

## Coronavirus

# Gilead's coronavirus drug: why experts are cautious on its prospects

US shares rise after leaked report enthused about benefits of remdesivir in 125 Covid-19 patients



Ampules of remdesivir. The drug emerged from a collaboration to find a treatment for Ebola © REUTERS

Clive Cookson 4 HOURS AGO

Of all the drugs being tested to fight the new coronavirus, people have invested most hope in [remdesivir](#). A leaked report on Thursday night of positive results from a clinical trial of remdesivir in Chicago caused shares in its manufacturer, Gilead Sciences, to rise 14 per cent in after-hours trading and sparked an overall market rally in Asia and Europe.

## What is remdesivir?

Remdesivir emerged from a collaboration to find antiviral drugs during the west African Ebola epidemic of 2013-16 that involved Gilead, the US Army Medical Research Institute of Infectious Diseases and the US Centers for Disease Control and Prevention. It works by jamming the molecular machinery that some viruses use to build their genes as they replicate.

Clinical trials against Ebola virus first in west Africa and then in the Democratic Republic of Congo gave promising results but those outbreaks fizzled out before remdesivir had been fully evaluated to the satisfaction of medical regulators. It remains an unlicensed medicine everywhere.

Pharmacologists who surveyed existing drugs for possible effectiveness against Covid-19 when the pandemic started immediately saw potential in remdesivir, because the new coronavirus shares important features in common with Ebola. Both viruses carry their genes in a single strand of RNA, a sister molecule to the DNA that makes up animal and plant genomes.

Since January, scientists in several parts of the world have been carrying out clinical trials with Covid-19 patients, starting in China, but none has yet given unequivocal evidence of efficacy.

## What results have come out of the Chicago trial?

The overnight excitement over the trial at University of Chicago Medicine does not come from any official disclosure of results but from a video [leaked to Stat](#), a healthcare publication. Kathleen Mullane, an infectious disease specialist at the hospital, enthused to medical colleagues about the benefits of daily infusions of remdesivir in 125 Covid-19 patients.

Dr Mullane said the patients, most of whom were severely ill, experienced rapid recoveries in fever and respiratory symptoms; nearly all were discharged in less than a week, according to Stat. She has confirmed that the video is genuine but declined to comment further.

Both Gilead and the hospital urged caution. “Information from an internal forum for research colleagues concerning work in progress was released without authorisation,” said University of Chicago Medicine. “Drawing any conclusions at this point is premature and scientifically unsound.”

## What remains uncertain?

Almost everything. Even if the positive findings from Chicago are confirmed when they are officially released, probably later this month, sceptics will point out that it is what researchers call an “open label trial” in which everyone knows that remdesivir is being infused. The progression of Covid-19 is variable and unpredictable — and the positive results might have been good luck.

Statistically valid evidence will come from the large “randomised controlled studies” that Gilead is carrying out with medical collaborators around the world. In these [trials](#), patients are divided at random into two groups, one receiving remdesivir and the other a placebo that looks the same but contains inactive ingredients. The studies are double-blind, meaning trial investigators and participants would not know who is receiving remdesivir or placebo.

Even if remdesivir gives positive results in these controlled trials, questions will remain about whether Gilead can produce enough remdesivir to satisfy what would be a huge demand worldwide. The University of Oxford wanted to include remdesivir in its current large clinical trial to test the efficacy of existing drugs against Covid-19 but was unable to obtain sufficient quantities.

## How does remdesivir compare with other potential treatments for Covid-19?

With the pharmaceutical world devoting immense resources to the battle against coronavirus, more than 100 [potential Covid-19 medicines](#) are in various stages of testing.

Remdesivir is among the most promising candidates in the antiviral category, which attack coronavirus directly. These are likely to be particularly effective in the early stages of the disease, when the virus is replicating rapidly and symptoms beginning to emerge.

A second category of drug aims to damp down the excessive immune response and inflammation that can damage the lungs and other vital organs in patients with more advanced severe disease. Medicines developed to treat rheumatoid arthritis and autoimmune disorders are being tested against Covid-19.

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