

Department of Defense  
Biological Threat Responses to the 2009-2010  
H1N1 Influenza Outbreak:

*A Real World Exercise*

*By*

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## **Disclaimer**

The views expressed in this publication are those of the author and do not reflect the official policy or position of the U.S. Government, Department of Defense, or the USAF Counterproliferation Center.

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**Department of Defense Biological Threat Responses to  
the 2009-2010 H1N1 Influenza Outbreak:  
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“One of our greatest concerns continues to be that a terrorist group or some other dangerous group might acquire and employ biological agents... to create casualties greater than September 11.”

Director of National Intelligence Michael McConnell, Commission on the Prevention of WMD Proliferation and Terrorism, World at Risk, Dec. 2008

In June 1993 a doomsday cult known as Aum Shinrikyo sprayed an aerosolized form of *Bacillus anthracis* (anthrax) from the roof of its suburban-Tokyo headquarters. Health officials became aware of this event following “numerous public complaints concerning odors emanating from the building.”<sup>1</sup> Several animals in the vicinity fell ill, but no people were seriously harmed. This incident was largely ignored until two years later when the same group conducted a sarin nerve gas attack on the Tokyo subway system, killing 13 people and injuring hundreds. In retrospect, Aum Shinrikyo’s intentional dispersal of anthrax marked a turning point in bioterrorism. Though the strain of anthrax used in the failed attack “had little possibility for endangering human life,”<sup>2</sup> this event highlighted the threat of biological agents used as weapons of mass destruction (WMD).<sup>3</sup>



In 2001 in the United States, the threat of bioterrorism once again emerged as letters containing anthrax spores were mailed to two U.S. Senate offices and several news agencies. In what became the most lethal biological attack in U.S. history, five people were killed, and dozens more were injured.<sup>4</sup> Though these incidents may seem isolated, national security experts agree that it is merely a matter of time before a terrorist group or rogue state conducts biological warfare against the United States. Numerous congressional and academic studies have predicted that terrorists will use a biological WMD within the next several years.<sup>5</sup> In fact, *World at Risk*, a 2008 publication by the bi-partisan U.S. Congressional Commission on the Prevention of WMD Proliferation and Terrorism, concluded, “Unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013.”<sup>6</sup> The Commission’s report specifically focused on nuclear and biological weapons, labeling these threats as the ones posing the “greatest peril.”<sup>7</sup> This case study examines the biological threat that H1N1 posed to the U.S. and highlights DoD’s WMD-related preparations, including force health protection and medical countermeasures, in the

midst of a pandemic disease outbreak. The 2009-2010 worldwide H1N1 influenza outbreak provided the DoD an opportunity to exercise disease containment planning measures and address BW response mechanisms while responding to a real-world biological event.

### **Natural vs. Deliberate Disease Spread**

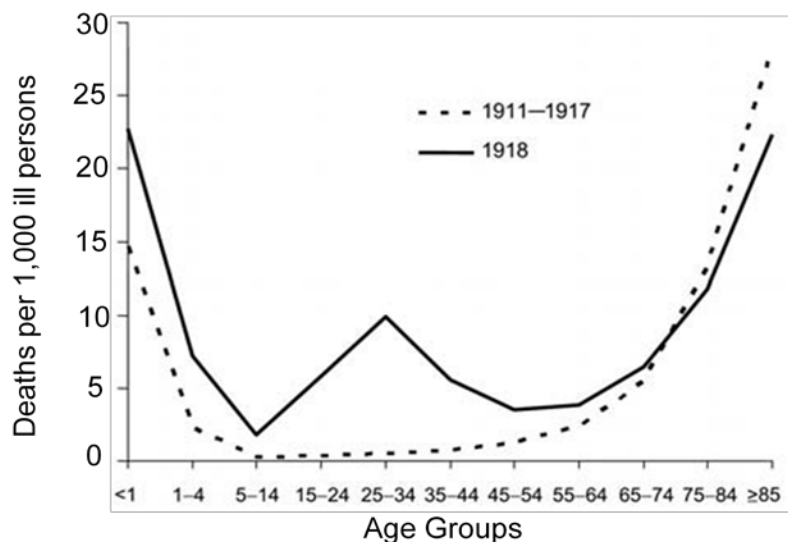
Beginning in April 2009 with the outbreak and rapid spread of the H1N1 “swine flu,” the world witnessed the potential effects of a bioterrorist attack. While the 2009-2010 H1N1 pandemic was a naturally-occurring disease outbreak and *not* a deliberate attack, the symptoms, infection rates and response mechanisms associated with the virus could be similar to the impacts of a deliberate attack employing a contagious biological agent. Unlike nuclear or chemical weapons that have clearly identifiable signatures, biological agents may be disseminated covertly, and therefore they may not be identified immediately. The first indication of a biological event could be more numerous-than-expected hospital visits in a particular location, or in a group of people who were in the same location at the same time. Whether natural or deliberate, biological outbreaks will have similar impacts on employee absenteeism, school and work closures, the availability and distribution of medical and non-

medical countermeasures, and mortality rates. While influenza is not a viable biological warfare (BW) agent,<sup>8</sup> the H1N1 outbreak provided the U.S. Government and the Military Services an opportunity to identify and assess valuable lessons learned that can be applied in the event of a deliberate BW attack. It also can provide insight into how to improve DoD responses to future WMD attacks.

### **Background – Public Health and National Security Considerations**

Since at least 2004, several U.S. Government agencies including the Department of Agriculture, the Department of Health and Human Services (HHS), and the FBI have initiated efforts to prevent and mitigate the risks associated with biological WMD. In order to sustain operations and protect national security, the DoD has a significant role in bioterrorism prevention and mitigation. The DoD must be aware of and prepare for terrorist use of BW, including both non-contagious pathogens such as anthrax and contagious pathogens such as smallpox. During the 2009-2010 worldwide H1N1 influenza outbreak, the DoD was able to practice bioterrorism response mechanisms in a high-stakes, real-world exercise.

Though the particular strain of influenza is novel, the H1N1 outbreak did not represent a new biological threat to the U.S. On the contrary, the world periodically experiences severe influenza pandemics that threaten significant illness and mortality rates. There were three such pandemics during the 20th century, with each one producing varying degrees of infection and mortality rates.<sup>9</sup> The 1918-1919 “Spanish flu” was by far the most lethal, killing between 20 and 50 million people and infecting more than 25 percent of the U.S. population.<sup>10</sup> The Spanish flu primarily affected adults rather than the young or the elderly.<sup>11</sup>



**Figure 1. The impact of the 1918 Spanish flu pandemic was greater in young adults than in the more typical age extremes seen in seasonal flu.<sup>12</sup>**

The Spanish flu, which coincided with the final years of World War I, swiftly became the real enemy as it killed more U.S. servicemen in Europe than did combat action in the Great War.<sup>13</sup> For the young men who lived in close quarters and faced extreme pressure, the Spanish flu had a tremendous impact on military operations. Military hospitals were quickly overwhelmed with flu patients and treatment options were extremely limited, consisting mainly of quarantines.<sup>14</sup>

Josie Brown, a nurse stationed at a Naval Hospital in Great Lakes, Ill., in 1918, described the scene at her hospital:

The morgues were packed almost to the ceiling with bodies stacked one on top of another. The morticians worked day and night. You could never turn around without seeing a big red truck loaded with caskets for the train station so bodies could be sent home.

