

## THE ORIGIN OF QUARANTINE

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### Abstract

Quarantine, a major breakthrough achieved by human beings in the battle with infectious diseases throughout history, is embedded in health practice and strictly related to plague ever since the 14<sup>th</sup> century. This term dates back to 1377, when the rector of the seaport of Ragusa officially issued a 30-day isolation period for ships and 40 days for land travelers. During the next 100 years, similar laws were introduced in Italian and French ports and they gradually assimilated other connotations with respect to their original implementation. Through the measures taken by governments from infected regions and nations, we all know that the period for quarantine varies. Whereas the original 40 days is not without a basis, instead, it has a strong association with the medical theory of Hippocrates, the Lenten Season of the Judeo-Christian tradition, and the Philosophical month in ancient western alchemy. In the absence of a targeted vaccine and according to medical theory, traditional belief and alchemical practice, quarantine formed the standard system and was relied upon for the 40-day period as one of the most effective general preventive intervention, which influenced people for centuries.

*Keywords:* quarantine, Hippocrates, Lent, philosophical month

### Introduction

The Ebola virus is a contagious virus with a long history. Recently (February 2014), there was an outbreak in West Africa which drew close attention from all over the world (Rajak, 2015 and WHO, 2015). The vice president of Sierra Leone himself was faced with the fate of quarantine because one of his bodyguards was diagnosed with the Ebola virus and died days later (BBC News, 2015). This virus illustrates the relationship between man and disease. In the battle with infectious diseases throughout history, human beings have achieved a major breakthrough in four aspects: 1) the establishment of the quarantine system; 2) the discovery of pathogenic microorganisms; 3) the presence of specific medicine; and 4) the emergence of vaccine (Zhang, 2003). Quarantine, being of utmost significance, is embedded in health practices and is strictly related to the outbreak of the

plague, especially the black death which had a huge stimulus on the establishment of a permanent quarantine (Schepin, 1991).

### **Historical Background of Quarantine**

The earliest record of quarantine can be traced back to 532 AD. During the Justinian plague period when one hundred million people around the world deceased, the eastern Roman emperor Justinian decreed that all people from areas contaminated with the plague who were trying to enter the city of Constantine, must be cleansed in special localities and then they would be awarded the health certificate (Schepin, 1991). As early as 1127 AD, the 40-day period of quarantine appeared in Venice in the outline of the first set of legislation about the plague (Schepin, 1991). These regulations required businessmen and travelers coming from the Levant (the eastern Mediterranean region) to stay in the House of St. Lazarus for 40 days before they were allowed to enter the city of Venice. In 1403, Venice established its first quarantine station (i.e., Lazaret quarantine station). In quarantine, the sick could get treatment and those from affected areas needed to be isolated for 40 days and in some cases, the quarantine period could be extended. Healthy people would be temporarily quarantined for 40 days although if any new cases appeared during the quarantine, there would be an additional 40 days of isolation (Schepin, 1991).

Quarantine measures in preventing infectious disease were obviously a big step forward. These were the first attempts for preventing potential infectious diseases from spreading throughout the world and protecting local people from the infectious diseases carried by foreigners. According to previous research, quarantine was an ideal system because it included regulations, laws, personnel departments and finance supports, and it even had a legal impact (Schepin, 1991). During those days, people treated quarantine as the only reliable way to prevent the invasion of infectious disease with great conviction and this sort of belief was continued for hundreds of years. The term quarantine was derived from the Italian (*quaranta giorni*, Byrne, 2008) and the development of the thoughts about modern international quarantine originated from The First International Sanitary Conference (held on July 23th, 1851), which had the purpose of drafting an agreement to protect all human beings from the cholera epidemic which had mounted since the 1830s.

Although isolation and quarantine are likely the oldest documented measures used to prevent infectious diseases, isolation differs from quarantine. The distinction was made by the CDC (Centers for Disease Control and Prevention) and was undoubtedly the most worthy of reference. This explanation was given by this authority which gradually was accepted by more scholars and reveals that isolation “is the measure taken to those who had specific infectious diseases and healthy people, to limit their actions, so as to prevent the spread of disease”; while quarantine inspection “is used for those who are exposed

to infection near the original, being vulnerable to infection, separate them and limit their action” (CDC, 2014). However, the concept of quarantine is changing constantly as mentioned in an essay written by Gensini (2004). Meanwhile, the Oxford English Dictionary also gives its definition which explains “Isolation means the act of separating somebody; Quarantine means a period of time when an animal or a person that has or may have a disease is kept away from others in order to prevent the disease from spreading” (Hornby, 2010). In sum, although quarantine is of limited value, it still can play a useful public health role in properly circumscribed situations.

