Some Comments Regarding Previous Pandemics

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PART 1. PLAGUE / THE BLACK DEATH / THE PEST / YERSINIA PETSIS

"Suddenly the plague raged with flaming fury and ultimate darkness closed many eyes. Then all the inhabitants began to quake with cold fear. They were astonished and, chilling horror raised their pendant hair, for the plague raged everywhere in the town and thence it was unlawful, nay even impracticable to depart because the bridges and roads were attended by sentinels armed with clubs both day and night." George Postlethwaite, Dalton-in-Furness 1631.

The latest DNA research suggests that the subtype (biovar) of Yersinia Pestis responsible for bubonic plague may have evolved about four thousand years ago. Of all the pandemics that swept through Western Europe 'The Black Death' (probably a mix of bubonic and pneumonic plague), which began in 1347, was the most lethal in terms of proportion of victims killed (case fatality rate CFR). One feature of bubonic plague is the presence of small black pustules on the skin, hence the name it was given. In contrast to coronavirus, it appears that the Black Death was more fatal to the young than the elderly. Both in terms of the number of people killed worldwide (approximately fifty million) and the mortality rate for those infected (about fifty percent) the Black Death had no parallel until the Spanish Influenza pandemic of 1918.

Although the disease was first recognised in England at Dorset in July 1348, it wasn't until the following summer that it reached Lancashire. Contemporary evidence for the impact of plague in Morecambe Bay during the 14th century is scanty, particularly for Westmorland and Cumberland. The evidence we have about plague in North Lancashire over this period comes largely from a legal dispute between Adam of Kirkham, Dean of Amounderness (one of the historic sub divisions or Hundreds of Lancashire), and the Archdeacon of Richmond. The Dean was in charge of executing wills and administrating the goods left by the dead. Plague was generally considered a punishment for sin at this time so many would leave large bequests to the church, believing that their sins would be forgiven. The Archdeacon accused the Dean of concealing some of these bequests and the matter ended up in court. The Dean's evidence suggests that the first outbreak of 'the pest' in Lancashire lasted from September 8, 1349 until January 11 the following year. Three thousand people died in Lancaster, a similar number in Preston, two thousand in Garstang, and a further thousand in the parish of Cockerham. Clearly, these figures appear to be round estimates but the impact of the disease was evidently enormous. Whole villages were decimated (Deserted Medieval Villages: DMV) and there is speculation that a village at Dalton Old Hall near Burton in Kendal was one such village (R. Bingham personal communication).

The word 'quarantine' originated in 1377 as a result of the impact of plague on the city state of Ragusa (now Dubrovnik). Ships arriving in Ragusa were impounded for forty days or 'quaranti giorni' to prevent infection reaching the city.

Plague was first reported in Westmorland in 1554 but a more severe outbreak started in September 1597 and continued until December 1598. Kendal recorded 2500 deaths and Penrith 2260. One interesting feature that survives from this period is the plague stone in Penrith. There is a similar one in Brookhouse near the Black Bull Inn. These hollowed out stones were used as a form of social distancing during the purchase of food and other goods. Coins were dropped into the stone's cavity (which contained a disinfectant such as vinegar) and only retrieved after several minutes.

Figure 1: The Brookhouse plague stone, photograph by Ruth Nutter.

A vivid account of the 1631 outbreak in Dalton in Furness is recorded in the Parish records written by the Parish Clerk, George Postlethwaite. Three hundred and sixty residents died in the outbreak: more than fifty percent of the population.

The Great Plague of 1665

Plague spread across Europe in 1663 causing alarm in official circles in England. The usual thirty day quarantine of ships was increased to forty days but it wasn't enough. Plague arrived in England the following year and reached London in February 1665. Although the cause of plague wasn't known, the main theory of infection was now that of miasma: smells and bad air from rotting organic material was thought responsible. The contagious nature of the disease was recognised and by order of the Lord Mayor it was stipulated that, in the event of symptoms appearing in any member of a household, the whole house should be sealed for 40 days with watchmen designated to oversee the passing of provisions and make sure no-one

left the building. The infected houses were marked with a large red cross and the inscription '*Lord have mercy upon us*' written on it. Social distancing was practiced but public houses remained open. Clothing and domestic animals were also thought to transmit the plague: 200,000 cats and 40,000 dogs were killed.

