates even more profoundly in a time of a global pandemic and should guide the efforts of healthcare systems and policymakers as they continue to grapple with and eventually emerge from the pandemic.

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# Table Of Contents

COVID-19: Threat to Healthy Aging, Opportunity for Health System Change	6
COVID-19's Disproportionate Impact on Older Adults	8
Resilience, Immunity and Nutrition	10
The Role of Nutrition in Older Patients Hospitalized with COVID-19	12
Nutritional Care and the Road to Health After COVID-19	14
Nutritional Care and the Promise of Healthy Aging: A Call to Action	17

[← BACK](#)

# COVID-19: Threat to Healthy Aging, Opportunity for Health System Change



Few, if any, expected that 2020—the start of the Decade of Healthy Ageing<sup>2</sup>—would be marked by a global pandemic which has disproportionately affected those over 60, particularly those with underlying medical conditions. Yet as the world continues to contend with the serious effects of COVID-19 on societies, health systems, and economies as well as individual health, it has become increasingly clear that one's health status upon contracting COVID-19 is crucial for success coming out of it. Indeed, the value of building one's "health capital" has generally been understood, but it has not been addressed with the necessary urgency.

The World Health Organization defines health as we age as functional ability or having the capabilities to be and to do what an individual values—including working, socializing, doing physical exercise, and much more.<sup>3</sup> In this time of COVID-19 when many of these activities especially for older people have been constrained, we must redouble our efforts to support health before—and resilience after—a serious health incident.

Among these missed opportunities is recognition of the importance of nutrition to overall health, in particular as we grow older. Especially during moments of ill-health, nutrition is an underestimated area of impact on prospects for recovery. It is not broadly recognized that older people can become malnourished because of health incidents, a disease or the conditions of aging like frailty, sarcopenia or cognitive decline. Often, when it is recognized, it is too often and wrongly considered to be a normal part of aging or the disease progress. Failing to address malnutrition or the risk of malnutrition also means missing out on the positive impact of nutrition—and more specifically medical nutrition—on the recovery of older people after major health crises such as heart disease, stroke, and hip fractures as well as COVID-19.

With respect to COVID-19, one study highlighted that more than half of patients (of all ages) admitted to the hospital with complications resulting from a COVID-19 infection are malnourished.<sup>4</sup> Further, COVID-19 patients enduring lengthy hospital stays, especially those in the intensive care unit (ICU), are at risk of malnutrition and significant loss of muscle mass that can result in a severe depletion of strength and resilience.<sup>5</sup> This overall weakness, further exacerbated by undernourishment, can impact the speed of recovery, with many people hardly able to undergo rehabilitation programs and return to engage in activities of daily living like personal hygiene, preparing and eating food or going outside for a walk.<sup>6</sup>

More than half of patients admitted to the hospital with complications resulting from a COVID-19 infection are malnourished.



← BACK

# COVID-19’s Disproportionate Impact on Older Adults



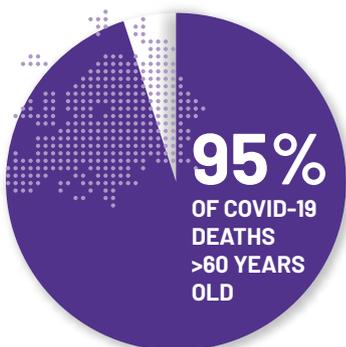
The impact of COVID-19 on older populations is profound both from a health as well as societal perspective. Mortality rates are highest among older people who also are at a greater risk of contracting the virus because of weakened immune systems and the likely presence of one or more underlying conditions. Further, lockdown measures that were put in place to contain the spread of the virus often had unintended yet acute consequences for their social well-being.<sup>7</sup>

In Europe, as of early April, 95% of deaths resulting from infection with COVID-19 occurred in those older than 60 years. More than 50% of all deaths were of people aged 80 or older.<sup>8</sup> In the United States, 80% of deaths from COVID-19 have occurred in adults age 65 and older.<sup>9</sup>

