

Nutritional Support : use of L-Glutamine in Covid-19 Patient Care

Consensus opinion: Nutritional therapy using adequate protein and aa supplements are indicated in treating Covid-19 patients.

Study	Objective	Conclusion	Key issues
Cengiz M et al. Effect of oral L-Glutamine supplementation on Covid-19 treatment. Clinical Nutrition Experimental 33 (2020) 24-31.	Investigate the effect of oral L-Glutamine supplementation on hospitalization time, need for ICU and disease mortality.	L-glutamine can boost the immune system by inhibition of inflammatory responses. Results suggest that adding oral/enteral glutamine to normal nutrition in the early period of Covid-19 infection, can shorten the length of hospital stay and reduce the need for ICU.	As in other acute diseases, normal protein intake <i>is not sufficient to support recovery</i> . Muscle loss is associated with a poor prognosis of the disease.
Mohammed Ali A et al. Skeletal Muscle Damage in Covid-19: A Call for Action. Medicina 2021, 57;372.	To assess interventions to limit muscle damage, associated with poor prognosis in Covid-19 patients.	Nutritional support using protein and amino acid supplements like glutamine, along with physical activity, when possible/electrical stimulation, may be necessary to restore skeletal muscle metabolism and prevent the after-effects of physical disability in recovering patients.	Malnutrition and baseline inflammation are thought to be key effectors in the development of cytokine storms in individuals that contract Covid-19.
Obayan A. Overview of Rationale for L-Glutamine treatment on Moderate to Severe Covid-19 Infection. J Infect Dis Epidemiol. 2021,7:187	This overview focuses on how to overcome the treatment challenges posed by Covid-19 infection and reduce mortality with antioxidant therapy, and thereby reduce oxidative stress. Individuals with premorbid conditions have diminished antioxidant reserve and are more at risk of oxidative stress	Increasing glutathione levels with L-Glutamine orally or parenterally could improve surfactant regeneration and reverse the sequelae of Covid-19 infection. Therapeutic doses of oral or parenteral glutamine between 0.3 – 0.75 g/kg body weight improved clinical outcomes of surgical and intensive care patients. Glutamine is the main source of glutathione.	The lung damage in severe Covid-19 infection occurs through inflammatory mediated excessive secretion of proteases and reactive oxygen species (oxidative stress), as well as direct damage by viral replication.
Haraj NE et al. Nutritional status assessment in patients with Covid-19 after discharge from the intensive care unit. Clinical Nutrition ESPEN 41 (2021) 423-428.	Assess the nutritional status of patients with Covid-19 after ICU to: <ul style="list-style-type: none"> Determine the prevalence of undernutrition 	The immune response and antioxidant defenses are worsened by malnutrition leading to an increased risk of complications. Adequate protein intake is essential in acute infections and malnutrition. Amino acids and in particular glutamine, are essential energy	Covid-19 patients are at high risk of malnutrition.

	<ul style="list-style-type: none"> • Determine factors influencing undernutrition • Describe nutritional management 	<p>substrates, for immune cells such as lymphocytes.</p> <p>Moderate undernutrition: a high-calorie and high protein diet with ONS is recommended.</p> <p>Severe undernutrition: early EN is recommended</p> <p>This has implications, not only for when a patient is in hospital, but patients cured of infection after weeks in ICU frequently have impairments on the respiratory, cardiovascular, neurological, and musculoskeletal level.</p>	<p>A positive correlation was found between poor nutritional status and length of stay in ICU</p> <p>Despite personalized diet, supplementation with vitamin D and trace elements, 14.6% of patients presented undernutrition.</p>
<p>Cautionary notes:</p> <p>Patients with liver disease/ failure: The only group of patients in the ICU with supranormal plasma glutamine concentration are patients with acute fulminant liver failure. Avoid the use glutamine in:</p> <ul style="list-style-type: none"> • Patients with fulminant liver failure • Potential liver transplant patients • Patients who have liver failure following resections who present with severe complications <p>In contrast patients with chronic liver failure or acute-on-chronic liver failure have low or normal plasma glutamine concentrations and therefore they may be treated as any other patient in the ICU⁵</p> <p>Patients with kidney disease/failure: It is safe to use Glutamed in patients who have a GFR \geq 30⁶</p>		<p>Glutamine:</p> <p>Oral or enteral glutamine can be added at a dose of 0.3 - 0.5g/kg/24 hrs or 3 x 10g sachets given in divided doses daily. Glutamine should be administered with full nutrition support and the dose should not exceed 30% of the prescribed nitrogen supply.</p> 	

References:

1. Ali AM et al. Skeletal Muscle Damage in Covid-19: A Call for Action. Medicina 2021,57,372
2. Haraj NE et al. Nutritional status assessment in patients with Covid-19 after discharge from the intensive care unit. Clinical Nutrition ESPEN 41 (2021) 423-428.
3. Cengiz M et al. Effect of oral L-Glutamine supplementation on Covid-19 treatment. Clinical Nutrition Experimental 33 (2020) 24-31.
4. Obayan A. Overview of Rationale for L-Glutamine treatment on Moderate-Severe Covid-19 Infection. J Infect Dis Epidemiol. 2021,7:187
5. Wernerman J Glutamine Supplementation. Annals of Intensive Care 2011,1 :25
6. Enteral glutamine for Covid-19 patients at risk of renal insufficiency. J Thorball MD July 2020

