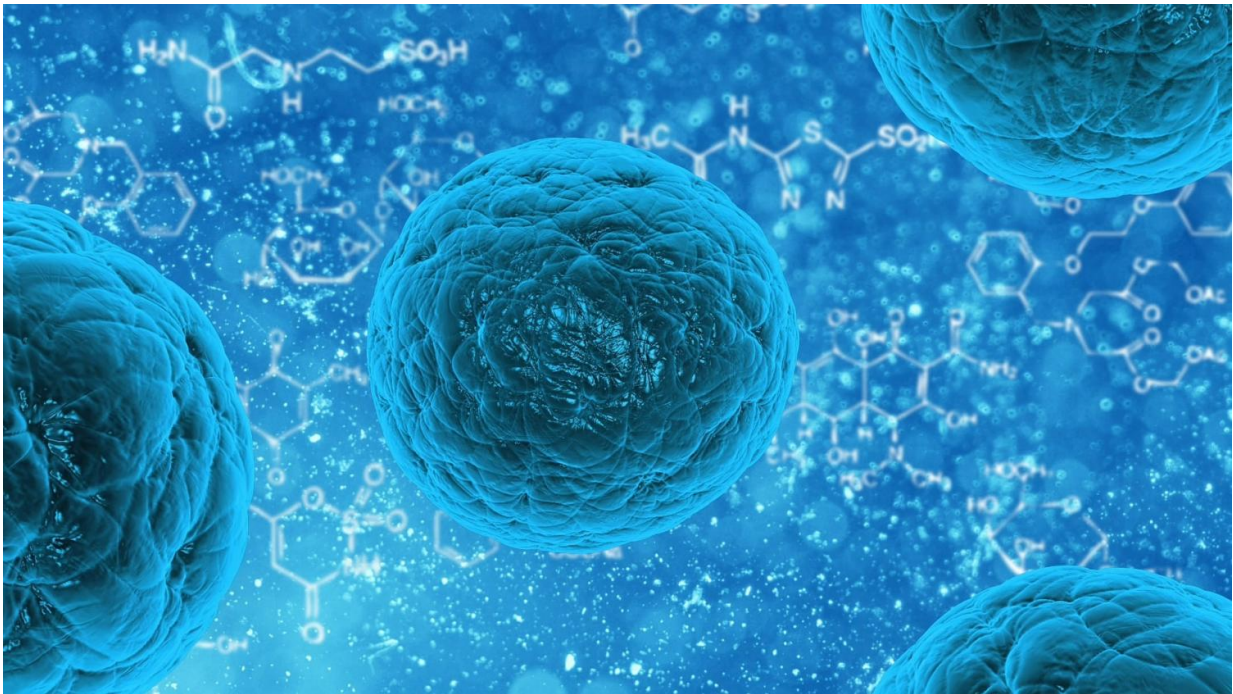


# Non-altered birth cord cells boost survival of critically ill COVID-19 patients

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Critically ill COVID-19 patients treated with non-altered stem cells from umbilical cord connective tissue were more than twice as likely to survive as those who did not have the treatment, according to a study published today in *STEM CELLS Translational Medicine*.

The clinical trial, carried out at four hospitals in Jakarta, Indonesia, also

showed that administering the treatment to COVID-19 patients with an added [chronic health condition](#) such as diabetes, hypertension or kidney disease increased their survival more than fourfold.

All 40 patients who took part in the double-blind, controlled, randomized study were adults in intensive care who had been intubated due to COVID-19-induced pneumonia. Half were given [intravenous infusions](#) containing umbilical mesenchymal stromal cells, or [stem cells](#) derived from the connective tissue of a human birth cord, and half were given infusions without them.

The survival rate of those receiving the stem cells was 2.5 times higher and climbed even more—4.5 times—in the COVID-19 patients who had other chronic health conditions, said Ismail Hadisoebroto Dilogo, professor of medicine at Cipto Mangunkusumo Central Hospital-Universitas Indonesia and research team member.

The stem cell infusion was also found to be safe and well-tolerated with no life-threatening complications or acute allergic reactions in seven days of post-infusion monitoring, he said.

Previous [clinical trials](#) have shown that treating COVID-19 pneumonia patients with stem cells from umbilical cord [connective tissue](#) may help them survive and recover more quickly, but the Indonesian study is the first to treat intubated, critically ill COVID-19 pneumonia patients with a naive, or non-genetically manipulated, form of the stem cells.

"Unlike other studies, our trial used stem cells obtained through explants from actual umbilical cord tissue and we did not manipulate them to exclude ACE2, a cellular protein thought to be an entry point for COVID-19," Dilogo said.

Some research suggests that one of the main causes of acute respiratory

distress in COVID-19 patients is "cytokine storm," a condition in which infection prompts the body's immune system to flood the bloodstream with inflammatory proteins.

"The exact cause of cytokine storm is still unknown, but our study indicates that the presence of non-manipulated umbilical cord stromal stem cells improves patient survival by modulating the immune system toward an anti-inflammatory immune state," Dilogio said.

Since there is no cure for COVID-19, supportive care has been the only help available for patients who are critically ill with the virus.

"Although our study focused on a small number of patients, we think this experimental treatment could potentially lead to an effective adjuvant therapy for COVID-19 patients in intensive care who do not respond to conventional supportive treatment," he said.

Dilogio's research team launched the clinical trial last year after the COVID-19 occupancy rate in Jakarta's [intensive care](#) units climbed to 80 percent and the mortality rate of critically ill COVID-19 pneumonia patients in the ICUs reached 87 percent.

"This study, which assessed the potential therapeutic effect of human [umbilical-cord](#) mesenchymal stem cells on critically-ill COVID-19 patients, provides promising results that could inform a potential treatment to increase [survival rates](#)," said Anthony Atala, M.D., Editor-in-Chief of *STEM CELLS Translational Medicine* and Director of the Wake Forest Institute for Regenerative Medicine. "Having additional potential therapies, such as MSCs, could be highly beneficial for these patients."

**More information:** *STEM CELLS Translational Medicine* (2021). [DOI: 10.1002/sctm.21-0046](https://doi.org/10.1002/sctm.21-0046)

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