COVID-19: a test for society at a worldwide level

As many epidemiologists, public health experts, and influential voices had already warned, it was only a matter of time before a highly infectious virus would have an explosive global dissemination, as occurred at the beginning of 2020.[1,2] Two years later, with 6 million deaths and 500 million people infected worldwide (more than 9 000 000 cases in Argentina),[3] we should not forget that we have survived this, partly, due to the global effort of science.

When the 1918 influenza pandemic struck, the most severe in the recent past, there were neither the technology to develop a vaccine nor the antibiotics to treat the bacterial infections associated with the virus, and humanity was decimated. The 1918 influenza pandemic also infected approximately 500 million people (roughly one-third of the world's population at the time). However, in contrast with the 6 million deaths worldwide from COVID-19 in 2022, at that time the number of deaths was estimated to be between 50 and 60 million worldwide;[4] a catastrophically higher mortality rate, surely related to the lack of adequate resources to deal with it, which include diagnostic and treatment methods, and an effective vaccine.

Thus, 100 years later, we are the only generation in the history of mankind that has been able to successfully fight a pandemic of this magnitude, with the global scientific effort, through the development of sensitive and specific diagnostic tests developed against a totally new virus, treatment strategies and an effective and safe vaccine, which made it possible to restrain its transmission in a very short time.

The magnitude of isolating the genetic code of the virus, characterizing immune responses,[5] developing diagnostic methods,[6] and producing vaccines for use on a global scale in such a short period of time has been a feat like no other in human history. This was strengthened by the response of health care systems to assist the sick, the logistics to distribute and use diagnostic tests and vaccines, and the implementation of the necessary public policies to achieve these goals.

To face the pandemic, the world had to develop diagnostic methods that would allow the detection of the virus nucleic acid or the presence of specific antibodies, widely available, inexpensive, and on a scale never seen before. Diagnostic tests, in addition to identifying each case, would help governments tailor non-pharmacological interventions for specific locations and populations, in order to decide when to relax or tighten them.

Massive diagnostic testing also provided valuable data to help answer pressing unknowns: What is the infection rate in certain populations, cities or countries? What fraction of the population is immune? How long does immunity last? How does it depend on age, on the severity of infection, and on the presence of previous conditions?[7]

During the COVID-19 pandemic, countries have turned to their scientific community for advice and practical solutions. Many governments have established *ad hoc* scientific committees to manage the crisis. This pandemic has radically changed our way of life, and the crisis may yet redefine scientific processes in unforeseen ways. It is likely that it will have an impact on the next generation of physicians and researchers and on the mechanisms by which medicine and science in general are financed. Capacities necessary for research are not generated by themselves. They are long-term processes that require investment and complex productive structures that demand science and technology.

It is mandatory not to underestimate what we have achieved as a society: the giant breakthrough in diagnostic methods, vaccines, and the science behind them. ■

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