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Shawn Smallman

*Portland State University, drss@pdx.edu*

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## Whom do you trust? Doubt and conspiracy theories in the 2009 influenza pandemic

Shawn Smallman, PhD  
Portland State University  
drss@pdx.edu

### **Abstract**

The 2009 pandemic of H1N1 influenza led people around the globe to create narratives about the epidemic defined by the question of trust; these narratives ranged from true conspiracy theories to simply accounts in which mistrust and betrayal formed a motif. In particular, most of these narratives reflected a fear of capitalism and globalization, although in specific regions, other issues—such as religion—played a more central role. These stories were not unique to the H1N1 pandemic but rather have appeared with every contemporary outbreak of infectious disease. This paper will examine conspiracy theories and moral panics related to the H1N1 pandemic in different world regions to explore how the disease became associated with economic and social systems in these accounts.

In May 2009, an outbreak of influenza (A-H1N1) began in southern Mexico (possibly Veracruz) and, by June, had spread globally.<sup>1</sup> While this viral strain soon replaced other forms of influenza A—at first appearing to provide sizeable threat—the mortality rate did not prove to be particularly high, and fears of a pandemic like that of the influenza pandemic of 1918 soon receded. This paper will examine how people responded to the 2009 epidemic by creating narratives about the outbreak related to trust, involving both true conspiracy theories entailing secret and unlikely alliances among powerful actors, as well as more contained narratives involving a motif concerning betrayal. These stories were not wholly original but rather built on a larger set of beliefs about trust and health, which were widespread even in modern, developed nations. These beliefs have endured, as a recent report about the United States indicates: “Nearly half of American adults believe the federal government, corporations, or both are involved in at least one conspiracy to cover up health information. . .” (Painter, 2014). Polling data and other research suggests that a significant fraction of the population believes in conspiracy theories in nations as diverse as Canada and China (Sunstein & Vermeule, 2009, p. 202).

As Steve Clarke (2002, p. 131) has argued, academics typically take a “dismissive attitude” towards conspiracy theories. Yet these beliefs—along with broader narratives that undermine trust—can have key implications during an epidemic. The purpose of this paper is to examine how such narratives about the 2009 pandemic undermined confidence in government and health authorities in multiple world regions. In order to focus this discussion, this paper will primarily examine four areas: (1) North America, particularly the United States and Mexico, where the epidemic first appeared and spread; (2) Egypt, which served as a classic example of a moral panic during a health emergency; (3) Europe, because it was central to the global pharmaceutical industry and illustrated how the outbreak led citizens to question their governments in a wealthy region; (4) and finally, Indonesia, where conspiracy theories regarding influenza circulated before the 2009 pandemic. To examine the popular perception of the outbreak, this study will draw not only on academic literature but also on alternative media, such as YouTube, blogs, and talk radio. While the views expressed via the latter media are often regarded as belonging to the social and political “fringe,” during the pandemic, people sought access to information from multiple sources, including those that could be considered both unreliable and popularly influential. Finally, this paper will place H1N1 in the context of other diseases to examine how epidemics commonly undermine trust.

### **The Timeline of the Outbreak**

A timeline of the pandemic can help to understand the atmosphere of fear that existed during the initial months of the outbreak. At the onset, health authorities feared that the outbreak of H1N1 might become a pandemic on the scale of the influenza outbreak of 1918, when between 50 and 100 million people may have died. During the period of the initial appearance of H1N1, H5N1, a strain of highly pathogenic avian influenza (HPAI), was also circulating in Southeast Asia, where it was killing perhaps 80% of the people that it infected in Indonesia. This context shaped the response to the H1N1 virus. In March 2009, Mexican authorities began to receive reports of an influenza-like illness.<sup>2</sup> By mid-April, they had contacted the Pan-American Health Organization, a branch of the World Health Organization (WHO), to seek advice. Patients died of atypical pneumonia on April 12 and 21 while being cared for in hospitals in the state of Oaxaca in southern Mexico. On April 22, the Mexican government issued a national alert, and samples of H1N1 virus were sent to Canada for testing. The next day, the U.S. government

announced that seven people in Texas and California had been infected with the H1N1 virus. It was not known if these cases were related to those reported in Mexico. On April 23, the World Health Organization (WHO) made its first public statement related to the virus, in which it declared that the cases in Mexico and the United States were caused by the same virus. The Mexican government then stated that it was investigating reports of the virus from other parts of the country. Schools in the capital were closed. On April 25, an emergency committee of the WHO met to shape the agency's response to the virus. In Mexico, President Felipe Calderon issued an emergency decree that gave the government the right to isolate sick people, to regulate all forms of transportation, and to enter homes and workplaces for health reasons. The following day, the U.S. government declared a public health emergency.

On April 27, the first cases of H1N1 appeared in Europe among vacationers returning from Mexico. On April 28, U.S. President Obama asked Congress for \$1.5 billion to build drug stockpiles and prepare for an influenza pandemic. The WHO raised its alert level to four (on a 6-point scale), indicating that despite sustained human transmission of the virus in at least two countries, it was still possible to avoid a pandemic. Mexico closed all of its schools until May 6, and the United States called for its citizens not to travel to that country if possible. On April 29, the WHO raised its alert level to five, just one level short of a pandemic. That same week, Egypt announced that it would slaughter all pigs in the country, acting on the suspicion that the virus had originated within the swine population (Al Jazeera English, 2009, April 30). Perhaps no country responded as decisively to the epidemic as China did, perhaps because of its experience with SARS in 2003—though in so doing, it appeared to discriminate against Mexican citizens. On May 2, 2009 China suspended flights to Mexico. Seventy Mexican citizens were quarantined in China despite the protests of the Mexican government. The result was a diplomatic spat, which ended with Mexico sending an airplane to pick up its citizens.

In retrospect, early May 2009 represented a turning point in the response to the H1N1 virus. On May 5, Mexico reopened schools, day care centers, and universities. It would not be until June 11 that the World Health Organization declared the outbreak to be a pandemic, but by that point, the media coverage and government responses to the outbreak had begun to become more measured, partly because mortality rates seemed similar to those in a typical influenza year, and nothing like the rates associated with the H5N1 strain in Southeast Asia. Still, the H1N1 epidemic revealed some citizens' lack of trust in their authorities on a global scale, as revealed by media coverage of the epidemic in North America, mass protests by Coptic Christians in Egypt, and popular outrage in Europe.

