

# Blood from critically ill COVID-19 patients contains antibodies that contribute to clotting

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A McMaster University-led study has teased out the reason for blood clots caused by COVID-19, a serious potential complication of the virus.

Blood from critically ill COVID-19 patients contains antibodies that can contribute to clotting, says Ishac Nazy, associate professor of medicine and director of the McMaster Platelet Immunology Laboratory. These antibodies form immune complexes that activate platelets, the cells that

lead to [blood](#) clotformation. Some blood-thinner medications can block these immune complexes and potentially reduce clots.

"By discovering the mechanism, we can inform doctors on the use of blood-thinners, known as anticoagulants, that can stop the clotting in COVID-19 patients," said Nazy, whose findings have been published in the *Journal of Thrombosis and Haemostasis*.

Nazy said his laboratory suddenly saw an increase in patients with blood clots at the onset of the pandemic in Canada in early 2020, as COVID-19 began spreading worldwide.

At first, Nazy and his colleagues thought these patients had heparin-induced thrombocytopenia (HIT), a clotting condition that can occur in patients given heparin, ironically an anticoagulant medication.

However, these patients tested negative for HIT, despite being at medium to high-risk of the condition. Instead, these critically-ill patients were positive for COVID-19, which can also cause life-threatening blood clots.

Of the 10 patient blood samples tested by Nazy, six had platelet-activating immune complexes when their [blood samples](#) were tested in the lab. These [immune complexes](#) were not found in eight recovered COVID-19 patients or pre-pandemic patient samples.

Nazy said this discovery gives [medical professionals](#) better insight into the underlying mechanisms of COVID-19 and potential future therapies to combat [blood clots](#).

This is increasingly important with the recent information regarding the clotting complication in a few patients who have received the AstraZeneca vaccine in several European countries. The mechanisms of

clotting could potentially be similar in response to the infection by the virus or by the vaccines.

**More information:** Ishac Nazy et al. Platelet-activating immune complexes identified in critically ill COVID-19 patients suspected of heparin-induced thrombocytopenia, *Journal of Thrombosis and Haemostasis* (2021). [DOI: 10.1111/jth.15283](https://doi.org/10.1111/jth.15283)

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