United Journal of Drug Development and Industrial Pharmacy

COVAX and the Fight Against Vaccine Nationalism

Lemus-Martin Roselyn*[1], Sandoval-Vargas Hector
HPQC Labs, Waterloo, Canada.

Author Biography

Lemus-Martin R

Roselyn Lemus-Martin has a plethora of research experience in clinical research, consulting, and as a corporate executive. She was the Head of Drug Development and Research at Landsteiner Scientific. She has also served on the Board of Advisors for the Association of Medical Doctors in the Pharmaceutical Industry. Roselyn Lemus-Martin was selected by McKinsey & Company for the Next Generation Women Leader Award in 2019, as one of the most influential young female leaders in the North America Region, and is recognized as one of the best voices to speak about COVID-19 in Spanish.

Author Biography

Sandoval-Vargas H

Mexican economist with experience in Public Private Associations, Economic-Financial Analysis, as well as quantitative Market Studies in Mexico, Spain, India, Nicaragua, and the United Kingdom.

Corresponding Aurthor:
Lemus-Martin Roselyn, Sandoval-Vargas Hector, Sandoval-Vargas Hector 2 FLACSO, Mexico City, Mexico.
Email: sandovargas10@gmail.com, Phone No: +91 9561217140.

Article Information

Article Type: Review Article
Article Received: 05-25-2021
Article Accepted: 06-20-2021
Article Published: 06-30-2021
Vol:1, Issue:2

OPEN ACCESS

Keywords:

Vaccine Nationalism; Equitable Access; COVAX; CEPI; GAVI; Vaccine Access.

Abstract

International collaboration is key for the fair and efficient distribution of COVID-19 vaccines. In this paper, we aim to review and analyze the vaccine nationalism phenomenon; which countries have acquired the majority of available vaccine doses in the world and how that impacts the global economy; the costs associated with COVID-19; the appearance of new variants; and the importance of global cooperation mechanisms like COVAX to solve the vaccine nationalism problem.

Introduction:

There is no doubt that the main effects that the SARS-COV2 pandemic have generated in the world are, on the one hand, the health emergency and, on the other hand, the economic impacts derived from it. This double crisis has changed the priorities of policy makers and has placed other demands on the public agenda of societies and governments, which has modified the traditional process of design and implementation of public policies [1]

This situation has pushed policymakers into an environment of great uncertainty[2]. Most countries have implemented some social and economic restrictions, lockdown measures and constraints to their borders to temporarily stop the spread of the virus. Policy decisions are further conditioned now by contextual factors, and the emergency requires quick implementation of measures that remain uncertain in their duration and final effects. This requires many poor or developing countries to try to emulate the recent and unproven experiences of other more advanced nations.

Many emerging and developing economies feel the economic impact first [3]. The drastic drop in tourism, the decline in remittances and the fluctuation of commodities prices affect the short-term income of emerging countries, which in turn restricts the economic capacity to face the health and social demands of the pandemic.

Under this complex scenario, international cooperation is essential to address the weaker economic panorama and the global health challenges[4]. Indeed, international collaboration between governments and the private sector, -*which in some cases is receiving support from governments under emergency financial support*- [5], has allowed the development of vaccines in time spans never seen before in the history of science [6].

Although the framework of principles and values of the WHO SAGE recommends COVID-19 vaccines should significantly contribute to the equitable protection and promotion of human well-being in all

Citation: Lemus-Martin R. / United Journal of Drug Development and Industrial Pharmacy 1(2020):1-13

countries [7], in the short term, laboratories are not able to produce at a rate that meets world demand -*a problem of supply restriction*-. This situation has generated the term commonly known as "vaccine nationalism", where most nations give priority to their own populations before those of other countries [8], which leaves developing countries with a struggle to access doses for their citizens.

Collaboration Initiatives helping equitable access of vaccines.

The Access to COVID-19 Tools (ACT) accelerator is a global initiative created in April 2020, that aims to accelerate not only the equitable access but also the equitable development and production of various tools to control the pandemic. These include vaccines, tests, and treatments for COVID-19 through the joint work of government, scientists, companies, and global health organizations like CEPI (Coalition for Epidemic Preparedness Innovations), GAVI (Vaccine Alliance), and the WHO (World Health Organization), among others. The amount pledged, through February 11, is $6 billion, to be divided among the four pillars of the initiative (vaccines, diagnostics, access and allocation, health systems). The vaccine pillar that includes GAVI and CEPI has pledged around $4 billion. [9]

