

7 Plagues That Changed History

With Ebola's re-emergence in West Africa, a look at past epidemics that left their mark on the world

BY BRYN BARNARD

What does yellow fever have to do with the size of the United States? How did tuberculosis popularize being thin?

Why did the bubonic plague contribute to Islam's rise?

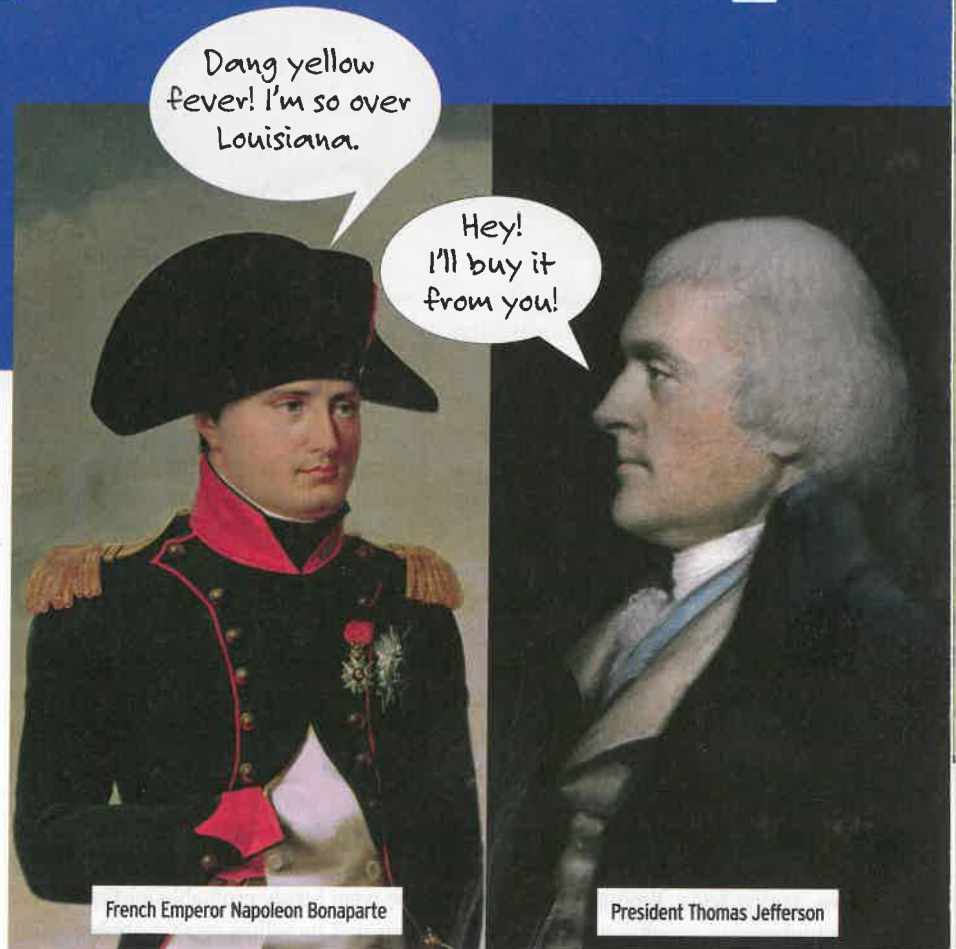
Epidemics—like the Ebola outbreak in West Africa—can deal devastating blows to a society, often at breakneck speeds. But sometimes their effects go way beyond immediate suffering. Epidemics, in fact, can change the course of history.

Here are seven epidemics that wreaked havoc when they happened and changed the world in ways still felt today.

1 Bubonic Plague The Rise of Islam

In the mid-seventh century, Muslim armies swept out of the Arabian Peninsula, crushed some of that era's greatest powers, and within decades created the biggest empire of its day. How? With lots of help from the bubonic plague, caused by the bacterium *yersinia pestis*.

The symptoms of the plague are fever, vomiting, and buboes—swollen and painful lymph nodes that fill up with pus. Most victims died within a week.