We didn't have the time to treat them. We didn't take temperatures; we didn't even have time to take blood pressure.

We would give them a little hot whisky toddy; that's about all we had time to do.<sup>15</sup>

The Spanish flu demonstrated how disastrous a biological epidemic can be for military forces—a fact just as true today as it was in

1918. Throughout the planning and operations in response to a biological event, “force health protection remains a primary focus...regardless of whether the virus was natural, accidental or of deliberate origin.”<sup>16</sup> If an outbreak were determined to be a deliberate act of war, it will be particularly important for U.S. military forces to maintain operational capability and accomplish their assigned missions. As noted in the 2006 Government Accountability Office report on DoD infectious disease planning: “An influenza pandemic would be of global and national significance and could affect large numbers of Department of Defense (DoD) personnel, seriously challenging DoD's readiness.”<sup>17</sup>

Prior to the 2009 H1N1 outbreak, the DoD recognized the need to conduct deliberate planning and implemented a variety of strategies to mitigate and protect military personnel against infectious diseases. On Aug. 15, 2006, Defense Secretary Donald Rumsfeld designated the United States Northern Command (USNORTHCOM) the “global synchronizer” for pandemic influenza (PI) planning.<sup>18</sup> By October 2007, USNORTHCOM drafted and implemented CONPLAN 3551, *Concept Plan to Synchronize DoD PI Planning*. CONPLAN 3551 addresses DoD-level planning and operating considerations and directs the Services to

create PI mitigation plans. The DoD relied heavily on the CONPLAN 3551 PI planning infrastructure both in the years leading up to and during the 2009-2010 H1N1 outbreak. Using lessons learned from the H1N1 pandemic, the DoD continues to improve its BW and infectious disease response policies, plans and procedures.

### **The Start of a Global Pandemic**

On April 26, 2009, the United States and Mexico both reported an unusual number of influenza cases (20 cases in the U.S., 18 in Mexico) outside of the normal flu season (October to March in the Northern hemisphere). Laboratory test showed that the influenza strain responsible for these illnesses had not been previously observed in humans. The virus spread rapidly, largely due to high volumes of global air travel (illustrated in Figure 2). By April 27, 2009—only one day after the first cases were identified—73 cases of H1N1 influenza in four countries, along with seven deaths had been reported.



**Figure 2. Spread of the 2009 H1N1 influenza strain was expedited by air travel.<sup>19</sup>**

The virus quickly gained the attention of world leaders and international health organizations. On April 27, speaking at the National Academy of Sciences’ annual meeting, U.S. President Barack Obama declared, “We are closely monitoring the emerging cases of swine flu in the United States. And this is obviously a cause for concern and requires a heightened state of alert.”<sup>20</sup> On the same day, the DoD announced that it was “monitoring the H1N1 flu situation closely, with its primary focus on protecting the military population.”<sup>21</sup> A Pentagon official said, “We certainly have a number of contingency plans for dealing with health incidences like this, because our primary goal is preservation of the fighting force.”<sup>22</sup> As part of previous infectious disease outbreak planning, military treatment facilities already stocked prescription



anti-viral drugs Relenza and Tamiflu, with larger stockpiles spread across the U.S. and overseas.<sup>23</sup>

By April 29, the World Health Organization (WHO) declared the H1N1 outbreak a level five (out of six) pandemic, meaning the virus had spread between humans in at least two countries.<sup>24</sup> Accordingly, WHO Director-General Dr. Margaret Chan recommended, “All countries should immediately activate their pandemic preparedness plans. Countries should remain on high alert for unusual outbreaks of influenza-like illness and severe pneumonia.”<sup>25</sup> Though the DoD remained at Phase 0, the Services and Combatant Commands began implementing many of their CONPLAN 3551-directed preparedness plans (see WHO vs. DoD Phases, below). At that time, Dr. Michael Kilpatrick, the Military Health System’s director of strategic communications, said, “We have been preparing for a situation like this for more than five years and have plans, processes and procedures to respond to a pandemic incident.”<sup>26</sup> Lt Col (Dr.) Wayne Hachey, director of preventative medicine for defense department health affairs, added, “We have been preparing for pandemic flu because of its potential impact on the mission.”<sup>27</sup>

### **WHO vs. DoD Phases**

“The main difference between the WHO Phase levels and DoD Phase levels is that the DoD Phase levels are driven by 3 factors: Operational, Efficiency of Virus Transmission, and Geographic distribution. All three are taken into consideration by the Secretary of Defense before any phase is raised or lowered. The WHO Phase levels are driven primarily by Efficiency of Viral Transmission.”

“Pandemic Influenza Phases.” Pandemic Influenza Watchboard, 3 Jun. 2010. <http://fhp.osd.mil/aiWatchboard/pandemicflu.jsp>

The Department of Defense, though geographically deployed, is primarily organized with respect to mission. The DoD phases do not necessarily correspond to those of the WHO. USNORTHCOM, as global synchronizer of PI planning, enacted its own phases to coincide with CONPLAN 3551 actions. USNORTHCOM initiated Phase 1 in August 2009, and remained at a Phase 1 throughout the crisis.

### **A Novel Influenza Strain**

On April 30, only four days after the start of the outbreak, the United States experienced its first H1N1-related death, and by the beginning of May the disease had spread to 21 states.<sup>28</sup> As influenza continued to spread across the country and around the globe, health experts were concerned by the fact that H1N1 was a novel strain to which people had no immunity. Even in the worst flu seasons, pandemics rarely occur because a large percentage of the population already has some

immunity to the influenza strain in circulation.<sup>29</sup> H1N1, however, developed as a combination of the swine and avian influenzas and had not previously infected humans.<sup>30</sup>

In addition to the natural protection many people have against the seasonal flu, vaccines can guard against infection and can mitigate the spread of the disease. As the human-to-human H1N1 infections spread, scientists looked to an H1N1 vaccine as a possible mitigation measure. Experts from the WHO convened in May 2009 to determine the necessity and feasibility of developing a vaccine separate from the seasonal flu variety. On May 14, however, the organization was unable to decide on vaccine production recommendations, calling the issue “enormously complicated.”<sup>31</sup> One of the complicating factors in producing an H1N1 vaccine was the timing of the outbreak. The time between when a new virus is first identified and when a vaccine is released to the military or the public is generally at least five or six months.<sup>32</sup> The question was whether the pandemic would already be over by the time manufacturers could produce a vaccine.

