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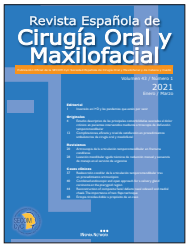

Editorial

Investing in R&D and the pandemics to come

The need for research and development (R&D) in the biomedical area has become apparent, even more so, in the current global pandemic situation caused by the SARS-CoV-2, with the development of different vaccines in the fight against COVID- 19 which, as of March 1, 2021, reaches the number of 308, of which five vaccines based on the inactivated virus, four based on non-replicating viral vectors, two based on RNA and one based on protein subunits are already available in use, summarizing a total of 12 vaccines available for administration to the population; the vast majority of the rest, a total of 212, are still in the preclinical phase, thus their incorporation into weapons against the pandemic will necessarily take several months. Along with the development of the long-awaited vaccines, multiple other treatments are being developed worldwide, more than 300, highlighting 80 antibody treatments, 35 cell therapies and 32 antivirals.

As of March 29, 2021, there were more than 127.5 million confirmed cases of COVID-19 worldwide. The United States leads the ranking, approaching 562,500 deaths, followed by Brazil with around 312,300; The United Kingdom, Italy, France, Germany and Spain are also among the first ten places, with 126,592, 107,933, 94,596, 76,468 and 75,010 deaths officially confirmed by COVID-19, respectively, a figure that in the Spanish case easily exceeds the first hundred thousand of deaths if we look at the real figures provided by organizations other than the National Government, such as the National Institute of Statistics (INE, from its capitals in Spanish), which, from the start of the pandemic on February 9, 2020 to February 13, 2021, it accounted for 103,512 more deaths than in the same period a year earlier.

One of the factors that heralds the slow progress in the effective control of the epidemic is the small percentage of the population that has been vaccinated worldwide, with only 315 million people receiving at least one dose of vaccine, but distributed unequally among countries. Israel is positioned as the country with the highest vaccination coverage against COVID-19 (115.2 doses administered per 100 inhabitants), followed by the United Arab Emirates (82.24), Chile (51.82), United Kingdom (50.26) and the United States (43.6), on March 29, 2021. Spain and most of the countries of the European Union are very far from these figures, with 16.19 doses per 100 inhabitants for our country, 15.98 for Italy, 15.36 for Germany and 15.34 for France. If we also attend to the need for two doses for some vaccines in a complete way, in relation to our country, with only 5.50% of it (2,604,209 people), it seems that the optimal rate to speak of "immunity herd" is still far away. If we also take into account the evolution of vaccination at the global level, with only 7.24 doses per 100 inhabitants, the situation is even more discouraging (Figures 1 to 3).

On the other hand, as of March 23 of this year, 532 randomized clinical trials (RCTs) related to the coronavirus had been registered in the United States. Thus, this country ranked first in the world in the number of medical studies against COVID-19, followed by Iran (304), China (229) and Spain (213). Others, such as France (162), United Kingdom (137), Italy (107) or Germany (106) are located at a considerable distance from our country and complete this selected group. This privileged position, fourth in the lead, speaks very well of the level of commitment of our doctors and scientists in the biomedical branch, especially if we take into account that the percentage of gross domestic product (GDP) that the state allocates to R&D is only 1.24 %, well below that allocated by other neighboring countries (European Union: 2.18 %) and compared to most of the OECD (2.58 %): Israel (4.95), South Korea (4.81), Switzerland (3.37), Sweden (3.34), Japan (3.26), Austria (3.17), Germany (3.09), Denmark (3, 06), United States (2.84), Belgium (2.82), Finland (2.774), France (2.20), Netherlands (2.16), Norway (2.07).