### **North America: NAFTA and Doubt**

In retrospect, Mexico seems to have handled the outbreak relatively well. In 2003, the country had developed a National Preparedness and Response Plan for a Pandemic. Although there were lessons to be learned from the H1N1 outbreak, this was not the case of a country that failed to act decisively or effectively (Córdova-Villalobos, et al., 2009). Within Mexico and Latin America, there was considerable frustration about the quality of the media coverage of the outbreak, along with a belief that media coverage mapped onto other stereotypical images of Mexico as a nation wracked by drug violence and social breakdown (Crosby, 2010; dos Santos Borba, 2009). At the same time, the media shaped how Mexicans themselves viewed the epidemic. Even most Mexican doctors said that they were mainly obtaining their information about the outbreak from the global media, at least until the World Health Organization officially

declared H1N1 to be a pandemic (Gholami et al., 2011, p. 32). During the early reporting, the media often described the virus as the “Mexican flu,” which Mexicans perceived to stigmatize their entire country (González González et al, 2011, p. 106). As a result, Mexican authorities fought hard to rename the virus (Vigsø, 2010, p. 30). This effort to shift the media focus and the name of the virus included its own diplomatic risks: “The Mexican ambassador to Beijing, Jorge Guajardo, tried shifting the focus from Mexico to other parts of the world, claiming that the disease was brought to his country from an infected person from somewhere in ‘Eurasia’” (Vigsø, 2010, p. 30). At one point, the governor of Veracruz, Mexico was quoted as saying that the virus came from China, which created resentment in that country (Rosch, 2009, p. 5). In the end, a consensus emerged to avoid naming the virus based on geography. Nonetheless, Mexico paid a heavy economic cost for its early association with the virus.

As González González et al. have argued (2009, p. 108), the epidemic emerged during a period of crisis in the country and led to staggering economic losses, which became a dominant theme in early Mexican media coverage of outbreak (González González, et al., 2011, p. 108-109). International observers also stressed the economic impact of the epidemic. Christian Nordquist, an editor for a medical news site, also maintained a blog in Mexico (where he lived most of the year), which covered this period. His blog described how hotels in Cancun closed, while the beaches were deserted. People were laid off from positions related to the tourism industry, impacting the local community. In their anger, people turned to fantastic theories about the origins of the virus: “Conspiracy theories are circulating briskly. Some say the virus was intentionally started by sinister organizations in a lab, while others accuse the authorities of deflecting public attention from the current financial crisis” (Nordquist, 2009). Many of these theories reflected concerns about the United States and reflected concerns about Mexico’s economic reliance on its northern neighbor. While these arguments were relegated to the fringe media outlets, they were significant in that they reflected popular concerns. For this reason, it is worth examining some conspiracy theories that circulated either outside the mainstream media and those which drew upon these sources.

On April 27, 2009 the Chilean newspaper *El Ciudadano*, published an article on the origins of the “swine flu,” the virus’ colloquial name—which asked who had benefited from the emergence of the disease (Anonymous, 2009). The report itself was based on internet reporting in Spanish from California, which referred to accusations that the U.S. biodefense agency was working to “weaponize” avian influenza and that former U.S. Defense Secretary of Defense Donald Rumsfeld stood to benefit from the outbreak. This article pointed to Rumsfeld’s long role with Gilead Laboratories in California, which manufactured Tamiflu, a possible treatment for highly pathogenic avian influenza (HPAI). The article concluded by referencing U.S. biological warfare tests that had been conducted upon unsuspecting populations in the 1950s and 60s (Anonymous, 2009). These articles circulated widely outside of Mexico, where conspiracy “theorists had a field day” with information about Gilead Laboratories (Ainsworth, 2009). Although these theories spread primarily through alternative media, they were critically discussed that year (though later rejected) in the respected forum of *Le Monde Diplomatique* (Ramonet, 2009). In May 2009, there was widespread fear—bordering on panic—in Mexico (Saldaña Díaz, Carreón Méndez, & Díaz Soto, 2009, p. 226). These stories circulated at a time when citizens were worried about a disease so serious that the nation’s schools all had closed.

This reliance on alternative sources of information on the outbreak of H1N1 was not confined to Mexico. Within the United States, people relied on questionable sources, including YouTube, for information about the pandemic. One study looked at 142 YouTube videos that

had been uploaded on H1N1 influenza in the three months before June 26, 2009. A significant percentage (17.5%) of the videos were misleading, with most videos warning against vaccinations, while 17.4% (out of this class of videos) called the outbreak a man-made conspiracy (Pandey, et al., 2010, p. e-3). Some of the narratives that were circulating within the U.S. portrayed Mexican migrants as disease vectors who were threatening the nation, which led to discrimination against Latino farmworkers and migrant workers (Schoch-Spana, et al., 2010; McCauley et al., 2013). The dangers posed by migrants from Mexico was stressed in blogs, talk radio, and internet forums.

Some media pundits particularly depicted undocumented migrants as a threat to the nation: “Conservative media hosts, including Michelle Malkin and Glen Beck have placed the blame for the spread of swine flu to the United States squarely on the shoulders of undocumented Mexican immigrants. Some even suggested yesterday that Mexicans were purposefully carrying the virus across the border to sabotage the United States” (Weiner, 2009). Organizations calling for stricter border enforcement pointed to the outbreak of the pandemic to emphasize the danger that migrants posed:

The swine flu ‘illustrates how any country that doesn’t properly control its borders leaves itself wide open to the importation of a major health crisis,’ said Dan Stein, head of the Federation for American Immigration reform. Michael Savage, a nationally syndicated radio talk-show host, was one of several conservative commentators sounding similar themes, according to Media Matters for America, a liberal media-monitoring group. ‘Make no mistake about it: Illegal aliens are the carriers of the new strain of human-swine avian influenza from Mexico,’ he said. (Witt, 2009)

For Savage, the question could become one not only of border enforcement but also of national security: “Savage speculated that terrorists are using Mexican immigrants as walking germ warfare weapons. ‘It would be easy,’ he said, ‘to bring an altered virus into Mexico, put it in the general population, and have them March across the border’” (Alexander, 2009). In this manner, concerns about public health and the border began to drift into conspiracy theories about possible attacks upon United States.

Other conservative commentators echoed Savage’s argument: “During the April 27 edition of his nationally syndicated radio show, Neal Boortz asked: ‘[W]hat better way to sneak a virus into this country than to give it to Mexicans? Right?’ (Allison, 2009). He went on to argue that once some person introduced the virus into Mexicans, they could then start a rumor that construction jobs were available in the United States to flood the border. A radio personality in Boston was suspended by the management of station WTKK-FM after saying that besides exporting venereal diseases, Mexico was now bringing swine flu to the United States (Hastings, 2009, p. 7).

