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The History of Quarantine

Dr. Russell:

Coming to you from the ReachMD studios, this is *COVID-19: On the Frontlines*. I'm Dr. John Russell. Today, I will be discussing the history of quarantine.

Quarantines have been in great use all over the world, and now in the United States in our battle against COVID-19. The isolation of people, animals, and goods have been a big part of medicine for close to two centuries. Let's discuss.

So, leprosy, or Hansen disease, was probably the first disease to be dealt with via quarantine. Leprosy is mentioned 68 times between the Old and New Testament. Years later, the Council of Lyons in 583 A.D. restricts the free movement of those with leprosy. By the year 1200, there are over 19,000 leprosaria, or homes for leprosy patients, throughout Europe.

The Black Plague; so medicine was completely ineffective against the plague, so avoidance became paramount. In 549, the Byzantine Empire restricted movement from plague-infested regions to battle Bubonic plague epidemic they were facing. During the beginning of the Black Plague, some countries encircled infected areas in their countries with guards, and even executed those who tried to leave. In 1377, the city of Dubrovnik on the Dalmation Coast, began isolating ships in port for 30 days, or Trentino, to fight the Black Plague. This would go on to take the lives of 20% of the European population at that time.

Over the next 40, 50 years, other port cities in Europe adopt this process, but extend it to 40 days, or Italian Quaranta. People who arrive by foot are taken to a field or forced outside the city for the same period. Cities began to build plague hospitals, or lazarettos, named after Lazareth from the bible. And they were usually separated by natural barrier, like a river, but if not, the towns would build moats around these places.

So, why 40 days? How did they come up with the 40-day number? Most likely, it was because some felt that 30 days was not enough, but it might have been related to some of the disease theories of Hippocrates, or Pythagorean Theorem numbers, or even the importance of the number 40. But also 40 days had connection to Jesus' time in the desert, Moses on the mountain, or the 40 days of Lent.

Next, looking at Yellow Fever. So, in fear of small-pox and Yellow Fever, in the early 1700s, New York City sets up a quarantine anchorage off Bedloe Island, the current location of the Statue of Liberty. In 1792, Yellow Fever would strike Philadelphia, and then our nation's capital. It would go on to kill 20% of the city's inhabitants. In 1799, Philadelphia built the first lazaretto in the Delaware River, 10 miles south of the city, and that's still – the building still stands today as part of our historic buildings in the city of Philadelphia. In 1808, Boston establishes all ships from the Caribbean be in quarantine for 3 days, or 25 days from when they left port. In 1878, Memphis will have a Yellow Fever epidemic that becomes the most fatal infectious entity a U.S. city ever sees. Quarantine fails to protect it from spreading to New Orleans.

So, we've seen a lot of quarantine of cruise ships through this epidemic, but what about through history? Well, certainly lots of us have heard about the Flying Dutchman, the ghost ship that sails with the ghostly crew. In the book, *The American Plague*, author Mary Caldwell Crosby writes that it was thought that the story is one of a Yellow Fever infected ship that is repeatedly denied port until all on board have perished to the fever, and the ship was forced to sail endlessly, manned by a ghost crew, delivering detriment to all other sea-faring vessels.

So, the next disease state to encounter the United States was Cholera. So, once upon a time, this fast-moves – moving disease in slow ships prevented Cholera from spreading far from the Indian Basin. But increasing speed of ships allowed the disease to spread to the rest of the world. In 1832, 30,000 people would go on to die in the United Kingdom of Cholera. New York City established a halt to any

ship approaching the dock with any illness aboard. The disease slipped through the safety net and goes on to kill 3,500 New Yorkers. In 1893, the U.S. Congress passes the National Quarantine Act that creates a national policy while still allowing state-run quarantines. Over the years, different legislations followed, but in 1967, this power was transferred to the CDC. In March of 1900, a Chinese resident died of plague, and the city of San Francisco responded by quarantining off a 15-block area with 25,000 residents living there. It was lifted after it was declared racist by the court, saying Public Health acted with an evil eye and an unequal hand.

So, what about the super-spreaders? Mary Mallon, also known as Typhoid Mary, was an Irish immigrant who was an asymptomatic typhoid carrier and infected several family members that she cooked for. She was identified, and told she could never work again around food, but for an Irish immigrant, being a cook was a very good job. When she took another job under a different name and ended up leading to illness in another family, she was then quarantined. For quarantine, she was sent to North Brother Island in the East River, and there, she lived her final 26 years. Mary Mallon continued to protest her quarantine, and that she was never sick, but an asymptomatic spreader.

During World War I from 1917 to 1919, the U.S. government incarcerated more than 30,000 prostitutes and other women to curb the spread of venereal disease in a pre-antibiotic era. These women were never formally charged with any crime. The historian, Allen Brandt, calls it the most concerted attack on civil liberties in the name of U.S. health.

But, what about more recent times? So, for tuberculosis, you might remember on the news, Andrew Speaker was an Atlanta lawyer who had focused attention on the role of compulsory isolation quarantine in tuberculosis control. In May 2007, after being diagnosed with a drug-resistant form of tuberculosis, Speaker flew to Europe for his wedding and honeymoon. While he was there, laboratory tests at the CDC indicated that Speaker's infection was an extremely drug-resistant form of tuberculosis. Although counts of what followed vary, it is known that the CDC contacted Speaker and asked him to stay in Italy, where they tried to determine what to do. Speaker, fearing isolation in an Italian hospital, flew to Prague, and then Montreal, bypassing his inclusion on the federal no-fly list, which doesn't apply to flights outside the United States. In Montreal, Speaker rented a car, then he drove into the United States, thanks to the help of a border agent who disregarded a detention order. Speaker then went to New York City; he went to a hospital where he was met with a CDC order restricting his movement and requiring him to corroborate with health officials. Reportedly, this was the first such federal order issued in more than 40 years.

As it turns out, Speaker had more multi drug-resistant tuberculosis and not extremely multi drug-resistant tuberculosis, and ended up treated at National Jewish Hospital in Denver.

We all remember Ebola, and all the fear it caused in the United States. And we all remember on the news in 2014, Kaci Hickox, a Doctor's Without Borders nurse, landed in New Jersey and she was forced into quarantine after she treated Ebola patients in West Africa. She sued governor Chris Christie for allegedly imprisoning her against her will. 'Christie had no medical epidemiologic or legal grounds to hold me,' Hickox said at a new conference in New York. Hickox treated Ebola patients in Sierra Leone before she returned to the United States on October 24, 2014. She was held in a quarantine tent in New Jersey for a little more than three days before she was released to Maine, her home at the time, which also sought to quarantine her. Although she had a slightly elevated temperature when she tested with a forehead thermometer at the airport, she did not show a fever when an oral thermometer was used. A blood test for Ebola on her first night in detention was negative, and she never developed the disease. She was held in an isolation tent inside University Hospital in Newark. But Hickox defied Maine's government when a court order that she could come and go as she pleased as long as she submitted to monitoring for infection to the deadly virus. She ended up suing governor Christie, and eventually had a settlement that included no money.

I think in the United States, we think our freedoms are absolute, but there is a list of diseases that we can be quarantined for, and they include Cholera, diphtheria, infectious tuberculosis, plague, small-pox, Yellow Fever, viral hemorrhagic fevers like Ebola, flus that can cause pandemics, like a bird flu, and now severe acute respiratory syndromes like SARS or MERS or COVID-19. So, hopefully this gave you a little background on quarantines as they have applied to medicine over the years.

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