


The Role of the American Heart Association in the Global COVID-19 Pandemic

As the United States and the world confront the novel coronavirus (COVID-19) pandemic, the American Heart Association (AHA) and its thousands of science volunteers have an important role to play to help stop the spread.

That may seem counterintuitive to some, considering that COVID-19 is an infectious disease and the AHA has spent the last nearly 100 years focused on noncommunicable diseases such as cardiovascular diseases (CVDs), stroke, and other vascular disorders. However, COVID-19 is very much a concern of the AHA because patients with underlying cardiovascular conditions appear to face a greater risk of complications. In addition, as an organization dedicated to overall health and well-being, we are very concerned about significant domestic and global health problems.

Mitchell S.V. Elkind , MD
Robert A. Harrington, MD
Ivor J. Benjamin, MD

CONTAGIOUS INFECTIONS AND CVD

Even before the first outbreak of COVID-19, the AHA and its professional members were aware of evidence suggesting that acute coronary events and strokes could be triggered by common infections.^{1,2} Respiratory and urinary tract infections, among others, have been associated with a short-term increase in the risk of myocardial infarction and ischemic stroke.³ Influenza in particular is associated with increased risk, and some clinical trials provide additional evidence that the influenza vaccination decreases cardiovascular risk.¹ Since 2006, the AHA and the American College of Cardiology have recommended that patients with CVD receive the influenza vaccination to prevent flu-related respiratory disease and other complications, including cardiovascular events.³ This approach represents the first instance of routine use of anti-infective strategies to reduce CVD. Mechanisms for the increase in risk with influenza remain unclear but may reflect greater cardiovascular stress in the setting of infection, reduced oxygenation in the setting of lung disease, or systemic inflammation with consequent thrombosis or intraplaque disruption predisposing to rupture.

Although much remains unknown about COVID-19, it is reasonable to assume that increased risk of cardiovascular events after infection is possible. In China, CVD and hypertension were associated with an increased COVID-19 case fatality rate.⁴ Among patients who died of COVID-19, substantial cardiac damage was observed.⁵ Furthermore, it appears that elderly people with coronary heart disease or hypertension are more likely to be infected and to develop more severe symptoms. Surveillance for cardiovascular events after COVID-19 seems very warranted, and this could be an area for future investigation.

PREPARING TO MITIGATE SPREAD

It is important to understand that we are in a mitigation phase for this pandemic. Mitigation strategies are nonpharmaceutical interventions to help slow the

Key Words: coronavirus infections
■ epidemiology ■ heart failure
■ hypertension ■ life expectancy
■ pandemics ■ social determinants of disease

© 2020 American Heart Association, Inc.

<https://www.ahajournals.org/journal/circ>

transmission of the virus in communities before drugs for treatment or a vaccine becomes available from the Centers for Disease Control and Prevention. However, although prevention and avoidance are important, preparedness in clinical settings, particularly acute care hospitals, is now crucial to ensure the ability to care for more COVID-19 cases. The number of reported cases is increasing rapidly. As of March 16, the Centers for Disease Control and Prevention had confirmed 1629 US cases and 41 deaths in the United States.⁶ More than 125 000 people worldwide have COVID-19, and >4600 people have died, mostly in China.⁷

During this mitigation phase, it is crucial that public health agencies, hospitals, healthcare systems, and others focused on the public's health learn from missteps early on and subsequent successful mitigation in China. We need to anticipate what is to come. It is increasingly likely that critical care physicians and cardiologists will be called on to assist in the care of persons with COVID-19 who have underlying CVD or who develop cardiac complications. Many of the AHA clinical care volunteers will be on the front lines.

AHA's role also will be crucial in the dissemination of science-based information about COVID-19 for patients, caregivers, and their families from a trusted source. We will continue to track developments by following reports from the Centers for Disease Control and Prevention and the World Health Organization and provide science-based, common-sense updates and guidance on our website, in social media, and in syndicated news stories that reach millions of people. We will continue to share best practices on how people can protect themselves from COVID-19; steps that individuals with CVD, stroke, and other vascular conditions should take; and measures people should take if they develop COVID-19. At times of crisis especially, people need understandable and actionable information from credible sources.

THE AHA'S EXPANDED MISSION

Our mission is to be a relentless force for a world of longer, healthier lives, and our 2030 Impact Goals aim to achieve a 2-year increase in healthy life expectancy in the United States and 3 years globally.⁸ Cardiovascular health and brain health are integral to extending healthy life expectancy. Furthermore, optimized mental health extends healthy life expectancy.

Social determinants of health, including education, income, geographic location, and access to care, are essential to cardiovascular and brain health as well as overall health and well-being. In the face of this crisis, we are likely to witness the dramatic ways in which social determinants affect outcomes to severe, acute illness. Countries and regions with fewer resources are likely to face higher mortality and morbidity than areas with greater access to care, particularly as increasing

numbers of cases overwhelm local healthcare systems, as is already being seen in parts of Italy. Ultimately, the case fatality rate of COVID-19 is likely to be less a property of the virus or of individuals infected and more a function of each healthcare system affected.

Once the AHA began to tackle social determinants and to work to extend healthy life expectancy, it became imperative to ensure that the organization address aspects of health and well-being that may have traditionally fallen outside of cardiovascular research and practice. Areas such as brain health, air quality, health insurance reform, rural health, and more are now part of our mission.^{9,10} There is no way to draw a sharp demarcation between cardiovascular health and general health and well-being.

