



REVIEW

The concept of quarantine in history: from plague to SARS

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Summary The concept of 'quarantine' is embedded in health practices, attracting heightened interest during episodes of epidemics. The term is strictly related to plague and dates back to 1377, when the Rector of the seaport of Ragusa (then belonging to the Venetian Republic) officially issued a 30-day isolation period for ships, that became 40 days for land travellers.

During the next 100 years similar laws were introduced in Italian and in French ports, and they gradually acquired other connotations with respect to their original implementation.

Measures analogous to those employed against the plague have been adopted to fight against the disease termed the Great White Plague, i.e. tuberculosis, and in recent times various countries have set up official entities for the identification and control of infections.

Even more recently (2003) the proposal of the constitution of a new European monitoring, regulatory and research institution has been made, since the already available system of surveillance has found an enormous challenge in the global emergency of the severe acute respiratory syndrome (SARS). In the absence of a targeted vaccine, general preventive interventions have to be relied upon, including high healthcare surveillance and public information. Quarantine has, therefore, had a rebound of celebrity and updated evidence strongly suggests that its basic concept is still fully valid.

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Introduction and definition of quarantine

The concept of 'quarantine' is radically embedded in local and global health practices and culture, attracting heightened interest during episodes of perceived or actual epidemics. The term, however, evokes a variety of emotions, such as fear,

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resentment, acceptance, curiosity and perplexity, reactions often to be associated with a lack of knowledge about the origins, meaning, and relevance of quarantine itself.

Historically quarantine has been defined as the detention and segregation of subjects suspected to carry a contagious disease. More recently, the term quarantine has come to indicate a period of isolation imposed on persons, animals or things that might spread a contagious pathology.¹ Nowadays the word quarantine should be used to refer to compulsory physical separation (including restriction of movement) of groups of healthy individuals who have been potentially exposed to a contagious disease.² The term 'isolation' must be kept separate from the term quarantine, since the former denotes the separation and confinement of subjects already known to be infected with a contagious disease to prevent them from transmitting disease to other people; the latter, essentially the same procedures but with *suspected* transmitters of disease.

Health interventions on the population in the ancient past

From ancient times different populations have adopted varying strategies to prevent and contain disease. One of these is exactly what we would now call isolation. The Old Testament evidences how individuals affected by diseases were separated from others, and people with leprosy, as *Leviticus* informs, had to live isolated all their lives. In the New Testament, too, leprosy continues to be considered a reason for social discrimination, and is represented as curable only through the phenomenon of a divine intervention. The isolation, temporary or otherwise, of sick people has thus always been extensively used as one of the approaches to limit the spread of disease.³

Another strategy was the establishment of a time limit to the manifestation of diseases. In the V century B.C. Hippocratic teaching had established that an acute illness only manifested itself within forty days. The case of plague was representative with respect to this; since a disease manifesting itself after 40 days could not be acute, but chronic, it could not be plague. In the ancient past the term *pestis* (plague) was used in a broad way to indicate every epidemic characterised by high mortality, and magical practices were implemented to fight different diseases since the idea of preventive instruments (such as quarantine) was still not present.⁴ With regard to the real plague (the

disease caused by *Yersinia pestis*), one may remember the first great pandemic wave of the Greek-Roman period, and the recurrent epidemics throughout Europe in the VI and VII centuries A.D. Against acute, fatal diseases such as bubonic plague attempts were made by healthy communities to prevent entry of goods and people from infected communities. In the VII century A.D. armed guards were stationed between plague-stricken Provence and the diocese of Cahors.⁵ Particularly virulent was the impact of the disease on the whole of Europe in the middle of the XIV century, when the plague spread from southern Europe to Germany and Russia, causing the death of more than 30% of the European population.⁶

Medieval laws, Renaissance health achievements and XVI-XVIII centuries overview

The concept of (modern) preventive quarantine is strictly related to plague and dates back to 1377, when the Rector of the seaport of Ragusa, today called Dubrovnik (Croatia), officially issued the so-called 'trentina' (an Italian word derived from 'trenta', that is, the number 30), a 30-day isolation period. Ships coming from infected or suspected to be infected sites were to stay at anchor for thirty days before docking. This same period of time became 40 days for land travellers, probably because the shorter period was not considered sufficient to prevent the spread of disease, and precisely from the Italian number forty ('quaranta') comes the term quarantine.⁷ Furthermore, the chief physician of Ragusa, Jacob of Padua, also advised establishing a place outside the city walls for the treatment of sick (or suspected to be infected) citizens.⁸ The imposition to remain 30-40 days in an isolated site was determined not only by health reasons, but also by economic necessity, since the quality and safety of the trade network needed to be protected from the Black Death. The attention dedicated by the Ragusan rulers to the plague was, therefore, responsible for the creation of the first 'official' quarantining as a legal system aimed at defending both health and commercial aspects.⁹ The following were the main tenets of the 1377 law of Ragusa: visitors from areas where plague was endemic would not be admitted into Ragusa until they had remained in isolation for a month; whoever did not observe this law would be fined and subjected to a month of isolation; no one from Ragusa was allowed to go to the isolation area; people not assigned by the Great Council to care for