Pandemic Influenza and Support from Community Volunteer Organizations:
How The Civil Air Patrol Can Help Local Communities During a Pandemic

By

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Abstract

Volunteer organizations can have a significant impact within a community, especially during times of a disaster. Natural disasters like flooding, hurricanes, and tornados can strike at anytime and the ability of a community to recover is often dependent on the level of volunteerism provided to that community. Influenza pandemics, while considered somewhat of a natural disaster, present a unique set of challenges for disaster recovery. With many natural disasters the infrastructure is compromised, but with a pandemic, the infrastructure remains intact while human resources are compromised during the attack. As such, community volunteer organizations need to develop a Contingency Plan before they can prepare their Response Plan to assist the community. The Contingency Plan is designed to address high levels of absenteeism during a pandemic while maintaining their usual operations. It also seeks to protect those volunteers against succumbing to the virus while performing their duties. The Response Plan defines how the volunteer organization will provide assistance to the community during the pandemic. The Civil Air Patrol, a volunteer organization providing emergency services to local communities, can provide assistance to state Public Health departments by transporting basic and medical supplies to either local Health Units or directly to people in need. By entering into formal or informal partnerships with state and local agencies, a volunteer organization can participate in the coordinated effort to help with relief and recovery during a pandemic attack on a community. This paper addresses how community volunteer organizations, and in particular the Civil Air Patrol, can develop a Contingency Plan and a coordinated Response Plan to provide assistance to state and local authorities during an influenza
pandemic. Since Public Health officials are instrumental in coordinating efforts during an influenza pandemic, it is important for Public Health practitioners to have a sound understanding of how community volunteer organizations can provide assistance in addressing the needs of the public during such disasters.

**Pandemic Influenza**

**History of Pandemics**

Influenza epidemics are not uncommon. Each year the flu will come and go, resulting on average 36,000 deaths in United States. Most of those deaths are the very young and the elderly. Every so often a virulent strain will develop and cause a pandemic. A pandemic is a worldwide outbreak that affects many countries all at once. There are three conditions necessary to meet the definition of a pandemic flu: 1) the virus must be a new strain whereby people have little or no immunity, 2) the replication of this virus must cause serious illness, and 3) there must be efficient human-to-human transmission (WHO, 2009). Depending on the severity of such an influenza outbreak, the degree to which containment measures are successful can often be a function of the healthcare delivery system's ability to handle such an outbreak, as well as the degree to which citizens are willing to comply with some of these measures. The CDC developed a Pandemic Severity Index similar to the Saffir-Simpson Hurricane Index (HHS, 2007) which has five categories based on the case-fatality ratio (CFR). For instance, a Category 1 has a CFR of less than 0.1% and is the usual category for seasonal flu, a Category 2 has a CFR of 0.1% to 0.5% and a Category 5 has a CFR of 2% or greater.

Pandemics are not new to this planet. Since recorded time there have been many major outbreaks of infectious diseases killing millions of people. Most people have
heard about the Bubonic Plague that ravished the European population in the Middle Ages (the “Black Death.”). There have been outbreaks of measles, smallpox, cholera, typhus, yellow fever, typhoid, scarlet fever, and polio that have been recorded throughout time. Influenza exits as three main types: Influenza A, Influenza, B, and Influenza C. While Influenza B and C generally cause a milder flu and are not associated with pandemics, Influenza A can infect birds, pigs, horses, other animals, and humans. Wild birds are natural hosts for these viruses and only Influenza A viruses infect birds. Influenza A viruses are divided by subtypes based on two proteins on their surfaces: hemagglutinin (15 types) and neuraminidase (9 types), for example H1N1, H5N1, etc. Subtypes of Influenza A currently circulating among humans worldwide include H1N1, H1N2, and H3N2. Usually infected wild birds do not become sick, but when the virus is passed to domestic poultry, the birds become sick and can die. Avian Flu currently affecting fowl in China is one such type of Influenza A (H5N1) (CDC, 2010).

