Nebraska Isolation and Quarantine Manual
Theodore J. Cieslak, Mark G. Kortepeter, Christopher J. Kratochvil, James V. Lawler

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Introduction
THEODORE J. CIESLAK
ANGELA L. HEWLETT

History

The concepts of isolation and quarantine date back thousands of years, with detailed instructions for the assessment and isolation of lepers described in the 13th chapter of the book of Leviticus. In 583, at a council held in Lyon, an edict was issued restricting lepers from freely associating with healthy persons. In the meantime, as the first pandemic of plague swept through Europe, the Byzantine emperor Justinian, in 549, ordered the quarantine of all persons arriving from affected regions. The measure was only partially effective—the plague epidemic arrived despite the quarantine, spread throughout Constantinople and beyond, and ultimately killed at least 13% of the known world’s population, putting the final nail in the coffin of the Roman Empire.

When the second global pandemic of plague struck in 1348, Venice established an institutionalized system of quarantine, requiring visiting ships, along with their crews, passengers, and cargo, to lie at anchor in the Venetian lagoon for 40 days prior to disembarkation. The term “quarantine” (from the Italian quaranta giorni [forty days]) derives from the length of this waiting period. In 1374 the duke of Milan added isolation to the repertoire of plague control measures, ordering all victims to be taken to the forest outside the city until they recovered or succumbed.
These measures were also of limited success as the Black Death killed at least 20% of Europe’s population. In 1592 a lazaretto (from Lazarus, the leper in Christ’s parable and patron saint of those so afflicted), or maritime quarantine station, was established on Malta. While this initial structure was temporary, a permanent facility was constructed in 1643 in order to manage repeated importations of plague and cholera.

In the American colonies, a lazaretto was built on Tybee Island, outside Savannah, Georgia, in 1767, in order to quarantine imported African slaves. By this time, however, quarantine measures had been employed by colonial authorities for at least a century, beginning with a law passed by the New York City General Assembly in 1663. This law, enacted during a smallpox epidemic, prohibited persons arriving from affected areas from entering the city until cleared by sanitary officials.

In 1832 a cholera outbreak killed 30,000 people in Britain, and quarantine efforts shifted toward this disease. New York at that time prohibited ships from approaching within 300 yards of its docks until the absence of cholera aboard could be assured. The failure of this measure (cholera killed an estimated 3,500 in New York that year), as well as the arrival of Asiatic cholera in 1892, prompted the US Congress to pass the National Quarantine Act the following year. This act created, for the first time, a national system of quarantine, with medical standards for the inspection of immigrants, ships, and cargo. At about the same time, President Benjamin Harrison ordered that “no vessel from any foreign port carrying immigrants shall be admitted to . . . the United States until such vessel shall have undergone quarantine detention of twenty days,” the shortened duration (from the previous forty) perhaps reflecting a developing understanding of infectious disease incubation periods.

In 1865 King Kamehameha V of Hawaii, facing a leprosy outbreak on the heels of a devastating smallpox epidemic, issued the “act to prevent the spread of leprosy,” which, among other things, forced lifelong isolation (on a remote and inaccessible peninsula on the island of Molokai) on thousands of afflicted Hawaiians. In 1892 the Louisiana legislature established a leprosarium at Carville and forcibly moved patients there, again for life. It wasn’t until 1969 (on Molokai) and 1970 (in Carville) that residence in a “leper colony” became voluntary. Knowing no other life, a few leprosy patients (now cured) remain at each location to this day.
In 1900 the third global pandemic of plague reached the United States with the death of a Chinese man in San Francisco. The subsequent quarantine imposed on 25,000 people in a 15-block area of the city’s Chinese quarter was ruled racist by an intervening court, adding to the burgeoning intense debate over the ethics of quarantine. This debate perhaps reached its zenith in 1907 when Mary Mallon (aka Typhoid Mary) was forcibly quarantined on North Brother Island in New York’s East River until 1910, and then again from 1915 until her death in 1938. The ethical conflict over mandatory quarantine was further exacerbated in 1916 when an epidemic of polio struck New York and those wealthy enough to provide a separate bedroom for their sick child could buy their way out of quarantine. Similarly, the incarceration of 30,000 prostitutes during the period 1917–19 in an effort to curb the prevalence of venereal disease has been labeled “the most concerted attack on civil liberties in the name of public health in American history.”

