

The Black Plague: The Least You Need to Know

*Ring around the rosies
A pocketful of posies
Ashes, ashes,
We all fall down.*
--children's rhyme

*Many a lovely lady and their lover-knights
Swooned and died in sorrow of Death's blows. . . .
For God is deaf nowadays, and will not hear us,
And for our guilt he grinds good men to dust.*
--William Langland, *Piers Plowman*, circa 1370

Q: What was it?

A: Most scholars think the Black Plague was a bacterial strain of *Yersinia pestis*. A growing minority of scholars (e.g., Graham Twigg) think we have misdiagnosed the disease, and that it was actually anthrax or some mutation of cattle murrain. It's also possible the Black Plague might not have been a single disease at all, but rather a combination of several at once or a series of different ones over many decades.

Q: Does it have other names?

A: Today, it's best known as the **Black Death** or the **bubonic plague**. Medieval people called it "the blue sickness," *La pest* ("the Pestilence"), and "the Great Mortality." The English word *bubonic* comes from the medieval Latin word *bubo* via Italian *bilbo*--meaning a pustule, growth, or swelling. In Mongolia, the first outbreaks were called *ko-ta-wen* (literally, "sore-sore,") and in southern China, the term was *ta-wun*, from which we get the Arabic term *ta'un*.

Q: Where did it come from?

A: The first historical record of bubonic plague is in Central Asia in 1338/39. It reached China and India by 1346. It infected the Black Sea port of Kaffa by 1347. One (false) legend says that the Mongols infected the city of Kaffa by shooting infected corpses over the walls with catapults. It is more likely that rats carried infected fleas into the town. Fleeing ships then carried infected rats to Constantinople, Italy, and Marseilles during the year 1347. In 1348, the first outbreaks appeared in England. In July 1349, it spread to Scotland. In 1350, it stalked Scandinavia. In 1351, it arrived in Kiev, Ukraine.

Q: How is it transmitted?

A: Fleabite transmits common plague bacteria. Normally, the fleas that bite humans (*Pulex irritans*) are a separate species from the fleas that live on rats (*Xenopsylla cheopis*), and the bubonic bacteria can survive indefinitely in its normal host, the European black rat (*Rattus rattus*). Occasionally, however, a desperate flea would mistakenly bite a human host, and then the human contracts the disease. Once a human is infected, the plague bacterium can spread for a few weeks by human fleas hopping from person to person and biting them.

Once the bacteria have built up in the human body, there is a small but documented chance of it evolving into an airborne version (the "pneumatic strain") that infiltrates the blood vessels in the lungs. This version not only can be spread by fleabite, but it can be transmitted by airborne water particles from coughs and sneezes. This pneumatic strain is the one that's truly lethal. In Florence, archeologists exhuming 15th-century mass graves found a mutant version of the bubonic plague. Examining the molecular structure of that plague shows that the plague strains extant in the 1400s had twice as many protein receptor sites as any known modern strain. It must have been wickedly contagious. The historian Edward Thompson noted in 1998 that, when archeologists exhumed bodies from a 15th-century mass grave for plague victims southwest of Edinburgh, they found spores for anthrax, so a mixture of anthrax and plague might have been running concurrently. That's even worse because anthrax can be transmitted by bodily fluids (saliva, sweat, tears) and by skin contact generally.

Q: What are the symptoms?

A: Fever, trembling, weakness, and profuse sweating are initial symptoms of the bubonic version. In the pneumatic version, coughing and parched throats are additional symptoms. In advanced cases, the most distinctive sign is the agonizing rise of dark "buboes" or "bilbos": sensitive black-blue swellings under the armpit and near the groin--spots where dead blood and pus builds up in the lymph nodes. If the buboes are not lanced, the buildup of infected blood will cause the buboes in the armpit and groin area to expand in size (typically the swelling is about golf-ball sized, but sometimes as large as softballs). Untreated, the patient will die from the buildup of dead blood in these buboes. On the other hand, lancing the bilbo or popping it can still kill the victim from toxic shock, and the spray from the bubo is profoundly infectious to those who come into contact with it.

Q: How long did the outbreaks last?