The vaccine pillar of the ACT Accelerator is called COVAX and was proposed by CEPI, GAVI and the WHO. The main aims of COVAX include the acceleration of the development of effective vaccines for all countries and improvement of manufacturing capabilities so that 2 billion doses can be fairly and equally distributed by the end of this year. Around 190 countries of all income groups (high-, middle-, and low-income) are engaged with COVAX [10]

The main idea is that the participating countries, regardless of their income levels, will have access to the full portfolio of developed vaccines. It protects both low- and high-income nations by allowing them to acquire vaccine doses so that the inability to pay or the lack of bilateral deals with pharmaceutical companies is not a barrier to access them. Within COVAX, there are two different schemes: the COVAX Facility where self-financing and funded economies can participate, and the GAVI COVAX Advanced Market Commitment (AMC) for lower-income countries. Combining both schemes, the 92 lower-income economies will receive access to donor-funded COVID-19 vaccines at the same time that the 98 higher-income, self-financing countries receive their doses.

The COVAX Facility provides investments so that pharmaceutical companies can manufacture the vaccines once they are approved, which will also allow the participant countries to be able to negotiate better prices from these companies. [11]

By the end of this year, COVAX aims to provide 2 billion doses of vaccines that will be divided equally between the two streams of low-income and high-income countries with around 100 million doses that will be set aside in case there is a need for emergency deployment [12]. COVAX will cover 20% of the population of each of the participating countries. This percentage is needed to secure equitable access to vaccines for all the participants.

Since COVAX is co-led by CEPI, through the coalition, it has leverage with the manufacturers due to the provided funding for manufacturing and development. CEPI is a non-profit organization created to help alleviate the response to the Ebola outbreak in West Africa and since

Table 1: Producers and Buyers of Vaccines.

Producer	Price per dose	Number of doses	Estimated production capacity in millions (2021)	Estimated production capacity in % of total (2021)	% Doses bought by rich countries	Supply agreement with COVAX (%)
AstraZeneca/ Oxford	1.50-4	2	2,996	33.80%	36%	Yes
Novavax	16	2	1,364	15.40%	31%	Yes

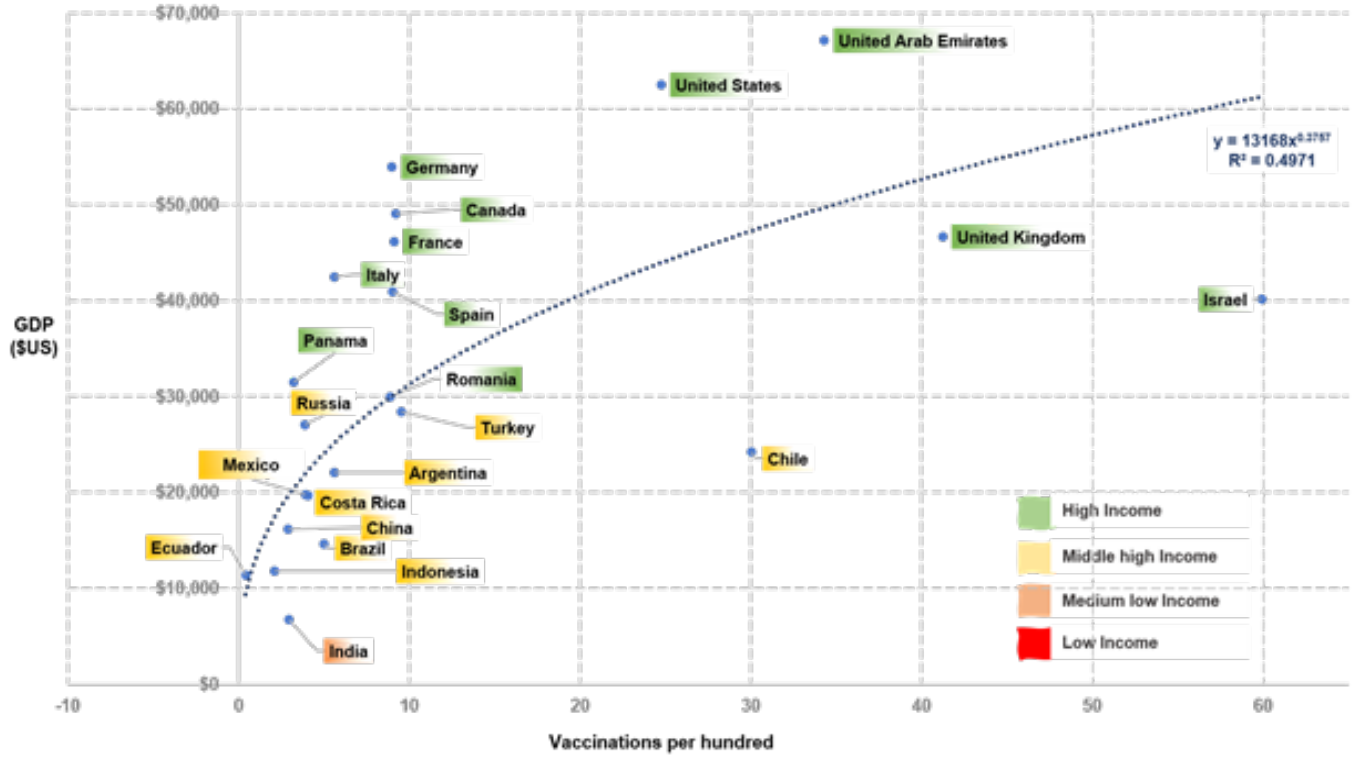
then it has invested in different vaccine development projects around the world. Currently, it has invested more than $1 billion to fund at least nine COVID-19 vaccine developments, with the condition that the nations who will benefit from some of these developments need to abide to their equitable access policy. [13]

