



VITAMIN C AND INFECTIONS

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This article reviews the available literature on the effect of vitamin C on infections. In the early 20th century scurvy was found to be due to vitamin C deficiency and it was also observed that lack of vitamin C predisposed to infections, in particular pneumonia, which sparked interest in the connection between vitamin C and infections. Infections increase oxidative stress which may lead to a decrease in plasma levels of vitamin C, which has antioxidant properties, and much higher intakes of vitamin C may be necessary to maintain sufficiently high plasma levels during an infection. In animal studies vitamin C has been found to be beneficial against various infectious agents including bacteria, viruses, *Candida albicans*, and protozoa. The common cold is the most widely studied infection with regards to vitamin C. Vitamin C supplementation has been shown to only decrease the incidence of the common cold in specific subgroups but not the population as a whole. However, supplementing no less than 1g vitamin C per day significantly shortened the duration and alleviated severity of colds. Interpretation of studies is complicated by a number of factors, including dose of vitamin C, with up to a 240-fold difference between the lowest and highest vitamin C supplementary dose used in the common cold trials. This review also discusses why interest in the vitamin C/common cold research plummeted in the mid-1970s. Studies on vitamin C and pneumonia showed benefits, but as all these trials were done in specific population groups, the results cannot necessarily be generalised. There is insufficient clinical research into the use of vitamin C for other infections. The author concludes that in view of vitamin C being safe and cheap even modest clinical effects are worth exploring.

VITAMIN C CAN SHORTEN THE LENGTH OF STAY IN THE ICU: A META-ANALYSIS

Hemilä, H, Chalker, E
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For centuries, Vitamin C has been known as an important part of human health. Initially, deficiency was associated with scurvy, however subsequent research has found links between administration of Vitamin C and several conditions, including lowering blood pressure, decreasing blood glucose levels in Type 2 diabetes, and shortening the duration of the common cold.

This meta-analysis of 18 controlled trials examined the effect of Vitamin C on the length of ICU stay or the duration of mechanical ventilation. Doses varied from 1-3g daily orally and 0.5-110g daily intravenously and from 1-4 days in duration.

The authors found that in 12 of the trials (1766 patients), Vitamin C shortened the length of ICU stay by 8%. 6 trials reported that Vitamin C shortened the length of mechanical ventilation by 8%. Given the significant price difference between Vitamin C supplementation and ICU stay, the authors suggest that further research is justified based on these findings.



VITAMIN C MAY REDUCE THE DURATION OF MECHANICAL VENTILATION IN CRITICALLY ILL PATIENTS: A META-REGRESSION ANALYSIS

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Whilst 100mg vitamin C per day may be sufficient to maintain normal plasma vitamin C levels in healthy people, critically ill patients appear to have a much greater need for vitamin C. A previous meta-analysis showed that vitamin C supplementation shortened the stay in intensive care units (ICU) by 7.8% and duration of mechanical ventilation by 18%. The extent to which vitamin C shortened need for ventilation varied greatly between studies and appeared to depend on duration of ventilation in the control group which reflects the severity of illness in the study population.

The aim of this study was to confirm this theory by analysing the relationship between the effect of vitamin C in the treatment group and the duration of mechanical ventilation in the control group, as a proxy for the severity of the disease. Nine trials with 975 patients overall were included in the analysis. Vitamin C was administered either orally or intravenously and dosages ranged between 1-6g per day for all but one trial which used 90g per day. Severity of illness at baseline varied greatly between studies, with a 250-fold variation of length of mechanical ventilation.

The analysis confirmed that when duration of ventilation was less than 10 hours there was no meaningful benefit from vitamin C whilst there was a 31% decrease in duration of mechanical ventilation when durations were longer than 100 hours, reflecting the severity of the illnesses included in the studies. The study with the highest dose of vitamin C saw the largest effects but the authors attributed this to the fact that this study had the sickest patient population rather than to the high dose of vitamin C.