Among the first flu pandemics to be recorded occurred in the winter of 1732, 1774, 1857, 1873, 1918, 1957 (Asian Flu), and 1968 (Hong Kong Flu). Both the Asian flu and the Hong Kong Flu were Category 2 pandemics. The most severe of all flu pandemics recorded to date occurred in 1918. The flu of 1918 (also known as the Spanish Flu, or Purple Death) was different from all other influenza outbreaks in that instead of killing the very young and elderly, this virus (H1N1) attacked and killed people of all ages, especially those between 20 and 34 years of age. This was the only known Category 5 influenza pandemic estimated to have a CFR of over 5%. Since influenza often leads to pneumonia and other sequelae, accurate records of deaths directly
attributable to the influenza virus of 1918 are lacking. From this three-wave attack of the H1N1 virus, estimates of deaths range from 50 – 100 million worldwide, and 500,000 – 750,000 in the U.S. (Barry, 2005). This pandemic influenza attacked about 900 million people worldwide (population at that time was 1.8 billion), killing as many as 100 million people in less than 12 months. No pandemic of any disease has ever resulted in so many deaths in so short a period of time. AIDS has resulted in 23 million deaths in 25 years; the Spanish Flu killed 100 million in less than 12 months. More people died from this pandemic flu than were killed in both World War I & II, combined. Eighty percent of the deaths among U.S. soldiers fighting in World War I were attributed to influenza. There were more deaths from the Spanish Flu than those caused by over 100 years of the Bubonic Plague (Geiger, 2006).

Since the 1918 flu there have been two other flu outbreaks to reach pandemic status: 1) the Asian Flu in 1957 (H2N2), and 2) the Hong Kong Flu in 1968 (H3N2). Both pandemics were considered mild, with 70,000 and 34,000 deaths, respectively (CDC, 2009). There have been other strains of influenza A detected in recent years, such as H7N2 in New York and Virginia in 2002, H9N2 in China and H7N7 in the Netherlands in 2003, and H7N3 in Canada in 2004. However, the new strain to emerge from Hong Kong in 1997 that is causing the greatest amount of concern is H5N1, also known as Avian Flu.

H5N1 – The Threat of Avian Flu

At this point in time, the H5N1 virus has not met the third criterion of a pandemic, which is to achieve efficient human-to-human transmission. As of March 30, 2010, there
have been 492 reported cases in 15 countries with 291 deaths (WHO, 2010). This is a case-fatality rate (CFR) of 60%, as compared to the flu of 1918, which had a mortality rate of only 5% and killed nearly 100 million people. At this time, human infection with Avian Flu is through direct contact with infected fowl, both wild and domesticated.

If H5N1 can achieve efficient human-to-human transmission with an attack rate similar to that of the 1918 flu (38%) and maintain its mortality rate of 60%, then in a world populated with 6.8 billion people there could be as many as 2.6 billion people sick with the flu and 1.6 billion people dead. Of course, no one believes that this virus would maintain a mortality rate of 60% once it mutated to efficiently transmit from human to humans; however, even if we assume a mortality rate of 5% for H5N1, similar to that of the H1N1 strain of 1918, the potential number of deaths would still be 136 million worldwide and 6 million in the United States.

The healthcare system in many countries throughout the world would be unable to handle 2.6 billion people becoming very sick with influenza, let alone handle 136 million deaths (at a mortality rate of only 5%). Very few countries experiencing natural disasters are able to manage adequate healthcare services during such events, and one as potentially devastating as Avian Flu would likely result in a complete collapse of the healthcare system. Even in the United States, if a pandemic with a CFR of 5% (Category 5) struck, 117 million Americans would succumb to the flu resulting in 6 million deaths (attack rate = 38%). It is very unlikely the healthcare system in the U.S. will be able to cope with this event and communities across the nation would be in dire need for basic and medical supplies. The potential for an avian flu pandemic (H5N1) to be one of the biggest threats to life on this planet is significant. In fact, the U.S.
Department of Homeland Security views pandemic influenza as both the most likely and most lethal of all threats facing the United States (HHS, 2005). Luckily, to date, the H5N1 virus has not achieved efficient human-to-human transmission, but if the current A-H1N1 virus circulating the globe comingles with the deadly H5N1 virus, the result could be a deadly pandemic of catastrophic proportions.

