

Approved drug reduces ventilator time for patients with severe COVID-19

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Piotr Nowak, researcher at Karolinska Institutet and infectious diseases consultant at Karolinska University Hospital. Credit: Karolinska Institutet

The drug tocilizumab, which is used in the treatment of various forms of arthritis, can greatly shorten the time on ventilation and shorten hospital stays for patients with severe COVID-19, a new study from Karolinska Institutet and Karolinska University Hospital published in *The Journal of Internal Medicine* reports.

"The report is, as far as we know, the first from Sweden to present results of a specific drug intervention for severe cases of COVID-19," says principal investigator Piotr Nowak, researcher at Karolinska Institutet and infectious diseases consultant at Karolinska University Hospital (Huddinge).

The [retrospective study](#) began in March 2020 during an early phase of the COVID-19 pandemic

and included 87 patients with severe COVID-19 in intensive care at Karolinska University Hospital in Huddinge, south of Stockholm. 29 of the patients received tocilizumab, a drug approved for the treatment of rheumatoid arthritis that blocks the so-called IL-6 receptor to prevent viral hyperinflammation (cytokine storm). Hyperinflammation triggered by the new coronavirus is central to the pathological process and causes high levels of the cytokine IL-6, which are associated with a more severe COVID-19 disease.

The differences between the treatment and control groups were significant. Patients who received tocilizumab were hospitalized for a much shorter length of [time](#), including time spent on a ventilator, than those who received the standard treatment. The time spent on ventilation was reduced by ten days, the time spent in [intensive care](#) by eight days, and the total [hospital](#) stay by ten days. The treatment was not associated with serious adverse events.

"So it seems we can help severely ill COVID-19 patients by affecting inflammation in the body with this treatment," says Dr. Nowak. "The results now need to be corroborated by a larger study that randomly assigns patients to either tocilizumab or other treatment."

The study reported above is a so-called [retrospective cohort study](#), which involves working back from particular outcomes to determine possible causal factors. In this case, such a factor was who had received drug treatment and who had not. Retrospective studies are usually easier to conduct and less resource-demanding than prospective (forward-looking) studies. The drawback is that the results are less reliable since it is harder to control for different influencing factors. The most reliable results can be obtained from randomized controlled trials in which the participants are randomly assigned to either an

experimental or a control group.

More information: Johannes Eimer et al.
Tocilizumab shortens time on mechanical ventilation and length of hospital stay in patients with severe COVID-19: a retrospective cohort study., *Journal of Internal Medicine* (2020). DOI: [10.1111/joim.13162](https://doi.org/10.1111/joim.13162)

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