French Emperor Napoleon Bonaparte

President Thomas Jefferson

The plague hit Europe in two distinct pandemics, each with multiple waves: Justinian's Plague (541-42), named for the Byzantine emperor, was part of the first pandemic; the "Black Death" (1346-51) was part of the second, which finally burned out in the 1750s. (It's long been thought that the Black Death was spread primarily by rats and fleas; but new research suggests the disease was airborne, transmitted from person to person by coughing.)

The first pandemic killed 30 million to

100 million people, up to half the world's population at the time. It decimated the Byzantine and Persian Empires, claiming peasant farmers, aristocrats, and soldiers alike. And it weakened the empires' militaries, ruined their economies, and tore their social fabric to shreds, enabling the Muslim conquest of Persia (modern-day Iran), which took place from 633-51.

About 800 years after the first pandemic, the Black Death ravaged Europe, killing up to a third of its population. The badly weakened Byzantine Empire





A smallpox victim in New York, 1941; the last known case was in 1977 in Somalia.

held on through the devastation but finally succumbed in 1453, when a Muslim army, led by 21-year-old sultan Mehmed, conquered Constantinople (today Istanbul, in Turkey). The plagues led to the end of Christian domination of the Mediterranean and the beginning of Islam as a global force.

2 Smallpox The Birth of the U.S.

Would there be a United States without smallpox? Probably not.

Of all the horrific diseases that Europeans inadvertently exported on their colonizing expeditions—plague, chicken pox, cholera, diphtheria, influenza, measles, scarlet fever, typhus, tuberculosis, and whooping cough—smallpox proved the most deadly for native populations in the Americas. Caused by the *variola* virus, smallpox symptoms include fever, rash, headache, and masses of painful pus-filled bumps called pustules on the skin, eyes, throat, and internal organs. It was probably brought to the Americas by the Spanish in the 1520s, and within a few generations killed an estimated 20 million native inhabitants. In the Puritan northeast, many viewed the epidemics as part of God's plan. John Winthrop, the governor of the Massachusetts Bay Colony, wrote in 1634, "for the natives, they are all near dead of smallpox, so the Lord hath cleared our title to what we possess."

3 Yellow Fever U.S. Expansion

If not for yellow fever, the United States might be a third of its current size. The deadly viral mosquito-borne illness causes fever, black vomit, and jaundice (yellowing of the skin and eyes).

In 1802, France's Emperor Napoleon Bonaparte sent a massive fleet to Haiti,¹ his most important colony in the New World, to quell a slave rebellion that began there in 1791. But nearly all the 50,000 troops he'd sent were wiped out by yellow fever.

Napoleon had envisioned the Louisiana Territory as a giant farm to feed Haiti, whose slaves, sugar, and coffee were highly profitable for France. But defeated by yellow fever, Napoleon withdrew from Haiti and in 1803 sold France's claim to the Louisiana Territory to the U.S. Those 827,000 square miles now make up part or all of 15 U.S. states. The lands contained valuable minerals and millions of acres of forest and farmlands, helping America become one of the world's wealthiest nations.

4 Cholera Modern Plumbing

You can thank cholera for access to toilets and clean drinking water.

Cholera is a deadly bacterial infection that causes severe diarrhea and

drains the body of fluids so quickly it turns skin blue and thickens the blood to a tar-like consistency. Starting in India in 1817, wave after wave of cholera swept around the world to cities where sewage was pumped into the same rivers from which drinking water was taken. Death rates soared, killing rich and poor, young and old.

In London, a government bureaucrat's suggestion to parliament in 1842 that cleaning up sewers, water, and housing would solve the problem was initially dismissed as foolish philanthropy. But he managed to get parliament to enact a number of sewage-disposal reforms starting in the mid-1840s. More substantial change came after 1854, when a London doctor discovered that contaminated drinking water was the cause of cholera. Most significantly, in 1902, London took over the city's private water systems, creating the first safe, municipal water-delivery system.

