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Combined Vaccination Approaches for COVID-19. Will These Improve the Efficacy Spectrum?

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Vaccination, flexibility with vaccine rollout and dealing with potential disruption of supplies are more than necessary. In England, Oxford University researchers under the direction of Dr. Matthew Snape have launched a clinical trial to see if giving people different COVID-19 vaccines for their first and second doses is as efficient as using the same type of vaccine twice. This trial, which uses 2 different principle vaccines, is different from the Sputnik V Covid vaccine approach where the 2 doses of vaccine use 2 different kinds of innocuous cold viruses, but with the same principle (similar to the approach applied to Ebola and HIV vaccines). 820 volunteers over the age of 50 who have not been vaccinated yet will be enrolled and 2 dosing schedules will be tested: one with a 4-week interval between the 2 injections, and another with a 12-week interval. First dose: either AstraZeneca based on adenovirus or Pfizer/BioNtech based on messenger RNA. Four to 12 weeks later, one group will receive a second dose of the initial vaccine, and another group will receive a second dose of a different vaccine. Levels of antibodies and immune T cells that participants produce against the coronavirus will be measured regularly in blood samples, and the trial will be monitored for safety reasons. The study will last for 13 months, but initial findings are expected to be released in the summer. Both AstraZeneca and Pfizer/BioNtech vaccines prepare the immune system to target the coronavirus's spike protein, which plays an important role in the infection process, but in 2 different ways: the AstraZeneca vaccine presents the spike protein to the immune system via a modified cold virus, while the Pfizer one relies on human cells to produce the spike protein through genetic instructions. Dr. Snape cited experiments in mice in which combinations of the AstraZeneca and Pfizer vaccines boosted immunity better than two doses of either one alone. By training the immune system to recognize new and different pieces of the virus, these vaccines could generate neutralizing antibodies, but also boost production of a specialized class of immune cells called CD8+ T-cells.[1] With this army of CD8+ T-cells, the immune system would be able to find and kill cells that have already been infected and turned into virus-copying factories. These T-cells also have long and specific memories of what the SARS-CoV-2 virus looks like.[2,3] Therefore, immunity might last longer. Furthermore, with the injection of mismatched vaccines targeting different sets of proteins on the virus's surface, the immune system could be prepared to face the arising of a wider array of new virus variants. Surprisingly, following the suspicion of thrombosis due to the AstraZeneca vaccine, several governments have recommended replacing the second injection of this vaccine with an RNA vaccine, and this even before the results of this study.

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