## **Fighting Back: Vaccine Development Begins**

For the DoD, preventing proliferation of the disease and maintaining force health protection were guiding principles in dictating the department's response. Anti-viral medications Tamiflu and Relenza were proving somewhat effective in lessening the duration and severity of the symptoms associated with H1N1, but the medicines were not intended to prevent infection like a vaccine. Additionally, the DoD's anti-viral supplies were far too limited to cover the entire force, which by its very nature is "more vulnerable than most to the spread of disease... [because they] live together, eat together in mess halls, sleep together in barracks and bunk together by the thousands aboard ships."<sup>33</sup> Furthermore, if the anti-viral supply was too limited to protect the force, what was to be done to protect DoD civilian employees, contractors and military dependents?

With the WHO unable to reach a conclusion about whether to recommend H1N1 vaccine development, the DoD and other U.S. government agencies developed a strategy to respond to this biological threat. On May 22, in order to support health protection measures, HHS allocated \$1 billion to vaccine research and development.<sup>34</sup> Bruce Gellin, director of the National Vaccine Program Office within HHS explained,

“HHS is committed to protecting the health and safety of American citizens from CBRN [chemical, biological, radiological and nuclear] threats. Along with our colleagues at DoD, HHS is committed to a full examination and discussion of all viable options for the manufacture of vaccines and other medical countermeasures against identified threats.”<sup>35</sup>

On June 11, just seven weeks after the first H1N1 cases were reported, with more than 17,400 people in 62 countries infected with the virus, the WHO declared the outbreak a Phase 6 pandemic.<sup>36</sup> Vaccine research moved quickly after the WHO’s decision to elevate the pandemic alert to Phase 6. Over the next two days, the CDC released vaccine guidance and HHS pledged an additional \$1 billion for vaccine research. Yet, with the Food and Drug Administration (FDA) following the rigorous seasonal flu research and development timeline, an H1N1 vaccine would not be available to the public or the military until the fall of 2009.

## The H1N1 Disease Profile

As the number of confirmed cases rose, the Centers for Disease Control and Prevention (CDC) reported unusual trends involving young patients, with higher H1N1-related hospitalizations occurring among the 5-24 year-old-age group.<sup>I</sup> During the typical flu season, the elderly and the very young<sup>II</sup> are usually the most affected, in terms of both hospitalization and mortality rates. H1N1, however, targeted a different age group. The median age for H1N1 cases in the U.S. was 20 years old,<sup>II</sup> and 75 percent of H1N1 infections worldwide involved those under 30 years of age.<sup>IV</sup>

The significance of the H1N1 disease profile extends to the DoD, as more than 66 percent of active duty military personnel are under the age of 30.<sup>V</sup>

Service	18-21	22-30	31-40	41-50	51-59	Average Age
Army	18.3%	48%	25.6%	7.9%	0.7%	29
Navy	18.6%	46%	26.3%	8.3%	0.8%	29
Marine Corps	36.9%	46%	14%	3.1%	0.2%	25
Air Force	14.4%	46%	28.3%	10%	0.6%	30
Coast Guard	12.2%	48%	27%	12%	1%	30
Total	19.9%	47%	24.8%	8%	0.6%	28

<sup>I</sup> Schuchat, Dr. Anne, "CDC Telebriefing on Investigation of Human Cases of H1N1 Flu," Press Briefing Transcripts, May 18, 2009. Centers for Disease Control and Prevention (CDC), June 3, 2010, <http://www.cdc.gov/media/transcripts/2009/t090518.htm>.

<sup>II</sup> The CDC characterizes elderly as over 65 and very young as those under 5 years old. See <http://www.cdc.gov/flu/keyfacts.htm>.

<sup>III</sup> Kelly, Heath, et al, "H1N1 Swine Origin Influenza Infection in the United States and Europe in 2009 May be Similar to H1N1 Seasonal Influenza Infection in Two Australian States in 2007 and 2008," Influenza and Other Respiratory Viruses 3.4, (Jul 2009), pp. 183–188.

<sup>IV</sup> Butler, Declan, "Portrait of a Year-Old Pandemic," Nature, (April 22, 2010), vol. 464.

<sup>V</sup> "Active Duty Demographic Profile: Assigned Strength, Gender, Race, Marital, Education and Age Profile of Active Duty Force," Sept. 2008, Online PowerPoint, Defense Manpower Data Center, <http://www.slideshare.net/pastinson/us-military-active-duty-demographic-profile-presentation>.

### **Putting Disease Containment Plans to the Test**

DoD also responded to the H1N1 pandemic through by enacting the social distancing measures called for in USNORTHCOM CONPLAN 3551 with the goal of mitigating the spread of the disease. As early as April 2009, U.S. Pacific Command (PACOM) issued a message to U.S. forces within its area of responsibility stressing the importance of preventative measures against the virus.<sup>37</sup> The message included simple social distancing precautions, such as “staying at home when sick; covering your mouth and nose when coughing or sneezing; washing your hands regularly; avoiding touching your nose, mouth or eyes; and seeking medical care if you are ill.”<sup>38</sup>

Social distancing measures were particularly necessary at the U.S. Army’s Fort Jackson, through which more than 50,000 Initial Entry Training Soldiers pass each year and where H1N1 cases were “steadily climbing.”<sup>39</sup> According to Lt Col Marilyn Lazarz, chief of Army Public Health Nursing at Fort Jackson, “the virus is more active among BCT [Basic Combat Training] Soldiers because they live within close quarters—in barracks—and tend to share personal items.”<sup>40</sup>

Force health protection measures continued throughout the summer of 2009 while the H1N1 vaccine was under development. The Services updated and tested the USNORTHCOM-directed disease containment plans and mitigation measures, including social distancing, working from alternate locations and other non-medical countermeasures. At Fort Jackson, for example, the Army instituted social distancing through “sick-in-quarters,” an isolated area on-post for confirmed H1N1 cases, and took additional prevention measures, asking all soldiers to re-arrange their bunks to sleep head-to-toe “so that if one coughs or sneezes during the night, the other soldier is on the opposite end of the dispersion droplets.”<sup>41</sup>

These social distancing measures were essential to protecting the health of the force. According to Department of the Navy (DON) Work/Life Program Manager Karen Meyer, “40 percent of flu cases could be prevented by stopping the spread of germs.”<sup>42</sup> She further noted that “avoiding human contact by ‘social distancing’ was and remains the most effective method of minimizing the effects of the pandemic flu emergency.”<sup>43</sup> To that end, the DON practiced teleworking (working from an alternate location) and appointed telework coordinators at each of



the Navy's Major Commands. While not everyone in DON was eligible to telework—either because of the sensitive nature of the work or because of mission requirements—allowing even a portion of the Department to work remotely limited the spread of the disease.