By 1945, the availability of penicillin ensured that syphilis and gonorrhea could be cured within a few days, obviating the need for lengthy and controversial quarantine for these diseases. Nonetheless, in Baltimore those few who refused treatment were subject to involuntary hospitalization. Although sanitoria such as the one started by Trudeau in Saranac Lake, New York, in the 1880s already existed for the management of tuberculosis (TB), the first locked TB ward was opened in Seattle in 1949 and served as a model for the construction of similar facilities throughout the United States. The occasional imposition of mandatory isolation orders on infectious, but reluctant, TB patients by state and local public health authorities continues to this day.

In the aftermath of the September 11 terror attacks in 2001 (as well as the subsequent anthrax letter attacks), the Centers for Disease Control and Prevention (CDC) drafted the Model State Emergency Health Powers Act, to be used by states as a template in improving and strengthening their public health response capabilities. Concomitantly, the CDC increased the number of its quarantine stations to 20, located at major international air and sea gateways. It is via these quarantine stations, within the CDC’s Division of Global Migration and Quarantine (DGMQ), that persons subject to federal quarantine might first be identified. Whether persons potentially harboring highly hazardous
communicable diseases (HHCDs) are identified within the United States or repatriated from abroad (as occurred with most individuals managed during the West Africa Ebola outbreak), public health officials at all levels of government, as well as clinicians, hospital administrators, and emergency planners, will require a working knowledge of isolation and quarantine fundamentals. This book is for them.

**Definitions**

**Isolation**, in a clinical context, and as defined by the CDC, refers to the separation of “ill persons who have a communicable disease from those who are healthy.” **Quarantine**, on the other hand, is used to “separate and restrict the movement of well persons who may have been exposed to a communicable disease to see if they become ill.” The World Health Organization (WHO) broadens these definitions, noting that isolation involves the separation of not only ill or contaminated persons but also “affected baggage, containers, conveyances, goods or postal parcels from others in such a manner as to prevent the spread of infection or contamination,” while quarantine refers to the “restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods” for the same reason.

**Restriction of Movement** is a term sometimes used in conjunction with both isolation and quarantine, as well as certain travel restrictions and enforced social distancing. **Directed Health Measures**, as defined by the Nebraska Department of Health and Human Services (DHHS) and codified in Nebraska state law, include isolation and quarantine, social distancing, and a number of additional infection control and prevention measures, such as hand and cough hygiene; cleaning, disinfection, and sterilization; decontamination; and the use of personal protective equipment. Other states have their own regulations and definitions.

Isolation can be voluntary or involuntary and may be accomplished in a number of settings. Isolation in the home is a commonly employed public health measure. Most parents are quite familiar with the notion that children with chicken pox and other highly communicable diseases should not return to school or day care until their period of contagion has passed. Among patients requiring outpatient medical care or inpa-
tient hospitalization, isolation is routinely employed in “conventional” clinical settings in the form of a private room coupled with contact or droplet precautions. Such measures, and the diseases warranting their use, are discussed in greater detail in chapter 7. Similarly, patients with TB and a few other diseases transmitted by droplet nuclei (see chapter 14) are typically managed in negatively pressured airborne infection isolation rooms (AIIRs) using airborne precautions when there is a need for hospitalization. Finally, a small number of highly infectious, highly communicable, and highly hazardous infectious diseases (see chapter 4) pose special challenges and generate significant concerns related to employing adequate isolation precautions in a conventional hospital setting. Patients with these diseases, which are described in detail in chapters 10–13, can be considered candidates for management in specialized biocontainment units.

Quarantine can also be voluntary or involuntary and similarly can be managed in a variety of settings. Given that most infectious diseases are not communicable until patients are symptomatic, persons who are deemed reliable by public health authorities can often forego quarantine with instructions to take their temperature frequently and report in if they develop signs or symptoms of disease. When quarantine is required, it can be accomplished within the home in the majority of cases; however, when institutional quarantine is advisable, it is typically imposed by state and local health departments. Various settings may be used, such as unused hospital wards, hotels, and other conventional and comfortable environments. While federal quarantine is expected to remain an infrequent event, changing human behaviors and movement, such as burgeoning migration and ease of global travel, make it likely that exotic and hazardous communicable diseases will occur domestically with increasing frequency. Federal authorities have jurisdiction over travelers arriving from abroad, as well as those engaged in interstate travel and commerce; therefore, we anticipate a concomitant increasing emphasis on the need for a federal quarantine facility. Regardless of whether quarantine is voluntary or mandatory, and whether it is imposed at the local, state, or federal level, recent history demonstrates that serious communicable diseases will continue to emerge and that quarantine and isolation care will be important tools for managing them.