Other conservative commentators argued that national elites could not be trusted to act in time. Conservative columnist Michelle Malkin, a Fox News contributor, suggested that political correctness had stopped the U.S. government from enforcing its borders, saying: “I’ve blogged for years about the spread of contagious diseases from around the world into the U.S. as a result of uncontrolled immigration” (qtd. in Alexander, 2009). She continued, “9/11 didn’t convince the open-border zealots to put down their race cards and confront reality. Maybe the threat of their sons or daughters contracting a deadly virus spread from south of the border to their Manhattan prep schools will” (qtd. in Alexander, 2009; for more examples see also Allison, 2009). According to this narrative, the danger was posed by corruption from within and the

blindness of America's economic elites. Spanish language media in the United States denounced these narratives linking the virus to immigrants (Hastings, 2009, p. 7).

Such rhetoric was not unique to the United States, nor was it new. In a study of SARS in Toronto, Andrew Galley (2009, p. 134) said: "I argue that responses to emerging diseases such as SARS may reveal social anxieties about immigration, urbanization, and cultural hybridity." The discourse about Mexican migrants in 2009 formed part of a larger set of narratives told about cultural globalization during epidemics, in which the threat is associated with foreigners. These concerns mapped onto concerns about social issues, as Galley suggested: "Diseases act as agents within the processes of globalization and demographic transformation, processes that are intimately associated with social change" (Galley, 2009, p. 134).

Interestingly, both Mexico and the United States created narratives about the virus that stressed the role of the border and betrayal, but with the threat moving in opposite directions. In the United States, some conservative commentators stigmatized Mexican migrants and Latinos as carriers of the virus, while in Mexico, people worried about the transport of swine flu from the United States. Mexicans also worried about the political influence that transnational pork producers held over the government, because of evidence that the disease originated on pig farms. These accounts reflected concerns about NAFTA and economic globalization in both nations. Despite the existence of conspiracy theories on the fringes of alternative media, in some respects, the pandemic led to the creation of common narratives regarding food and globalization across the U.S.-Mexican border.

### **The Food Supply**

Media coverage about the possible origins of H1N1 soon focused on the pork industry and questioned the security of the global food supply. Early scientific reports argued that this particular viral strain might have had its origins in the U.S. pork industry (Cohen, 2009). An initial genetic study of the virus revealed "that six of the eight viral gene segments arose from North American swine flu strains circulating since 1998, when a new strain was first identified on a factory farm in North Carolina" (Greger, 2009). Within Mexico, the early cases were associated with La Gloria, a community in Veracruz, where pigs were farmed by a Mexican subsidiary of Smithfield Foods, the world's largest producer of pork (González González, et al., 2011, p. 106). The company has its headquarters in Smithfield, Virginia, with massive operations in North Carolina. Additional research further tied the Mexican strain of the virus to forms of influenza circulating in swine in the United States: "As for this being a 'Mexican virus,' analysis of the H sequence by BLAST (14) reveals that the closest relative to the Influenza H1N1 2009 virus previously isolated is in fact a virus 95% identical to it, from swine in Indiana in 2000. . . ." (Gallagher, 2009, p. 55). Mexican citizens in Veracruz had an intense reaction against the local pork farm because they feared that unsafe farming practices were endangering their communities (Nava-Ocampo, et al., 2009, p. 773). In the end, it was unclear whether this pork production facility was the original site of the infection because Mexican authorities pointed to another early case at a different location (Schmidt, 2009, p. 396). Nevertheless, Mexicans associated the emergence of this virus with the pork industry and the cross-border transport of swine.

There was some basis for these fears because health authorities had already expressed concerns about the crowding of pigs in factory production, as well as the transport of swine across the border. In particular, they worried about concentrated feeding operations (CAFOs), which placed pigs by the thousands in crowded facilities, which represented an ideal

environment for the rapid transmission of disease (Schmidt, 2009, p. 395). Robert Webster, a leading expert on influenza suggested that the emergence of a new strain of influenza, originally in North Carolina, could be linked to factory farming practices (Greger, 2009). At first, the World Health Organization referred to the illness as “Swine Influenza A/H1N1” (Nava-Ocampo, et al., 2009, p. 773). It soon changed its nomenclature, but the damage to the pork industry in the United States and Mexico was significant. People had long held concerns regarding health problems associated with CAFOs, ranging from virus transport to excessive sewage, which the “swine flu” nomenclature encouraged (Schmidt, 2009, p. 397).

On both sides of the border, citizens asked if the move to transnational food production had been done with sufficient attention to health and environmental issues: “Meanwhile, Robert Martin, senior official with the PEW environmental Group in Washington, DC, is concerned that competing financial interests may partly be to blame for the current lack of data and regulation. ‘Even the best scientists seem loath to say anything against the industry,’ he says. ‘With the decline in public research funding, it’s industrial animal agriculture that pays for virtually all the animal science research going on at land grant universities today’” (Schmidt, 2009, pp. 399-400). Throughout North America, people questioned whether the pork industry was regulated sufficiently, while these fears caused a crisis for the pork industry globally.

In both Mexico and the United States, the government faced pressure to support pork producers. With the onset of the pandemic, nations began to place restrictions on the import of U.S. produced pork: “In June 2009, U.S. Trade Representative (USTR) reported that 16 U.S. trading partners had officially notified the United States of trade restrictions on swine and pork products. [The] USDA reported that as many as 27 countries had imposed such trade restrictions” (Johnson, 2010, Summary; see also p. 6). Even though the World Health Organization, the U.S. Center for Disease Control (CDC), and other leading health authorities announced that there was no health danger posed by the consumption of properly prepared pork, domestic consumption in the United States declined (Johnson, 2010, p. 5). The pork industry began to lobby for government support: the USDA reported that it would buy an additional \$30 million in pork products to assist the industry (Johnson, 2010, p. 14). Within Mexico, there was intense pressure upon government authorities to demonstrate their support for the pork industry: “In some Mexican towns, the media reported politicians who ate swine meat in public places to demonstrate the safety of pork” (Nava-Ocampo, et al., 2009, p. 773). These public relations events perhaps were similar to what took place in Toronto’s Chinatown during the SARS outbreak of 2003, when Canadian politicians visited the community in the company of journalists (Galley, 2009, p. 137).