Despite the growing efforts for universality and equity in access to vaccines, especially in the early stages of production, the reality is that those who have had greater access to them are high-income countries (See table 1).

Source: Own elaboration based on Our World in data, World Bank, Bloomberg, LSE Institute of Public Affairs and The Lancet. [Update January 2021] [14][15][16][17][18]

A first finding to highlight is that projections of laboratory capacity for the year 2021 indicate that they can produce enough vaccines so that the world population has access to at least one dose. Another important element is that 45% of the doses to be produced this year are destined for high-income countries.[1] Finally, only half of the laboratories have an agreement with COVAX.

Figure 1. Relation between GDP and Vaccination per Hundred.



Mechanisms such as the ACT are needed to ensure the affordability of vaccines, mainly in low-income and emerging economies, which are home to about 85% of the global population [6]. The following figure shows the relationship between GDP per capita and vaccinated people per 100 inhabitants.

Source: Own elaboration based on Our World in data and World Bank. [Update March 2021]. [14][15]

The scatterplot shows a direct and positive relationship between GDP (measured by Purchasing Power Parity) and the number of people vaccinated per hundred inhabitants. It is evident that countries classified as high-income invariably have the highest percentages of inoculated population (except for Chile), followed by upper-middle-income countries, while emerging and low-income economies have not been able to access markets for international vaccinations by themselves. These countries will be relying on COVAX aiming to secure 6 billion doses for poorer countries around the globe [19].

There is still no clear consensus on the percentage of the world population that must be inoculated to contain the health emergency. It depends largely on the conditions of the country and the effectiveness of the vaccine(s); Anthony Fauci considers that it must be between 70% to 85% [16] Grant & Hunter [20] estimated that in the case of Pfizer vaccines, it would require 69% of the population to be vaccinated to control the spread and 93% of the population with Astra Zeneca's vaccine.

