

BOOKS

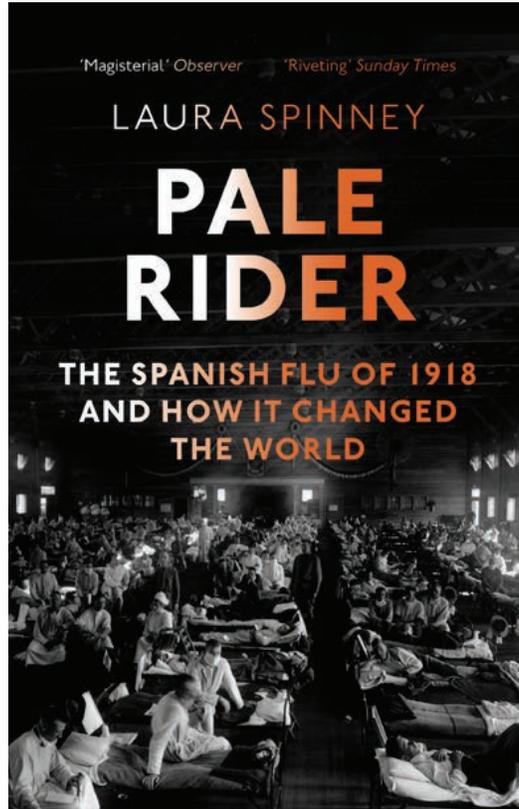
A Modern Plague

NABILA SHAIKH AND
DAVID L. HEYMANN

Pale Rider: The Spanish Flu of 1918 and How It Changed the World
by Laura Spinney. New York, NY:
PublicAffairs, 2017, 352 pp.

For anyone who thinks of influenza as a biomedical problem with biomedical solutions, there is a lesson to be learned from Laura Spinney's book on the 1918 flu pandemic, *Pale Rider*: anthropology is a tool to be used to understand why disease control methods are not accepted by communities, and understanding anthropology—and the associated socioeconomic impact of pandemics—is just as much an integral aspect of the control of influenza as is the provision of antiviral drugs and vaccines. Combining epidemiology, anthropology, and meticulously researched evidence, Spinney documents the so-called Spanish flu, underscoring the impact the disease had on the world as it was in the early twentieth century, and how that has influenced and shaped modern history and science. The 1918 pandemic is still used today as a benchmark for the potential of novel influenza viruses—those flu viruses that enter humans by breaching the species barrier between the animal and human kingdoms.

With the advent of antibiotics to treat bacterial superinfections, antivirals that appear to be effective if given early enough in a flu infection, and the potential to rapidly develop new seasonal vaccines each year, mortality among people with seasonal influenza has decreased. Although mortality from



novel, nonseasonal influenza viruses such as the virus that caused the 1918 pandemic remains higher, medical interventions have also effectively decreased their associated mortality. But the lessons from anthropology remain. In fact, it could be concluded from *Pale Rider* that the Spanish flu pandemic will remain a benchmark not only because of its associated widespread mortality, but also because of the social and economic disruption that it caused—disruption that continues to be associated with seasonal and pandemic influenza today.

As a history of science, politics, religion, and the arts, *Pale Rider* is a fascinating read for health and science professionals and the general public alike. By 1918, scientists had discredited the theory of miasma (“bad, foul smelling air”) as the cause

of disease; they were beginning to understand the germ theory and had identified bacteria as the cause of many infections. But penicillin—the first antibiotic—was only discovered a few years later, and first used in humans in the 1940s. The idea that disease could be caused by a contagion much smaller than a bacterium—a filter-passing organism that could cause disease—was just gaining recognition by 1918, though technology did not allow for full viral discovery until later in the twentieth century.

And in 1918, as Spinney points out, much of the world was at war, with troops deployed across Europe, transported from and to the United States, England, France, Germany, India, and elsewhere. Furthermore, immigrants and disempowered populations around the world were living in squalid tenements and environments. With the world in such a disheveled state,

many people accepted the flu pandemic of 1918 as an act of God, as punishment for their sins and for allowing the inequalities that had developed throughout the world. In the Spanish city of Zamora, the bishop defied a health authority ban on mass gatherings and ordered citizens to gather and pray for an end to the pandemic. The rate of death in Zamora was listed as the highest in Spain, so much so that by October 1918 wood for coffins was hard to come by.