Health equity is incorporated into all AHA activities, and health equity is never challenged more than in the face of crisis. We have already begun to see threats to individuals related to this pandemic: disinformation, disparities in access to health care, xenophobia, racism, and prejudice. Each has the potential to undermine the public health response. Trust is essential to a rational approach to this crisis, and the AHA is one of the most trusted brands in the world.

POSITIONED TO HELP

As a catalyst for change and a convener, the AHA will continue to work with our many partners to educate and activate the public and to partner with other organizations to take action. Our work touches on population-level, clinical, translational, and basic science research. The AHA maintains a large network of cardiologists, neurologists, and other specialists and disciplines—more than 30 000 committed individuals with clinical and scientific expertise. We have partnerships with US and international governments, other international agencies, large health systems, industry, and others with the capacity to assist.

This outbreak underscores the need to modernize our public health surveillance infrastructure with state-of-the-art, interoperable data systems, security to protect data, a workforce prepared for the information age, and partnership and innovation between the public and private sectors. The AHA will support efforts to make this modernization happen at the local, state, federal, and global levels. This will ensure a robust public health infrastructure that can target focused and effective local, state, and national action to improve population health and well-being.

We call on our AHA members, clinical volunteers, and others to aid these efforts; to heed the guidance of the Centers for Disease Control and Prevention, World Health Organization, and state and local health departments; and to share best practices.

Together with the public health and healthcare community, we are working toward the same goals: preventing

COVID-19 to the fullest extent possible, ensuring that people with COVID-19 can be identified and receive care, developing treatments and a vaccine, ultimately stopping COVID-19, and laying the groundwork for the robust public health and healthcare system of the future.

ARTICLE INFORMATION

Correspondence

Mitchell S.V. Elkind, MD, Columbia University, Neurological Institute of New York, 710 W 168th St, New York, NY 10032. Email mse13@columbia.edu

Affiliations

Columbia University, New York, NY (M.S.V.E.). Stanford University, Palo Alto, CA (R.A.H.). Medical College of Wisconsin, Milwaukee (I.J.B.).

Acknowledgments

The authors thank John McFarland for his assistance in preparing the manuscript.

Disclosures

Dr Elkind receives ancillary funding from Roche and study drug in kind from the BMS-Pfizer Alliance for Eliquis for a National Institutes of Health-funded trial of stroke prevention; he also receives royalties from UpToDate for chapters related to stroke. He is also an officer of the American Heart Association (unpaid); he also served on the Stanford Healthcare Board of Directors from 2016-2018 (unpaid). Dr Benjamin reports no conflicts.

REFERENCES

1. Smeeth L, Thomas SL, Hall AJ, Hubbard R, Farrington P, Vallance P. Risk of myocardial infarction and stroke after acute infection or vaccination. *N Engl J Med*. 2004;351:2611–2618. doi: 10.1056/NEJMoa041747
2. Elkind MSV. Why now? Moving from stroke risk factors to stroke triggers. *Curr Opin Neurol*. 2007;20:51–57. doi: 10.1097/WCO.0b013e328012da75
3. Davis MM, Taubert K, Benin AL, Brown DW, Mensah GA, Baddour LM, Dunbar S, Krumholz HM; American Heart Association; American College of Cardiology. Influenza vaccination as secondary prevention for cardiovascular disease: a science advisory from the American Heart Association/American College of Cardiology. *Circulation*. 2006;114:1549–1553. doi: 10.1161/CIRCULATIONAHA.106.178242
4. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention [published online February 24, 2020]. *JAMA*. doi: 10.1001/jama.2020.2648. <https://jamanetwork.com/journals/jama/fullarticle/2762130>.
5. Zheng Y-Y, Ma Y-T, Zhang J-Y, Xie X. COVID-19 and the cardiovascular system [published online March 5, 2020]. *Nat Rev Cardiol*. doi: 10.1038/s41569-020-0360-5. <https://www.nature.com/articles/s41569-020-0360-5>.
6. Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19) in the U.S. <https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.html>. Accessed March 16, 2020.
7. World Health Organization. Coronavirus disease (COVID-2019) situation reports. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>. Accessed March 16, 2020.
8. Angell SY, McConnell MV, Anderson CAM, Bibbins-Domingo K, Boyle DS, Capewell S, Ezzati M, de Ferranti S, Gaskin DJ, Goetzel RZ, et al. The American Heart Association 2030 Impact Goal: a presidential advisory from the American Heart Association. *Circulation*. 2020;141:e120–e138. doi: 10.1161/CIR.0000000000000758
9. Warner JJ, Benjamin EJ, Churchwell K, Firestone G, Gardner TJ, Johnson JC, Ng-Osorio J, Rodriguez CJ, Todman L, Yaffe K, et al. Advancing healthcare reform: the American Heart Association's 2020 statement of principles for adequate, accessible, and affordable health care: a presidential advisory from the American Heart Association. *Circulation*. 2020;141:e601–e614. doi: 10.1161/CIR.0000000000000759
10. Harrington RA, Califf RM, Balamurugan A, Brown N, Benjamin RM, Braund WE, Hipp J, Konig M, Sanchez E, Joynt Maddox KE. Call to action: rural health: a presidential advisory from the American Heart Association and American Stroke Association. *Circulation*. 2020;141:e615–e644. doi: 10.1161/CIR.0000000000000753