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If wishes were vaccinesâ?¦

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One of the most obvious positive fallout of this COVID-19 pandemic has been the tremendous increase in focus on, and funding for, vaccines. When Covid first broke out in China in December 2019, the number of influenza vaccines under research and discovery were about 15. At that level, this was still higher by several times compared to two decades ago.

Vaccines have traditionally always lagged behind drug discovery as a favoured area of research for the pharma and biotech sector as a whole. The reasons are many, starting from the time and investment needed for the research and discovery.

Before the COVID-19 pandemic and current feverish pace of the race to find the vaccine against it, the 2015 ZIKA vaccine held the record for the shortest time taken from initiation to completion of trials – seven months. Add to this the cumbersome process of production which would take years to produce sufficient doses for the affected populations: the ZIKA pandemic had already fizzled out before large scale commercial production could be achieved.

This leads to the most critical economic aspect of the process - the uncertainty surrounding the final take-up of the vaccine by populations. It is not surprising therefore that the funding for them has grown primarily through sources from government institutions like BARDA and charity outfits like the Bill and Melinda Gates Foundation, via the critical role executed by organisations like Coalition for Epidemic Preparedness Innovations (CEPI) and GAVI, the vaccine alliance.

The growth in the interest of the vaccine research exploded as the COVID-19 pandemic spread, with over 100 vaccine candidates currently at various stages of research. Moderna of USA is leading the pack with Sanofi and Pfizer not far behind. As many as 5 vaccines are in advanced trials in China. The most interesting economic feature of this global feverish enthusiasm has been that quite a lot of funding for this vaccine research has emanated from private sources as well. Combined with the $ 2 billion outlay expected from GAVI / CEPI and various government institutions and alliances across the globe, the total economic interest invested in this research would be at a never-before-seen or imagined level.

All premier companies of the pharma world are competing with not only each other but also prominent universities and research organisations to win the race with an effective vaccine against the dreaded Novel Coronavirus. As of now, either Moderna or Sanofi (France) looks all set to pip everyone at the post with their vaccine, and already in discussions with countries for distribution of the future production. Serum Institute of India has collaborated with the Oxford University to start producing their vaccine candidate soon after the success of animal trials, to achieve production of sufficient quantity of the vaccine in the shortest of time upon final approval.

With this much amount of money floating about around vaccines, controversy cannot be far behind either. There are virologists and medical doctors crying foul over whether the current focus on vaccines is a result of a force majeure event or the source of the same. There is no evidence whatsoever however, to back up such conjectures. Further, the shape-shifting nature of this new monster called Novel Coronavirus has gone beyond any sort of human capacity to control it, posing the core problem in arriving at the cure and the vaccine both. Fortunately, the thinking about shortening vaccine discovery process via RNA-based technologies and 'plug and play' *platforms* developed which will work for any, or a wide number of viruses, started way back in 2017 itself. Encouraged by NIAID of USA, Moderna was one of the laboratories doing valuable research, leading to bringing out their vaccine solution to the stage of human trials in a record time. In May, Moderna struck a 10-year strategic collaboration with Lonza Group that over time will allow the company to make up to 1 billion 50 mcg doses by the end of 2021. In an online summit organised by the EU attended by over 40 countries and donors, more than $8bn has been pledged to help develop a coronavirus vaccine and fund research into the diagnosis and treatment of the disease.

The researchers' interest in finding a cure for COVID is equally high, as that in finding a vaccine. Most pharma industry players – whether small or big - are tweaking their knowledge and experimenting with quick repurposing of their proprietary drugs holding any relation or promise for helping recovery process if not cure. All universities and research laboratories are after the same, trying to find a cure quickly. However, if one looks at 'investor interest' and funding patterns, a different picture emerges. Compared to the funds in hot pursuit of the vaccine, the investor interest in finding an adequate cure for COVID-19 can be described as warm at best.

After 325,000 deaths (and counting), and millions of people already infected, the pandemic is nowhere near tapering out. WHO is now issuing warnings that it may be years before we are rid of the threat from this particular virus. Coming months are going to be tough, with second wave already apparent in Asia. While this is a terrible vision for the wellness of the mankind as a whole, it may still be a contributing factor to sustain the funding interest in COVID-19 vaccine to the ultimate goal of global availability of the same. As much as 70 per cent of the cost of vaccines comprise of the research and development costs, remaining 30 per cent being the production and distribution costs. Many vaccines are therefore developed and kept mainly in the form of a reserve vaccine stockpile for future outbreaks if any rather than going into commercial production cycle. A raging pandemic that is showing no signs of waning any time soon, is perhaps the only perfect time to ensure compliance by the world's population to take up the immunisations in a very large scale, which answer the commercial

compulsions of the vaccine production. Astra Zeneca has been handed $ 1 billion-plus by BARDA to race through phase III and ramp up deliveries of the pandemic vaccine well before fall.

The cure will not lag far behind in the race, though. The current efforts by approving authorities like US FDA to fast-track approvals will go a long way in relieving the time and pain in the process of finding the much-needed cure for COVID-19. Glenmark's Ramdesivir was approved by USFDA in record time and has been accepted as a standard of practice for encouraging faster recovery of COVID patients.

Let us hope that the spirit of urgency will expedite the process as all stops are pulled out, and we find the cure for COVID-19 at the earliest as also achieving a successful vaccine for preventing further waves of infections.

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