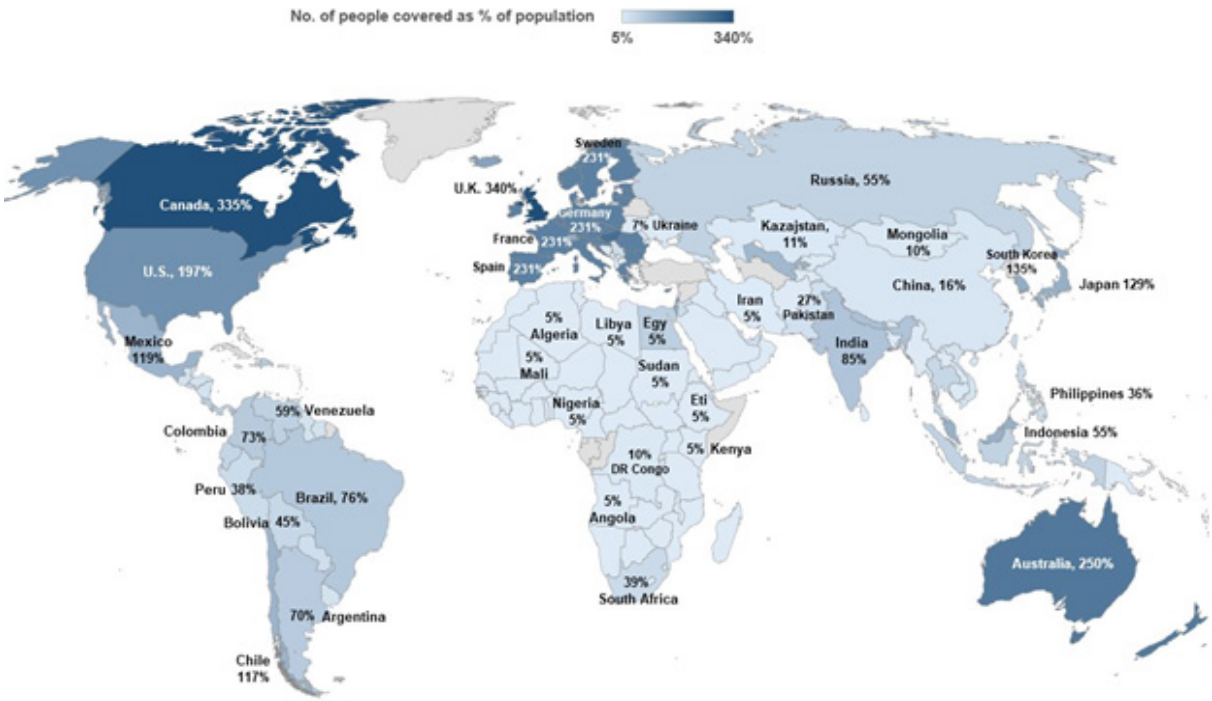
Source: Own elaboration based on Bloomberg. [Update March 2021] [16]

The map above shows the percentage of the population covered with a vaccine access contract in 2021 for a total of 186 countries. It is important to note that about 50% of the countries analyzed do not have access to vaccines, or their access agreements cover less than 10% of their population (countries colored in light blue). Most of these countries are in Africa, Southeast Asia, and Central America. Twenty percent of the countries have agreements that cover 10% to 50% of their

population, while only 7% of the countries can inoculate their entire population.

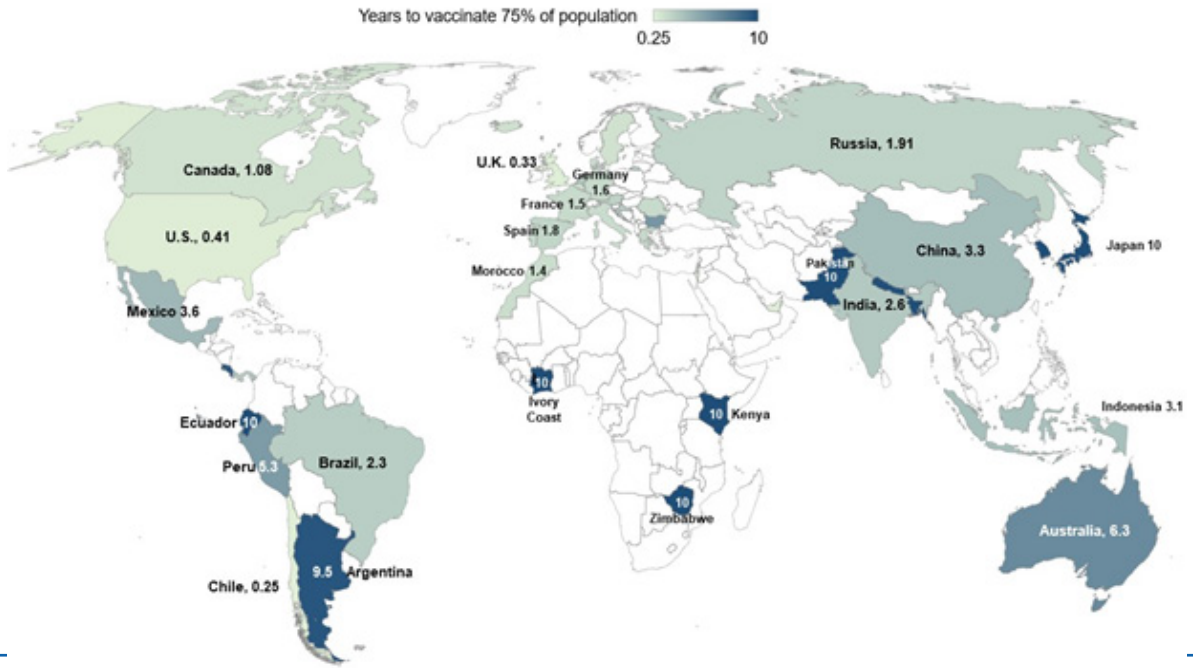
On the other hand, there is another group of countries (23% of the total) that have access agreements for various vaccines that cover more than proportionally their entire populations (colored in strong blue). Most of them are considered by the World Bank as high-income and upper-middle-income nations; As an example, note that countries such as Germany, France, Italy, and the United States, which could vaccinate their populations twice over. New Zealand, Australia, and U.K. could vaccinate three times its population, and finally Canada could vaccinate almost 3.5 times its population.