While the Mexican government struggled to protect the pork industry, its citizens questioned how business leaders might influence the government response to problems with factory farms. Within Latin America, media articles suggested that the Mexican government had known about the origins of the outbreak near a swine factory farm for some time but had been slow to act. For example, a member of Brazil’s socialist party published an article that first pointed to the dangers of industrial food production and then stated that the Mexican government had moved slowly and sought to conceal the real causes of the pandemic, saying that the virus’ spread only benefitted large pharmaceutical companies in wealthy countries (Sant’Anna, 2009, p. 214). The implication was clear: the epidemic reflected global inequalities, which put national elites in the role of a comprador class serving the interests of capitalists in the Global North. The discourse about the virus was shaped by concerns about NAFTA and economic globalization. In



other nations, concerns about the pork industry were shaped by the local context, as was the case in Egypt, where the pandemic created a moral pandemic around swine.

### **Egypt and Pigs**

A moral panic is an outbreak of extreme fear or hysteria, in which a particular group is believed to endanger society, often through behavior that is perceived as repugnant. Moral panics often lead to a response disproportionate to the original threat. In Egypt, the Muslim majority argued that Coptic Christians were endangering the nation by breaking food taboos by eating pork, the consumption of which is forbidden within Islam. The Copts are descendants of the original Christian population of Egypt and constitute the largest Christian group both in Egypt and the region. The demography of the Copts is a controversial issue, but they likely represent between five and ten percent of Egypt's population, although the Copts themselves argue that this estimate is too low (Mohamoud, Cuadros, & Abu-Raddad, 2013; CIA World Factbook, "Egypt, people"; Leach & Tadros, 2014, p. 245). The Copts differed from their Muslim neighbors in that pigs were a key part of their household food production. On April 30 2009, the Egyptian government announced that it planned to cull all pigs in the country, although no cases of H1N1 had been reported in the nation.

As Leach and Tadros note, the fact that the virus was originally named "swine flu," shaped how Egypt responded to the outbreak: "The politically charged name stuck with political forces whose vested interests lay in annihilating pigs for ideological reasons" (Leach & Tadros, 2014, p. 244). While in Mexico, the virus' association with swine had evoked fear of factory farms and economic globalization, in Egypt, the swine became the target of a moral panic based upon religious divisions and food taboos. As Andrew Galley (2009, p. 137) has argued, with his study of SARS in Canada, animals are often the subject of popular fear during epidemics: "Relationships between human and non-human animals, whether the latter are food animals or unwelcome vermin, are one type of 'hybridity' that evokes strong notions of pollution and danger." With SARS, people feared the danger posed by chickens raised in close proximity to humans in China, or the slaughter of exotic animals for food (Galley, 2009, p. 138). In Egypt, swine were described as an existential threat.

During the parliamentary meeting that discussed a law to prohibit raising pigs, debaters argued that as an Islamic country, it was logical for the nation to prohibit swine (Seef & Jeppsson, 2013, p. 3). Among some religious leaders, there was also apocalyptic language about the dangers of pig farming: "'Swine flu is more dangerous than the hydrogen bomb. . . . It is a punishment from God,' declared a leading Muslim brotherhood figure at a symposium held in Cairo in April 2009, a day after the People's Assembly passed a motion to slaughter 300,000 pigs" (Ibrahim, 2009; see also Leach & Tadros, 2014, p. 245). Such extreme rhetoric is common during epidemics. As Andrew Galley (2009, p. 139) has noted, "Disease is an excellent candidate for fantasies of apocalypse because it connects aspirations for global movements and prosperity so closely to corresponding anxieties concerning the loss of identity and boundaries . . . ." Media coverage of H1N1 may also have contributed to creating deep public fears in Egypt (El-Awady, 2009). The Egyptian government said that it had to act to avoid public panic.

The decision to slaughter swine created massive protests within the Christian community, which owned most of the country's 300-400,000 pigs. The swine formed an important resource for this group, which tended to be both poor and politically marginalized. In the years before 2009, the Coptic community had perceived that political decisions were made against their

interests (Knickmeyer, 2009). Not only did this fact shape how Copts viewed the government's announcement, but outside observers also critiqued this decision. The World Health Organization and other agencies argued that there was no significant benefit to slaughtering the swine, especially since the H1N1 virus had not been detected in Egyptian pigs (Leach & Tadros, 2014, p. 245), nor could the virus be transmitted through properly cooked pork.

After the Egyptian government voted on April 30, 2009 to ban the raising of pigs, pig farmers set up roadblocks and smashed the windshields of the veterinary service vehicles as they came to take the pigs away.<sup>3</sup> There were multiple cases of violence:

In at least one instance, a pig farmer too poor to own a radio or TV knew nothing about the decree until police and health officials arrived at this house early in the morning and threatened to arrest him if he did not surrender his animals. Since half of the family's annual income comes from the sale of their small herd of 25 pigs, he resisted but finally yielded after being beaten on the head and legs several times. The government also sent a health worker to inoculate all 14 members of the family against swine flu. A Cabinet spokesman suggested that farmers would be reimbursed for each slaughtered pig, but the Minister of Agriculture subsequently ruled that this would not apply if farmers were allowed to sell pork from fit animals. (Rosch, 2009, p. 5)

One strange aspect of this report—if it was true—was its reference to vaccinations against H1N1 since none existed in Egypt at that time. Because this proposed vaccination policy was implemented quickly, Egypt lacked time to develop infrastructure or plans to implement it.

During the month of May 2009, the Egyptian government slaughtered hundreds of thousands of pigs (Seef & Jeppsson, 2013, p. 1). The government was poorly prepared for the scale of the task. According to Leach and Tadros, some swine were buried alive and burned with acid (Leach & Tadros, 2014, pp. 243, 247). The government did give the pork to farming families, but the families had no way to freeze the meat, and there was no market for the sudden surplus of pork: "Slaughterhouses could not keep up with the demand, and riots broke out when the government announced plans to import three machines to raise their capacity to [slaughtering] 3,000 pigs a day" (Rosch, 2009, p. 5). At the height of the pig slaughter, there were massive confrontations between Coptic farmers and the government: "In one Cairo suburb, Egyptian police and armored cars spraying tear gas charged into a crowd of a thousand irate pig farmers who had blocked the road leading to their pig pens armed only with stones and bottles. Some 200 policemen then surrounded the neighborhood, backed by a half dozen police trucks, causing over a dozen injuries and 14 arrests" (Rosch, 2009, p. 5).