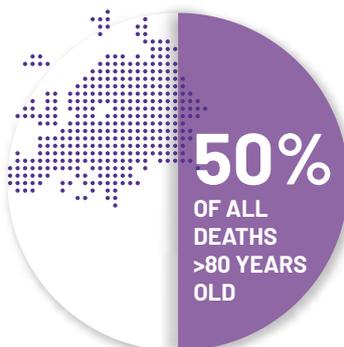
Older adults commonly have chronic diseases that can increase the risk of severe illness or death from COVID-19. Evidence from various studies shows that eight out of ten COVID-19 deaths occur in individuals with at least one underlying co-morbidity, such as cardiovascular diseases, hypertension, diabetes, chronic obstructive pulmonary disease, and cerebrovascular disease.<sup>10,11,12</sup>

## EUROPE

IN APRIL 2020



IN 2020



## USA

IN 2020



It is increasingly becoming better understood how our immune system, the body's multi-level defense network against potentially harmful bacteria, viruses and other organisms, evolves over the course of our lives. Immunosenescence refers to the gradual decline of the immune system as people age and is associated with increased mortality in older adults.<sup>13</sup> This gradual decline of the immune system puts older people at a greater risk of COVID-19; as their natural defense system is impaired, affecting its ability to tackle pathogens like the virus that causes COVID-19.<sup>14</sup>

Further, there is a growing recognition that isolation and loneliness contribute to worse health outcomes for older adults. Social isolation and related health decline were already a significant challenge for many older adults; this risk is now heightened.<sup>15</sup> Quarantining and social or physical distancing, while important and effective strategies for reducing the spread of the virus, also have tangible, if far more difficult to measure, costs, particularly for older adults. As the UN has noted, “[w]here physical distancing is not implemented with supports in place, it can lead to increased social isolation and denial of support to older persons at a time when they may be at most need of care and support.”<sup>16</sup>

At worst, the need for self-isolation can easily turn the preventive goal into serious unintended consequences for the frail elderly, linked to a loss of appetite, eating and drinking inadequately, increasing the risk of malnutrition and weight loss.<sup>17</sup> “Depression and loneliness as well as reduced food availability may be determined by those necessary public health countermeasures, unavoidably leading to changes in food quality and quantity in the older person’s diet.”<sup>18</sup>

As the UN has noted, “[w]here physical distancing is not implemented with supports in place, it can lead to increased social isolation and denial of support to older persons at a time when they may be at most need of care and support.”

[← BACK](#)

## Resilience, Immunity and Nutrition



A well-functioning immune system is key to providing good defense against pathogenic organisms, including viruses and bacteria.<sup>19</sup> Good nutrition builds one's "health capital," making people less susceptible to infection and contributing to resilience in times of health crisis. If older people are not getting the nutrition they need, they are at a greater risk of becoming malnourished. Malnutrition impairs the immune system, leading to a greater incidence of infection while harming the ability of the body to recover.<sup>20</sup> As the world awaits progress on a vaccine against the virus that causes COVID-19, individuals' immune systems should be as strong as possible to prepare them for the possibility of infections and disease and to live healthier lives. Further, that health capital can help ensure our bodies are as strong and receptive to the vaccine as possible.