Figure 2: Contracts of Vaccines 2021 (% of people covered).



It is not only important to have contracts for access to vaccines, but also to have the supply capacity and application logistics, which are additionally linked to the infrastructure and level of development of the countries (See figure 3)

Figure 3: Years to Vaccinate 75% of the population.



Source: Own elaboration based on Bloomberg. [Update March 2021] [16]

At the current rate of vaccination, countries such as Israel, Chile and the United Arab Emirates will reach the point of inoculating 75% of their population in 3 months; Singapore, the U.K. and the U.S. will reach the goal in less than 6 months. On the other hand, other developed countries will reach this goal within 1 to 2 years, as in the case of Canada, Portugal, Austria, France, Germany, and Spain. Another group of mainly upper-middle-income countries will reach this goal within less than 4 years, such as Brazil, China, and Mexico.

Finally, among the countries that have already started vaccination campaigns, there are some whose current vaccination rate would require 7 to 10 years to vaccinate everyone. This is due to supply restrictions and short-term logistical difficulties which exist in Costa Rica, Kenya, Bangladesh, Nepal, Pakistan, among others.

In recent months, we have witnessed the emergence of new variants that have multiple mutations that make SARSCoV-2 more infectious (like B.1.1.7) or, to a certain extent, evade the effect of the immune system (B.1.351 and P.1). [21] [22]

Their emergence and presence make the vaccination process even more urgent. The efficacy rate of the current vaccines is dropping due to the variant present in South Africa (B.1.351). This variant is becoming predominant and reducing the effectiveness of the J&J, Astra Zeneca, Pfizer, Moderna and Novavax vaccines by at least 10% or more. [23]

There is currently an emergency push to vaccinate as many people as possible in a shorter period since the less people who get infected or ill, the lower chance that a more contagious or mortal variant will become predominant.

Discussion

Economic consequences of the COVID-19 pandemic have negatively impacted all the countries of the world to some extent. The global growth contraction for 2020 was estimated at -3.5% [24]. Beyond that, this phenomenon has exacerbated inequalities, mainly between women, youth, and informal workers.

The path of economic recovery may vary significantly between countries and regions depending on factors, such as the success and effectiveness in the implementation of emerging public policies in health, support to productive sectors, structural conditions, external shocks and, of course, access to the international vaccine market.

Strong international cooperation is required from multilateral organizations to advance equitably at the global level, both in health and economics. Despite important efforts in financial matters, such as the G-20 meeting in April 2020 to launch the Global Action Plan to fight the COVID-19 crisis [3], or the foundation of COVAX to accelerate access to vaccines for low-income and developing countries, the international response has been woefully insufficient [4]. In truth, even in countries considered high-income there are difficulties in implementing expansive public policies and targeted support, emerging and poor countries do not have the slightest capacity to act.

Given the current rate of inoculation, it is considered that global vaccination will be achieved in the year 2024 [8], which implies negative repercussions in the short term for developing countries, both in their health situation and in their economic reactivation. The WHO has a framework of principles and values [25] which high income countries reinforce by economic incentive; these include t*he promotion of human well-being, equal respect, global equity, national equity, reciprocity, and legitimacy*. In addition, there are mechanisms such as COVAX and others to promote these principles. However, poorer countries will continue to have restrictions on vaccine access because they cannot provide their inhabitants with incentives such as monetary transfer and expansive spending to encourage various production chains.

Phenomena such as the increase of 150 million poor people in the world caused by the pandemic [26], waves of migration, or the crisis of industries such as hospitality, recreation, retail, transportation, etc. affect both poor countries, as well as developed countries. A study by the RAND Corporation Europe [8], estimates that the total cumulative economic cost for 30 high-income nations will be $82 billion in 2020–2021; $156 billion in 2021–2022; $216 billion in 2022–2023; and $258 billion in 2023–2024. This is due to the fact that low- and medium-income countries are unable to immunize their populations sufficiently.