Egypt was a country that had significant issues with a lack of trust in the government: "The results of a household survey showed that the public has little trust in the representational mechanisms of the political system" (Seef & Jeppsson, 2013, p. 2). Moreover, as Seef and Jeppsson have argued (2013, p. 3), most of the political power was concentrated in the hands of the Muslim majority, while most of the poor farmers were from the Coptic minority. Christians found that they faced intense discrimination: "Red Faheem, one of the women involved in raising pigs in Ard el Lewa, described the level of dehumanization to which they were subjected at the peak of the H1N1 hysteria: "At the local health clinic, they refused to treat my nephew and said we were infected because we raised pigs. . . . After a while, they will kill us like the pigs" (qtd. in Leach & Tadros, 2014, p. 248). The stigmatization of pigs in public discourse deeply impacted the Coptic Christian population.

Some scholars have suggested that the Egyptian governments' intent was always less to control H1N1 than to undermine and isolate the Coptic community: "The extinction of Egyptian pigs is an example of how a health issue can be used to persecute a minority within a country. Although the current influenza has nothing whatsoever to do with pigs, the previous name of the epidemic was used as an argument to violate the rights of the Christian minority in Egypt (Seef & Jeppsson, 2013, p. 3). While in the U.S., conservative commentators had advised people to avoid Mexican migrants, in Egypt, the Minister of Health, El Gebally, advised on a series of measures to protect against H1N1 (such as hand-washing) that included "keeping away from pigs *and those who are in contact with them*" (Leach & Tadros, 2014, 246; emphasis in the original). In both nations, people associated the virus with marginalized people.

Some of the Egyptian discourse employed to justify the slaughter talked about the need for urban planning and eliminating poor and marginal communities (mainly Christian) that worked as garbage collectors in order to clean up the cities. These people were called zabbaleen (var. spelling zabaleen) in Egyptian Arabic, which literally means "pig-pen operators." The zabbaleen were familiar sights in Cairo, where thousands of them passed through the streets with donkey pulled carts as they collected trash, which they recycled. The housing standards for these communities tended to be poor, as some individuals even lived among garbage. During the debate over the adoption of the swine ban, some officials had stated that the purpose of measure was to improve urban areas: "When health officials worldwide said that the virus was not being passed by the pigs, the Egyptian government said that the cull was no longer about the flu, but was about cleaning up the zabaleen's crowded, filthy, neighborhood" (Slackman, M., 2009). Ironically, the policy soon led to a crisis as trash flooded the streets in Cairo because the pigs had previously eaten tons of organic waste. Without their presence, both middle-class and poor neighborhoods soon witnessed piles of rotting food in the streets. The zaballeen no longer went door to door to collect scraps (Leach & Tadros, 2014, p. 248). Given the weakness of the state and central administration, garbage collection had long operated through the informal sector despite the existence of some contracts awarded to multinational firms. As a result, this effort to clean the city had unintended consequences, which undermined the Christian community's trust in the city government.

There were divisions within Egypt's Muslim population about the pig slaughter, while unexpected political ties also formed: "The ruling National Democratic Party found an unlikely ally in the largest opposition group, the Muslim Brotherhood, in passing the parliamentary motion. The Egyptian population in general, however, was repulsed by the slaughter . . . ." (Ibrahim, 2009). Still, even after the pigs had been culled, the Egyptian government continued efforts to relocate some zaballeen communities as part of a vision of urban planning (Ibrahim, 2009). In the years after 2009, the tensions between Coptic Christians and the Muslim majority worsened, in part because of the mistrust engendered by this event (Sarhaddi-Nelson, 2012). As Leach and Tadros have argued, global narratives about the H1N1 outbreak were picked up in Egypt but interpreted in a local context, which was partly shaped by an outbreak of avian influenza in 2006 (Leach & Tadros, 2014, pp. 244, 250). In this sense, this was a "glocal" event. While Egypt experienced a moral panic, even wealthy nations, including those in Europe, faced public mistrust during the pandemic.

## The World Health Organization and the Pharmaceutical Industry

There were multiple factors that led people to doubt the WHO's legitimacy. During 2009, the anti-vaccine movement had particular momentum. There was a great deal of concern about a preservative used in some vaccines called thimerosal. Others were concerned about the use of adjuvants within vaccines, which were commonly used in Europe but not in the United States (Jack, 2011). The influenza vaccine, in particular, is typically less effective than vaccines against other illnesses, which encouraged doubts about the efficacy of any flu vaccine. During the pandemic, Brownlee and Lenzer (2009) published an article in *the Atlantic* that discussed contemporary scientific literature to question whether the flu vaccine reduced mortality. These authors argued that even in years when the viral strains chosen for the flu vaccine poorly matched the dominant strain of the flu, death rates in the U.S. did not rise. Additionally, despite increased rates of influenza vaccination in recent decades, death rates among the elderly from influenza have increased rather than decreased over time. Brownlee and Lenzer also discussed the literature on medications to treat influenza, which are not highly effective. The combination of popular skepticism about the efficacy of vaccines in general—combined with media coverage of the limitations of vaccines and medicines for influenza—led people to doubt both health authorities and the WHO regarding imperatives to become vaccinated against the flu. Were these actors making choices based on the science alone, or were they influenced by commercial interests? Conversely, frustrated health authorities found maintaining public confidence to be difficult (Dupras & Williams-Jones, 2012).

The fear that pharmaceutical companies might have too much influence on health policy was widespread in Switzerland, the home of the WHO. One study of French-speaking people in Switzerland asked people their opinion of certain actors engaged in the H1N1 pandemic. One of the clear findings of this study was that the public perceived there to be certain villains in this outbreak, including the media, which people feared was hiding information because of pressure from both the government and pharmaceutical companies (Wagner-Egger, 2011, p. 472). People also worried about major pharmaceutical companies profiting from the crisis: “In the same vein, distrust and conspiracy as well as power were attributed to *Private Industry* in fighting the disease. . . . A minority of participants even suggested that private corporations may have created diseases for profit. . .” (Wagner-Egger, 2011, p. 472). Once again, conspiracy theories suggested that because some actors benefited from influenza, they might have created the epidemic. At the same time, people believed that Switzerland might be less at risk than other nations because it was home to major pharmaceutical companies (Wagner-Egger, et al., p. 471). There were multiple narratives created about the epidemic, some of which emphasized the importance of health authorities, while others emphasized the threat posed by conspiracies between health authorities and business interests. One commentator in *New Scientist* made the point that the pandemic was not a hysteria created by pharmaceutical companies to ensure revenue (MacKenzie, 2010).