Other cities followed suit. Today, clean water and proper sewage disposal are considered government responsibilities, even if most people in developing countries still don't have them.

5 Tuberculosis When Skinny Became Cool

The idea that "thin is beautiful" can be traced back to tuberculosis (TB). The bacterial disease ran rampant in Europe's overcrowded cities during the Industrial Revolution in the 18th and 19th centuries. It's transmitted through droplets released in the air from coughs and sneezes. It attacks bodies already weakened by illness, stress, malnutrition, and overwork, causing a slow, painful death.

One in four Europeans suffered from it, including many of the cultural celebrities of the time, like poet John Keats, composer Frédéric Chopin, and authors Charlotte Brontë, Emily Brontë,



John Keats

AP PHOTO (SMALLPOX); MARY EVANS PICTURE LIBRARY/EVERETT COLLECTION (JOHN KEATS)



Seattle police wear gauze masks during the 1918 Spanish flu epidemic.

and Robert Louis Stevenson. TB's tell-tale marks—thin bodies and flush-red cheeks—came to be associated with artistic genius and seen as chic and attractive, displacing older ideas of beauty as chubby and well fed (think King Henry VIII). English poet Lord Byron wrote in his journal in 1810 that he was sure the disease would make him a heartthrob: "See that poor Byron," he imagined women saying. "How interesting he looks in dying."

Though TB is now curable, it remains one of the world's deadliest diseases, especially in developing nations. In 2012, nearly 9 million people worldwide became sick with TB and more than 1 million died from it, according to the Centers for Disease Control and Prevention.

6 Malaria Connecting the Atlantic and Pacific

A century ago, the U.S. completed one of the greatest engineering feats in history: the Panama Canal, which connects the Atlantic and Pacific oceans. Had it not been for malaria, however, the Panama Canal might be Le Canal de Panama, with the glory going to France.

In 1882, the French began building a canal connecting the Atlantic and Pacific

through the Isthmus of Panama, the narrowest point in the Americas. A successful canal would save ships thousands of miles and weeks in travel. But almost immediately, workers began dying by the thousands, some from yellow fever, most from malaria—a mosquito-borne disease that causes cycles of violent fevers and chills, leaving victims weakened or dead.

The French project went bankrupt in 1888, and in 1904, the U.S. bought it from France. Malaria initially proved a problem for the U.S. effort too, causing 21,000 of the 26,000 workers to be hospitalized. But by oiling over or filling in mosquito-breeding ponds and lakes, as well as fumigating homes, swamps, and the jungle, the U.S. brought the death rate from malaria down to 1 percent of the labor force by 1910.

The canal opened in 1914.² It enabled speedy transport from America's East Coast to West Coast and gave the U.S. military much greater mobility between the Atlantic and Pacific, contributing to America's emergence as a global power.

7 Spanish Influenza Modern Medicine

One of medicine's most important advances has a deadly epidemic to thank.

At the tail end of World War I (1914-18), Spanish influenza swept around the world. In a matter of months, it killed up to 100 million people—many times more than the 16 million who died in the war. The airborne viral illness turned the skin blue, filled the victim's lungs with bloody froth, and could kill within hours.

By November 1918, at the height of the epidemic, cities like San Francisco and Seattle had enacted ordinances requiring everyone to wear gauze masks. Scientists all over the world began searching for the cause of the flu. But during his search in 1928, Scottish scientist Alexander Fleming discovered something else: a fungus that had floated onto one of the petri dishes in his London lab. It was *penicillium*, which was used to make the world's first antibiotic, penicillin.

It's still the most widely used antibiotic today, curing everything from skin and throat infections to pneumonia, which were often death sentences.

"I certainly didn't plan to revolutionize all medicine by discovering the world's first antibiotic, or bacteria killer," Fleming later said. "But I suppose that was exactly what I did." •

Bryn Barnard is author of the book "Outbreak! Plagues That Changed History."

² The U.S. handed over the Canal to Panama in 1999.