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Editorial

Health Economics of Interventions to Tackle the Coronavirus 2019 Pandemic

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On March 11, 2020, the World Health Organization declared coronavirus 2019 (COVID-19) a global pandemic. Within 1 year of this declaration, at least 2.6 million people have reportedly died from COVID-19. During this time, almost all countries implemented some kind of social restrictions (eg, closure of businesses and mask mandates) to mitigate or suppress the transmission of the SARS-Co-2 virus. These nonpharmaceutical interventions helped reduce COVID-19-related morbidity and mortality, but they also significantly impacted the economy. In the past year, pharmaceutical interventions also have become available, which could change the landscape of COVID-19. Multiple COVID-19 treatments are approved for use that can either reduce morbidity or mortality.[1] Recently, several COVID-19 vaccines have become available that are highly effective in preventing COVID-19 serious disease as well as reducing the spread. Understanding the effectiveness and cost-effectiveness of these interventions can maximize the benefits of allocating the limited resources available to tackle the COVID-19 pandemic.

The May issue of *Value in Health* presents the second themed section on COVID-19. The first themed section was published in November 2020.[2] Collectively, 11 articles in these 2 sections present important data and information on the cost-effectiveness, affordability, and impact of different COVID-19 interventions that can help further optimize the balance between prevention and treatment for societies around the globe.

Four articles evaluated trade-offs in the implementation of nonpharmaceutical interventions. Reed et al[3] conducted a discrete-choice experiment to determine the extent to which Americans are willing to accept a greater spread of SARS-CoV-2 to lift social distancing restrictions and limit the economic impact of the pandemic. They found diverse preferences pertaining to social distancing restrictions, infection risks, and economic outcomes: 36% of respondents were reluctant to accept any increase in COVID-19 risk, 26% strongly preferring to delay reopening nonessential businesses, independent of COVID-19 risk levels, 25% were primarily concerned about time required for economic recovery and the remaining respondents prioritized lifting social restrictions. Furthermore, contrary to the common belief, they found that people's willingness to accept specific trade-offs among health and nonhealth outcomes could not simply be answered by their political ideology.

Zala et al[4] provided insights into the trade-offs in suppression versus mitigation policies in the United Kingdom. Their analysis countered the earlier notion that suppression policies are obviously cost-ineffective relative to the alternatives available. Zhao et al[5] evaluated the cost-effectiveness of early versus delayed interventions to restrict the movement of people in China. They found that rapid implementation of restriction policies dominated delayed restrictions. A 4-week delay in implementing restrictions would result in 3.7 million additional disability-adjusted life years and $2942 billion during China's first wave of COVID-19. Shlomai et al[6] estimated the cost-effectiveness of lockdown in Israel. In contrast to the findings in the United Kingdom and China, they concluded that the national lockdown in Israel did not provide a good value; the estimated cost of preventing 1 death was $45 million. Instead, they recommended a "testing, tracing, and isolation" approach to tackle the COVID-19 pandemic.

Five articles focused on the health economics of pharmaceutical interventions. Dawoud et al[7] conducted a systematic review to identify economic evaluations of antiviral treatment for pandemics and outbreaks of respiratory illnesses, including COVID-19. They concluded that antivirals for managing outbreaks of respiratory diseases having a high infection fatality rate are likely to be cost-effective. Of note, remdesivir, the first antiviral approved for COVID-19 treatment, was found to be cost-effective by the Institute for Clinical and Economic Review report in May 2020 but with some uncertainty depending on whether it reduces mortality.[8] Forsythe et al[9] make a case for keeping COVID-19 drugs affordable by drawing lessons from past mistakes, including the cost of HIV treatment at the peak of the epidemic and stockpiling of oseltamivir (Tamiflu) by the United Kingdom government. Towse et al[10] focus on advancing innovation in COVID-19 vaccines. They provide different financial mechanisms to attract private capital and research and development expertise to develop next-generation COVID-19 vaccines, equitable allocation of COVID-19 vaccine in high- versus low-income countries, and mechanisms by which high-income countries can pay for vaccines in low- and middle-income countries. Although the aforementioned studies followed the traditional cost-effectiveness approach, Ma et al[11] pushed the envelope of cost-effectiveness analysis in the context of a pandemic. They developed a checklist that helps quantify the economic impact associated with fear of contagion when estimating the value of COVID-19 vaccines, treatments, and other interventions. Finally, Leahy et al[12] discussed how the COVID-19 pandemic would affect (non-COVID-19) submissions to the health technology assessment agencies and provided specific recommendations to applicants when making a submission to the National Centre for Pharmacoeconomics in Ireland.

Four articles provided tools and insights to help reduce the burden of COVID-19. Basu et al[13] provided a generalizable

estimate of 1.51 gains in quality-adjusted life years to patients and their families from averting 1 COVID-19 infection. They accounted for the contagion effect of the index case infecting others during the pandemic. Gravesteijn et al[14] developed a decision model to estimate the impact of postponing semielective surgeries on health to support prioritization of care. Mouter et al[15] investigated the extent to which digital contact tracings apps among the Dutch population are affected by the societal effects and government policies toward such apps. Finally, Manski and Tetenov[16] describe the use of the near-optimality concept, which jointly considers the probability and magnitude of decision errors for estimating treatment effect in trials evaluating interventions for COVID-19.

As the world waits to get vaccinated, the end of the COVID-19 pandemic seems possible. Until then, affected jurisdictions should continue implementing appropriate nonpharmaceutical interventions to mitigate any further loss of lives. Although health economics has played a moderate role so far in deciding on interventions during the COVID-19 pandemic, much work lies ahead. An increasing role of health economics is needed to understand the value, affordability, and financing of pharmaceutical interventions in the postpandemic era by balancing humanistic and economic impacts.

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