The Origin of Quarantine

"Shall we let him in?" A political cartoon demanding protection against yellow fever brought into the Port of New York by shipping, particularly from the Caribbean. Leslie's Illustrated Newspaper, September 1878.

Figure 1. Cartoon courtesy of Dr. Theodore E. Woodward, University of Maryland School of Medicine, Maryland

In modern times, the yellow flag depicted in this cartoon (figure 1) was used to announce that a quarantine against yellow fever was in effect. Although the use of flags to signal a quarantine is a recent phenomenon, societies have, since ancient times, used strategies to isolate persons with disease from unaffected persons. Some of the earliest references to these strategies are found in the books of the Old Testament. In Leviticus, chapter 13, it is stated that anyone with leprosy remains unclean as long as they have the disease and that they must live outside the camp away from others [1, Lev. 13.46]. Numbers, chapter

5, prescribes a duty to expel from camp everyone with a dreaded skin disease or bodily discharge [1, Num. 5.2]. However, nowhere in these early accounts does the term "quarantine" appear. How, then, did the term become part of the modern lexicon? The answer to this question can be found in the history of the black death in Europe.

Beginning in middle of the 14th century, repeated waves of plague swept across Europe. After arriving in southern Europe in 1347, plague spread rapidly, reaching England, Germany, and Russia by 1350 [2]. During this time, it is estimated that one-third of Europe's population died. The profound impact of the epidemic led to the institution of extreme infection-control measures. For example, in 1374, Viscount Bernabo of Reggio, Italy, declared that every person with plague be taken out of the city into the fields, there to die or to recover [3].

A similar strategy was used in the busy Mediterranean seaport of Ragusa (modern Dubrovnik, Croatia). After a visitation of the black death, the city's chief physician, Jacob of Padua, advised establishing a place outside the city walls for treatment of ill townspeople and outsiders who came to town seeking a cure [5]. The impetus for these recommendations was an early contagion theory, which promoted separation of healthy persons from those who were sick. Unfortunately, these measures proved to be only modestly effective and prompted the Great Council of the City to pursue more radical steps to prevent spread of the epidemic.

In 1377, the Great Council passed a law establishing a *trentino,* or thirty-day isolation period [5]. The 4 tenets of this law were as follows: (1) that citizens or visitors from plague-endemic areas would not be admitted into Ragusa until they had first remained in isolation for 1 month; (2) that no person from Ragusa was permitted go to the isolation area, under penalty of remaining there for 30 days; (3) that persons not assigned by the Great Council to care for those being quarantined were not permitted to bring food to isolated persons, under penalty of remaining with them for 1 month; and (4) that whoever did not observe these regulations would be fined and subjected to isolation for 1 month. During the next 80 years, similar laws were introduced in Marseilles, Venice, Pisa, and Genoa [4, 6]. Moreover, during this time the isolation period was extended from 30 days to 40 days, thus changing the name *trentino* to *quarantino,* a term derived from the Italian word *quaranta,* which means "forty" [5, 7].

The precise rationale for changing the isolation period from 30 days to 40 days is not known. Some authors suggest that it was changed because the shorter period was insufficient to prevent disease spread [8]. Others believe that the change was related to the Christian observance of Lent, a 40-day period of spiritual purification [2]. Still others believe that the 40-day period was adopted to reflect the duration of other biblical events, such as the great flood, Moses' stay on Mt. Sinai, or Jesus' stay in the wilderness [9]. Perhaps the imposition of 40 days of isolation was derived from the ancient Greek doctrine of "critical days," which held that contagious disease will develop within 40 days after exposure [3, 9]. Although the underlying rationale for changing the duration of isolation may never be known, the fundamental concept embodied in the *quarantino* has survived and is the basis for the modern practice of quarantine.

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