A: The pandemic lasted until 1351, but smaller outbreaks (epidemics) continued off-and-on for decades. For instance, Paris and Rouen had epidemics in 1421, 1432, 1433, and an especially bad outbreak in 1437-39. Between 1453-1504, outbreaks died down dramatically across Europe. The last major outbreaks were in the late 17th and early 18th centuries, such as the London outbreaks in 1665 and 1722. After that, cholera, typhoid fever, and tuberculosis were much more significant causes of death, but small outbreaks in Egypt, Syria, Turkey, and Greece have been reported as late as 1845; in Russia as late as 1879; and in Indonesia in 1959. The most recent lethal case in America I am aware of took place in Pensacola Florida in 1922, though animals with the plague have been found in America as late as 2011.

Q: How bad was this infection? What happened if you caught it?

A: Very, very, very bad. About two-thirds of the victims died within three or four days of developing symptoms. Most of the rest lingered about two weeks and then died. Note that an infected person could be a carrier of the disease for a few days before any symptoms manifested at all, which made quarantine difficult.

In the twentieth century, it became possible to treat the plague with antibiotics. Without antibiotics, the mortality rate is 72% for infected victims. However, a small number of people are naturally resistant to bubonic plague due to unusual protein structures. The bacteria's enzymes cannot interact with these proteins easily. This protein structure seems to be tied to a specific gene. Before the 1340s, only about 0.2% of the European population appeared to have had this gene when we examine DNA from their remains. Now a much larger percentage of the Europeans have the gene that makes them resistant to *Yersinia pestis*. The 0.2% of people who were immune back in the 1300s survived the genetic bottleneck and then passed on this immunity to a significant number of their modern descendants. Today, if you are a Caucasian American, the odds are about 15% that you have inherited this gene.

Q: How many people died in the pandemic of 1346-1351?

A: The absolute minimum number of European dead would have been 20 million, as J. F. Heckler suggests. Most modern scholars place the estimate of European dead somewhere between 50-70 million dead (about one-third of Europe's population on average), with perhaps the worldwide count at 155-220 million. Remember, in the early fourteenth century, the world population was only about 500 million as a whole before the plague struck.

Some places (like certain islands off the western coast of Scotland) were completely unaffected. The cities of Genoa and Dublin are more typical cases in which 35% of the population died. In Paris (which was already suffering from an earlier famine), the population fell by 42%. The mortality was even higher in other regions, such as 66% percent in Caux, Normandy, or 90% in Florence, Italy. In the worst cases, mortality was absolute (i.e., 100%). For example, over 3,000 villages in France were completely emptied, with the entire population dead or fled. Similar numbers of "ghost towns" were left as shells in other parts of Europe and Britain. In these places, every single person died, and forests grew over the streets. De-populated Europe forgot they ever existed. Many of them were not rediscovered until the rise of aerial photographic surveys in the years after World War I ended in 1918. The world population as a whole did not recover to pre-plague levels until the 17th century.

Q: What were the sociological and economic effects?

A: They were mixed. The Black Plague accelerated the demise of the feudal system of government, and it might actually have improved the economic lot of serfs after 1370. The disease hit rural farm workers especially hard, so labor became scarce. According to the laws of economics, wages would then go up. Landowners had to offer their workers special incentives to stay and work the land, or they would up and run off to work for another lord down the road. Increasingly, the aristocracy would grant charters to communities, or release peasants of traditional demands and taxes, or even (gasp!) pay them actual money for their work. This ultimately encouraged the rise of a prosperous middle class. That was a long-term benefit to the survivor's grandchildren, however. In the short term, it was economically devastating. To illustrate how trade was affected, consider that about 1,360 ships set sail to trade Gascon wine to England on average each year between 1320-1340. In the year and a half after the black plague, only 141 trading ships sailed, a 93% drop in trade--far worse than the Great Depression in America.

For Jews, the result of the plague was increasing victimization. Because the Jews were often isolated in ghettos far away from the wharves where rats dwelled, and because of their strict hygiene and dietary laws, it is likely that Jewish communities were less hard-hit by the plague. That roused the suspicions of their Christian neighbors in France and Germany, who often accused Jews of poisoning wells to kill Christians. Purges against Jews took place in 1349 and nearly every other year of a plague outbreak.

