

## Vaccine vs. Medicine. What is more urgent?


*We live with constant announcements about advances in the manufacture of the long-awaited vaccine. More than 154 teams work worldwide in a research operation at a scale never seen before, but the available capacity to manufacture is non-existent. We will need to multiply the current manufacture capacity by 1.5 times. But we forget that making vaccines is not making pills, it is much more complex. On the contrary, a mass-produced medicine would cause the same desired effects with an infinitely lower production capacity, which would make its production viable.*



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These previous days I have had the opportunity to read some interviews with two of the most reputed virologists and epidemiologists in the world, Dr. Klaus Stohr, who before working at Novartis was one of the key WHO researchers in 2003 SARS, and the other to Dr. Giuseppe Remuzzi, director of the Institute of Pharmacological Research of Italy. The conclusion of the reading of both interviews and especially of the abundant declarations of one of the world eminences in this field, Dr. Fauci, director of the CDC of the USA are two-fold: the first, there will be no vaccine at very short time, but above all there will be no vaccine for everyone in a very long time. The second, we are much closer than we think to finding a medicine that will alleviate the health situation.

As readers will know, at least those who follow me regularly, I combine my work as a fund manager -and therefore as an economist- with one of my passions, Science. In fact, Science was what originally took me to college. In my case, to complete not only a career in Biology but also a specialization in Biochemistry and Molecular Biology. This knowledge has been very useful to me, but above all it has been useful to understand that in science, nothing falls from the sky -except for gravity- nor is anything so irrefutable that it does not need arduous checks.

***"40 years ago, an AIDS vaccine was promised within two years, but neither is yet here, nor is expected."***

I am from the generation of students of the AIDS era. At that time a vaccine was promised in two years, but more than forty have passed and neither the vaccine is in place, nor is it expected. On the contrary, there is a treatment for AIDS. At first, the pill cocktail was like having a bottle of

M&Ms every morning, but it has evolved and now it is just two simple capsules a day. But, above all, and most importantly, nobody has to die of AIDS anymore.

Developing a vaccine is a very complicated thing, much more complicated than anyone might think. In addition, it is not a market as profitable as the "antivaccines" -those lunatics that circulate around- want us to believe. This has caused that the companies that manufacture vaccines are few, scarcely five in the world and that they do not have any idle capacity. In one sentence: today there is no capacity to manufacture more vaccines than are already being made.

***"The global capacity to manufacture vaccines is currently 5 billion doses and we are 7.7 billion people."***

Today about 5 billion doses are manufactured in the world a year but the current world population is 7.7 billion people. And neither measles nor seasonal flu nor the other viruses that cause major diseases have disappeared, so it is necessary for humanity that these 5 billion are still being produced. Thus, we could say that our problem lies not only in finding the vaccine, but in producing and distributing it.

This is what led me a few months ago to state that in the medium term we will find two worlds, the vaccinated and the unvaccinated. And of course, the vaccinated world will be the first world and the unvaccinated will be the underdeveloped countries. This, in addition to it being a tremendous social injustice, will cause significant economic chaos.

According to the information provided by the World Bank, approximately 85% of the world's mineral resources -discounting oil- are found in these countries. If people get sick and die, they can't work. And even if they manage to work while sick, their effectiveness will be lower and here is where the first world will have to intervene.

I am a pragmatic and if this is the way for social injustice to be solved, then so be it, but the important thing is that it does get resolved.

Of course, this will be the way for the decision to be made, but we continue with the problem of production on the table. And this problem will increase as the effective vaccines generate lasting immunity of at least two years. But unfortunately, it seems that this will not be the case, as the majority will generate immunity of a single year or maybe more than one dose will be necessary.

***"For each new dose that has to be given to the population, the current production capacity will have to be multiplied by 1.5 times."***

I remind the reader that we are talking that for each dose that the population has to be inoculated, the current production capacity must be multiplied by 1.5. At least in the short and medium term this seems impossible for me.

Now, let's analyze the published data. We currently have about 700.000 deceased on the planet. Let's think that these numbers, for different reasons in each country, are wrong, and that they are twice this figure, and that therefore in a year we would have about three million deaths in the world due to this cause. Let's also think that since the deceased is approximately 25% of the patients who enter the ICU and 25% of those are hospitalized, this last number should be around 23 million people. In other words, we would have 23 million candidates per year to receive hospital treatment that would significantly reduce the death toll.

Let's say that the treatment needed five vials or doses. We would be talking about a figure of 125 million doses of the drug against 7,700 million doses of vaccine. The first is viable, the second is not, at least in the short term. And all this regardless of what all of this would cost.

And what state are we at? Well, much more advanced than we think.

***"To care for all the seriously ill people in the world, we would only need to produce 125 million doses annually."***

As I said before, two antagonistic minds coexist in my brain, but both of two inexact science. The scientist one tells me that prudence and silence is always a safe path; the economic one tells me that simple words open oceans (remember Mario Draghi). Well then, the scientist one is with Eli Lilly or Amgen and the study of medications and the economic one with Moderna and his constant announcements in the advances. And I don't know why, but I trust the first one more than the second.

Do any of my readers hear Sanofi announce something? For those who do not know, Sanofi, in addition to being the world's leading manufacturer and researcher of vaccines, is developing two, and one of them based on the virus's mRNA (such as Moderna is doing). This is developed in collaboration with German biotechnology CureVac. CureVac has developed the most efficient genetic replication system in history that allows production up to seven times faster than with traditional systems. CureVac was the company that in a blunder Trump said he was going to buy it.

In summary, let's look more at the development of the medicine, obviously without forgetting the development of the vaccine. The medicine in the short and medium term will solve many more problems than the vaccines that will become available.