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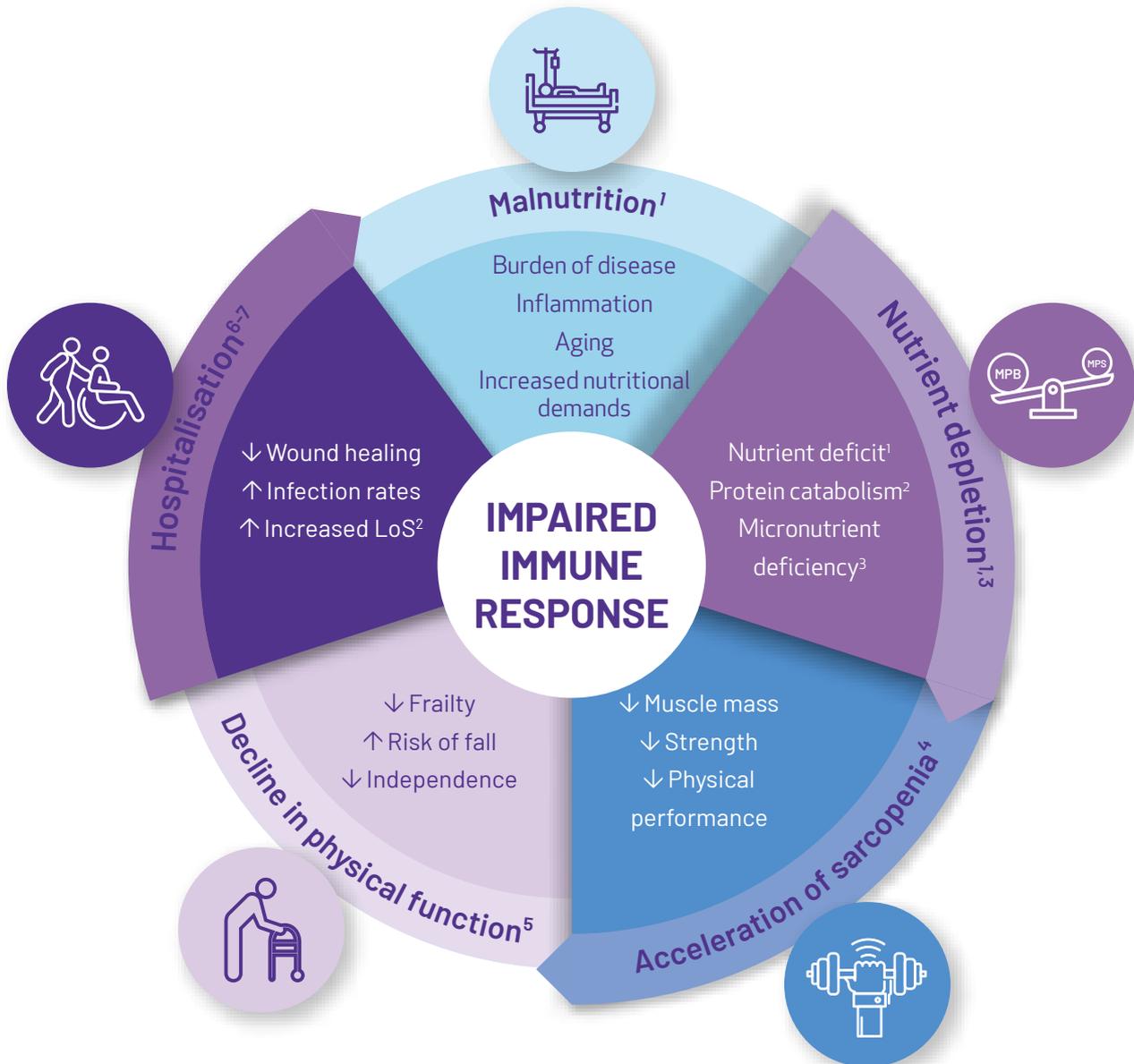
A wealth of mechanistic and clinical data<sup>21</sup> show that beyond protein and energy, vitamins (including A, B6, B12, C, D, E, and folate) and trace elements (zinc, iron, selenium, magnesium, and copper) and omega-3 fatty acids (eicosapentaenoic acid and docosahexaenoic acid) play important and complementary roles in supporting the immune system. Inadequate intake of these nutrients can lead to a decrease in resistance to infections and as a consequence an increase in disease burden.<sup>22</sup>



"In the wake of SARS-CoV-2, a virus with no current treatment, approaches to ensure that individuals' immune systems are well supported should be taken. Nutrition should be at the forefront of these approaches"

—Professor Philip Calder  
Head of Human Development & Health and Professor  
of Nutritional Immunology, University of Southampton, UK

## FACTORS INFLUENCING DELAYED RECOVERY



\*LoS: Length of stay

MPB: Muscle protein breakdown

MPS: Muscle protein synthesis

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[← BACK](#)

## The Role of Nutrition in Older Patients Hospitalized with COVID-19



Prevalence of malnutrition in hospitalized patients is high at admission (31%) and importantly, also high pre-discharge (36%). Moreover, malnutrition is more prevalent in patients with a longer length of stay.<sup>23</sup> The prevalence of malnutrition in hospitalized older patients is even higher: more than 55% of older patients in hospitals are malnourished, according to a study conducted in German hospitals. This number can reach 75% in some countries.<sup>24,25</sup> During the current pandemic, more than half of patients who were admitted to the hospital with complications resulting from a COVID-19 infection were malnourished.<sup>26</sup>

