

**Acknowledgments.**

**Financial support.** This work was supported by National Precision Cooperation Project (grant no. 2017YFC0910000) and by the Clinical Research Project of Shanghai Mental Health Center (grant no. CRC2017YB03).


**Conflicts of interest.** All authors report no conflicts of interest relevant to this article.

**References**

1. O'Neill S, Irani J, Siewe Fodjo JN, *et al.* Stigma and epilepsy in onchocerciasis-endemic regions in Africa: a review and recommendations from the onchocerciasis-associated epilepsy working group. *Infect Dis Poverty* 2019;8:34.
2. Stokols D. Translating social ecological theory into guidelines for community health promotion. *Am J Health Promot* 1996;10:282–298.
3. Rüsçh N, Angermeyer MC, Corrigan PW. Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. *Eur Psychiatry* 2005;20:529–539.

4. Adhikari B, Kaehler N, Raut S, Marahatta S, Gyanwali K. Risk factors of stigma related to leprosy—a systematic review. *J Manmohan Mem Inst Health Sci* 2014;1(2):3–11.
5. Heymann DL. Data sharing and outbreaks: best practice exemplified. *Lancet* 2020;395:469–470.
6. Pryce J, Mableson HE, Choudhary R, *et al.* Assessing the feasibility of integration of self-care for filarial lymphoedema into existing community leprosy self-help groups in Nepal. *BMC Pub Health* 2018;18:201.
7. Zhao S, Zhuang Z, Ran J, *et al.* The association between domestic train transportation and novel coronavirus (2019-nCoV) outbreak in China from 2019 to 2020: a data-driven correlational report. *Travel Med Infect Dis* 2020;33:101568.
8. Engelbrecht M, Rau A, Kigozi G, *et al.* Waiting to inhale: factors associated with healthcare workers' fears of occupationally acquired tuberculosis (TB). *BMC Infect Dis* 2019;28;19:475.
9. Chen Q, Liang M, Li Y, *et al.* Mental health care for medical staff in China during the COVID-19 outbreak. *Lancet Psychiatr* 2020;7(4):e15–e16.
10. Stein RA. COVID-19 and rationally layered social distancing. *Int J Clin Pract* 2020;74(7):e13501.
11. Hirschberger G. Collective trauma and the social construction of meaning. *Front Psychol* 2018;9:1441.

## The future of masking

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*To the Editor*—The 2 mRNA vaccines now administered in the United States offer >90% protection against symptomatic coronavirus disease 2019 (COVID-19) infection based on published data. How long the protection lasts beyond a few months is uncertain at the present time. There is one report of COVID-19 reinfection in an otherwise healthy adult 6 months after the initial infection despite production of neutralizing antibodies after the first infection.<sup>1</sup> This individual apparently spread COVID-19 while reinfected, likely reflecting viral replication in the nares in the absence of neutralizing antibodies at that site (ie, lack of mucosal immunity). Widespread vaccination will inevitably reduce the COVID-19 reproductive number, thereby changing the transmission dynamics in many parts of the world. However, infection among those unvaccinated and reinfection in unvaccinated and vaccinated individuals remains an ongoing concern.

Universal masking, along with other public health measures, slows COVID-19 transmission.<sup>2,3</sup> These interventions have also reduced transmission of other respiratory viruses over the last year,<sup>4</sup> thereby reducing associated morbidity and mortality.<sup>5</sup> The durability of protection against COVID-19 infection after vaccination is unclear, and universal masking is associated with reduced risk of COVID-19 and infection from other respiratory viruses. What will be the role of masking in the future?

Universal masking should continue until COVID-19 herd immunity is reached from natural disease and vaccination.

Thereafter, particularly during winter months,<sup>6,7</sup> universal masking should continue in congregate settings and other indoor settings where social distancing cannot be maintained and/or the introduction of fresh air introduced into the environment, or filtration of recirculated air, is suboptimal.<sup>8</sup> Mask wearing will be particularly important for those individuals at greatest risk of poor outcomes with COVID-19 infection.<sup>9</sup> By reducing transmission of respiratory viruses, masking should reduce immune selection pressure in infected individuals, and lower the likelihood that severe acute respiratory coronavirus virus 2 (SARS-CoV-2) will become more transmissible in the future.<sup>10</sup> There will be temptation to lower our guard and not follow advice about social distancing and masking after vaccination. However, we must learn from our experience over the past year. Failure to maintain more than a modicum of masking would reflect an inability to learn from the past to improve our lives in the future.

**Acknowledgments.**

**Financial support.** No financial support was provided relevant to this article.

**Conflicts of interest.** All authors report no conflicts of interest relevant to this article.

**References**

1. Selhorst P, Van Ierssel S, Michiels J, *et al.* Symptomatic SARS-CoV-2 reinfection of a healthcare worker in a Belgian nosocomial outbreak despite primary neutralizing antibody response. *Clin Infect Dis* 2020. doi: [10.1093/cid/ciaa1850](https://doi.org/10.1093/cid/ciaa1850).
2. Leung NHL, Chu DKW, Shiu EYC, *et al.* Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nat Med* 2020. doi: [10.1038/s41591-020-0843-2](https://doi.org/10.1038/s41591-020-0843-2).