The WHO soon faced intense criticism for its role in declaring H1N1 to be a pandemic despite the virus's low fatality rate:

A joint investigation by the BMJ and the Bureau of Investigative Journalism has uncovered troubling questions about how WHO managed conflicts of interest among the scientists who advised its pandemic planning, and about the transparency of its advice to governments. Was it appropriate for the WHO to take advice from experts who had declarable financial and research ties with

pharmaceutical companies producing antivirals and influenza vaccines? Why was key WHO guidance authored by an influenza expert who had received payment for other work for Roche, manufacturers of oseltamivir, and GlaxoSmithKline, manufacturers of zanamivir? And why does the composition of the emergency committee from which Chan sought guidance remain a secret known only within the WHO? (Cohen & Carter, 2010, p. 1274)

People were not convinced that the decision to stockpile medications had reflected an accurate assessment of the pandemic's dangers.

Particularly in Europe, there were vocal critiques of the process through which the WHO decided to declare H1N1 to be a pandemic, given the virus' low mortality (Lynn, 2010): "In [light of] the latest complaint about the way authorities have dealt with the pandemic, the Council of Europe, a political forum of most European countries, [the group's charge] is to determine whether drug companies influenced public health officials to spend money unnecessarily on stockpiles of H1N1 vaccines." The Council of Europe's report "accused the WHO of lack of transparency over the pandemic announcement, saying it wasted huge sums of money and provoked 'unjustified fears'" (Al Jazeera, 2010, June 4). The European Parliament also asked questions about the WHO's actions. Throughout Europe, people were angry that nation-states had purchased large supplies of vaccine and anti-viral medications, for which there was low demand in 2010. France had spent vast sums on the vaccine but was unable to use much of its supply (Ncaiyana, 2010). The WHO was pushed to create an outside panel to judge whether its independence had been violated (Lynn, 2010): "The World Health Organization is to examine its handling of the H1N1 pandemic, the group said on Tuesday, after accusations by some politicians that it exaggerated the dangers of the virus under pressure from drug companies."

In the end, the WHO was compelled to create this review committee, which released its final report in March 2011. It found some shortcoming in the WHO's response to the pandemic but argued that overall the organization had responded well to the crisis (WHO Review Committee, 2011, p. 13). The reviewers did argue, however, that the WHO lacked a good definition for a pandemic, which fed public confusion: "When, without notice or explanation, WHO altered some of its online documents to be more consistent with its intended definition of a pandemic, the Organization invited suspicion of a surreptitious shift in definition rather than an effort to make its descriptions of a pandemic more precise and consistent. Reluctance to acknowledge its part in allowing misunderstanding of the definition fueled suspicion of the Organization" (WHO Review Committee, 2011, p. 15). The committee argued that the WHO's decision to keep the identity of the members of the Emergency Committee led to confusion (WHO Review Committee, 2011, p. 16). In the future, the committee concluded, WHO needed to be more transparent about the membership of these committees and to have clearer standards about who could be appointed to them (WHO Review Committee, 2011, p. 20). Ultimately, the committee actually asserted that the WHO should have argued more strongly to defend its integrity (WHO Review Committee, 2011, p. 17). The committee believed that the WHO remained independent of commercial interests: "In the Committee's view, the inference by some critics that invisible commercial influences must account for the WHO's actions ignores the power of the core public health ethos to prevent disease and save lives" (WHO Review Committee, 2011, p. 19; see also Butler, 2011).

The debate in Europe impacted not only the WHO but also health care leaders at the national level. For example, in the Netherlands, Roel Coutinho, head of the Rijkinstituut voor

Volksgezondheid en Milieu (the Institute for Health Care and Environment), was responsible for ordering 34 million doses of vaccine for H1N1. He faced media criticism because there was concern that many of these doses would never be used (Crul, 2009; Vanheste & Martjin, 2013). Coutinho was arguably the most powerful person in the Dutch healthcare system, and like many European politicians and health care officials, he was faced by a terrible dilemma. If he did not order vaccine and medications, and the pandemic was serious, he would be held responsible. But if he ordered the medications, and they were not needed, he would be held responsible for needlessly wasting funds due to hysteria. Throughout the European Union (EU) and the U.S., leaders had to balance these pressures (Ncayiyana, 2010). The irony of the debate about the benefits of vaccines (and medicines) was that even in wealthy nations, few people had access to vaccine in time.

In 2014, a literature review by the Cochrane Collaboration found no evidence that Tamiflu reduced hospitalizations or intensive care unit (ICU) admissions in people infected with influenza (Farrar, 2014; One News/Fairfax, 2014). The implications were significant: “The researchers argued that hundreds of millions of pounds spent on stockpiling the antiviral for pandemic defense had therefore been wasted” (Farrar, 2014). This fed popular anger about the amount of money that European governments had spent stockpiling antiviral medications during the 2009 outbreak:

It’s been five years since European governments tried to fight the H1N1 pandemic and wasted a colossal \$3 billion of taxpayer money in doing so. Back then, they stocked up on Tamiflu, a medication used on other types of influenza and marketed as a cure for swine flu. It actually turned out to be ‘just as effective as aspirin’ against the swine flu, save for ‘renal and psychiatric events’ being among the main side effects of the medicine. What caused the scandal was not so much the wasted money. It was that Roche, the producer of the treatment, broke no law by hiding eight of the 10 clinical trial reports on Tamiflu. (Fontanella-Khan, 2014)

The legacy of 2009, the outbreak of the H1N1 flu, the handling of the WHO declaration of pandemic, and the resulting stockpiling of vaccine facilitated an ongoing conversation that is still shaping political decisions. Because of this controversy, the European Medicines Agency has introduced new legislation requiring that pharmaceutical companies publish their trial results. The media coverage of this issue reflected a larger trope regarding the 2009 pandemic: the capitalist system could not be trusted with people’s health.