Surgeons were often used as 'searchers' to look for patients with evidence of plague: an early version of 'Track and Trace'. Nathaniel Hodges was one of very few physicians to remain in London after the pandemic reached London. Hodges observed that confining the healthy with the sick in the same household often resulted in the death of every member of the household.

Preventative measures for Plague

Nathaniel Hodges' daily routine throughout the year of the 'Poor's Plague' started on each morning with a small amount of 'anti-pestilential electuary'. The electuary comprised the green rind of the walnut, figs and plums macerated in vinegar, Virginia Snakeroot, rhizome of Dorstenia, Butterbur and White Turmeric, sugar, juice from the scale insect Kermes vermilio, syrup of marigold, clove oil and gold leaf. His other prophylactic measure was simpler: a generous glass of Sack (fortified wine). He also sucked protective lozenges while he examined his patients. Hodges didn't believe in tobacco but whether chewed or smoked this was also commonly believed to prevent plague and was used by Samuel Pepys for this purpose. Another physician, George Thomson, believed that a dried toad worn around his neck would protect him! A wide variety of other substances were available including garlic, viper oil and crabs eyes.

Figure 2: A physician wearing a 17th Century plague preventive costume. Wellcome Collection Images.

PPE for Plague

The first PPE used by doctors to protect them from infection was designed for plague in the 1600's by a French doctor called Charles de Lorme. This forerunner of the hazmat suit included a leather head and shoulder section with two glass eye covers and a long nose beak. The beak contained a variable mixture of pungent substances including dried flowers, aromatic herbs and spices and vinegar soaked sponges. Two holes in the beak allowed the doctor to breathe. The wooden stick served a variety of purposes including the warding away of unwanted physical contact. It isn't known how commonly these were used in England.

Treatment for Plague in the 17th Century

Once a patient had been diagnosed with bubonic plague, usually by the appearance of the characteristic buboes, they were generally kept inside their home by the watchmen posted to guard their home until death or recovery. The Royal College of Physicians published guidance about the (largely herbal) medicines recommended for plague and some surgeons continued to use bloodletting and lancing for painful buboes.

Yersinia Petsis and Fleas

Alexandre Yersin identified the gram negative bacillus (Yersinia petsis) that caused plague in 1894 during an outbreak in Hong Kong. He also noticed a lot of dead rats and postulated that there might be a vector spreading

Figure 3: Real 17th Century plague hood, Deutsches Historisches Museum Berlin, Wikimedia commons.

the bacillus from rats to humans. In Bombay, Paul-Louis Simond carried out research into Yersin's hypothesis about there being a vector for the bacillus. He noticed fluid filled vesicles, phlyctene precoce, on the legs of plague patients which he found to be full of plague bacilli. He considered these to be the primary lesion preceding formation of a bubo and that they may be caused by flea bites. He also noted, like Yersin in Hong Kong, that the streets of Bombay were littered with dead rats. He wrote as one of his observations, "On the rats captured alive, and on the rats which had just died, the fleas were thicker than I have ever seen them … We have to assume there must be an intermediary between a dead rat and a human. This intermediary might be the flea."

In 1898 in Karachi, Simond, using a very simple experiment with an infected rat and its fleas and a healthy rat, showed that the bacillus was transmitted by the fleas.

Plague appears to have died out in Western Europe in the 1720s. The reasons for this are still debated. Plague continued to occur in other parts of the world and the Manchurian outbreak of 1910 featured the first use of modern style face masks as PPE for medical staff. Plague is still endemic in places such as Madagascar and the last outbreak there happened in 2017.

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The generosity of "Boost" sustained MBHT health care workers for weeks