Disease and catastrophe

BY DAVID WALBERT

DISEASE AND EPIDEMICS TODAY

The World Health Organization provides information on the symptoms, treatment, and current status of some of the diseases mentioned in this article:

- influenza
- malaria
- measles
- mumps
- smallpox
- typhoid fever (typhus)
- yellow fever

Of all the kinds of life exchanged when the Old and New Worlds met, lowly germs had the greatest impact. Europeans and later Africans brought smallpox and a host of other diseases with them to America, where those diseases killed as much as 90 percent of the native population of two continents. Europeans came away lucky — with only a few tropical diseases from Africa and, probably, syphilis from the New World. In America, disease destoyed civilizations.

Endemics and epidemics: How disease works

A disease becomes *endemic* in a population when it continues to be passed from person to person without needing to be re-introduced from outside sources. The common cold, for example, is endemic in the United States — if we closed the borders and sterilzed everything that entered the country, we'd still be sneezing half the winter. Malaria, which is passed from person to person by mosquitoes, is endemic in parts of Africa. If you live in a region where a particular disease is endemic, you are likely to get that disease at some point during your life.

DISEASE AND DOMESTIC ANIMALS

Although all populations of animals, including humans, are subject to disease, humans who live in close contact with domesticated animals are particularly at risk. Many of the diseases that have plagued humanity are caused by microorganisms that originally affected only other species of animals. When humans began to domesticate animals for agricultural purposes, some of those microorganisms mutated into a form that could cause disease in humans. Diseases that come to humans from other animals are called *zoonotic* diseases.

Measles, smallpox, influenza, diphtheria, the common cold, and tuberculosis probably came to humans from other animals and are now transmitted directly from human to human. Other zoonotic diseases are still transmitted by animals. Yellow fever and malaria, for example, are transmitted by mosquitoes. Bubonic plague is carried by rats (though it is also highly contagious among humans), and rabies can be carried and transmitted by any mammal.

Because Europeans, Asians, and Africans had many more domestic animals than American Indians, they had acquired more endemic diseases. Large centers of population like the cities of Europe and Asia also attracted rats that carried diseases like the bubonic plague.

NATURAL RESISTANCE AND EPIDEMICS

When a deadly disease is endemic in a population, over many generations, that population gradually builds up a resistance to it. Most serious diseases are especially likely to kill infants and children. Children who die of a disease obviously won't live to reproduce. But not everyone dies from even the most serious diseases. Some people have combinations of genes that help their immune systems to successfully fight particular diseases. A child who survives smallpox, for example, and grows up will pass on his smallpox-resistant genes to his children. Since people with genes that help them resist the endemic disease are more likely to live, reproduce, and pass on their genes, while people who lack those genes are more likely to die in childhood, over time, all of the surviving population will have those genes.

An endemic disease isn't always present in a population at the same level. There can still be *epidemics* — outbreaks of the disease that spread faster and to more people than is typical. But epidemics are more likely, and more serious, in a population where a disease is not endemic. There, people are sickened more easily, become weaker, and pass the disease along more quickly. The most serious epidemics are of diseases or strains of diseases new to a population. Epidemics of influenza (the "flu"), for example, tend to come from new strains of the influenza virus.

Europeans, Asians, and Africans had a natural resistance to smallpox, measles, typhoid, and other diseases endemic to the Old World. These diseases were still deadly — smallpox killed some 60 million Europeans over the course of the eighteenth century — but not as deadly as they would have been in a population that lacked the natural resistance.

American Indians, who lived on a continent where the smallpox virus and other Old World microbes did not exist, had no natural resistance to them. When Europeans arrived, infection spread like wildfire, killing not only the young, old, and weak but healthy adults in the prime of life.

Disease in the Americas

Not only smallpox but measles, tuberculosis, diphtheria, whooping cough, and influenza arrived in the Americas with European conquistadors and colonists. Enslaved Africans brought malaria, yellow fever, and denge (breakbone fever), which thrived in the Caribbean and warmer parts of North America. Slave traders, in turn, carried yellow fever back to Europe, and European traders and explorers may have brought home syphilis from the Americas. Nowhere, though, did disease have the devastating impact it did in the New World.

This was not the first time that a new disease had been introduced into a human population. In the 1300s, Mongol armies and traders from Central Asia brought the

bubonic plague to Europe, and the resulting epidemic — the "Black Death" — killed one-third of the population of Western Europe.

