



ASIA PACIFIC CENTER FOR
EVIDENCE BASED HEALTHCARE

Should Vitamin C/ Ascorbic Acid be used in the treatment of COVID-19?

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KEY FINDINGS

There is no direct evidence available as of this point for efficacy of intravenous vitamin C as an adjunctive treatment in preventing mortality or shortening disease course among adults suspected of, or positive for COVID-19.

- Vitamin C or ascorbic acid, is a water-soluble vitamin that has anti-oxidant and microvascular activities, among others.
- Currently, there are 3 ongoing trials registered in clinicaltrials.gov studying intravenous vitamin C in COVID-19. No other ongoing or planned trials were registered in the other trial registries.
- Most of the available data are from studies on disease populations which may be considered as COVID-19 suspects:
 - Indirect evidence from 2 RCTs on patients with sepsis showed inconsistent effects on mortality.
 - Indirect evidence from a meta-analysis on patients with sepsis/septic shock showed significant reduction in mortality in a small subset of patients (n=40) with severe sepsis given high dose Vitamin C infusion.
 - Five meta-analyses on critically ill patients due to conditions other than or in combination with sepsis who were given Vit C infusion alone or in combinations with other medications showed no impact on mortality. Most showed no benefit on and other key endpoints such as acute kidney injury, duration of hospital stay/ ICU stay/ duration of vasopressor use or duration of mechanical ventilation.
- The use of Vit C infusion is not mentioned in the treatment guidelines for COVID-19 or ARDS. The risks or adverse events with short term use of Vitamin C infusion in the general population is negligible or minimal. It should be avoided in patients with G6PD insufficiency. The dose should be carefully adjusted for patients with renal insufficiency.

Declaration of Conflict of Interest

No conflict of interest

Disclaimer: The aim of these rapid reviews is to retrieve, appraise, summarize and update the available evidence on COVID-related health technology. The reviews have not been externally peer-reviewed; they should not replace individual clinical judgement and the sources cited should be checked. The views expressed represent the views of the authors and not necessarily those of their host institutions. The views are not a substitute for professional medical advice.

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Appendix 1. Characteristics of clinical trials

Title	Design	N	Conditions	Interventions	Primary outcome measures	Locations
Use of Ascorbic Acid in Patients With COVID 19	Open label prospective	500	Hospitalized Patients With Covid-19 Pneumonia	10 gr of vitamin C intravenously in addition to conventional therapy.	In-hospital (72 hr) mortality	A.R.N.A.S. Civico - Di Cristina - Benfratelli, Palermo, Italy
Vitamin C Infusion for the Treatment of Severe 2019-nCoV Infected Pneumonia	RCT	140	<ul style="list-style-type: none"> • Pneumonia, Viral • Pneumonia, Ventilator-Associated 	Drug: VC Vs. Sterile Water for Injection	Ventilation-free days [Time Frame: day 28 after enrollment] 2ndary outcome: 28-day mortality	Zhongnan Hospital of Wuhan University, Wuhan, Hubei, China
Lessening Organ Dysfunction With VITamin C (LOVIT trial)	Multicenter concealed-allocation parallel-group blinded randomized controlled trial	800	<ul style="list-style-type: none"> • Sepsis • ICU • COVID-19 • Pandemic • Coronavirus 	<ul style="list-style-type: none"> • Drug: Vitamin C • Other: Control 	Death or persistent organ dysfunction at day 28	Research Center of the CHUS, Sherbrooke, Quebec, Canada
Hydroxychloroquine for COVID-19 PEP (not yet recruiting)	RCT	2000	Post-exposure prophylaxis	<ul style="list-style-type: none"> • Drug: Hydroxychloroquine 400 mg orally daily for 3 days, then 200 mg orally daily for an additional 11 days • Placebo: acid 500 mg orally daily for 3 days, then 250 mg orally daily for 11 days 	PCR-confirmed SARS-CoV-2 infection through 14 days after enrollment	US (NY, Washington)
Prophylaxis Using Hydroxychloroquine Plus Vitamins-Zinc During COVID-19 Pandemia	Observational	80	Healthcare professionals	Plaquenil 200Mg Tablet + Vitamin combination of Vitamins A, C, D and Zinc	Freedom from COVID-19 infection	Istinye University Medical School, Istanbul, Turkey