

# A myth too tough to die: The dead of disasters cause epidemics of disease

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Myths abound in the practice of health care, death, and disease. Akin to the old adage of swallowing camels and straining gnats, the myth that mass fatalities cause epidemics of disease following natural or other disasters is alive and well. Despite the findings of observers, microbiologists, epidemiologists, and other scientists, even medical doctors and public health professionals lend support to the ancient belief and rush into mass graves or mass cremations the bodies of those victims of trauma in a disaster. Putting this myth to rest depends on use of information concerning the transmission of the organisms that cause disease, the sources of those organisms, and the hosts or suspected hosts that will be receptive to those organisms to result in disease. The information provided by recent investigators of disasters in the region of the Americas and comments from those who have reviewed the literature on the subject of the myth concerning the dead and epidemics following disasters have provided the basis for some concise guidelines for placing this myth in the archives of other traditions without foundation. Education of the public and the news media are the responsibility of those who are aware of the fallacies in this belief to bring about the demise of this myth. (Am J Infect Control 2006;34:331-4.)

Myths abound in the practice of health care, death, and disease. An example of a recent myth that was overcome by vigorous evaluation of measured result versus traditional belief was the use of the “red” line to restrict passage into the operating room area from the passage or corridors of the hospital. Belief held that “germs” could be transmitted to those entering the operating room by those walking in the general corridors. Proof was that it was the hands of those entering the operating room arena that transmitted the “germs,” not the shoes of those entering the area. Keeping dirt out—thus keeping the area clean—was the desire; the practice was not accurate. Information was the dispelling factor to rid the majority of hospitals of this unfounded belief (which unfortunately still is found in some facilities).<sup>1</sup>

Myths or traditional practices in the vein of “this is the way we have always done it” are difficult to overcome. The old adage of swallowing camels and straining gnats explains the tradition from the past of

accepting the old over the new. The old is easier, safer, and done with support of colleagues; the new may be simple—even easier—take less time, and certainly can be done with the support of knowledge but encounters objections of colleagues. Myths arise out of tradition, religious foundations, storied observations by an elder or respected friend, or a spiritual or religious tenet.<sup>2-4</sup>

The myth that the dead bodies are the cause of disease in the living is a long-held and venerated belief not only in the general population (the working class) but by those in government and the rulers of governments. Major disasters resulting in many dead bodies, human and animal, have occurred throughout known history. Edward III of England cited the need to remove the refuse, dead bodies, and feces from the streets of London to prevent the great numbers of deaths occurring at the time. It was between 1338 and 1340, that the Black Plague devastated the region. He inadvertently moved in the right direction of hygiene by cleaning up the area, thus removing the real cause of the deaths: rats, lice, and fleas. His desire was to rid the city of the bad smells from the offal, garbage, bodies (human or animal), and waste in the streets.<sup>5</sup> The masses of dead did not cause the epidemic but sustained it as the rats, fleas, and lice on dead bodies infected those handling the bodies; thus, the myth of the dead being the cause was supported.

In this era, the dead bodies were hurried into mass graves, or mass cremations, rather than individual interment. FEAR prompted the action; ignorance supported the action and the myth.

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During the past decades, there have been many disasters: natural and those because of technical advances of the times (airplane crashes, industrial fires, and explosions); all of which have resulted in mass numbers of dead bodies to be identified and disposed of with respect. In no records of disasters past or present is there evidence of epidemics of disease related to large numbers of dead bodies.<sup>6</sup> The myth persists.

Karl Western, of the National Institutes of Health Institute of Allergy and Infectious Disease, states that "the facts indicate that there has not been any epidemic generated from large number of dead bodies. In the event that mass fatalities from epidemics occur, the dead body poses a limited risk only for certain pathogens. That minimal risk is determined by very specific circumstances or situations."<sup>7</sup> No disease epidemic because of dead bodies has been documented. Other investigators say such a risk is negligible.<sup>8</sup>

The region of the Americas comprising Nicaragua, Peru, Honduras, Chile, El Salvador, Colombia, Mexico, and Central America have recorded multiple victims of disasters: in Nicaragua, the volcanic eruption and landslide with 2500 victims; insurgents war in Colombia with 68 known victims; terrorism in Bogota itself with 36 victims known; the Andes of Peru with air crashes, with 150 bodies; endemic epidemic disease in Chile (a question of cause for the myth); fires in Peru with more than 700 dead.

These records only mirror the happenings called *disasters* of hurricanes, volcano actions, and earthquakes for the region. Columbus recorded his boats being swept to the North in a hurricane in 1502. Records of 1931 and 1972 with deaths numbering from 4000 to 10,000, respectively, hold further descriptions of the practice of the myth in full reign to protect the survivors.<sup>9</sup>

Other parts of the world have recorded natural disasters, wars, and accidents that resulted in multiple dead bodies strewn over the geographic landscape. No observers in these areas were able to record disease epidemics caused by the dead bodies. In all cases, the dead were hastily disposed of in mass graves or with mass cremations.

Can this myth be put to rest? As with all myths, particularly those that impact professional practices such as health care and that involve investigation of details, measurements of action/reaction, or cause and effect, the belief that the dead cause disease excites a search for proof. The question that is in need of an answer is, "Are large numbers of dead bodies, resulting from a disaster, a cause of epidemics of disease and thus a threat to the survivors?"

The search, if such has taken place, to shed light on this traditional practice and belief and to find an answer has been toward specifics in the language of

public health at levels that not reach the "man on the street" who is the rescue team member nor has it reached the middle management level.<sup>10</sup> There are publications by health organizations such as the World Health Organization (WHO) and the Pan American Health Organization (PAHO) and some South American governments, such as Chile and Peru, that do address this belief concerning epidemics caused by the numbers of dead bodies following any disaster. There is an excellent literature review on the subject by Oliver Morgan of the London School of Hygiene and Tropical Medicine, Public and Environmental Health Research Unit.<sup>11</sup> Several passages and observations from this literature review are cited in this article. Many other science investigators from the Americas have published their findings on this subject in the professional journals of their respective countries. Their efforts have brought about guidelines for handling the victims of a disaster according to approved measures to prevent disease, to respect the cultural disposal of the dead, and to give support to grieving families. Their concerns lie in the realm of practicality and the need to dispose of the dead with regard for those who survive. Three courses of action are described in various ways: (1) need to look first to the treatment and safety of survivors; (2) the prevention of recurrence of the disaster; and (3) identify methods to secure the safety and prevent further disasters of the scope and cost; identify as much as possible, bury or memorialize according to the customs with respect and consideration, the bodies of those killed.

Morgan writes from his literature review that "Victims of natural disasters usually die from trauma and are unlikely to have acute or epidemic-causing infections. This indicates that the risk that dead bodies pose for the public is extremely small." The question would appear to have been answered by the investigations and reviews of those who saw the need to find them. Is the myth then dead?

The answer lies in a closer look at the methods of transmission of diseases and the organisms that cause diseases. Professionals in infection control and infectious diseases have identified the intertwined links that must be present to result in infection or disease: there must be a causative organisms, a method of transmission, and a receptive host. Without any of these links, there is no successful result to infection or disease. Body fluids are designated as infectious. Normal flora of the body are beneficial to the health of the system when performing as they are designed to do in areas where they are designed to perform, yet, if transplanted to other system of the same body, the flora cause reactions called *infections*.<sup>12</sup> Those same microbes can be the cause of infections or disease in another body system. Body systems can harbor

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