Concerning the origin of the forty-day quarantine period, some scholars feel that it was both related to the forty days of Lent which represents a form of spiritual purification and a result of medical observation (Kilwein, 1995). Some scholars are inclined to regard forty days as a sufficient period for preventing the spread of infectious diseases (Gordis, 1995). Others believed it was closely related to the idea of “critical days”, an idea deriving from ancient Greece that infectious diseases would continue to develop within 40 days (Wang, 2013). Although scholars referred to some conjectures, they seldom made deeper explanations of any of them. This article would like continue to explain this question in three aspects (i.e., medical theory of Hippocrates, Lent and ancient western Alchemy), and attempts to gain some historical enlightenment from the discussion.

### **Quarantine and the Medical theory of Hippocrates**

Hippocrates was one of the most famous physicians in ancient Greece (Daintith, 2009). He was born on the island of Thasos around 460 BC. Hippocrates was said to be born in a medical family with many generations of health practitioners, and the offspring of Asclepius, the medical god in Greece (Novelli, 2011 and Castiglioni, 2003). Hippocrates preceded Plato and Aristotle, the two great men of the most notable figures in ancient Greece, and out of respect he was regarded as “The Great Hippocrates”. Galen, the most famous physician in ancient Rome, treated Hippocrates as “The Medical Sage” (Hippocrates, 2007), and the medieval western world revered him as the “Father of Medicine” (Hippocrates, 2007). Owing to the efforts and theology made by him and his fellows, western medicine finally became a science and technology (Du, 2006).

Hippocrates had two famous sayings: “Cause drowsiness is a harbinger of illness”, “In every house where I come, I will enter only for the good of my patients, keeping myself far from all intentional ill-doing and all seduction.” (quoted from Hippocrates Oath, Castiglioni, 2003). Thus, as the founder of western medicine, his interpretation of the diseases and the corresponding measures would no doubt have a significant impact on the behaviors of Europeans.

Fortunately, we could find mounds of evidence which proved the significance of a forty-

day period for disease in *The Hippocratic Collection*. In one chapter on epidemics, he mentioned that when summer arrives and until the autumn, all kinds of fevers will begin to attack residents in Thasos. These fevers were to last long since they were not very serious although they always seemed to affect the weaker to a greater degree than those who did not yet get the disease before (Hippocrates, 2007). Generally, Fen Li (分利), which is a term from Chinese medicine which uses drugs to make patients perspire significantly in order to improve their health (Zhang, 2014 and Zhong, 2003), appears on the twentieth day, yet most patients see the improvement on the fortieth day and some on the eightieth day. For example, Hippocrates recorded the condition of his patients, one of which was Antioch (son of Bruce in Crito) whose Fen Li first happened on the fortieth day and then proceeded to get well afterwards (Hippocrates, 2007). The great physician also mentioned that encephalitis could cause many residents to die during the period from around winter to the vernal equinox and it affects children and adults equally. What's more, Fen Li appeared to some on the eleventh day, relapsed on the fortieth day, totally Fen Li began on the twelfth day. But, if the situation became worse, then the totally Fen Li appeared on the fortieth day (Hippocrates, 2007).

The medical theory of Hippocrates dedicates the significance of the roles played by a forty days period in dealing with disease. It appears to be a turning point and situations improve if they will not get worse during the crucial forty days. When we put the status of Hippocrates and his effects on medieval society into consideration, it is not so difficult to deduce this conjecture: the vital forty days from the medical theory of Hippocrates directly influenced the origin of quarantine.

### **Quarantine and the Lenten Season of Judeo-Christian tradition**

The Lenten Season was well-known not only in Judeo-Christian world, which generally lasts for forty days from Ash Wednesday (the first day of Lent) to Easter. Lent is a fasting season for Christians so that they can be well prepared for the coming confession (Strayer, 1986). It derived from a biblical story of when the Spirit drove Jesus out into the wilderness where he spent forty days and where he was tempted by Satan. Jesus was with the wild animals and the angels were ministering to him (Mark 1:12) Jesus endured hunger for the sake of human beings and he lived in the wilderness for forty days resisting the temptation of Satan. Why did the Spirit put Jesus in the wild for forty days and not twenty days or eighty days? In my opinions, forty days was a symbol which is significant in the Christian world. Although Christian could not understand the mystery of the forty days, they believed that forty days was symbolic of the time period for rebirth which brought about change and hope.