**A-H1N1 – Recent Pandemic**

In April 2009, the news of a new strain of influenza A affecting people throughout Mexico created a serious concern throughout the WHO, CDC, and the media. Once the WHO raised the level of activation to Phase 4, the news media created tremendous “noise” among the public. When the strain was isolated and genetically characterized, it was identified as an H1N1 variant (A-H1N1), and the media were quick to label the new strain as the Swine Flu (similar to the strain the occurred in 1976). While this strain was similar to that of 1918, and of the Swine Flu in the 70’s, it appeared to be less virulent (CFR of less than 0.1% making it a Category 1) (CDC, 2009). As vaccine manufactures rushed to begin production of a vaccine from the WHO seed, it was nearly impossible to develop, test, and manufacture enough vaccine to deal with a pandemic that would hit in the Fall. With Herculean efforts from several vaccine manufacturers, an effective vaccine against this new A-H1N1 strain became available by October 2009. Usually, during a pandemic, the new strain overwhelms the typical seasonal flu strain and one victor emerges; however, during the Fall of 2009, there were both influenza A strains competing for victims. Likewise, there were two different vaccines offered in the Fall; the seasonal flu vaccine, and the new A-H1N1 vaccine. As a result, there was some
confusion by people as to which vaccine they should take, or if they should take both. Another issue was the fact that this new A-H1N1 strain was among the least virulent strains ever seen in a pandemic, and people were uncertain if they should risk taking a vaccine that was rushed through development and clinical testing, and that could pose unwanted side effects. By March of 2010, the flu season had drawn to a close, and 60 Million Americans had become infected with Influenza A, there were 256,000 hospitalizations, and 12,000 deaths (CDC, 2010). Interestingly, 11,000 of those 12,000 deaths were in people under 65 years of age, which is in contrast to those deaths typically seen during seasonal flu. Worldwide, the WHO reported that in March of 2009 there were 213 countries with confirmed cases of A-H1N1 and 16,931 deaths (WHO, 2010). The new vaccine being prepared for the 2010 flu season will protect against A-H1N1, H3N2, and a strain of influenza B (CDC, 2010). This should lessen the confusion over which vaccine to take during the pre-season immunization period. As was stated at the beginning of this paper, in a typical flu season, the United States usually records about 36,000 deaths, but the A-H1N1 saw only 12,000 deaths. Was this because of the younger, and presumably healthier, age group that was attacked, was it because of the relatively mild flu that resulted from this strain, or was it successful containment measures and vaccination that yielded a lower mortality rate than expected? Undoubtedly, all three elements contributed to a mild flu season with lower mortality rates, and less serious symptoms. But did we get lucky? Are we being lulled into complacency so if and when the next one hits us, we will exhibit lackadaisical behavior. Influenza A viruses are notorious for co-mingling their RNA to create new strains, and if the A-H1N1 exchanges its genetic material with the deadly H5N1 virus, we could be
facing a new Category 5 pandemic. For the purposes of this paper, the assumption is that a community volunteer organization, such as the Civil Air Patrol, would be prepared to respond to requests for assistance by Public Health officials for any influenza pandemic (Category 1-5), but the higher the category the more likely state Public Health authorities would call on the assistance of the CAP. The influenza pandemic of 2009/2010 with the variant A-H1N1 strain was a Category 1 and considered quite mild. Thus, very little disruption occurred to state Public Health divisions to warrant additional support from community volunteer organizations. Should a more severe pandemic strike, the need for additional assistance would necessitate greater demand of these volunteer organizations.

**Containment Measures**

There are six major approaches to containing an epidemic or pandemic: 1) vaccines, 2) anti-viral medication and other medical interventions (i.e. ventilators), 3) quarantine and isolation procedures, 4) social distancing, 5) sanitary measures, and 6) education and information dissemination.