Q: What were the religious effects?

A: After an initial frantic outburst of short-term piety and revival, the Black Plague caused long-term damage to religious institutions. During the plague outbreaks, many believed God was punishing humanity for its sins. Strange penitential practices returned like those of the **flagellants** (who went from town to town publicly whipping themselves until they bled). Some infected people tried to bury themselves alive in holy ground when no priests were left to perform last rites. Pope Clement VI declared a worldwide indulgence, allowing the laity to perform funerals and hear confessions to ensure all the dying would have a chance to confess before death. Good priests, who would stick around to administer last rites, perform funerals, and comfort the dying, were especially likely to contract the disease from their parishioners and thus die themselves. Bad priests would simply run off and hide. The church suffered from a serious shortage of quality priests after the pandemic, and it lowered its standards of theological training and literacy in order to attract fresh blood over the next twenty-five years. Likewise, the sheer number of deaths diminished the importance of saintly veneration and saint's shrines as healing places, leading to a new interest in medicine. Before the Black Death, many medieval authorities had discouraged herbal and medicinal treatments, thinking this smacked of witchcraft instead of faith in God, and priests might urge their sick parishioners to pray for healing or to visit the shrines of saints. In the case of the plague, the demonstrable ineffectiveness of this medical regimen in the long run caused ritual pilgrimage and ceremonial veneration of the saints to diminish in prestige. Others despaired, and wrote that God did not exist, or that He had died, or He was asleep, or He had given up on humanity. Europe did not regain a sense of optimism and hope until the Renaissance of the late 1500s.

Q: What were the psychological effects and the effects on art?

A: Paradoxically, it led to a strong, conservative desire for social stability in general, even as it gnawed away at the stability of the church and the feudal network. It also often led to a despairing *carpe diem* attitude in some members of the public. The average age of marriage suddenly moved from sixteen to twenty-two. Many people became more xenophobic and isolationist. In art, the trauma of the plague led to the common motif of the *dans macabre*--images of the dead interacting with humans--especially in visual art and on tombstones. In other places, ossuaries (human bone depositories) were turned into grotesque skeletal decorations when locals took the jumbled bones from thousands of plague victims and stacked them in odd, symbolic sculptures. An example is the Cemetery Church of All Saints at Sedlec in the Czech Republic. Medieval literature had always been somewhat "other worldly," focused on rejecting the physical world and embracing the spiritual world. This trend continued and increased for thirty or fifty years, with morality plays emphasizing the coming of death. On the other hand, an increasing rise in secular literature also accompanied the plague, with ribald *fabliaux*, courtly love songs, and other entertainment serving to distract the public from the anxieties of the plague. Boccaccio's *Decameron*, for instance, uses the frame narrative of young noblemen fleeing from the plague to a country estate as its backdrop.

Q: The most visible sign of the plague is the bubo under the arm or on the thigh. What should I do if I see someone with such symptoms?

A: Modern clothing would conceal the most obvious markers of the disease, so you are only likely to spot the visual symptoms at a swimming pool, gymnasium, or a changing room. Norman Cantor tells his students, if they see somebody with plague symptoms in a dressing room, they should put on their clothes and immediately walk out of the building and notify the CDC. If they see a rat in the same vicinity of the infected person, they should forget about putting on their clothes and simply run away while still naked. That's good advice for you too.

Q: Where can I learn more?

A: Any good encyclopedia is a starting spot, but consider these books as well.

- Norman F. Cantor, *In the Wake of the Plague* [My personal favorite]
- Paul W. Ewald, *Evolution of Infectious Diseases*
- Robert S. Gottfried, *The Black Death: Natural and Human Disaster in Medieval Europe*
- David Herlihy, *The Black Death and the Transformation of the West*
- Rosemary Horrox, ed. *The Black Death* [primary sources in translation; very useful for medievalists]
- William H. McNeill, *Plagues and People* [my second favorite]
- Colin Platt, *King Death: The Black Death and Its Aftermath in Late Medieval England*
- Mark Ormrod and Phillip Lindley, eds. *The Black Death in England*
- Graham Twigg, *The Black Death: A Biological Reappraisal*
- Phillip Ziegler, *The Black Death*