

Coronavirus evokes memories of New Orleans' bout with yellow fever — and hopes of solution

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The COVID-19 pandemic has given people everywhere a crash-course in epidemiology, public health, data analysis and human geography. Among New Orleanians, it can also be a history lesson — a moment in which we can empathize with the peoples of our past, and the pestilences they endured.

None was more dreaded than yellow fever. Between 1796 and 1905, more than 100,000 Louisianians and 40,000 New Orleanians lost their lives to this viral disease.

It likely arrived here via the Middle Passage of the international slave trade, as eggs of the *Aedes aegypti* mosquito made their way on vessels from West Africa, the original habitat of this species, or from intermediary ports in the Caribbean. *Aedes aegypti* was well-suited for urban environments, able to spawn in small amount of water, such as puddles or leaf droplets, while finding blood meals among humans living adjacently in high density.

Yellow fever plagued tropical and subtropical communities at a time when medical researchers, not yet enlightened by modern understandings of germs, bacteria, and viruses, instead relied on their senses and intuition to diagnose illness. They posited that health threats came in part from moisture, heat and decaying organic matter. So they came to perceive swamps and marshes in particular, with their stagnant water and humus, as sources of insalubrious vapors, called "miasmas," from the Greek word for pollution or defilement. "Miasmatic theory" became a leading explanation for diseases such as dengue, cholera, malaria ("bad air") and yellow fever, all of which would afflict New Orleans recurrently.

The first significant yellow fever outbreak struck New Orleans in 1796, killing over 600 people at a time when the city's population was under 9,000, most of whom lived within today's French Quarter. Seven smaller outbreaks occurred from 1799 to 1812, a tumultuous political time in which the colony switched governance three times, and New Orleans ended up in the new American state of Louisiana.

Soon, Anglo-Americans began arriving to the Creole city, physicians among them. New Orleans was poised to boom as a vital port, even as it grappled with the nation's highest death rate — 7% in the late 1700s, and 4.3% throughout the 1800s. Paradoxical nicknames circulated as New Orleans rose to rank among the largest cities and busiest ports on the continent. Some called it "Queen of the South;" others, "the Necropolis of the South."

A medical community formed to tackle the maladies, but it first had to bridge a growing cultural chasm in the polyglot metropolis. English-speaking American doctors were inclined to practice "heroic medicine" — that is, extreme measures, such as blood-letting and purging—while their French-speaking Creole counterparts tended to favor more gentle and sparing approaches.

During 1817-1819, Creole medics formed La Société Médicale de la Nouvelle Orléans, while the Americans organized the Physico-Medical Society. Both focused their attention on miasmas and body contact as the source and spread of disease. Futilely, the city tried burning tar and even firing cannons to ward off the pestilence, while doctors performed risky blood-letting operations.

The threat grew in 1832 and 1833, when terrifying cholera epidemics, ongoing in Atlantic and Caribbean port cities, wiped out roughly 6,000 New Orleanians in three weeks, and as many as 500 in a single day. Corpses were buried hastily in a mass grave in the Girod Street Cemetery, for fear that decay would defile the air and spread the disease.

The next year, seven physicians organized the Medical College of Louisiana to train young doctors to combat yellow fever, cholera, malaria, smallpox and other plagues. The 1834 effort, led by English-speaking physicians not of local birth, was initially opposed by the Creole medical establishment, but resistance soon faded as everyone appreciated the unifying nature of the threats. The college became only the second medical school in the South and 15th in the nation. In 1847 it transferred to state control as the University of Louisiana, with a campus at present-day 900 Common St.; in 1884, it became the private Tulane University of Louisiana.

Hundreds died roughly every other summer throughout the 1830s and 1840s, prompting the formation of the city's first professionally staffed Board of Health. The Board documented deplorable conditions in a forthright and scientific manner, though the death rate only increased — 2,300 perished in 1847 — in part because of official complacency.

The reason for the complacency: disease was bad for business. Besides, outbreaks did not occur every year, much less epidemics; those with means could flee across the lake or to the coast; and the disease was not always fatal.

Those who survived — particularly robust youth — became “acclimated” (immune) to the disease, and those who were born locally — namely Creoles, regardless of race — thus had greater opportunity to acclimate. Newcomers, on the other hand, were highly susceptible, and mariners, transients, domestic migrants, and particularly immigrants dominated the list of fatalities.

In a cruel coincidence, these same years also marked the peak immigration era in New Orleans history, testimony to its ongoing economic vitality. During 1837 to 1860, the city attracted more immigrants than any other Southern city, and in 1851 alone, over 52,000 immigrants landed here, predominantly Irish and German, equaling those coming into Boston, Philadelphia, and Baltimore combined.

Many continued to other destinations, while those who stayed tended to settle in the muddy *banlieues* (outskirts) of the metropolis, where stagnant puddles and canal beds bred mosquitoes, and crowded living conditions abetted mosquito-borne contagion. So pernicious was its association with newcomers that yellow fever earned the nickname “the stranger’s disease.” Others called it “yellow jack” or “the saffron scourge,” for some victims’ jaundiced appearance as kidneys and other vital organs failed.