**Vaccines**

Influenza vaccines, for the most part, still rely on chicken eggs to produce material, and yields are typically low and slow (WHO, 2010). So, when a pandemic suddenly strikes, it usually will take a manufacturer 5-6 months to produce sufficient quantities of vaccines to protect the general public. Initially, there are vaccine shortages during a pandemic, and organizations like WHO and CDC develop guidelines to
prioritize the usage of such limited supplies. As vaccine manufacturers were scrambling to develop an effective agent against H5N1, the new A-H1N1 strain was emerging in Mexico in the Spring of 2009. When it became apparent that the A-H1N1 strain was developing into a pandemic, the WHO alerted countries to prepare for a pandemic, albeit not the one they expected. Suddenly, vaccine manufacturers raced to produce an effective agent against this novel strain. Fortunately, the A-H1N1 flu appeared in April, which is at the end of the typical flu season in the Northern Hemisphere. During the summer months, manufacturers were able to produce vaccines in sufficient quantities to get ready for the Fall flu season of 2009. Since the A-H1N1 flu was considered fairly mild, many people elected not to receive the vaccine, which resulted in a surplus. Had the strain been more virulent, it is likely there would have not been enough vaccines to cover the population and rationing based of defined guidelines would have been implemented in most countries (CDC, 2010) Once again, we may have been lucky. If a new Category 5 strain emerges in the height of the Fall flu season, communities could be faced with a serious disaster.

Anti-Virals and other Medical Interventions

The United States government has been stockpiling the anti-viral medicine, oseltamivir (Tamiflu) for several years, and currently this stockpile would only cover about 3% of the existing population (CDC, 2009). While other countries have begun stockpiling well before the U.S. began, the highest level for any country is about 25% of their citizens (Geiger, 2006). Oseltamivir has been shown to be effective against most strains of influenza (including A-H1N1); however, resistance is developing against this
agent, even in the A-H1N1 strain. One of the limitations of the anti-viral agents currently on the market is that for this drug to work it is best taken within the first 36-48 hours after appearance of flu symptoms. This means that someone would have to have their own personal stockpile of oseltamivir to take and administer to family members immediately upon exhibiting flu symptoms. But as described by one survivor of the 1918 pandemic, “people didn’t want to believe that they could be healthy in the morning and dead by nightfall” (Barry, 2005). A more virulent strain of Influenza A can attack and kill very quickly, so waiting 36-48 hours to take oseltamivir could be too late for some people, even if they were to get it ahead of time.

If 100 million Americans become sick with a new virulent strain of H5N1 (avian flu), a large portion will show up at the emergency department of their local hospital. Currently in the United States, there are only 945,000 hospital beds (American Hospital Association, 2009). So even if only 10% of the 100 million people appear in the emergency department there would only be a hospital bed for 1 in 10. And that bed is likely to be already occupied by someone previously admitted for some other illness, since at any one time occupancy of hospital beds is about 70%. A disaster of this magnitude would quickly overwhelm the hospital system. Today, in the United States there are 105,000 ventilators, and at any one time 70,000 are in use (Osterholm, 2005). This means that of the 1 in 10 lucky enough to get a hospital bed, only 10% of those admitted would have access to a ventilator. Access to vaccines, anti-virals, hospital beds, and ventilators would have to be rationed during a severe pandemic. Who will make these decisions? Will these policies be made public? Will the public participate in these policy decisions? Will people agree with and support these rationing policies?
These are all ethical, moral, and legal questions to be addressed prior to the arrival of a severe influenza pandemic. Yet, despite these rationing measures, many people will be left to fend for themselves during such a disaster, and social injustices will escalate within communities.

Quarantine and Isolation

State governments have control over healthcare delivery, which includes public health. State legislatures assign powers to administrative agencies and may grant specific powers to local boards of health to exercise certain containment measures, such as quarantine and isolation (Harris, 2008). Isolation is usually reserved for those individuals with an active form of a communicable disease; whereas, quarantine is usually reserved for those individuals within a location (i.e. home, workplace, institution) that have been exposed to an infected person. Both quarantine and isolation can be legally enforced by the state’s police powers. States also require healthcare professionals to report outbreaks of communicable diseases. So each state, through its police powers, can issue a mandatory quarantine and isolation order to protect the public.