But even the Black Death can't compare to the devastation of the indigenous peoples of North and South America. Hit by wave after wave of multiple diseases to which they had utterly no resistance, they died by the millions. Disease spread from the paths of explorers and the sites of colonization like a stain from a drop of ink on a paper towel.

In fact, in North America, disease spread *faster* than European colonization. When Hernando de Soto explored the Mississippi Valley in the early 1500s he found large, thriving cities connected by networks of trade. By the time Rene-Robert de La Salle followed de Soto's footsteps in the 1680s, those cities had evaporated.

In parts of North Carolina, disease may have come later. Smallpox may have arrived in the 1500s in the wake of Soto's expedition, and it may have struck the Indians of the Outer Banks when the English arrived to settle Roanoke Island. Its worst damage, though, came later. In the late 1600s, the colonial population grew rapidly, and many more slaves were imported from Africa, where most people were not exposed to smallpox at a young age as they were in England. This made conditions right for an epidemic among the colonial population, and between 1696 and 1700, that epidemic occurred, first in Virginia, then moving south through the Carolinas and west to the Mississippi. The expanding network of colonial trade among the Indians (including a trade in Indian slaves) quickly carried smallpox throughout the Southeast. Death rates were as high as 90 percent in some communities — and it was only the beginning of a century of epidemics.

As a result, by 1700, North Carolina east of the mountains was sparsely populated. The English colonists in North America found a wilderness ready for the taking, and the Indians who remained were not numerous enough to stop them.

HOW MANY PEOPLE DIED?

Estimating the number of deaths due to imported diseases is difficult for two reasons. First, we have only rough estimates of the population of most of the Americas even after Europeans arrived and started counting people. Then, researchers use data on present-day epidemics to estimate what a likely death rate would have been for a population with no immunity to any of the diseases Europeans brought. A small inaccuracy in the estimated death rate can lead to very different estimates of population, and researchers argue about both numbers.

The figure most often cited is that 90 to 95 percent of the native population of the Americas died between the time Columbus landed in the Caribbean and the end of the eighteenth century. That percentage is based largely on epidemiology — the study of how diseases spread in populations. But no one knows exactly how many people died, because no one knows exactly how many people were here in 1491, before Columbus arrived.

In 1910, James Mooney, an ethnographer at the Smithsonian Institution, made the first scholarly estimate of the indigenous population of the Americas. Mooney used old documents to estimate that in 1492, North America had 1.15 million inhabitants. Mooney was widely respected in his field, and for decades, other researchers accepted this figure. Then, in 1966, anthropologist Henry F. Dobyns used new research in epidemiology to estimate that 95 percent of the native population of the Americas died after European contact — 95 percent of an original population of 90 to 112 million people, more than the population of Europe at that time!

Based on further research, Dobyns later reduced his estimate to 18 million people. Other researchers estimate far fewer, as low as 1.8 million. Others have proposed numbers in between. But regardless of whether 1 million people died or 100 million, scholars agree that disease devastated native populations, cultures, and societies. To put those numbers in perspective, consider that 1.8 million people is the population of Charlotte, Raleigh, Greensboro, Durham, Winston-Salem and Fayetteville combined; 18 million is more than

twice the current population of the state of North Carolina; and 100 million is a a third of the population of the United States.

Who's to blame?

Historians also debate whether Europeans were guilty of genocide — the deliberate killing of an entire ethnic group. That question has many layers, and it's difficult to answer — or even to ask — without succumbing to emotion or ideology. When millions of people die, we naturally look for someone to blame, but the desire to assign blame can prevent us from fully understanding the past.

Europeans certainly understood the impact of disease on American Indians. The Spanish learned quickly that the native populations of the Caribbean and Central America were highly susceptible to diseases. When John Lawson traveled through North Carolina in 1701, he noted repeatedly in his journals[1] that the populations of the Indians he met were greatly reduced from only a short time earlier. Europeans also had a rough idea of how some diseases, such as smallpox, were transmitted, and they understood the importance of quarantine.