Similarly, the Air Force used the summer months to test its disease containment plan for the National Capital Region. In August 2009, Bolling Air Force Base in Southeast Washington, DC, conducted a week-long full-scale PI exercise. The purpose of the exercise was to ensure that the base and other Air Force installations within the National Capital Region would be prepared when H1N1 returned as expected during the fall flu season. According to Col Steven Shepro, 316<sup>th</sup> Wing Commander at Andrews AFB in Landover, Md., ‘‘If you’ve been listening to the news, you’ve heard how the H1N1 can come back with a real vengeance for which we may not have the perfect remedy. This can be serious. That’s why we’re here today – come flu season, we may be at a point where we have to make tough decisions and have thresholds for those decisions. We have to be active and foresee the ‘what ifs’ in this situation.’’<sup>44</sup>

Advance preparation is the key to successfully mitigating the effects of a pandemic, whether H1N1 or some other future bio-event.

“Operations and the mission will still go on” during an outbreak, said Col Shepro, the goal is to practice disease containment plans in advance so that during a true emergency, the military will “be able to react as a team [and not] get bogged down in checklists.”<sup>45</sup>

### **DoD Plans for Fall Flu Season**

The Northern hemisphere received a much-needed respite from the H1N1 pandemic during the off-peak flu season.<sup>46</sup> However, with the fall approaching, a vaccine was needed more than ever. Worldwide, H1N1 cases jumped to more than 200,000 by August 23, and WHO Chief Dr. Margaret Chan said the speed at which the virus was spreading was “almost unheard-of.” She also noted that 40 percent of H1N1-related deaths had been in otherwise healthy young adults.<sup>47</sup> These statistics did not go unnoticed by the DoD. On August 26, “to mitigate the flu's effect on military operations,”<sup>48</sup> the Department purchased 2.7 million doses of the novel H1N1 vaccine for active military members and planned to conduct an immunization campaign beginning in October.<sup>49</sup> On August 28, in a long awaited move, USNORTHCOM raised its Pandemic Phase level from 0 to 1.

## **First Vaccines Shipped**

Vaccine distribution was still at least a month away when President Obama allocated an additional \$2.7 billion toward H1N1 prophylaxis and immunization campaigns.<sup>50</sup> Unfortunately, this did little to help Army Spc. Christopher Hogg, a 23-year-old soldier stationed at Fort Jackson. The Army base had not received doses of the vaccine when, on September 10, Spc. Hogg died of H1N1-related pneumonia. Spc. Hogg's death was the first H1N1 military death.<sup>51</sup> Manufacturers began shipping the vaccine to distribution centers less than three weeks later,<sup>52</sup> and military bases were scheduled to receive the vaccine in the first weeks of October.

When research and development began on the H1N1 vaccine, it was clear that because the H1N1 strain was novel the vaccine would need to be distinct from the seasonal one. The first 1.4 million H1N1 doses (of the 2.7 million the Pentagon ordered) were scheduled to arrive in early October for dispersal to active duty military.<sup>53</sup> The Pentagon announced that the vaccine would be mandatory for all uniformed personnel, and "highly encouraged for all others."<sup>54</sup> Active duty personnel preparing for deployment were given top priority, with troops slated for domestic disasters next on the list.<sup>55</sup> Some DoD personnel claimed that the process

for administering the H1N1 vaccine would be no more difficult than distributing the seasonal flu vaccine.<sup>56</sup> “We’ve been doing this for decades,” said Lt. Col. (Dr.) Wayne Hachey. “The system is tried and true.”<sup>57</sup> Yet others within the department were concerned about how National Guard/Reserve personnel, civilians, mission-essential contractors and dependents would receive their vaccines. Lack of DoD standardization for vaccine distribution made it potentially more difficult than the seasonal flu distribution.

Whether routine or not, to the DoD, protecting troops against the H1N1 virus was as important as providing protection against any other threat. Ellen Embrey, the acting assistant secretary of defense for health affairs, said, “[the DoD uses] other treatment modalities [such as vaccines] to protect people in the same way we use body armor to protect against other threats...The H1N1 vaccine was purchased specifically for our uniformed servicemembers so they could continue to perform their mission anywhere on the globe. And during a pandemic, that’s a real threat.”<sup>58</sup>

## **Immunization Campaigns Begin**

Initially, scientists were unsure whether the H1N1 vaccine would be administered in one dose or two. On the October 1, vaccine-production company Sanofi announced that a single dose could prevent H1N1 infection.<sup>59</sup> A study by the National Institutes for Health corroborated this conclusion.<sup>60</sup> With this new dosing guidance, the DoD's 2.7 million doses could be distributed to a larger population than originally planned. Active duty military personnel were still given top priority, but the DoD hinted the vaccine would also be available to Guard and Reserve personnel, civilians, contractors and dependents. On October 29, the DoD ordered one million additional doses of the Sanofi-produced H1N1 vaccine and announced the "vaccine is intended for DoD's non-beneficiary workforce and OCONUS DoD beneficiaries."<sup>61</sup> By the end of October, the Department further extended the vaccination umbrella by announcing that "more than enough [H1N1 vaccine] will be available for all military personnel and their beneficiaries,"<sup>62</sup> and that the DoD purchased enough to "immunize all 460,000 members of the National Guard."<sup>63</sup>

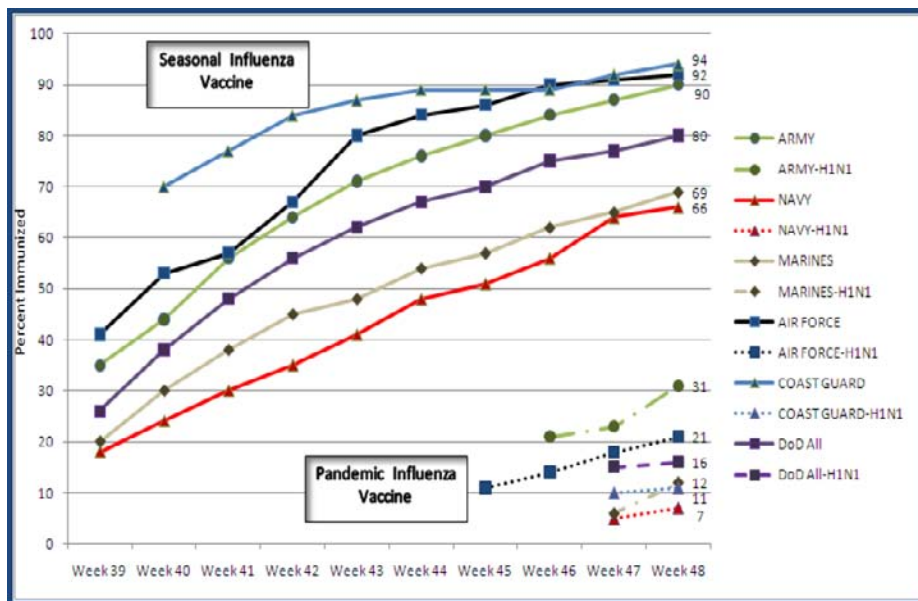
With the H1N1 vaccine beginning to arrive through distribution chains, the Services started immunizing their personnel. Some DoD