Because COVID-19 is a new disease, more data is needed, but the studies that have been conducted so far point to significant nutritional challenges linked to the severity of the disease and the high proportion of older adults with potential pre-existing malnutrition and/or co-morbidities. It is essential, therefore, to perform a nutrition screening upon or very shortly after admission<sup>27</sup> to measure muscle loss<sup>28,29</sup> and ensure adequate nutrition therapy is provided when needed.<sup>30</sup> These considerations are even more important for patients with COVID-19 admitted to an ICU.<sup>31</sup>

Patients with COVID-19 who need intensive care are ventilated and sedated for an average period of two weeks (and up to four weeks). During that time they are unable to eat normal food and therefore must receive either enteral tube feeding or parenteral nutrition. These patients can lose a substantial amount of muscle from immobilization and the side effects of medication. When discharged from the hospital these patients tend to be severely malnourished and weak and require lengthy periods of rehabilitation.<sup>32,33</sup>

The prevalence of malnutrition in hospitalized older patients is even higher: more than 55% of older patients in hospitals are malnourished, according to a study conducted in German hospitals. This number can reach 75% in some countries.

Fortunately, there are solutions. Specialized nutritional care using medical nutrition has been shown to contribute to better survival and recovery outcomes, by improving functional outcomes, reducing complications and the length of hospital stays.<sup>34,35,36</sup> Medical societies, including ASPEN (American Society of Parenteral and Enteral Nutrition) and ESPEN (European Society of Parenteral and Enteral Nutrition), highlight that short- and long-term outcomes in older, vulnerable patients depend heavily on nutritional status and timely nutritional care.<sup>37,38,39</sup> After hospital discharge, ongoing nutritional care should be a key component of patient rehabilitation programs for their recovery, in particular for patients with chronic conditions and patients who have been discharged from a long period of intensive care.

Short- and long-term outcomes in older, vulnerable patients depend heavily on nutritional status and timely nutritional care.



“Every effort should be made to try to avoid or at least reduce underfeeding in hospital in order to limit the deleterious consequences of malnutrition on patient outcomes, including morbidity, poor recovery, hospital length of stay and readmissions, healthcare cost and mortality. This is crucial for older patients who are disproportionately affected by COVID-19.”

—Dr Riccardo Caccialanza  
Head of the Clinical Nutrition and Dietetics Unit of the Research Hospital Foundation IRCCS Policlinico San Matteo, Pavia, Italy

[← BACK](#)

## Nutritional Care and the Road to Health After COVID-19



In the initial stages of the pandemic, acute care and the capacity of healthcare systems to respond adequately to a surge in cases took center stage in policy discussions. As countries around the world face second and third waves of the virus, follow-up care and recovery as well as building health resilience of at-risk populations become increasingly important. Here again, nutrition, specifically nutritional rehabilitation coupled with physical exercise,<sup>40</sup> is an essential component of recovery, continued good health and resilience.

After hospital discharge, older patients who have been admitted for COVID-19 remain at risk. Continuity of nutritional care is essential as the body works to restore health.<sup>41</sup> It is often taken for granted that people will begin to eat and drink normally again, but people might not achieve appropriate and adequate nutritional intake due to ongoing symptoms such as persistent respiratory issues, fatigue or weakness, lack of appetite, or because of swallowing difficulties they might experience after post-ICU stay extubation.<sup>42,43</sup>



“Older patients are amongst the most impacted patients infected with COVID-19. Especially if hospitalized, they face risk of malnutrition even as many entered the hospital already malnourished or suffering from chronic disease potentially linked with muscle loss. Recent French recommendations for care home residents similarly highlighted the need for better screening and management of care home residents during and after hospitalization in order to recover nutritional and functional status.”

—Professor Agathe Raynaud-Simon

Head of the Department of Geriatrics, Hôpitaux Bichat et Beaujon,  
Paris, France



ESPEN has issued specific guidance for the care of discharged COVID-19 patients: “Nutritional treatment should continue after hospital discharge with ONS [oral nutritional supplements] and individualized nutritional plans; this is particularly important since pre-existing nutritional risk factors continue to apply and acute disease and hospitalization are likely to worsen the risk or condition of malnutrition.”<sup>44</sup>

Practical guidance to support continuity of nutritional care along the patient journey is essential to inform healthcare professionals and help educate and empower patients and caregivers with knowledge of how proper nutrition aids recovery after discharge.