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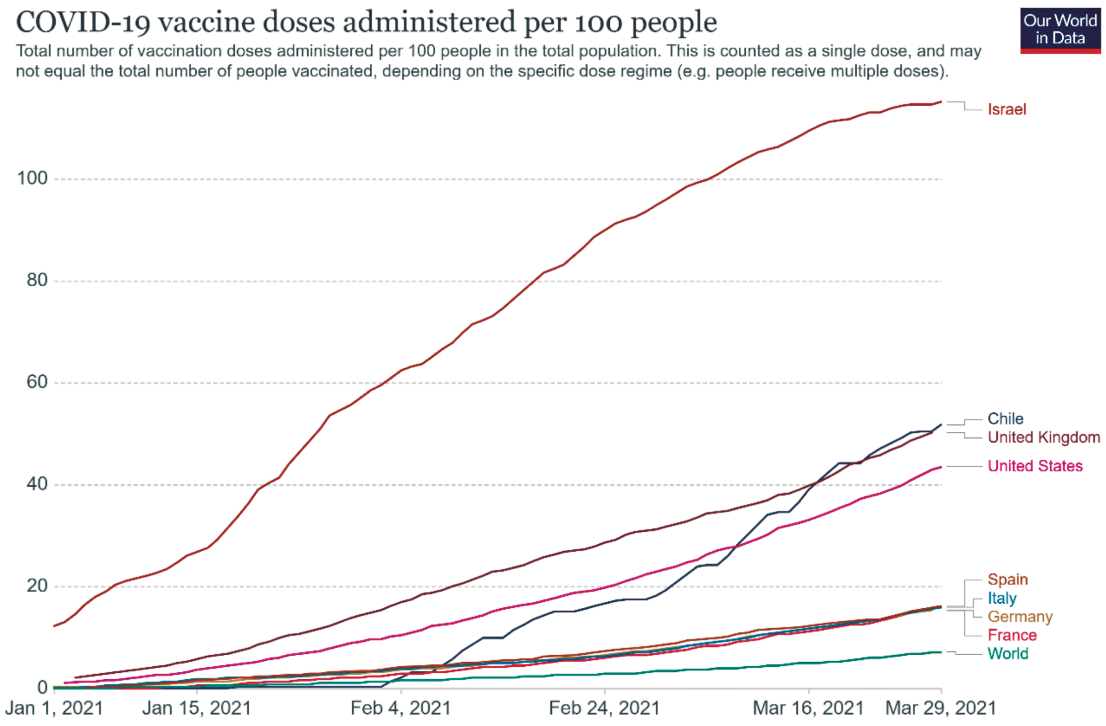

Chart courtesy from Our World in Data.

Figure 1. COVID-19 vaccine doses administered per 100 people, counted as a single dose.