personnel received their vaccination through immunization campaigns, such as at Fort Gordon, Ga., where thousands of military members were vaccinated in one day. “Units [at Fort Gordon] were scheduled in 20- to 30-minute increments, with 60 medics administering the vaccine while more than 80 additional personnel recorded data in the [Medical Protection] computer record system or helped with other tasks.”<sup>64</sup> Others were vaccinated through Joint efforts. The National Capital Region Medical Joint Task Force (JTF CAPMED) formed three 10-person Joint vaccination teams “with a mission to go to pre-designated offsite locations to vaccinate DoD active duty and civilian DoD employees against seasonal influenza and 2009 H1N1.”<sup>65</sup> The JTF CAPMED teams visited 21 locations in the Washington, D.C. area. Air Force Pandemic Influenza policy expert Lt Col Anthony Ricci explained the JTF CAPMED teams vaccinated many DoD employees, contractors and dependents who, because of their geographic location, would not otherwise have had access to a military medical treatment facility.<sup>66</sup>

### **Declining Pandemic: A Snapshot**

On Nov. 20, 2009 the CDC reported that despite greater influenza activity than normal for that time of year, H1N1 activity in the United

States fell.<sup>67</sup> On December 8, the DoD announced, “The overall trend for influenza-like illness has decreased across the military health system (MHS),” though H1N1 “remains the predominant strain among [U.S.] Armed Forces beneficiaries across MHS.”<sup>68</sup> Though progressing more slowly than the seasonal flu vaccination process, DoD active duty personnel were being immunized (illustrated in Figure 3). The Army led the Services in percent of soldiers immunized with 31 percent by December 8; the DoD overall percentage of active duty personnel was 16 percent.<sup>69</sup>



**Figure 3. Seasonal and Pandemic Influenza Active Component Vaccine Coverage as of Dec. 8, 2009<sup>70</sup>**

By the end of December 2009, researchers analyzing flu test results confirmed the swine flu pandemic reached its first peak in April of that year with a second peak in October 2009.<sup>71</sup> Vaccination campaigns continued into 2010 with the annual “National Influenza Vaccination Week” sponsored by HHS and CDC.<sup>72</sup> CDC Director Thomas R. Frieden, emphasized, “[t]he window of opportunity to get the H1N1 vaccine is still open...[as] we do know that the H1N1 vaccine is the best way to protect yourself.”<sup>73</sup>

By March 2010 the Armed Forces Health Surveillance Center reported only two active duty servicemen died from H1N1—a number that remained unchanged since January 2010.<sup>74</sup> Despite a decline in H1N1 activity, each Service maintained monthly influenza activity reporting and moved forward with H1N1 immunization efforts.<sup>75</sup> The DoD sought to achieve 99 percent vaccination compliance for all active duty military members, after which the Joint Staff would allow reporting activities to cease.<sup>76</sup> By the end of March, H1N1 immunization coverage for each Service was above 80 percent.<sup>77</sup> The Army and the Air Force were in the lead with 94 percent H1N1 immunization, followed by the Coast Guard (93 percent) and the Navy and Marines (each 82 percent).<sup>78</sup>



In late April the WHO's weekly pandemic updates reported an overall decline in H1N1 activity across the globe.<sup>79</sup> As the one-year anniversary of the first H1N1 cases approached, outreach for immunization continued for the Services.<sup>80</sup>

In April 2010, the Army's efforts to complete mass immunization resulted in "95 percent complian[ce] with the vice chief of staff's directive that all units be immunized."<sup>81</sup> An April AFHSC Influenza Surveillance Summary reported that the Army, Air Force and Coast Guard had achieved 95 percent H1N1 immunization coverage. The Navy had reached 84 percent H1N1 vaccination compliance, followed by the Marines at 83 percent.<sup>82</sup>

While the H1N1 pandemic was not the result of a deliberate biological attack, the threat the virus presented prompted the DoD to implement a range of force health protection measures, focusing efforts on social distancing and vaccination campaigns. The pandemic provided the DoD an opportunity to exercise disease containment planning measures and address BW response mechanisms.

From experience gained during the H1N1 pandemic, the Air Force's Lt Col Ricci said the DoD is "absolutely" in a better position if

another pandemic or biological threat occurs.<sup>83</sup> Referring to the review of disease containment plans and procedures, he said, “Changes are improvements. Procedures we wrote for the [Headquarters Air Force] didn’t exist before. We’re definitely in a better position than we were [before the H1N1 Pandemic].”<sup>84</sup>

**The Pandemic Today:**

“Worldwide, pandemic influenza activity has remained low over the past few months, and there has been little evidence of outbreaks outside the normal influenza ..”

As of August 2010, the WHO maintains a Phase 6 pandemic alert level and will apply information from the Southern hemisphere’s winter flu season to reassess this decision.

World Health Organization Pandemic Influenza Briefing Note 22.  
July 21 2010.

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- <sup>1</sup> Keim, Paul, et al. "Molecular Investigation of the Aum Shinrikyo Anthrax Release in Kameido, Japan." Journal of Clinical Microbiology 39.12 (2001).
- <sup>2</sup> Ibid
- <sup>3</sup> Takahashi Hiroshi, et al. "Bacillus Anthracis Incident, Kameido, Tokyo, 1993." Emerging Infectious Diseases Journal 10.1 (2004).
- <sup>4</sup> Amerithrax Investigation. Federal Bureau of Investigation. 19 May 2010 <<http://www.fbi.gov/anthrax/amerithraxlinks.htm>>. Though the infamous Rajneeshee salmonella attack in Oregon in 1984 sickened more than 750 people, it did not cause any deaths. For more information on the Ranjansee attack, see Miller, Judith, Stephen Engelberg, and William Broad. Germs: Biological Weapons and America's Secret War. New York: Touchstone, 2002.
- <sup>5</sup> United States. Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism. Prevention of WMD Proliferation and Terrorism Report Card. By Bob Graham, and Jim Talent. Jan. 2010. 26 May 10 <<http://www.preventwmd.gov/static/docs/report-card.pdf>>.
- <sup>6</sup> The December 2008 Report of the Commission on the Prevention of WMD Proliferation and Terrorism (World at Risk) details the findings of a bipartisan expert committee on nuclear and biological WMD threats. See Graham, Allison, et al. World At Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism. New York: Vintage Books, 2008.
- <sup>7</sup> Ibid
- <sup>8</sup> Influenza is not a viable BW agent, for a number of reasons. In terms of virulence, most strains of influenza are not as highly lethal or incapacitating as other BW pathogen candidates. Its genetic structure is unstable—this is why influenza strains change seasonally, requiring the development of new vaccines. This instability can also have unintended consequences—a weaponized strain might recombine with other influenza viruses, or adapt in other ways that make it a risk to the perpetrator.
- <sup>9</sup> The three pandemics are: 1918-1919; 1957; and 1968-1969 influenzas. Flu Pandemics. U.S. Dept. of Health and Human Services. 25 May 2010 <<http://pandemicflu.gov/individualfamily/about/pandemic/>>.
- <sup>10</sup> The Deadly Virus: Influenza Epidemic of 1918. National Archives and Records Administration. 9 Jun. 2010 <<http://www.archives.gov/exhibits/influenza-epidemic/>>.
- <sup>11</sup> Influenza of 1918 (Spanish Flu) and the US Navy. Navy Dept. Library. 8 Jun. 2010 <[http://www.history.navy.mil/library/online/influenza\\_main.htm](http://www.history.navy.mil/library/online/influenza_main.htm)>.
- <sup>12</sup> Oxford, JS, et al. "World War I May Have Allowed the Emergence of "Spanish" Influenza." Lancet Infectious Diseases 2:2 (2002): 111-114.
- <sup>13</sup> Billings, Molly. The Influenza Pandemic of 1918. Feb. 2005. Stanford University. 25 May 10 <<http://virus.stanford.edu/uda/>>