### **Indonesia**

These narratives had already been circulating in the developing world before the outbreak of the 2009 pandemic. In the developing world, nations had visions of pandemic influenza planning that differed from those of wealthy nations. The tensions between these two perspectives led Indonesia to stop viral sample sharing with the World Health Organization in 2007 (Smallman, 2013). Pharmaceutical companies need samples of influenza to develop pre-pandemic vaccines so that they can be prepared at the start of an outbreak. However, Indonesians perceived that they were being excluded from any benefits from this exchange. At the time, wealthy countries were spending billions of dollars to stockpile anti-viral medications and signing advance contracts with vaccine manufacturers. In contrast, Indonesia was a front-line state for highly pathogenic avian influenza (particularly for H5N1) in South East Asia, but it

could not afford to purchase sufficient medications to prepare for a pandemic. In the event of an outbreak, Indonesia would have to wait while vaccine manufacturers first supplied wealthy nations. As early as 2005, Indonesia had found that the “antiviral drug Tamiflu, made by Switzerland’s Roche, was not available to them in large quantities at any price” (Hammond, 2009; Elbe, 2010, p. 480). Rich countries dominated the global infrastructure of vaccine factories, laboratories, and pharmaceutical companies; the only item that this infrastructure needed for pandemic preparedness was access to the viruses circulating in Southeast Asia.

In 2007, the Indonesian government learned that the World Health Organization had transferred viral samples from Indonesia to pharmaceutical companies without permission and that one of these companies wanted to sell the vaccine to Indonesia, against the particular strain of the virus circulating in that nation (Fidler, 2007; Dinnen, n.d.; Franklin, 2009, p. 356; Stephenson, 2011, p. 623). As a result, Indonesia stopped sharing viral samples in 2007, which began a political struggle between developing and wealthy countries. From the Indonesian perspective, the global health system privileged wealthier countries, while less developed countries were denied key benefits. While Indonesia ultimately emerged victorious in this contest (Smallman, 2013), during the struggle, a key government official used conspiracy theories to justify their actions.

One weak point for the Indonesian government’s strategy was that the U.S. Department of Defense had a Naval Medical Research Unit (NAMRU 2) in Indonesia, which might collect its own samples of influenza (Elbe, 2010, p. 482). During the negotiations about the continued operation of NAMRU 2 in Indonesia, the Minister of Health, Siti Fadilah Supari, suggested that this facility might be constructing biological weapons, even though the U.S. had joined the Biological Weapons Convention in 1975. This suggestion caused a political firestorm when she published her book, *Time for the World to Change: God is Behind the Avian Influenza Virus*. Supari quickly backpedaled and “the English translation of the book was officially withdrawn by her (due to what she claims were inaccuracies in translation)” (Elbe, 2010). It is important to note that many people within Indonesia were critical of Supari’s comments (Foster, 2009, pp. 46-49). Supari probably made her original claims because they resonated with some Indonesians who mistrusted the United States. In this sense, conspiracy theories circulated regarding influenza even before 2009 because they were a metaphor for popular doubts regarding the global health system.

### **Diseases, Doubts, and Metaphors**

To understand the 2009 H1N1 pandemic, people turned to metaphors about disease, which placed illness in a broader social context. Susan Sontag (2001; original 1978) talked about the role of metaphor in how we understand diseases, using the examples of first cancer then AIDS, based upon her own experience as a cancer patient in the 1970s. Her key point was that these metaphors can be dangerous and exacerbate the suffering of patients. Still, these narratives are also so powerful that they can shape the behavior of even medical professionals. The metaphors that emerge in narratives about epidemics often reflect underlying social and political tensions, as Andrew Galley (2009, 136) suggests was the case with Severe Acute Respiratory Syndrome in Canada in 2003: “SARS was not only an epidemiological event but also a guiding metaphor or stage upon which the latent conflicts over Toronto’s significance inside and outside of Canada were brought out and performed.” For this reason, H1N1 is best understood in a larger global context.

As Sparke and Anguelov (2012) have stressed, the H1N1 was accompanied by the same demonization of victims witnessed in other pandemics, such as the first great outbreak of syphilis (see also Karlen, pp. 124-125). Such stigmas are common to epidemics. In Haiti, during the early history of the HIV epidemic, there were immense social costs to media coverage of AIDS, even before many people became ill, because of international hysteria (Smallman, 2007, pp. 25-27). This pervasive fear undermined the nation's tourism industry and made Haitian immigrants to the U.S. the targets of extreme discrimination. One of the Haitian responses to this stigmatization was the creation of conspiracy theories in which the United States had created the virus to destroy the poor (Smallman, 2007, p. 29). Such narratives were not uncommonly associated with the disease throughout Latin America and were equally common in gay and African-American communities in the United States (Goertzel, 1994, pp. 731-32, 740). While conducting fieldwork with people living with HIV, doctors, sex workers, and transvestites in São Paulo, Brazil in 2005, I heard from some interviewees that the U.S. had a cure for HIV but was not releasing it in order to protect the fantastic profits gained by its pharmaceutical companies.

Similar stories circulated in other major world regions affected by HIV/AIDS. In South Africa, government officials publicly questioned whether HIV caused AIDS. Because President Mbeki did not prioritize medications for people living with HIV during his administration (1999 to 2008), critics have suggested that many people died needlessly. According to one 2008 study, the South African government's rejection of HIV medications may have led to over 300,000 premature deaths (Boseley, 2008). In other diseases, a lack of confidence both in science and health authorities has led to disastrous consequences.

At the time of writing, the World Health Organization has recently issued a travel advisory for Pakistan, which is suffering from a significant outbreak of polio. Part of the reason that the epidemic has become so severe is that Islamists have been targeting and killing health workers, based on conspiracy theories that depict vaccines as Western tools to sterilize Muslims. These fears were fanned by the CIA's use of a Pakistani doctor to collect DNA from Osama Bin Laden's compound in order to confirm his identity. The CIA has since declared that it will no longer use health care workers as a cover. This particular case illustrates how issues of medicine become tied to questions of trust in the broader context of neo-colonial power relationships. Polio is currently increasing not only in Pakistan but also in northern Nigeria, partly because of conspiracy theories among local Islamic leaders, who denounce vaccination.

Lack of trust has also undermined recent efforts to fight an Ebola epidemic. In 2013, an outbreak of Ebola began in Guinea, which then spread to neighboring Liberia and Sierra Leone in March 2014. By September 2014, the number of infections was increasing rapidly, and large numbers of health workers had fallen ill. Part of the reason that the disease spread quite quickly was that people denied the existence of the virus. For example, in August 2014, a crowd of men overran an Ebola clinic in Monrovia, Liberia, after which 17 patients disappeared. All had tested positive for the virus. People shouted, "There is no Ebola" as they stormed the facility (Zoker & Chen, 2014). Armed men even stole a bloody mattress (Zoker & Chen, 2014). What this case emphasized was the depth to which people mistrusted official explanations of the disease. Liberia was not unique. In January 2015, a BBC film crew interviewed people in Guinea, where people said that Ebola was a myth created by Western doctors so that people would buy their medicine (Diané, 2015).

