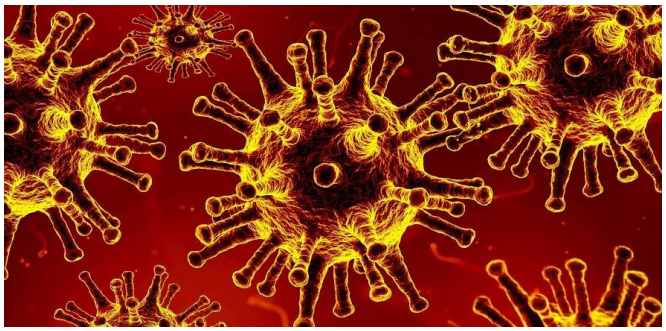
National trial launched to test re-purposing existing drugs to treat COVID-19 patients

20 May 2020



Coronavirus. Credit: Matryx

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TACTIC, as the trial is known, will test whether re-purposing existing drugs, which target the body's own immune response, can prevent people suffering severe organ failure or death. The trial is part of the coordinated national approach by the UK Government to support the early phase development of potential new treatments for COVID-19.

For the majority of people with COVID-19, the infection causes only mild symptoms, including a fever and cough. However, around 15% of patients develop severe disease, including serious damage to the lungs and multiple organ failure, and about two percent die.

The serious symptoms appear to be mostly caused by the body's own immune system responding to the presence of infected cells and 'over-reacting,' destroying healthy cells as well as virus-infected ones.

Two drugs will initially be tested through TACTIC on patients at a network of hospitals across the UK, including Cambridge University Hospitals NHS Foundation Trust (CUH), Guy's and St Thomas' NHS Foundation Trust, and King's College Hospital.

The first patient was recruited onto the study at Addenbrooke's Hospital in Cambridge on Friday 8 May.

The two drugs, Ravulizumab and Baricitinib, have been carefully selected by a consortium of doctors and scientists with expertise in treating immune-response diseases. They are both thought to have a high chance of reducing the sometimes fatal over-reaction of the immune system seen in very sick patients with COVID-19.

This study is one of a number of COVID-19 studies that have been given urgent public health research status by the Department of Health and Social Care. It is supported by the National Institute for Health Research (NIHR) Biomedical Research Centres at Cambridge and Guy's and St Thomas' and UK Research and Innovation; the drug manufacturers , Lilly and Alexion, have each supplied the drug for up to 469 subjects as well as contributing up to £200,000 in running costs for the project.

If the trial demonstrates that a drug is effective, it will be quickly moved into NHS care pathways, to treat the patients with severe COVID-19 related disease. Similarly, if the trial reveals that a drug is not effective, it can be quickly removed so that other options can be tested.

UK Research and Innovation Chief Executive, Professor Sir Mark Walport, said: "By supporting the rapid progress of these re-purposed drugs into

early clinical trials we will test whether they can prevent the development of severe COVID-19 symptoms. Trialling drugs that have the potential to suppress the severe inflammation caused by an over-reaction of the immune system is an important part of tackling the COVID pandemic."

Dr. Frances Hall, Consultant Rheumatologist, CUH, and TACTIC Chief Investigator, said: "It is striking that the severe COVID-19-related disease is associated with the person's own immune system causing most of the damage. It seems that, while most people's immune system attacks the virus appropriately, in those who become really sick, the immune response appears to overreact.

"We have selected the first two drugs for the TACTIC study based on their ability to 'dial-down', or block, two distinct types of response, each of which appear important in the immune response which causes damage to lungs and other organs in COVID-19-related disease. Baricitinib acts through the network of cytokines (soluble immune system signals running between cells); it reduces the upscaling of the cytokine response which leads to the "cytokine storm" evident in severe COVID-19-related disease. On the other hand Ravulizumab inhibits the activation of a trigger in a "tag-team" of molecules, called the complement cascade, which serves to rapidly ramp up inflammation and cell killing."

The two drugs are used routinely as treatments—Baricitinib in severe rheumatoid arthritis and Ravulizumab in blood diseases where complement activation destroys red blood cells. Dr. Hall says there is good reason to believe that either or both of these strategies could help prevent severe organ failure and even death in patients with COVID-19.

Professor Ian Wilkinson, Director of the Cambridge Clinical Trials Unit, and Professor of Therapeutics at the University of Cambridge, said: "This is a time of huge national effort in the fight against COVID-19 and I am delighted that Cambridge is playing a key role in this. TACTIC will test the effectiveness of a number of existing and new drugs in patients admitted to hospital, in a similar way to the RECOVERY trial, but with a strong focus on modulating the immune response and collecting high quality data that can be used by our partner pharmaceutical companies to seek the necessary approvals for widespread international use."

Dr. James Galloway, Senior Lecturer in Rheumatology at King's College London, and a Co-Investigator on the TACTIC trial, said: "By testing existing drugs that we think have the best chance of working against COVID-19, we hope that we can find proven ways to treat the disease. Identifying the high risk patients taking part in this research will be key, and we're incredibly grateful to the patients who have been so willing to take part, and their families."

Provided by University of Cambridge