



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Public Health Strategies Contain and Mitigate COVID-19: A Tale of Two Democracies

On January 19, 2020, the first cases of coronavirus disease 2019 (COVID-19) were introduced by travelers from Wuhan, China, the initial epicenter, into both South Korea and the United States.¹ In this commentary, we compare the responses of both democratic republics and demonstrate that the immediate and nationally coordinated public health strategies employed by South Korea effectively contained and mitigated their epidemic.² In contrast, the US government mounted a delayed and fragmented response, becoming and remaining the worldwide epicenter of the pandemic.

Upon report of the country's first case, South Korea promptly and efficiently instituted nationally coordinated strategies of containment and mitigation. Ironically, these methods were developed and introduced by the US Centers for Disease Control and Prevention (CDC).³ Further, by the end of February, South Korea had the most COVID-19 patients of any country outside China. Today, South Korea has experienced 14,269 cases and 300 deaths. At present, the United States, accounts for <5% of the world's population but about 25% of cases (>4.4 million) and deaths (>150 thousand). After adjustment for the 6.5-fold difference in populations, the United States has 47 times the number of cases and 79 times the number of deaths.¹

Funding: None.

Conflict of Interest: CHH reports that he serves as an independent scientist in an advisory role to investigators and sponsors as chair of data monitoring committees for Amgen, British Heart Foundation, Cadila, Canadian Institutes of Health Research, DalCor, and Regeneron, and to the Collaborative Institutional Training Initiative (CITI), legal counsel for Pfizer, the United States Food and Drug Administration, and UpToDate; receives royalties for authorship or editorship of 3 textbooks and as co-inventor on patents for inflammatory markers and cardiovascular disease that are held by Brigham and Women's Hospital; has an investment management relationship with the West-Bacon Group within SunTrust Investment Services, which has discretionary investment authority; does not own any common or preferred stock in any pharmaceutical or medical device company. JJS, DGM, TAA, and RDS have no disclosures.

Authorship: All authors had access to the data and a role in writing this manuscript.

Requests for reprints should be addressed to Charles H. Hennekens, MD, DrPH, First Sir Richard Doll Professor & Senior Academic Advisor to the Dean, Charles E. Schmidt College of Medicine, Florida Atlantic University, 2800 S. Ocean Blvd. PHA, Boca Raton, FL 33432.

E-mail address: PROFCHHMD@prodigy.net

In South Korea, immediate containment strategies included widespread, free, and rapid, point-of-care testing, along with meticulous tracing and quarantine of all contacts. In addition, effective mitigation strategies, such as masking, social distancing, crowd avoidance, and frequent hand and face washing were implemented. South Korea continued these effective containment and mitigation strategies, which followed well-accepted public health principles, until new cases and deaths were practically nonexistent.⁴ The time period for these mitigation efforts extended far beyond the flattening of the curve.

In the United States, in 2013, the Bill & Melinda Gates Foundation conducted a comprehensive review of worldwide data and predicted that a pandemic would occur during the next decade, most likely due to coronavirus. In 2015, the US government created a Pandemic Emergency Response Task Force, which was disbanded in 2018. Ironically, in early 2016, the World Health Organization noted that the United States was in the best position of any country to address a future pandemic. Upon introduction of the first US case, the official position adopted by the government was that there would be no further cases. Thus, no containment or mitigation strategies were initiated. Two months later, during which time the virus was exponentially spreading, the US government mounted a fragmented mitigation strategy that relied on separate state and local initiatives with limited and inconsistent federal involvement. Thereafter, containment and mitigation strategies in the United States have resulted from individual responses of individual states. For example, New York and New Jersey, the initial US epicenters of the pandemic, accounted for >50% of cases and deaths before effective mitigation. These public health measures have markedly diminished cases, hospitalizations, and deaths. At present, however, the United States remains the epicenter of the pandemic worldwide, due, at least in part, to the massive surge in cases in Florida, California, Arizona, and Texas. In addition, only California and Texas have issued statewide mask mandates. In contrast, the governor of Georgia is suing the mayor of Atlanta for issuing a mandate to wear masks. Not surprisingly, during the last 72 hours the states reporting the highest numbers of cases of COVID-19 are, in order, Florida, California, Texas, Georgia, and Arizona.¹