Actually, the number forty in common in the Bible:

- The Lord went to destroy human beings then said “I will send rain on the earth for **forty days** and **forty nights**, and every living thing that I have made I will blot out from the face of the ground.” (Genesis 7:4)
- “the Lord’s anger was kindled against Israel, and he made them wander in the wilderness **forty years**, until all the generation that had done evil in the sight of the Lord was gone.” (Numbers 32:13)
- “the people of Israel again did what was evil in the sight of the Lord, so the Lord gave them into the hand of the Philistines for **forty years**.” (Judges 13:1)
- Following the will of God, “Jonah began to go into the city, going a day’s journey. And he called out, Yet **forty days**, and Nineveh shall be overthrown!” (Jonah 3:4)
- When Israel died in Egypt, physicians will usually spend **forty days** to embalm the remains, “Joseph commanded his servants the physicians to embalm his father. So the physicians embalmed Israel. **Forty days** were required for it, for that is how many are required for embalming.” (Genesis 50:2)
- When it comes to test someone, **forty days** or years also play an important part, Moses stayed on the top of Mount Sinai for **forty days** and **forty nights**, (Exodus 34:28) he tried to make an agreement with the Lord for humans sake, “So I (Moses) lay prostrate before the Lord for these **forty days** and **forty nights**, because the Lord had said he would destroy you.” (Deuteronomy 9:25)
- “I myself stayed on the mountain, as at the first time, for **forty days** and **forty nights**, and the Lord listened to me that time also. The Lord was unwilling to destroy you.” (Deuteronomy 10:10)
- What’s more, in Hebrews, there was a famous sentence, “your fathers put me to the test and saw my works for **forty years**.” (Hebrews 3:9)

All of the references above were quoted from Bible and we see in Christianity that the Lord uses the number forty to destroy or remodel humans.

These implications indicates that, in Christianity, the Lord would like to spend forty days and forty nights to destroy every living thing that he made in the world, and he was also going to punish a nation for forty years until the disappearance of the whole generation for their sins. When a test approaches, forty days or forty years seem to be the cost for survival. Without denying of the influence that the Bible has on the medieval European society, we have no reason to believe that Judeo-Christian tradition has no influence on the origin of quarantine.

### **Quarantine and the Philosophical month in ancient western alchemy**

Western alchemy originated around the first century BC which gradually declined after its peak during the Roman empire (Hopkins, 1918 and Leicester, 1982). However, alchemy was popular everywhere throughout western world in 9<sup>th</sup>-10<sup>th</sup> century AD. Furthermore, alchemy theory became an essential part of scholasticism when Arab countries had transformed it (Yang, 2003). During the period of transition, alchemy was always the guiding principle of natural science, which had a direct impact on the emergence of early modern chemistry (Legend, 2013).

Distinguished from alchemy in ancient China, the ancient alchemy discussed here was not aimed at refining elixir but to increase in wealth by turning base metals such as coppers, irons and leads into precious metals. Throughout the origin of western and Arab alchemy, we found two origins of ancient alchemy: the philosophy of ancient Greece (or the natural philosophy) in 6~4 century BC and the ancient technology with astrology in Mesopotamia. The real alchemy actually derived from the combination of Greek philosophical thoughts and ancient Egypt's chemical technology. (Yang, 2003) Some crucial ideas determined the alchemist's behavior. They believed that any substance could be converted to each other. As Aristotle once believed, everything was made of the original substance and the original material had two groups of contradictory features: cold and warm or dry and wet. The combination of the different original materials formed four basic elements: warm and dry materials produce fire, warm and wet materials produce gas, cold and dry material produce soil, and cold and wet materials produce water. And then the combination of the four elements could produce all things and the great variety of things lies in the different proportion of these four elements (Miao, 1991).

More importantly, during the process of refining the gold, a period named philosophical month was applied to ensure that there was enough time for the gold to be refined, which was usually forty days. The ancient alchemists believed that the period of forty days was a complete circle for the transformation and generation of the materials. This is similar to the process used by Chinese alchemists when they refined elixir, they insisted that forty-nine days could be sufficient for producing a fairy medicine. The forty days of the philosophical month for ancient alchemy was common during those centuries in which the forty days quarantine was utilized.

## **Conclusion**

The author argues that the medical theory of Hippocrates, the Lenten Season of Judeo-Christian tradition, and Philosophical month in ancient alchemy have a direct impact on the emergence of the forty days quarantine period. Although the reason is not always clear, future investigations into this issue are important. Besides, those descriptions lead us to another world. When facing a plague, many historians tend to delineate the degree of the terrible disaster, to discuss how much impact the plague had on the whole society

and people's lives, as well as the fear and the eager to escape from it. However, we begin to think about the other side of human's spirits through this quarantine phenomenon. More specifically, the forty days period evident from medical experiences, biblical records and alchemy practice indicates people then struggling with the plague tenaciously, and extending their strong will to survive.

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