“Those at risk of severe COVID-19 infection, namely, older adults and those with multiple comorbidities, are equally those in whom malnutrition is already prevalent. Ensuring continuity of nutritional care after hospital discharge and identifying those in the community who require nutritional care whilst unwell at home, is essential for optimal recovery and rehabilitation. Better implementation of nutritional care pathways in all settings is warranted to identify those with nutritional issues and target and expedite nutritional care to those who would gain benefit.”

—Anne Holdoway  
BAPEN Education Officer & Chair BDA COVID-19 CGG, Bath, UK

“Nutritional treatment should continue after hospital discharge with ONS [oral nutritional supplements] and individualized nutritional plans; this is particularly important since pre-existing nutritional risk factors continue to apply and acute disease and hospitalization are likely to worsen the risk or condition of malnutrition.”

[← BACK](#)

## Nutritional Care and the Promise of Healthy Aging: A Call to Action



While the pandemic has deflected attention from other health priorities, it has not changed the underlying realities of what constitutes healthy aging nor the need for societies to address these challenges now, as demographic shifts to older societies accelerate.

Among those realities is the critical importance of nutrition to overall health at all ages and in particular to healthy aging. Proper nutrition enhances healthy aging and plays an important role in conditions that often occur with aging, such as frailty, decreased bone and muscle mass, and a weakened immune system. In contrast, malnutrition and physical inactivity can lead to weight loss, muscle and



bone mass loss, impairing the immune system, lowering quality of life and exacerbating the effects of pre-existing conditions.<sup>45,46</sup>

The current pandemic reinforces the need to ensure adequate screening and management of malnutrition in older people who live at home independently is an integral part of care systems. It should be a priority for policymakers and healthcare professionals to address the risk of malnutrition at an early stage because of the effects it can have on disease progression and health outcomes later.

Equally during and after a critical illness, nutrition should play an essential role in the recovery process of older people.<sup>47</sup> Nutritional guidelines and timely medical nutrition interventions must be implemented in treatment protocols not only during hospital stays but also after patients are discharged. Centering care on individual needs and recovery goals will yield the greatest benefits. Older patients who had COVID-19 benefit from follow-ups to ensure that they are not malnourished and to assess their rehabilitation needs, so that they may regain the ability to do the things that matter to them most and their quality of life is not diminished. Rehabilitation programs for the recovery of older people should incorporate medical nutrition, combined with physical exercise. National health systems should adopt policies that reflect the importance of nutrition to healthy aging and recovery from disease.

Such integrated care pathways are necessary not only in the current context of the pandemic but more broadly in our aging societies in which maintaining functional ability will enable the 2 billion people over 60 by 2050 to live longer healthier, and more active lives.



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### **About the Global Coalition on Aging**

The Global Coalition on Aging aims to reshape how global leaders approach and prepare for the 21st century's profound shift in population aging. GCOA uniquely brings together global corporations across industry sectors with common strategic interests in aging populations, a comprehensive and systemic understanding of aging, and an optimistic view of its impact. Through research, public policy analysis, advocacy, and strategic communications, GCOA is advancing innovative solutions and working to ensure global aging is a path to health, productivity and economic growth.

For more information, visit [www.globalcoalitiononaging.com](http://www.globalcoalitiononaging.com).

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### **About Nutricia**

Since 1896, Nutricia has pioneered nutritional solutions that help people live longer, more joyful and healthier lives. Building on more than a century of research and innovation, Nutricia has harnessed the power of life-changing and life-saving nutrition to create a leading specialized nutrition portfolio that can change a health trajectory for life.

With its nutritional solutions, Nutricia supports healthy growth and development during the first 1000 days and helps to address some of the world's biggest health challenges; pre-term birth, faltering growth, food allergy, rare metabolic diseases, age-related conditions and chronic disease, such as frailty, cancer, stroke and early Alzheimer's disease.

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