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The Emerging Pandemic of Coronavirus: The Urgent Need for Public Health Leadership

Charles H. Hennekens, MD, DrPH (corresponding author)

First Sir Richard Doll Professor & Senior Academic Advisor to the Dean

Charles E. Schmidt College of Medicine

2800 S. Ocean Blvd. PHA

Boca Raton, FL 33432

Email: PROFCHHMD@prodigy.net

Safiya George, PhD, APRN-BC, FAANP

Professor and Dean,

Christine E. Lynn College of Nursing

Florida Atlantic University

Terry A. Adirim, MD, MPH, MBA

Senior Associate Dean for Clinical Affairs

Professor and Chair

Department of Integrated Medical Sciences

Charles E. Schmidt College of Medicine

Florida Atlantic University

Heather Johnson, MD, MS, FACC, FAHA

Preventive Cardiologist/Cardiologist

Christine E. Lynn Women's Health & Wellness Center

Boca Raton Regional Hospital/Baptist Health South Florida

Dennis G. Maki, MD

Professor of Medicine

University of Wisconsin School of Medicine & Public Health

DISCLOSURES:

Professor Hennekens discloses that that he serves as an independent scientist in an advisory role to investigators and sponsors as Chair or Member of Data and Safety Monitoring Boards for Amgen, British Heart Foundation, Cadila, Canadian Institutes of Health Research, DalCor, Lilly, Regeneron and the Wellcome Foundation; to the United States (U.S.) 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 and does not own any common or preferred stock in any pharmaceutical or medical device company.

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There is ample precedent for public health officials directing the control of emerging pandemics. Perhaps most notably, in the early 1960s, Alexander D. Langmuir, MD, Director of the Epidemic Intelligence Service and Epidemiology Program at CDC began to work closely with Donald A. Henderson, MD, Chief of the Virus Disease Surveillance Program at the Centers for Disease Control and Prevention (CDC). Langmuir first introduced the concept of surveillance,¹ and

Henderson applied rigorous and evidenced based public health principles and methodologies to the eradication of smallpox.^{2,3,4}

Surveillance of communicable diseases of national importance was first defined by Langmuir as the critical watchfulness over the distribution and trends of incidence through the systematic collection, consolidation, and regular dissemination of data to all who need to know.¹ Since that time, as noted by Henderson, surveillance systems have increased in number and sophistication with advances in data collection, analysis, and communication.² From influenza³ to smallpox,⁴ the establishment of systematic reporting systems and prompt action based on results were critical factors. Over the course of just slightly more than a decade, during the tenures of Presidents Kennedy, Johnson, Nixon, and Ford, utilizing evidence based leadership, these physicians led both the United States and worldwide efforts that resulted in smallpox becoming the first human disease ever eradicated from the face of the earth.

In the United States (US) today, health care providers seem appropriately confused about the present and future issues concerning coronavirus disease 2019 (COVID-19). This infectious disease is caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2) that is now responsible for an emerging pandemic. The first case was reported in Wuhan, China on December 31, 2019⁵ and in the United States on January 22, 2020.⁶ During that interval containment

was potentially achievable in the United States, which would have included collaborative efforts such as the widespread utilization of the rapid testing kits available from the World Health Organization. At present, however, strategies must be employed to flatten the curve to decrease avoidable morbidity and mortality which include, but are not limited to, widespread testing with rapid turnaround, and social distancing.¹⁻⁵ In addition, some reports provide reassurance and others an ominous foreboding. At present, the current incomplete totality of evidence provides causes for serious concerns and, more importantly, an urgent need for public health leadership, but neither reassurance nor alarm.

On the one hand, it is reassuring that perhaps over 80% of symptomatic subjects will experience only mild flu-like symptoms. On the other hand, it is alarming that, as it appears based on currently available data, perhaps 15% of affected patients will become seriously ill and 5% will need critical care. On Friday, March 13 at 1PM ET, worldwide there have been 125,048 confirmed cases and 4613 deaths (3.7%).⁶ The first case was reported in Wuhan, China in late January 2020 and today there are reported cases on every continent except Antarctica. Further, in the US the numbers of confirmed cases and deaths have risen over the week from 307 cases and 17 fatalities (5.5%) to 1629 cases and 41 deaths in 46 states and the District of Columbia, with an initial cluster in a nursing

home in the state of Washington and currently another in New Rochelle, New York.⁷

Healthcare providers should be aware that younger and healthy individuals will represent a larger proportion of the population who experience mild to moderate symptoms, and older individuals with pre-existing conditions will be overrepresented among the deaths. Healthcare providers and their patients, as well as the general public, should remain fully cognizant that the young and healthy are not free of risk of death, but there are large segments of the population at highest risk. These include adults ≥ 60 years old, those with chronic diseases such as cardiovascular disease, diabetes mellitus, and lung disease, as well as those receiving chemotherapy or who are otherwise immunocompromised through illness or therapies. These guestimates about the numbers of cases will become more reliable with more widespread and accurate testing. It is somewhat sobering to note that South Korea, which has a population about 1/6th that of the United States, has tested over 240,000 or about 1 per 250 people. In contrast, the United States has tested 13,624 which includes 3903 from the Centers for Disease Control and 9721 from public health laboratories.⁸ Healthcare providers should be reassured that in South Korea and the United States, among patients with symptoms, only about 3% tested positive for coronavirus.

When the totality of evidence is incomplete it is certainly appropriate for healthcare providers to remain uncertain in choice of specific preventive and therapeutic measures for their individual patients. Not so, however, for public health and regulatory authorities. Such dedicated public servants are honed to a fine edge to maximize benefits and minimize risks while attempting to prevent and treat apparently emerging pandemics. Thus, as a consequence, it seems altogether fitting and proper for public health officials to lead public health efforts and politicians to lead political efforts.

Appropriate concerns---not fear---should play a major role in the emerging pandemic; public health efforts should focus, primarily although not exclusively, on public health issues; economic considerations seem of greater importance than political considerations. In the US and globally there is already ample evidence of person to person transmission of what appears to be a highly infectious agent. In addition, collegial and collaborative multifactorial preventive and therapeutic measures in the United States and throughout the world are warranted to control the pandemic. Healthcare providers as well as the general public should be aware that any vaccine is likely to emerge only after one to two years. In addition, however, healthcare providers should also be aware of the possibility that chloroquine phosphate may have apparent efficacy and an acceptable safety profile against COVID-19.⁹

With respect to influenza, in the flu season from 2018 to 2019, about 42.9 million Americans were clinical cases, of which 647,000 were hospitalized and about 61,200 died. Based on the existing incomplete totality of evidence it appears that coronavirus is comparable in communicability to influenza but with perhaps a 10 fold higher case fatality rate. If so, the guestimates suggest that if the epidemic continues to propagate in the US there may be 612,000 deaths and perhaps millions of hospitalizations. This staggering estimate of number of hospitalizations could paralyze the US healthcare delivery system. Further, the overcrowding of hospitals by patients with coronavirus may make it more difficult to provide lifesaving treatments to those with other life-threatening conditions. In addition, this number of deaths is comparable to the most lethal epidemic of influenza in US history which occurred in 1918. During that year, about 675,000 Americans died.¹⁰

We believe that Anthony S. Fauci, MD, Director of the United States National Institute of Allergy and Infectious Diseases, is the Babe Ruth of virology in general and influenza in particular. His proven capacity and capability for collaborative expert leadership to guide the US and the world through this pandemic and to ensure our preparedness for the challenges ahead would be beneficial for all.

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