Then came the summer of 1853. In this worst-ever local epidemic, roughly 8,000 people succumbed, possibly thousands more, out of a population of roughly 120,000. City streets were deserted, businesses closed and traffic at the port stilled. Lesser epidemics followed in 1854 and 1855, and in 1858, another 4,800 died, capping a twelve-year period in which 22,500 perished.

Medical researchers burned the midnight oil. In 1849, Drs. Edward Barton, J.C. Simonds, Erasmus Darwin Fenner and A. Forster Axson published frank and accurate vital health statistics, including deaths, in defiance of local newspapers’ tendency to suppress bad news in the interest of commercial activity.

In 1854, Barton plotted mortality rates from 1787 to 1853 against soil-disturbance events, suspecting that stagnant water had something to do with it. His meticulous publications flagged certain hydrological events

("Canal Carondelet dug," "Trenches dug around the City & Swamp exposed," "Drained the rear of 2nd District," "Immense excavations...for foundation of Customhouse") and correlated them to disease occurrences.

By 1860, the city's two medical schools, the Medical Department of the University of Louisiana and the New Orleans School of Medicine, enrolled a total of 600 students, the third-largest crop of young doctors in the nation.

While the cause of yellow fever eluded the medics, more evidence of the correlating factors —that is, public sanitation, or lack thereof — came during the Civil War. The Union, which occupied the city starting in May 1862, put its troops and local laborers to work cleaning city streets and the urban *purlieus* (surroundings). Death rates plummeted during the war years, only to rise again afterwards, as the city returned to civilian control. Cholera struck twice in 1866, and yellow fever killed over 3,000 in 1867.

In 1878, even as the recently formed Orleans Parish Medical Society convened, the worst epidemic since the 1850s killed over 4,000 people. But with focused determination and improved methods, researchers collected detailed data on infections and outcomes along with demographic and geographical information. The OPMS also strove to ensure accurate reportage and debunk quacks peddling home-brewed remedies, early examples of the advice recently offered by John Barry, author of "The Great Influenza," for authorities in times like these: "Tell the truth."

A breakthrough came in 1882, though few appreciated it at the time. A Cuban epidemiologist named Dr. Carlos Finlay presented compelling scientific evidence that *Aedes aegypti* spread yellow fever, and that vector control would be the solution.

Few in the medical establishment believed him. But one who did was locally born Dr. Rudolf Matas, a Louisianan of Spanish decent, who advocated for Finlay's "mosquito hypothesis" and eventually convinced, among others, Alabama-born Dr. William Gorgas, an Army physician who would later deploy mosquito-control tactics with great success in Panama, Cuba, and Florida.

Meanwhile, the fields of public health, civil engineering and city planning advanced during what would later be called the Progressive Era. Engineers designed and installed a world-class drainage system, which would soon drain the backswamp and allow for urban expansion toward the lake. The newly formed Sewerage and Water Board built a modern water purification and distribution plant in Carrollton, which would bring an end the use of cisterns to store roof-collected water, a source of mosquito habitat and gastrointestinal disorders. The agency also installed a sewerage collection and treatment system, while other entities took on mosquito and rodent control.

In 1900, while studying soldier deaths in the recent Spanish-American War, U.S. Army physician Dr. Walter Reed validated what Finlay had initially reported in 1882: that yellow fever is spread by *Aedes aegypti* mosquitoes and not miasmas or physical contact, and that its eradication would entail mosquito control, urban sanitation, fumigation and quarantining of ships.

New Orleans became the first city in the nation to adopt these preventative actions — but not before yellow jack paid one last visit. In 1905, the old nemesis killed over 400 people, particularly in the largely Sicilian immigrant neighborhood of the lower French Quarter. The area bounded by Decatur, Dumaine, Charters and Barracks streets saw 219 cases, and the Italian-born population, only 2% of the city, suffered 39% of the fatalities.

While many blamed the outbreak on the victims, researchers and authorities, now in full understanding of

causes and solutions, doubled down on decisive actions.

In 1906, the U.S. Public Health Service took control of the city's quarantine station and assumed responsibility for controlling the importation of contagious diseases. By 1912, the various municipal improvements occasioned a twenty-fold decline in malaria rates since 1886, from 180 to 9 victims per 100,000 residents. By the mid-1910s, New Orleans' death rate had dropped to 1.8%, a quarter the rate of a century ago.

In 1914, old fears rekindled as the dreaded Bubonic plague ("Black Death") made an appearance in the city. But as if to demonstrate the acumen developed by the New Orleans medical community in its victory over yellow fever, the response this time was swift and aggressive.

Federal, state, and city authorities took the earliest signs of the plague with utmost seriousness, and working cooperatively with broad public support, pounced on every suspicious situation. The prevention strategy focused on reducing the rat population through trapping campaigns, and separating rodents and humans through the "rat-proofing" of houses and other buildings.

So successful was New Orleans' 1914-1915 Bubonic plague campaign that it was used as a template to control similar outbreaks in New York, Boston, Philadelphia and other port cities.

While yellow fever never reappeared in New Orleans after 1905, it continues to imperil populations throughout tropical regions. As for *Aedes aegypti*, here since the days of the Middle Passage, that invasive pest remains common in New Orleans and throughout warmer regions. It has recently been identified as the vector of the Zika virus.

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