COVID-19 convalescent plasma with greater antibody levels is safe and shows promise

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The Hackensack Meridian Health scientists and clinicians continue to study the promise and potential of convalescent plasma for COVID-19 treatment. Credit: Hackensack Meridian Health

Convalescent plasma, the use of survivors' antibodies transfused into sick COVID-19 patients is safe and significantly improves clinical outcomes when using high levels of antibodies, according to a new publication by scientists at Hackensack Meridian Health, New Jersey's

largest and most comprehensive health network.

The treatment was safe, transferred the survivors' antibodies, and did not prevent the recipients from making their own antibodies, according to the results published recently in the journal *JCI Insights*.

"We have developed this technique and methodology to save the lives of patients," said Michele Donato, M.D., FACP, CPE, chief of Stem Cell Transplantation and Cellular Therapy at John Theurer Cancer Center at Hackensack University Medical Center, and who is leading the study. "We believe our hard work is paying off."

"The know-how is really crucial for this kind of treatment," said David S. Perlin, Ph.D., the chief scientific officer and senior vice president of the Hackensack Meridian Center for Discovery and Innovation (CDI). "We have demonstrated that when you rigorously qualify donors, and deliver their antibodies into the right patients, it can make a huge difference."

Fifty-one patients were enrolled to receive the plasma. They were split into two groups: one that was hospitalized but not needing mechanical breathing assistance, and one that was receiving such assistance.

The non-mechanically ventilated patients survived at a significantly higher rate (88.9 percent) at the 30-day mark than a comparative group elsewhere in the health network (72.5 percent).

The convalescent plasma program at Hackensack University Medical Center identifies "super donors"—those with the highest levels of neutralizing antibodies—through methodology developed by experts from the CDI.

These plasma patients received high levels (titers) of antibodies, with

almost all receiving viral neutralizing anti-spike protein levels at a proportion of 1:1000, or even greater. This compares with some other plasma programs which have not set elevated thresholds for antibody levels from donors.

Since the antibodies come from survivors who have developed immune responses to the latest strains, plasma may also keep up with the rise of "variants" of the SARS-CoV-2 virus where other interventions may not, according to some experts.

The promising results for the early intervention has led to an ongoing outpatient program at Hackensack University Medical Center, supported by a Department of Defense grant. The approximately $5.5 million will allow the researchers at Hackensack Meridian John Theurer Cancer Center at Hackensack University Medical Center, and their colleagues at the Hackensack Meridian Center for Discovery and Innovation (CDI) to continue phase 2 testing of the clinical treatments.

The goal of this outpatient work is to treat infected patients in the first 96 hours of symptoms with the antibodies found in plasma collected from COVID-19 survivors—with the aim to prevent hospitalization.

"This is an example of how our health network leverages excellent laboratory work into clinical interventions," said Ihor Sawczuk, M.D., FACS, president of Hackensack Meridian Health's Northern Market, and the chief research officer of the network. "Scientific research is helping to make a difference in this global pandemic."

More information: Michele L. Donato et al, Clinical and laboratory evaluation of patients with SARS-CoV-2 pneumonia treated with high-titer convalescent plasma, *JCI Insight* (2021). DOI: 10.1172/jci.insight.143196

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