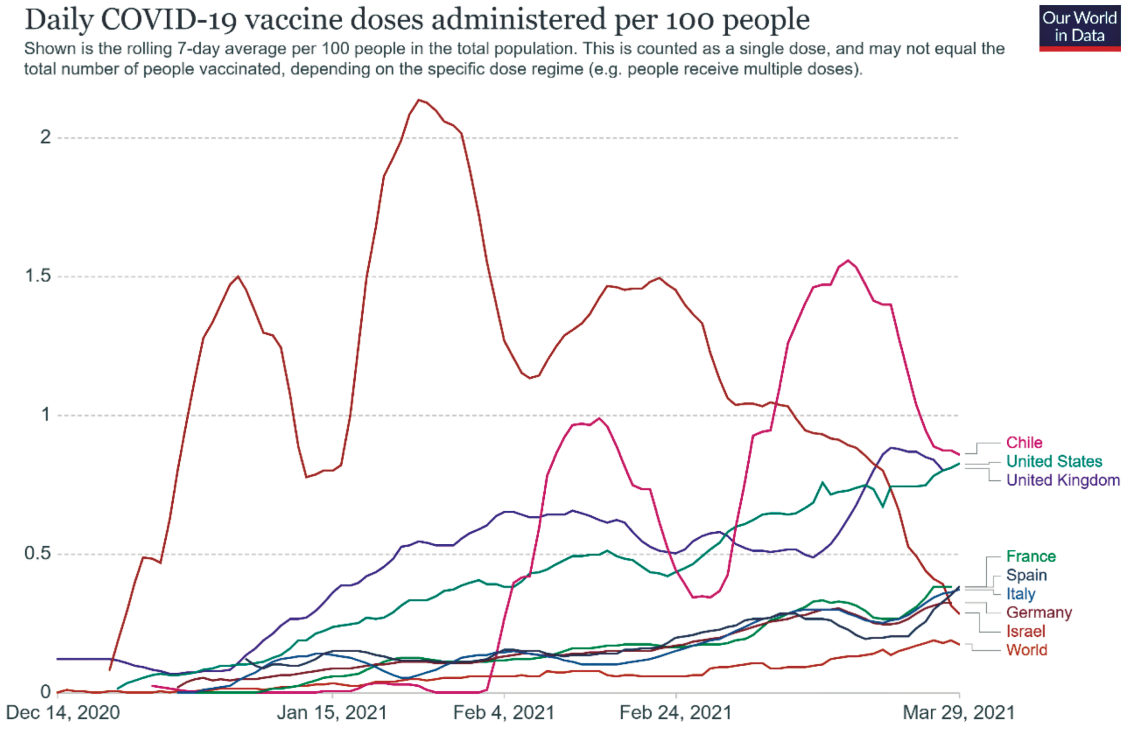

Chart courtesy from Our World in Data.

Figure 2. COVID-19 7-days mean vaccine doses administered per 100 people, counted as a single dose.

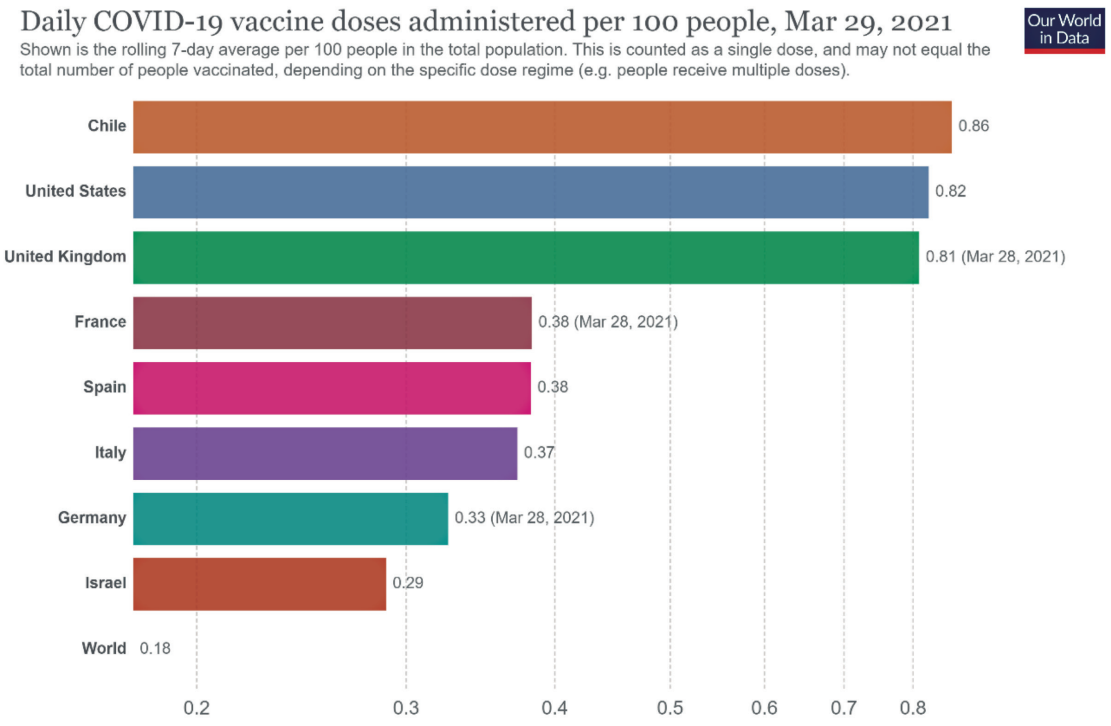

Chart courtesy from Our World in Data.

Figure 3. COVID-19 7-days mean vaccine doses administered per 100 people (frequency histogram), counted as a single dose.

These data, without a doubt, speak of the still long way to go so that the potential of our biomedical researchers and clinical-care physicians of the National Health System, among the most prestigious in the world, can have the same work tools and economic support than those of the neighboring countries, to which Spain must equip itself by population, development and history. The arrival of this terrible pandemic may convince our current ruling elite that only investing in R&D in a decisive way will bring us closer to the biomedical vanguard of the most developed countries, while its global implementation will allow Humanity to face with hope and strength potential biological threats and pandemics to come.

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