

## THOUGHTS FROM THE STREET

COVID-19

Home Office Edition

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## Putting efforts to find treatments for COVID-19 into context

As the world grapples with the outbreak of SARS-CoV-2 and people across the world experience dramatic cuts to their freedom of movement, the healthcare sector is racing to find solutions to tackle the current pandemic. How quickly could treatments for COVID-19 realistically become available?

In view of an ever-accelerating news cycle around the pandemic and daily mentions of potential drugs and vaccines against COVID-19, we wanted to provide some context around the healthcare industry's efforts and response to meet the medical need arising from severe – and for some fatal – courses of the disease.

It is important to remember that the scientific world has only just begun to learn about this specific virus and thus, the development of a therapeutic from scratch is only likely to help in the long run, no matter how expeditiously researchers and health agencies work together to lower bureaucracy without compromising safety. There are, however, some approaches that might prove effective in the near-term, potentially providing much needed relief for the hardest-hit population.

## Repurposing of existing drugs

The most promising route to finding a near-term therapeutic is the repurposing of already approved drugs. This has the big advantage that the clinical profile and particularly the side effects are well known and thus health agencies are more comfortable widening their use. Further, large-scale manufacturing is already in place and this is key to meet a potentially outsized demand should any treatment prove effective. While clinical trials still need to be conducted, access to a broader population could be granted under compassionate use, if interim results look promising enough.

Generally speaking, there are two main areas of interest from the scientific community: anti-virals, which aim to stop the replication of the virus, and drugs with anti-inflammatory properties, aimed at treating COVID-19-related pneumonia.

Along these lines, Gilead's remdesivir (experimental still, but with some clinical experience from previous trials in other indications) is being tested. Remdesivir might help, based on anecdotal evidence, but still needs to demonstrate its effectiveness in a controlled trial setting.

Anti-inflammatory drugs are seen as a promising approach due to COVID-19's clinical manifestation as a severe pneumonia in which the patient's immune system is in overdrive and leads to significant damages to lung tissue. Chloroquine (or hydroxychloroquine), originally an anti-malaria drug, is being looked at due to its use in rheumatoid arthritis, a chronic inflammatory disorder. It is noteworthy, however, that the evidence so far is only anecdotal and the mechanism of action is not entirely clear. Roche's Actemra (a targeted therapy against inflammatory signal IL-6) is also being investigated as are rival compounds Kevzara and Sylvant from Sanofi/Regeneron and EUSA Pharma, respectively. The excitement around these compounds largely stem from the Chinese health authority's decision in early March to include Actemra in their treatment guideline based on on a small, but very promising, trial in February during the outbreak in China.

## Antibody drugs and vaccines

Another promising approach could be the use of so-called convalescent serum, i.e. blood plasma from survivors, which contains functional antibodies against SARS-CoV-2. The biggest bottle neck in this case is not safety (it should be safe by definition) but scalability as the starting material is blood from survivors and serum processing is a complex procedure. The big advantage, however, is that this could be used as a prophylactic as well as a therapeutic treatment.

Companies such as Regeneron have platform technologies to produce antibodies identified from survivors, which they have already successfully applied in a recent Ebola outbreak. However, manufactured antibodies need to be tested for safety first, and they are thus not suited for an immediate response. Regeneron expects to start clinical trials at the beginning of the summer.

Numerous companies have stated their intent to develop a vaccine against SARS-CoV-2. Moderna's candidate already started clinical testing in the US. This is not to say that we are going to see a vaccine anytime soon. This is a process which takes 12-18 months and only if trials prove successful.

## Bottom line

It should be clear by now that the most effective tool in the very near term is the minimization of physical social contacts as to not overwhelm our healthcare facilities. We simply cannot expect any miracles to alleviate us from our individual responsibility to change our habits in order to slow the spread of the virus and keep resources free for the most vulnerable among us.

In the meantime, healthcare companies and researchers around the world continue to seek for therapeutics in an unprecedented and concerted industry effort to come together and share knowledge as well as manufacturing capacities.

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