- 
- <sup>14</sup> Influenza of 1918 (Spanish Flu) and the US Navy. 17 Feb. 2006. Navy Department Library. 8 Jun. 2010.  
<[http://www.history.navy.mil/library/online/influenza\\_main.htm](http://www.history.navy.mil/library/online/influenza_main.htm)>.
- <sup>15</sup> Ibid
- <sup>16</sup> United States. Joint Chiefs of Staff. Joint Publication 3-41, Chemical, Biological, Radiological or Nuclear Consequence Management (Draft). Washington D.C., 2010.
- <sup>17</sup> United States. Government Accountability Office. Influenza Pandemic: DOD Has Taken Important Actions to Prepare, but Accountability, Funding, and Communications Need to be Clearer and Focused Departmentwide. Washington D.C., 2006.
- <sup>18</sup> United States. U.S. Northern Command. NORAD and USNORTHCOM Public Affairs. USNORTHCOM Contributes Pandemic Flu Contingency Planning Expertise to Trilateral Workshop. By Sgt. 1st Class Gail Braymen. 14 Apr. 2004. 25 May 10 <<http://www.northcom.mil/news/2008/041408.html>>.  
See also, United States. U.S. Northern Command. US NORTHERN COMMAND Protecting and Defending America 2002-2008. 8 Jun. 2010.  
<[http://www.northcom.mil/about/history\\_education/usnc%20key%20event%20chron%202002-2008.pdf](http://www.northcom.mil/about/history_education/usnc%20key%20event%20chron%202002-2008.pdf)>.
- <sup>19</sup> Colizzi, Vittoria. "People Interact. They travel. And Diseases Might Travel with Them." Airneth Column Sep. 2009. 15 Apr. 2010.  
<<http://www.airneth.com/index.php/columns/people-interact-they-travel-and-diseases-might-travel-with-them.html>>.
- <sup>20</sup> Obama, U.S. President Barack. "The Necessity of Science." Speaking at the National Academy of Sciences. 27 Apr. 2009. 22 Jul. 2010 <<http://www.whitehouse.gov/blog/09/04/27/The-Necessity-of-Science/>>.
- <sup>21</sup> Miles, Donna. "Military Monitors H1N1 Flu With Focus on Protecting Force." American Forces Press Service on the Web 27 Apr. 2009. 2 Jun. 2010 <<http://www.defense.gov/news/newsarticle.aspx?id=54088>>.
- <sup>22</sup> Ibid
- <sup>23</sup> Miles, Donna. "Military Monitors H1N1 Flu With Focus on Protecting Force." American Forces Press Service on the Web 27 Apr. 2009. 2 Jun. 2010 <<http://www.defense.gov/news/newsarticle.aspx?id=54088>>.
- <sup>24</sup> WHO pandemic influenza phases are as follows: **Phase 1:** no viruses circulating among animals have been reported to cause infections in humans. **Phase 2:** an influenza virus in domesticated or wild animals emerges as a human-infection threat. **Phase 3:** limited incidents of animal-to-human disease spread due to combination (reassortant) of the new virus with another viral strain. **Phase 4:** larger numbers of human-to-human disease transmission are confirmed within a community. **Phase 5:** human-to-human spread of the virus into at least two countries in one WHO region has occurred. **Phase 6:** global pandemic;

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- community-level outbreaks in at least one other country in a different WHO region. For more information see  
<[http://www.who.int/csr/disease/avian\\_influenza/phase/en/index.html](http://www.who.int/csr/disease/avian_influenza/phase/en/index.html)>.
- <sup>25</sup> Chen, Dr. Margaret. "Influenza A(H1N1)." World Health Organization. 29 Apr. 2009. 8 Jun. 2010  
<[http://www.who.int/mediacentre/news/statements/2009/h1n1\\_20090429/en/print.html](http://www.who.int/mediacentre/news/statements/2009/h1n1_20090429/en/print.html)>.
- <sup>26</sup> Gilmore, Gerry J. "Military Continues to Monitor H1N1 Flu Virus's Path." American Forces Press Service on the Web 6 May 2009. 2 Jun. 2010  
<<http://www.defense.gov/news/newsarticle.aspx?id=54228>>.
- <sup>27</sup> Garamone, Jim. "Defense Department to Start H1N1 Flu Vaccinations." American Forces Press Service 1 Sep. 2009. 2 Jun. 2010  
<<http://www.af.mil/news/story.asp?id=123165987>>.
- <sup>28</sup> "Cautious Optimism on Flu but U.S. 'Not Out of Woods'". Associated Press 3 May 2009. 9 Jun. 2010.  
<<http://www.philstar.com/Article.aspx?articleId=464022&publicationSubCategoryId=200>>.
- <sup>29</sup> Although the virus mutates from year to year, it typically remains in the same general family of strains (such as influenza B viruses).
- <sup>30</sup> Port, Tami. "Difference Between the New H1N1 and Seasonal Flu." Associated Content from Yahoo! 6 Aug. 2009. 8 Jun. 2010  
<[http://www.associatedcontent.com/article/2029750/difference\\_between\\_the\\_new\\_h1n1\\_and.html](http://www.associatedcontent.com/article/2029750/difference_between_the_new_h1n1_and.html)>
- <sup>31</sup> "WHO: No Decision Yet on H1N1 Vaccine Production." Center for Infectious Disease Research & Policy. (May 14, 2009), University of Minnesota, [http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news\\_scan/index.html](http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news_scan/index.html), (June 8, 2010).
- <sup>32</sup> Once a new strain is identified, WHO collaborating centers like the U.S. Federal Drug Administration (FDA) prepare reagents to test the vaccine. Manufacturers then begin producing the vaccine and performing quality control tests. For some vaccines clinical trials are required before being released to the public. Once the vaccine is determined safe and effective, regulatory agencies review the research and release the product. For a graphical depiction of the vaccine process, see "Pandemic Influenza Vaccine Manufacturing Process and Timeline," Global Alert and Response, (Aug. 6, 2009), World Health Organization, [http://www.who.int/csr/disease/swineflu/notes/h1n1\\_vaccine\\_20090806/en/index.html](http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090806/en/index.html), (June 8, 2010).
- <sup>33</sup> Baldor, Lolita C. "H1N1 Outbreak Reveals Military Pandemic Plans, Gaps." The Associated Press 20 May 2009. 8 Jun. 2010. <<http://www.ems1.com/ems-news/498003-h1n1-outbreak-reveals-military-pandemic-plans-gaps/>>.