Spinney also makes deductions about when influenza first appeared in humans. Understanding that novel flu viruses—those considered to have pandemic potential—require an animal host in which to live and reproduce, and close contact with susceptible humans in order to breach the species barrier (thus becoming what's called a zoonotic dis-

ease), Spinney deduces that flu likely emerged and caused outbreaks among humans only about 12,000 years ago, when hunter-gatherers started living in larger, more sedentary communities. Spinney also goes further, presenting evidence that she feels supports the hypothesis that major outbreaks of infectious disease in general may play a role in altering the earth's natural weather systems. She argues that just as the Industrial Revolution resulted in a sustained increase of the levels of carbon dioxide in the atmosphere that contribute to global warming, widespread death from epidemics and pandemics such as the bubonic plague, which depopulated villages and allowed for the subsequent reforestation of Europe and Asia, led to the absorption of carbon dioxide and a cooling of the earth's atmosphere.

On the anthropological side, Spinney provides a vivid example of how random flu outbreaks appear to the general public, in this instance to the gold mining town of Rand and the diamond mines of Kimberley, in South Africa. Although the flu struck first in Rand, the Kimberley mines experienced the deaths of almost one-quarter of the miners, 35 times higher than the deaths recorded in Rand. The same was true for soldiers living in crowded conditions on transport vessels or in the field. With advances in understanding influenza transmission, we can now also understand that proximity of travel routes to population centers increased the potential for international spread. Ocean shipping routes and troop deployments ensured that the epidemic spread widely and progressed into a pandemic that circled the world.

Without a global reporting system during this period, establishing where the outbreak originated is difficult. Spinney points out that despite its name, Spanish flu was unlikely to have originated in Spain; the name may just be an unfortunate by-product of wartime censoring across the rest of Europe, where information about the

health of a nation's military was a guarded secret, but reporting on the flu in neutral Spain gave the impression that the pandemic was especially rampant there. Spinney presents three theoretical sites of origin for the pandemic: a troop deployment base in Étapes, France, in 1916; labor camps in the United States that housed a large influx of Chinese laborers arriving in 1917; and a military base in Kansas in 1918.

But perhaps even more compelling than ruminations on the pandemic's source of origin are the intertwining stories that Spinney tells of individuals who were both affected and infected by the flu, tales that illustrate the immense breadth of the global crisis and its impact. The Spanish flu is thought to have taken the life of the son of the British writer and physician Arthur Conan Doyle, leading the author further away from his Sherlock Holmes novels to a career devoted to researching spiritualism. The Hungarian physicist Leo Szilard, who played a crucial role in establishing the Manhattan Project, survived the Great War with a bout of influenza that hospitalized him just before his regiment was sent to the front and annihilated in battle. And Mustafa Kemal Atatürk, later the founder and first president of the Republic of Turkey, documented his experience of the Spanish flu after surveying troops in Germany.

Spinney also draws links between the flu and the success of Mahatma Gandhi and the Indian independence movement that culminated in partition of the subcontinent in 1947. And she mentions the experience of Fred Trump Sr., who received an insurance settlement following the death of his father from the Spanish flu in 1918 that allowed him to build a real estate empire. Also of importance to Spinney is the generational impact of the Spanish flu, which was associated with the death of 2.5% of the world's population; many of the pandemic's victims had preexisting debilitating conditions such as tuberculosis. The survivors, who had developed immunity or were not affected, produced healthy children and

grandchildren—the baby boomer generation of today.

Spinney concludes that disease has long played a part in shaping society and will continue to do so despite advances in medicine and technology. Worryingly, Spinney is less confident about the anthropological advances—or lack of them—in the fight against infectious diseases, which are at least as important in dealing with pandemics as medicines and vaccines. As evidence, she draws attention to the religiously motivated antivaccination movements of 1918 and the antivaccination movements of today. She also draws parallels between Confucianism and filial piety in China hampering quarantine efforts because a child's first allegiance is to a sick parent, not to authorities who wanted to establish isolation or quarantine procedures; she sees similar impediments today in efforts to fight Ebola and other disease outbreaks.

Spinney is explicit in presenting worst-case pandemic scenarios to emphasize why the world should not become complacent about infectious disease. She highlights the importance of an anthropological as well as a biomedical approach to infectious disease prevention and control. Human encroachment on forestry and spreading urbanization appear to be increasing the rate at which zoonotic diseases emerge in humans; climate change is associated with unexpected outbreaks of known infectious disease; and common diseases such as measles, which were nearly eliminated in the United States and Europe, have reappeared due to factors such as antivaccination movements that are threatening the lives of children and young adults. *Pale Rider* offers lessons for us all, and it is hoped that they will help lead us and our political leaders to more seriously confront the threats posed by infectious diseases.

Nabila Shaikh is a research assistant at the London School of Hygiene and Tropical Medicine (LSHTM). David L. Heymann is a professor of infectious disease epidemiology at LSHTM.