John Lawson, traveling through South Carolina in 1701, wrote about the effect of smallpox on the Sewee Indians:

> These Sewees have been formerly a large Nation, though now very much decreas'd since the English hath seated their Land, and all other Nations of Indians are observ'd to partake of the same Fate, where the Europeans come, the Indians being a People very apt to catch any Distemper they are afflicted withal; the Small-Pox has destroy'd many thousands of these Natives, who no sooner than they are attack'd with the violent Fevers, and the Burning which attends that Distemper, sling themselves over Head in the Water, in the very Extremity of the Disease; which shutting up the Pores, hinders a kindly Evacuation of the Pestilential Matter, and drives it back; by which Means Death most commonly ensues; not but in other Distempers which are epidemical, you may find among'em Practitioners that have extraordinary Skill and Success in removing those morbifick Qualities which afflict 'em, not often going above 100 Yards from their Abode for their Remedies, some of their chiefest Physicians commonly carrying their Complement of Drugs continually about them, which are Roots, Barks, Berries, Nuts, &c. that are strung upon a Thread. So like a Pomander, the Physician wears them about his Neck. An Indian hath been often found to heal an English-man of a Malady, for the Value of a Match-Coat; which the ablest of our English Pretenders in America, after repeated Applications, have deserted the Patient as incurable; God having furnish'd every Country with specifick Remedies for their peculiar Diseases.

Lawson had great respect for the traditional medicine of the Indians, which was based on herbal cures and rituals and was often quite effective against illnesses and maladies present before Europeans arrived. Although Indians tried to adapt their system of medicine to new diseases, viruses such as smallpox simply overwhelmed them.

At least one European used smallpox as a military weapon. Lord Jeffrey Amherst, commanding general of British forces in America during the Seven Years War (or French and Indian War, 1756–1763), distributed blankets from smallpox victims as a way to crush an Indian uprising and "to Extirpate this Execrable Race."[2] Amherst, at least, went on record in favor of genocide.

Other Europeans, from the Spanish in the 1500s to English colonists in the seventeenth and eighteenth centuries, saw the spread of smallpox as divine intervention. They believed that by wiping out the native population and clearing the continent for European settlement, God was declaring himself on their side.

But although there are rumors and stories of other similar attempts to spread smallpox among native populations — by the Spanish in Central America and by the U.S. government in the nineteenth century — no documentary evidence survives to prove them. Although plenty of Europeans wanted the Indians out of their way, few seem to have engaged in deliberate biological warfare.

Finally, it's worth remembering that germs weren't discovered until the nineteenth century, and that although inoculation had been proven to work, most Europeans still feared it. People's understanding of disease was still poor. Note Lawson's disdain for "English pretenders" — European doctors who claim to practice superior medicine, but are less successful than their Indian counterparts. European physicians believed, for example, that some diseases were caused by an excess of blood in the body, and "cured" them by attaching leeches to patients' skin to "bleed" them.

There was, probably, no way to stop the spread of disease once peoples long isolated came into contact. Even had Europeans been horrified by the spread of smallpox among the Indians and thrown the weight of their medical system against it, they would have been opening an umbrella against a hurricane.

OTHER KILLERS

It's important to remember that in addition to disease, war and slavery killed American Indians. How many people were killed is difficult — perhaps impossible — to know. Clearly, though, war and slavery were deliberate acts on the part of Europeans, and some of the wars fought between colonists and Indians were genocidal in intent — that is, the colonists attempted to wipe out an entire native population. Wars between colonists and Indians often led to massacres of native villages. In the Pequot War, which took place in New England in the 1630s, the colonial militia burned the village of Mystic, killing an estimated 600 to 700 Pequot Indians — mostly women and children. But both sides engaged in this kind of warfare: The Tuscarora War began in North Carolina in 1711 when parties of Tuscarora Indians attacked plantations and killed families of colonists. But weakened and diminished by disease, American Indians were nearly always unsuccessful in colonial wars.

What's clear is that millions of American Indians died, and most European colonists were content to have them out of the way. That feeling was usually mutual, but Europeans, armed with better weapons and with disease as an ally, prevailed. How they prevailed is a complex story that would play out over centuries.

On the web

1491

http://www.theatlantic.com/doc/200203/mann

Before it became the New World, the Western Hemisphere was vastly more populous and sophisticated than has been thought. By Charles Mann, from *The Atlantic*.

The Origin of Disease and Medicine

http://www.learnnc.org/lp/pages/1809

A Cherokee myth recorded in the late nineteenth century.

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Notes

1. See http://www.learnnc.org/lp/editions/john-lawson/.
2. Amherst wrote these words in a letter to Colonel Henry Bouquet on July 13, 1763.

About the author

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David Walbert is LEARN NC's editorial director and is responsible for all of LEARN NC's educational publications. He also oversees development of various web applications including LEARN NC's website and content management systems and is the organization's primary web, information, and visual designer. David has worked with LEARN NC since August 1997.

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