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**Cite this article:** Mermel LA. (2022). The future of masking. *Infection Control & Hospital Epidemiology*, 43: 403–404. <https://doi.org/10.1017/ice.2020.1439>

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3. Kwon S, Joshi AD, Lo CH, *et al*. Association of social distancing and masking with risk of COVID-19. *medRxiv* 2020. doi: [10.1101/2020.11.11.20229500](https://doi.org/10.1101/2020.11.11.20229500).
4. Baker RE, Park SW, Yang W, Vecchi GA, Metcalf CJE, Grenfell BT. The impact of COVID-19 nonpharmaceutical interventions on the future dynamics of endemic infections. *Proc Natl Acad Sci* 2020;117:30547–30553.
5. Chow EJ, Mermel LA. Hospital-acquired respiratory viral infections: incidence, morbidity, and mortality in pediatric and adult patients. *Open Forum Infect Dis* 2017;4(1):ofx006.
6. Choe YJ, Smit MA, Mermel LA. Comparison of common respiratory virus peak incidence among varying age groups in Rhode Island, 2012–2016. *JAMA Netw Open* 2020;3(5):e207041.
7. Park S, Lee Y, Michelow IC, Choe YJ. Global seasonality of human coronaviruses: a systematic review. *Open Forum Infect Dis* 2020;7(11):ofaa443.
8. Somsen GA, van Rijn C, Kooij S, Bem RA, Bonn D. Small droplet aerosols in poorly ventilated spaces and SARS-CoV-2 transmission. *Lancet Respir Med* 2020;8:658–659.
9. People with certain medical conditions. Centers for Disease Control and Prevention website. <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>. Accessed December 21, 2020.
10. Kemp SA, Datir RP, Collier DA, *et al*. Recurrent emergence and transmission of a SARS-CoV-2 spike deletion  $\Delta$ H69/ $\Delta$ V70. *bioRxiv* doi: [10.1101/2020.12.14.422555](https://doi.org/10.1101/2020.12.14.422555).

## Coronavirus disease 2019 (COVID-19) and spatial control in times of pandemic

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*To the Editor*—Coronavirus-19 infection (COVID-19) occurs through the spread of the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) among individuals, mainly by direct contact or droplet transmission when infected individuals cough or sneeze. Pulmonary epithelial cells are the main target of the virus.<sup>1</sup> The worldwide proliferation of this virus has caused a pandemic capable of changing paradigms related to healthcare delivery, and the resources needed to cope with the disease have directly influenced the safety of medical care offered to individuals on a global scale. The purpose of interventions, such as social distancing, is to guarantee broad and safe assistance to the global population and to minimize uncontrolled viral spread. Notably, globalization and, consequently, the great movement of people, animals, and products across geophysical and political boundaries that has characterized and facilitated modern life, has also increased the spread of diseases, facilitating the second viral pandemic in this century.<sup>2,3</sup>

Unlike the 2009 influenza pandemic, the emphasis on spatial control with the COVID-19 pandemic has interfered with social, political, and economic relationships. This disruption has resulted in the destabilization of global geopolitics and the economy. The important concepts of space management and educational actions related to disease control originally emerged from previous health crises. These interventions can be considered geobiopolitical strategies, that is, actions directed at the control of life through

geopolitical demands.<sup>4</sup> At first, science was able to control contagious diseases and increase the survival of the populations exposed to them through biology (eg, isolation of populations by natural geographical barriers). However, with the increase in a mobile and diverse global population with different lifestyles and the inequalities related to health care, the dissemination of new infectious agents has occurred, primarily through the transmission of disease-producing viruses that have escaped the usual biological control mechanisms.

As more people worldwide aspire to better lives, it is no longer sufficient to control infections at any cost. We must learn how our interventions to control diseases not only impact population but also the lives of individuals. Such strategies are characterized as biopolitical actions associated with biopower. Biopower can be understood as the inclusion of biology in the context of politics. Using biopower, governments start to calculate and act on health issues aiming to strengthen the lives of populations as a group of individuals. Over the years, strategies to save and maintain the quality of human life have been highlighted. Biopower comprises the relationships among 3 dimensions: (1) universally held truths regarding the value of the individual and their quality of life and authorities willing to defend those truths; (2) different strategies that allow interventions in favor of life or death to occur; and finally, (3) allowing individuals to subjectively choose and act on their own behalf incorporating these universal truths.

In the case of COVID-19, the subjectivity regarding the importance of social isolation stands out, being considered a “norm” of safety to prevent infection or disease. Although a rational approach, considering the lack of actually efficient and/or sufficient treatment structures, this strategy generates

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**Cite this article:** Carneiro M, *et al*. (2022). Coronavirus disease 2019 (COVID-19) and spatial control in times of pandemic. *Infection Control & Hospital Epidemiology*, 43: 404–405, <https://doi.org/10.1017/ice.2020.1424>

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