

Raw Milk Killed 48 in Boston Outbreak - 100 Years Ago

by [Dan Flynn](#) | Mar 16, 2012

*Editor's Note: In May 1911, as many as 1,400 people in the Boston area were infected with micro-organisms - most likely staphylococci or streptococci - spread by contaminated raw milk during an outbreak that killed 48. At the time, the illnesses were called septic sore throat or simply tonsillitis. The incident remains one of the 10 deadliest outbreaks of foodborne illness in U.S. history. As part of a [periodic series](#) on historic outbreaks, **Food Safety News** recounts the Boston epidemic.*

"The lesson drawn from the outbreak is that even a most carefully supervised milk supply is open to the danger of grave infection from carrier or unrecognized cases of disease," wrote biology professor C.E.A. Winslow. "The only real safeguard against such catastrophes lies in pasteurization, carried out by the holding system and preferably in the final packages."

Professor Winslow made those recommendations 100 years ago, in the *Journal of Infectious Diseases*, about the 1911 Boston staphylococci or streptococci outbreak that killed 48 people. It was originally caused by drinking contaminated raw milk and spread because it was "communicable by contact," especially among people in the same household.

Winslow's [39-page article](#), titled "An outbreak of tonsillitis or septic sore throat in Eastern Massachusetts and its relation to an infected milk supply," records the details of one of the most significant public health events in U.S. history.

Winslow says the outbreak was first recognized at a medical meeting in Boston on May 11, 1911 when physicians attending realized they each had been treating at least 20 to 30, and in some cases as many as 60 and 70 patients, for "tonsillitis of a peculiar and characteristic type" within the last week.

Severe headaches, acute abdominal pains and high temperatures of 103 to 105 degrees were the common symptoms. "It was commonly called tonsillitis, but differed from ordinary tonsillitis in some respects, and was held by many physicians to be a new and peculiar pathological condition," Winslow wrote.

At the meeting, the physicians reported something else. Most of the families with illnesses were customers of a single milk supplier -- Dearfoot Farms.

Winslow says many of the doctors were "loath to believe" that Dearfoot Farms "could possibly be involved." The company had been supplying Boston and its suburbs with milk for 28 years, and "had been universally regarded as a pioneer in the work of dairy inspection and in the marketing of clean milk..."

In 1911, tonsillitis was not a "reportable" illness - doctors did not have to report it to health authorities. Wilson's investigation depended on the medical community volunteering information, and that's how he discovered that some areas with illnesses were not directly supplied by Deerfoot. He eventually collected more than 1,400 records directly from physicians.

"The disease was not ordinary follicular tonsillitis, but more nearly what the English recognize as septic sore throat," Winslow wrote. "In early stages there was merely a diffuse redness over the tonsils and adjoining regions, but follicular patches often appear later and in many cases a membrane simulating that of diphtheria."

Winslow said the disease was "severe," and "occasionally fatal among the old and the weak." He said there were actually two epidemics -- one centered in and around Boston, Brookline and Cambridge, and another in the area around Marlboro, 25 miles inland.

In his interviews with physicians in Boston, Winslow identified 1,043 outbreak-related cases, with the illnesses peaking on May 14 and "practically ceasing" after May 22. In 56 percent of the affected households, there was only a single case.

Two-thirds of the deaths were among people older than 55, and one-third of those were over 75. Adults suffered more than children; only 15 percent of the cases were under age 16. Females were infected at twice the rate of males.

Winslow discovered that the distribution of the epidemic "exactly coincided" with Deerfoot's two main milk delivery routes. His study of customer lists found that about one in four on the routes were infected.

In the Marlboro area, Winslow collected 392 case records from physicians. He learned that the outbreak there had not exploded suddenly, but that the inland illnesses had been spread out over April and May. Because there was no known case in that area involving direct exposure to the milk, Winslow suspected a "carrier case" had touched off the infections.

At a time when a microscope might have been a laboratory's only powerful tool, Winslow had to rely on guesswork. "All these symptoms point to streptococcus as the probable cause of infection, but there is as yet no definite information as to the bacteriology of the outbreak," he said.

"Throat cultures examined at the Boston Board of Health Laboratory and elsewhere showed no constant organism but Professor Theobald Smith, of the Harvard Medical School, has four cultures isolated from internal organs in the more severe cases, all of which are streptococci of apparently the same type," Winslow added.

Winslow also addressed rumors at the time that New York and Washington D.C. both experienced similar outbreaks, but found nothing more than the usual number of cases.

Newspaper reports greatly exaggerated the number of septic sore throat in other areas of Massachusetts. Worcester was said to have 2,000 cases, but Winslow's doctor survey turned up nothing unusual.

He did find an "interesting community outbreak" in Wellesley that included about 30 cases at a Roman Catholic academy. The school had its own dairy, and also raised most of its own food. The investigation pointed to "a local infection of some food supply within the institution, perhaps an unrecognized carrier case."

The 48 deaths included 17 males and 31 females. The victims lived in Boston (19); Brookline (6) and Cambridge (23).

"Probability pointed to one of the two more universal vehicles, water or milk, and since the water supplies of the three communities are distinct, more particularly to milk supply," Winslow wrote.

Deerfoot Farms had two milk supplies, Southboro and Northboro, with a cream supply common to both. It was milk from Southboro that corresponded to the spread of the bacteria.

"On the whole, the general correspondence between Southboro milk and tonsillitis appears too close to be accidental," Winslow noted.

For Boston and Cambridge, 85 percent of the cases were on the Deerfoot Farms delivery list, and another 8 percent were believed by physicians to have consumed the milk.

Outbreaks early in the last century, like the one in Boston, eventually brought an end to the widespread distribution of raw milk, and most milk was pasteurized from then on to prevent the spread of disease and death.

Charles-Edward Amory (C.E.A.) Winslow, 1877-1957, went on to become a seminal figure in public health. After his investigation of the Boston outbreak, he founded the Yale Department of Public Health in 1915.

In 1920, Winslow defined public health as "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals."

His influence continues today with the C.E.A. Winslow Award, the highest award of professional achievement for public health professionals in Connecticut.