At the time of this writing, the West African Ebola outbreak that began in 2013 may be waning, but conspiracy theories continue to undermine efforts to fight the virus:



Now, the United States is helping to lead a large study of two vaccines against Ebola. But as researchers try to compress a clinical process that can take a decade into a fraction of the time, they are confronting a volatile mix of skepticism, fear, false rumor, and understandable mistrust that helped to spread Ebola in the first place. ‘When we look at Ebola, it came from America,’ said Sylvester George, expressing doubts about the clinical trials at an information session. ‘It’s a man-made virus. So why didn’t they do this trial in America, but they decide to come and do it in Liberia?’ (Onishi & Fink, 2015)

Even after a massive, global effort to control the virus, local peoples in Liberia question the integrity of the health care workers sent to help them. One obstacle to the vaccine trial was the rumor that “Ebola vaccines were being slipped into children’s immunizations” (Onishi & Fink, 2015). People also believed that the government exaggerated the outbreak’s seriousness to attract international funding; other people stated that authorities were deliberately “infecting citizens with Ebola to squeeze money out of donors” (Onishi & Fink, 2015). These narratives reflected global power relations and capitalism in the same manner as other narratives circulating during different epidemics.

### **Neocolonialism and Health Inequities**

Medicine has long been shaped by concerns about colonial (and neo-colonial) relationships, which was articulated as early as 1965 by Franz Fanon (Fanon, 1965, pp. 121-146). In *A Dying Colonialism*, Fanon argued that colonial societies have always looked to the medical establishment with ambivalence. At the core of this problem, Fanon suggested, was the question of trust (Fanon, 1965, pp. 121-123, 127). Medical advice was not apolitical because “the doctor always appears as a link in the colonialist network, as a spokesman for the occupying power” (Fanon, 1965, p. 131). Fanon, however, was writing in an explicitly colonial environment, in which colonial authorities sought to use medicine as a means to justify their authority. How have these relationships and tensions evolved as formal means of political control ended, only to be replaced by the financial architecture of Bretton Woods, and the global governance of International Health Regulations?

Neo-Marxists and Postcolonial theorists have argued that the global governance structures around global health and the role of major industries in health policy decision-making entail neocolonial relationships (Braveman, 2001, pp. 160-161). For example, wealthy nations have signed advance contracts that give them the right to purchase the first vaccines and medicines during an influenza epidemic. With the emergence of 2009 pandemic, rich countries activated these pre-existing contracts with major vaccine manufacturers, while the same manufacturers refused to take orders from poorer but more populous countries, claiming that they lacked the capacity to do so. As Marcel Verweij (2009, pp. 207-209) has noted, nations such as the Australia, Canada, and the Netherlands could receive vaccine, while the WHO was only able to ask these nations to share excess vaccine with developing countries. Countries such as Mexico resented being unable to access needed vaccines and medicines in a timely fashion. For nations affected by H1N1, it was difficult not to conclude that “despite warm words and pledges, efforts to engage the international community to ensure equitable sharing of limited resources such as antivirals and vaccines fell short, and stockpiles remained in the rich world” (Fisher et al., 2011, p. 876) What infuriated the most affected countries was that no system existed to match needs to resources. From the perspective of affected nations, it was not only that their

countries did not have the resources to purchase the required resources but also that the “shortages of these antivirals and vaccines were exacerbated by the hoarding of wealthy countries, where stockpiles of drug were underutilized, and vaccines were returned and orders cancelled” (Fisher et al., 2011, p. 879). This context may have shaped some of the breakdown in global trust in the World Health Organization’s independence, while also encouraging the perception that pharmaceutical companies were profiteering. In this sense, narratives about the epidemic reflected real concerns about global equity, which were often reflected in metaphors about capitalism and globalization.

### Conclusion

Every pandemic undermines the bonds of trust that unite people with their national governments and health authorities. During a crisis, how do you know whom you can trust? With the outbreak of H1N1 in 2009, people began to create narratives about the virus, which reflected their fears not only of the disease but also their mistrust of authorities. Through these narratives, the virus became “fetishized”; that is, it became a symbol for larger systems of social, political, and economic relationships (Taussig, 1983). At the core of these narratives was the question of trust, which often entailed conspiracy theories. Some of these narratives can be situated within a post-colonial perspective because many poorer countries shared fears that the global health architecture served the interests of wealthy nations. As the experience of Indonesia in 2007 illustrates, these stories existed around influenza before the H1N1 pandemic. These narratives not only pitted people the developing world against wealthy countries, but they also highlighted common concerns about capitalism in diverse world regions.

Globally, people in both wealthy and less-developed countries lacked trust in what they depicted as transnational elites, who might make decisions about the bodies and health of citizens in poorer nations based on the financial interests of wealthy nations. People in Switzerland had serious doubts about the integrity of pharmaceutical companies, while in Britain people wondered if industry interests had captured the WHO. In Mexico, people questioned whether they could trust their government to convey accurate information even if it harmed the pork industry, while in the U.S. people wondered whether their doctors might push vaccines for financial motives. How could people know that authorities would make decisions in citizens’ interests in the face of economic or political pressures? These concerns had policy implications, as the WHO learned, in everything from the structure of viral sample sharing to the need for transparency in decision making. All these narratives reflected peoples’ fears, which were common to diverse epidemics such as HIV, polio, and Ebola. The common fear among all pandemics is that elites make decisions about the most personal of spaces, the body, based on their own interests rather than in the interest of public health.

### Notes

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<sup>2</sup> This timeline draws on media coverage of the pandemic, particularly from *Al Jazeera English*. For a timeline of viral sequence events associated with the virus see GJD Smith et al. (2009) *Nature* 459, 1122-1125, doi:10.1038/nature08182; the World Health Organization also published

an animated outbreak map online that describes the spread of the virus. See [http://www.who.int/csr/don/2010\\_08\\_20/en/](http://www.who.int/csr/don/2010_08_20/en/) See also Jones 2009.

<sup>3</sup> See the article “UN says the Egypt pig cull real mistake.” *Al Jazeera English*, <http://www.aljazeera.com/news/middleeast/2009/04/200942923217637747.html>

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