Masking in the United States has been politicized despite clear scientific evidence of effectiveness. Within the US government, health officials extol the virtues of masking, but political leaders hold the practice in disdain. For example, the President of the United States stated that “facemasks are not needed to stop COVID-19.”⁵ Not surprisingly, in a recent survey, more than two-thirds of Americans who express support for the Democratic candidate for President stated that they will wear masks when not socially distancing in comparison with less than 15% of supporters for the Republican candidate.⁶ In addition, the US government has removed the CDC from its decades-long functions of receiving and providing analyses of surveillance data on COVID-19. This continued politicization of the CDC is causing further harm to its longstanding reputation and role as the model for disease control and prevention activities throughout the world.⁷

During the COVID-19 pandemic, South Korea has served as a model for the world, as have New Zealand, Australia, Canada, Germany, Iceland, United Arab Emirates, Greece, and Argentina.⁸ If one believes that “those who do not understand the lessons of history are doomed to repeat them” then the United States is in a downward spiral reminiscent of the tragedies of the Spanish Flu over 100 years ago. From September 17, 1918, until 1920, under a Democratic administration, about 42.9 million Americans developed the Spanish Flu, of which 675,000 died. In that pandemic, whose epicenter originated and remained in Europe, the United States accounted for >9% of cases and >1.5% of deaths.²

We strongly concur with all responsible health professionals that there is an urgent need for a unified national approach to implementation of effective public health mitigation strategies such as social distancing, masking, avoidance of crowds, and frequent hand and face washing. These simple measures are likely to be at least as effective as any safe vaccine that may be developed and approved for widespread use by the general public. Although the public health strategies of containment and mitigation were effectively implemented in a nationally coordinated effort in South Korea, the current trajectories in the United States may no longer be materially alterable by anything less than a coordinated national shutdown of sufficient duration, which was not achieved previously. Without these efforts it is plausible, if not likely, that the exponential growth of the virus will continue as reflected by the markedly decreasing

number of days to achieve each million cases in the United States—from 97 to 44 to 28 to 15 days. Last but not least, the failure to mitigate COVID-19 in the United States will paralyze the healthcare delivery system and decrease the ability to provide lifesaving measures for patients with COVID-19 or other serious conditions. Thus, it is now imperative that the United States abandon “pandemic politics” and focus on effective public health strategies.

ACKNOWLEDGMENTS

The authors are indebted to Peter Grossman for his advice.

Joshua J. Solano, MD^a

Dennis G. Maki, MD^b

Terry A. Adirim, MD, MPH, MBA^a

Richard D. Shih, MD^a

Charles H. Hennekens, MD, DrPH^a

^aCharles E. Schmidt College of
Medicine, Florida Atlantic
University, Boca Raton

^bUniversity of Wisconsin School of
Medicine & Public Health, Madison

References

1. Johns Hopkins University of Medicine Coronavirus Resource Center. Available at <https://coronavirus.jhu.edu/>. Accessed July 31, 2020.
2. Hennekens CH, George S, Adirim TA, Johnson H, Maki DG. The emerging pandemic of coronavirus: the urgent need for public health leadership. *Am J Med* 2020;133(6):648–50.
3. Langmuir AD, Henderson DA, Serfling RE. The epidemiological basis for the control of influenza. *Am J Pub Health Nations Health* 1964;54:563–71.
4. Exemplars in Global Health. Emerging COVID-19 success story: South Korea learned the lessons of MERS. Available at: <https://www.exemplars.health/emerging-topics/epidemic-preparedness-and-response/covid-19>. Accessed June 30, 2020.
5. Shepherd K. The Philadelphia Inquirer. Facebook deleted a viral video full of false coronavirus claims. Then Trump shared it on Twitter. Available at: <https://www.inquirer.com/politics/nation/facebook-false-coronavirus-viral-video-trump-twitter-20200728.html>. July 28, 2020.
6. Pew Research Center. Republicans and Democrats even more far apart in coronavirus concerns. Available at: <https://www.pewresearch.org/politics/2020/06/25/republicans-democrats-move-even-further-apart-in-coronavirus-concerns/>. Accessed June 25, 2020.
7. Reviving the US CDC [editorial]. *Lancet* 2020;395:1521.
8. Bremmer I. Time Magazine. The best global responses to COVID-19 pandemic. Available at: <https://time.com/5851633/best-global-responses-covid-19/>. Accessed June 12, 2020.