- 
- <sup>34</sup> “HHS Funnel \$1 Billion Toward Vaccine for Novel H1N1 Flu”. Center for Infectious Disease Research & Policy. May 22, 2009. University of Minnesota. 9 Jun. 2010. <[http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news\\_scan/index.html](http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news_scan/index.html)>.
- <sup>35</sup> Gellin, Bruce M.D., M.P.H. United States. Cong. Senate. Committee on Appropriations, Health and Human Services, Education, and Related Agencies Subcommittee on Labor. *Manufacturing Medical Countermeasures for Chemical, Biological, Radiological and Nuclear Threats: The Role of HHS* 21 Aug. 2009.
- <sup>36</sup> “Influenza A(H1N1) - Update 42.” World Health Organization. 1 Jun. 2009. 9 Jun. 2010. <[http://www.who.int/csr/don/2009\\_06\\_01a/en/index.html](http://www.who.int/csr/don/2009_06_01a/en/index.html)>. and “World Now at the Start of 2009 Influenza Pandemic.” World Health Organization. 11 Jun. 2009. 9 Jun. 2010. <[http://www.who.int/mediacentre/news/statements/2009/h1n1\\_pandemic\\_phase6\\_20090611/en/index.html](http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html)>.
- <sup>37</sup> “PACOM Encourages Preventive Measures Against H1N1 Influenza Virus.” United States Pacific Command. 28 Apr. 2009. 10 Jun. 2010. <[http://www.pacom.mil/web/site\\_pages/media/pr007-09.shtml](http://www.pacom.mil/web/site_pages/media/pr007-09.shtml)>.
- <sup>38</sup> “Preventive Measures Encouraged in Response to H1N1 Outbreak.” United States Pacific Command. 28 Apr. 2009. 10 Jun. 2010. <<http://us-pacific-command.blogspot.com/2009/04/preventive-measures-encouraged-in.html>>.
- <sup>39</sup> Fulton, Delaware. “Flu Cases Rise: H1N1 Cases Concentrated Among BCT Soldiers.” Fort Jackson Leader 23 Jul. 2009. 3 Jun. 2010. <<http://www.army.mil/news/2009/07/23/24768-flu-cases-rise-h1n1-cases-concentrated-among-bct-soldiers/>>.
- <sup>40</sup> Ibid
- <sup>41</sup> Fulton, Delaware. “Flu Cases Rise: H1N1 Cases Concentrated Among BCT Soldiers.” Fort Jackson Leader 23 Jul. 2009. 3 Jun. 2010. <<http://www.army.mil/news/2009/07/23/24768-flu-cases-rise-h1n1-cases-concentrated-among-bct-soldiers/>>.
- <sup>42</sup> Markfelder, George. “Telework: DON Keeps Working Through Flu Season.” Navy.mil 21 Dec. 2009. 2 Jun 2010. <[http://www.navy.mil/search/display.asp?story\\_id=50288](http://www.navy.mil/search/display.asp?story_id=50288)>.
- <sup>43</sup> Ibid
- <sup>44</sup> Chehy, Pacifica. “Exercise Discusses Disease Containment.” Capital Flyer 23 Jul. 2009. 11 Jun. 2010. <[http://www.capflyer.com/stories/072309/news\\_28201.shtml](http://www.capflyer.com/stories/072309/news_28201.shtml)>.
- <sup>45</sup> Ibid

- 
- <sup>46</sup> The peak flu season in the United States fall between late November through March. Seasonal Influenza. Centers for Disease Control and Prevention (CDC). 23 Jun. 2010. <<http://www.cdc.gov/flu/about/qa/disease.htm>>.
- <sup>47</sup> As of the end of July 2009, WHO no longer required countries to test and report H1N1 cases. Therefore, cumulative case totals are most likely understated. *See* <http://www.who.int/csr/disease/swineflu/updates/en/index.html>.
- <sup>48</sup> McIntire Peters, Katherine. "Defense Officials Prepare for H1N1 Flu." Government Executive 26 Aug. 2009. 14 Jun. 2010. <<http://www.govexec.com/dailyfed/0809/082609kp1.htm>>.
- <sup>49</sup> "Defense Department Secures its Own Vaccine Supply." Center for Infectious Disease Research & Policy. 27 Aug. 2009. University of Minnesota. 11 Jun. 2010. <[http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news\\_scan/index.html](http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news_scan/index.html)>.
- <sup>50</sup> "Obama to Spend Another \$2.7 Bln to Fight H1N1." Reuters 2 Sep. 2009. 15 Jun. 2010. <<http://www.reuters.com/article/idUSTRE5816TC20090902>>.
- <sup>51</sup> Carden, Army Sgt. 1<sup>st</sup> Class Michael J. "Army Confirms Suspected H1N1-Related Death." American Forces Press Service 1 Oct. 2009. 2 Jun. 2010. <<http://www.army.mil/-news/2009/10/02/28217-army-confirms-suspected-h1n1-related-death/>>.
- <sup>52</sup> "Shipments of H1N1 Flu Vaccine Leave Factories." CNN Health. 29 Sept. 2009. 14 Jun. 2010. <<http://www.cnn.com/2009/HEALTH/09/29/first.h1n1.vaccine/index.html>>.
- <sup>53</sup> "Military to Get Mandatory Swine Flu Shots Soon." The Associated Press. 30 Sept. 2009. 23 Jun. 2010. <<http://www.southcoasttoday.com/apps/pbcs.dll/article?AID=/20090930/NEWS/909300349>>.
- <sup>54</sup> Krenke, Lt. Col. Ellen. "H1N1 Vaccine Order Includes Enough for National Guard." American Forces Press Service 29 Oct. 2009. 2 Jun. 2010. <<http://www.defense.gov/news/newsarticle.aspx?id=56447>>.
- <sup>55</sup> Ibid
- <sup>56</sup> Garamone, Jim. "Defense Department to Start H1N1 Flu Vaccinations." American Forces Press Service 1 Sep. 2009. 2 Jun. 2010 <<http://www.af.mil/news/story.asp?id=123165987>>.
- <sup>57</sup> Ibid
- <sup>58</sup> Kruzel, John J. "Like Body Armor, Flu Vaccine Aims to Protect Troops." American Forces Press Service 4 Nov. 2009. 14 Jun. 2010. <<http://www.af.mil/news/story.asp?id=123176025>>.
- <sup>59</sup> Sanofi Pasteur Announces Results of U.S. Clinical Trials in Adults Following One Dose of Influenza A (H1N1) Vaccine." Sanofi Pasteur. 1 Oct. 2009. 14 Jun. 2010. <[http://www.avpi.org/sanofi-pasteur2/ImageServlet?imageCode=26483&siteCode=SP\\_US](http://www.avpi.org/sanofi-pasteur2/ImageServlet?imageCode=26483&siteCode=SP_US)>. *See also,*