The pandemic will take longer to be controlled since making and distributing enough vaccines to protect the world's population is a strenuous task. Even countries that are vaccinating their citizens at a fast pace might not finish vaccinating the elderly until the end of spring. A big challenge is that the efficacy of the vaccines will diminish considerably as new variants that evade the effect of the immune system keep surging, making boosters or re-design necessary. The WHO director general mentioned in an OECD forum that 75 percent of the available vaccine doses are being administered in ten of the wealthiest countries [27], but 85 percent of the countries in the world have yet to start their vaccination programs. Until the people in those countries get their first vaccine shot, the virus will have a playground to mutate and keep infecting. Vaccine nationalism will not only affect the poorest but also the richest countries since the global cost of the pandemic and its economic effects can be as high as $3 trillion per year [8].

Global cooperation is crucial for public health, economic and ethical reasons, and the pandemic is teaching all countries an important lesson in taking care of their poorer neighbors.

Conclusion

Development of various safe and highly effective vaccines against COVID-19 is one of the most important scientific breakthroughs of the century. Unequal access to vaccines and hoarding of vaccines are threats to controlling the pandemic and might favor the surge of new variants. GAVI, CEPI, WHO and COVAX are initiatives that without a doubt will play a major role in making sure that vaccine nationalism will not damage the benefits of vaccination and that affordable vaccines are available for everyone as fast as possible to control the virus in the

race against time.

References

1. Weible C, Nohrstedt D, Cairney P, Carter D P, Crow D A, et al. COVID-19 and the policy sciences: initial reactions and perspectives. Policy sci. 2020; 18: 1-17.
2. Khan A. What are the smart COVID-19 containment options for developing countries? London School of Economics, Institute of Global Affairs; LSE Global Policy Lab. 2020;
3. Berglof E. Nine ideas to strengthen our global firepower against COVID-19. London School of Economics, Institute of Global Affairs; LSE Global Policy Lab. 2020;
4. Shafik D. You cannot solve a global pandemic with national policies. London School of Economics, Institute of Global Affairs; LSE Global Policy Lab. 2020;
5. Tham B, Findlay M. COVID-19 Vaccine Research, Development, Regulation and Access. SMU Centre for AI & Data Governance Research Paper No. 2020;
6. Wouters O, Shadlen C, Salcher-Konrad M, Pollard A J, J Larson H et al. Challenges in ensuring global access to COVID-19 vaccines: production, affordability, allocation, and deployment. The Lancet. 2021; 397(10278): 1023-1034.
7. Grupo Técnico Asesor de Vacunación Covid-19. Priorización inicial y consecutiva para la vacunación contra SARS-CoV-2 en la población mexicana. Recomendaciones Preliminares. Salud Pública de México. 2020; 62(2):
8. Hafner M, Yerushalmi E, Fays C, Dufresne E, Van Stolk C. The Economic benefits of equitable global access to COVID-19 vaccines. 2020;
9. A Financial Framework for ACT Accelerator Proposition of the Facilitation Council Financial Working Group. ACT meeting report. (2021);
10. COVAX Commitment agreements. (2020);
11. Anuradha Gupta, Protecting Lower-Income Countries with COVID-19 Vaccines Requires Global Solidarity. (2021);
12. WHO Member States Briefing. COVAX . 2020;
13. Equitable Access Policy, CEPI. (2019);
14. Our World in data.
15. World Bank.
16. Bloomberg.
17. The Lancet.
18. LSE Institute of Global Affairs.
19. The Economist. Coronavirus vaccines: expect delays, Q1 global forecast 2021. Intelligence Unit.
20. Grant A, Hunter P. Immunization, asymptomatic infection, herd immunity and the new variants of COVID 19. medRxiv. 2021;
21. Lauring AS, Hodcroft EB. Genetic variants of SARS-CoV-2—what do they mean? JAMA. 2021; 325(6): 529-531.
22. Tang JW, Tambyah PA, Hui DS. Emergence of a new SARS-CoV-2 variant in the UK. J Infect. 2021; 82(4): 27-28.
23. Wibmer CK, Ayres F, Hermanus T, Madzivhandila M, Kgagudi P, et al. SARS-CoV-2 501Y.V2 escapes neutralization by South African COVID-19 donor plasma. bioRxiv (preprint). 2021; 622-625.
24. International Monetary Fund. (2021). World Economic Outlook Update.
25. World Health Organization. WHO SAGE values framework for the allocation and prioritization of COVID-19 vaccination, 14 September 2020.
26. World Bank Press Release (2021).
27. Blanchfield, M. Financial Post (2021).