- 
- Synderman, Judith. "Military Will Have Enough H1N1 Vaccine, Officials Say." American Forces Press Service 30 Oct. 2009. 2 Jun. 2010. <<http://www.defense.gov/news/newsarticle.aspx?id=56467>>.
- <sup>60</sup> United States. Department of Defense Statistical Information Analysis Division. Military Personnel Statistics. 30 Apr. 2010. 16 Jun. 2010. <<http://siadapp.dmdc.osd.mil/personnel/MILITARY/miltop.htm>>.
- <sup>61</sup> Garman, Lt. Col. Patrick, PhD. "DoD H1N1 Vaccine Supply - Federal Government Employees and OCONUS Beneficiaries." MILVAX H1N1 Update. 26 Oct. 2009. 15 Jun. 2010. <<http://www.vaccines.mil/default.aspx?cnt=disease/minidv&dID=60>>.
- <sup>62</sup> Garamone, Jim. "Defense Department to Start H1N1 Flu Vaccinations." American Forces Press Service. 1 Sep. 2009. 2 Jun. 2010. <<http://www.defense.gov/news/newsarticle.aspx?id=55698>>.
- <sup>63</sup> Krenke, Lt. Col. Ellen. "H1N1 Vaccine Order Includes Enough for National Guard." American Forces Press Service. 29 Oct. 2009. Web. 2 Jun. 2010. <H1N1 Vaccine Order Includes Enough for National Guard>.
- <sup>64</sup> Harben, Jerry. "Still Time to Get H1N1 Vaccine." Army News Service. 15 Apr. 2010. 3 Jun. 2010. <<http://www.army.mil/-news/2010/04/15/37432-still-time-to-get-h1n1-vaccine/>>.
- <sup>65</sup> "JTF CAPMED Joint Vaccination Teams Provide Influenza Prevention Support." The JTF CAPMED Voice. Issue 4. Oct. 2009. 15 Jun. 2010. <<http://www.nca-integration.amedd.army.mil/newsletters/JTF%20CAPMED%20Voice%20October%202009.pdf>>.
- <sup>66</sup> Ricci III, Lt Col Anthony. Telephone interview. 15 Jun. 2010.
- <sup>67</sup> Roos, Robert. "CDC: H1N1 declining but still widespread." Center for Infectious Disease Research & Policy. University of Minnesota. 20 Nov. 2009. 15 Jun. 2010. <<http://cidrapbusiness.biz/cidrap/content/influenza/swineflu/news/nov2009cdc.html>>.
- <sup>68</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Global Influenza Surveillance Summary. 08 December 2009. 15 Jun. 2010. <<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-08%20December.pdf>>.
- <sup>69</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Global Influenza Surveillance Summary. 08 December 2009. Web. 15 Jun. 2010. <<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-08%20December.pdf>>.
- <sup>70</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Global Influenza Surveillance Summary. 08 Dec. 2009. Web.



- 
- 15 Jun. 2010.  
<<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-08%20December.pdf>>.
- <sup>71</sup> Fox, Maggie. "Testing Group Data Shows Swine Flu Waning in US." Reuters. 18 Dec. 2009. 15 Jun. 2010.  
<<http://www.reuters.com/article/idUSTRE5AO3Z420091218>>.
- <sup>72</sup> United States. Department of Health and Human Services. "HHS Announces Nationwide Effort to Encourage H1N1 Vaccination During National Influenza Vaccination Week January 10 – 16, 2010." HHS News Release. 8 Jan. 2010. 14 Jun. 2010. <<http://www.hhs.gov/news/press/2010pres/01/20100108a.html>>.
- <sup>73</sup> Ibid
- <sup>74</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Armed Forces Health Surveillance Center (AFHSC) Influenza Surveillance Summary. 30 Mar. 2010. Web. 15 Jun. 2010.  
<<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-30%20March.pdf>>.
- <sup>75</sup> World Health Organization. "Pandemic (H1N1) 2009 update 89-90." Situation updates – Pandemic (H1N1) 2009. 26 Feb-5 Mar. 2010. 15 Jun. 2010.  
<<http://www.who.int/csr/disease/swineflu/updates/en/index.html>>.
- <sup>76</sup> Ricci III, Lt Col Anthony. Telephone interview. 15 Jun. 2010.
- <sup>77</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Armed Forces Health Surveillance Center (AFHSC) Influenza Surveillance Summary. 30 Mar. 2010. Web. 15 Jun. 2010.  
<<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-30%20March.pdf>>.
- <sup>78</sup> Ibid
- <sup>79</sup> World Health Organization. "Pandemic (H1N1) 2009 updates 96-98." Situation updates - Pandemic (H1N1) 2009. 16-30 Apr. 2010. 15 Jun. 2010.  
<<http://www.who.int/csr/disease/swineflu/updates/en/index.html>>.
- <sup>80</sup> Harben, Jerry. "Still time to get H1n1 vaccine." Army News Service. 15 Apr. 2010. 3 Jun. 2010. <<http://www.army.mil/-news/2010/04/15/37432-still-time-to-get-h1n1-vaccine/>>.
- <sup>81</sup> Ibid
- <sup>82</sup> United States. Department of Defense Pandemic Influenza Watchboard. Department of Defense Weekly Armed Forces Health Surveillance Center (AFHSC) Influenza Surveillance Summary. 6 Apr. 2010. 16 Jun. 2010.  
<<http://fhp.osd.mil/aiWatchboard/pdf/AFHSC%20Weekly%20Influenza%20Surveillance%20Summary-%206%20April%202010.pdf>>
- <sup>83</sup> Ricci III, Lt Col Anthony. Telephone interview. 15 Jun. 2010.
- <sup>84</sup> Ibid