The Centers for Disease Control and Prevention (CDC) commissioned experts in public health law to prepare a model act, known as the Model State Emergency Health Powers Act (Harris, 2008). Addressed in this model are such issues as the appropriate role of law enforcement authorities in responding to a public health emergency, rationing of scarce resources in an emergency, criteria for declaring a state of emergency, and the proper balance between state power and individual liberty (Greger,
Each state has been asked to develop a flu pandemic preparedness plan. It involves a complex set of initiatives between federal and state agencies, as well as other responder organizations, such as community volunteer organizations. The degree to which a state is deemed adequately prepared for a pandemic will determine the amount of support received from the CDC’s Strategic National Stockpile (SNS), a cache of medical supplies to aid communities during a disaster. Part of this planning involves guidelines for quarantine and isolation measures, and when Public Health officials will evoke these rules.

Social Distancing

Another approach to containment for influenza pandemics is to implement social distancing initiatives. In 1918, the spread of the Spanish Flu was so severe that many municipalities prohibited public gatherings. Michigan Governor Albert Sleeper in the Fall of 1918 proclaimed, “public gatherings of every description be discontinued” (Baulch, 1996). All public gatherings were banned, such as schools, churches, theaters, conventions, etc. Even funerals for those victims of the flu were confined to a handful of people, or delayed until a later date.

Many flu pandemic preparedness plans across the United States call for similar social distancing approaches. This time, in addition to the usual public gatherings, many businesses would close during a pandemic. The economic impact of such measures would be enormous, not just in the U.S., but throughout the world.

Given the quarantine and isolation restrictions, and the social distancing measures that might be implemented during a severe influenza pandemic, getting
medical supplies and food to people will become a tremendous challenge. In 1957, only 10% of meals we eaten outside the home, but today that figure is almost 40% (Barry, 2005). So many Americans confined to their homes might not be prepared to stock enough food to last a full quarantine period of 15-30 days. Who will deliver food and supplies to those with restricted movement? In 1918, people were denied access to public transportation unless they wore a mask to cover their face. Some cities went as far as to fine people seen in public without a face mask, and even placing them in jail for extended periods of time (a form of forced quarantine). People fearful of the continued spread of the Spanish Flu demanded laws against public sneezing, coughing, or nose blowing. If public health officials enforce social distancing during the next pandemic, given the highly mobilized society we live in, would they be effective or even enforced?

Sanitary Measures

According to the World Health Organization, children are the main vectors for influenza (WHO, 2009). Children are able to shed flu viruses for up to six days before they begin to show symptoms, and with uncovered sneezing and coughing, it is not long before a child brings home the flu. In fact, it is said that during each flu season, children kill their grandparents (Greger, 2006).

While many sanitary measures were adopted during the pandemic of 1918, frequent hand washing may have yielded the greatest outcome. One of the largest sources of flu contamination is our hands. Most people when sneezing or coughing cover their mouth and nose with their hands, then go around inoculating people and things, such as doorknobs, elevator buttons, etc. The Mayo Clinic has a slogan: “The 10
worse sources of contagion are our fingers.” Learning to sneeze or cough in the inner elbow area of one’s arm or sleeve will prevent contamination to one’s hand. In the absence of a vaccine or anti-viral medicine, the single most important step people can take to prevent getting the flu is to wash their hands frequently (Greger, 2006).

Despite the ineffectiveness of gauze facemasks worn by many in 1918, the use of N95 masks or surgical masks may afford some protection against larger respiratory particles during an influenza pandemic. Surgical masks are less expensive than N95 ones, and require frequent changing, but if the virus becomes truly airborne, they would be less effective than N95 masks. The strategy used during the SARS outbreak was surgical masks for the sick, and N95 masks for the healthy (Greger, 2006).

Basic sanitary measures, coupled with social distancing and quarantine/isolation, could represent the greatest non-pharmacological containment measures available to most people, especially since very few people will be lucky enough to receive a vaccine or anti-viral medicine, let alone a hospital bed or ventilator.

Information and Education

One of the greatest tools a public health professional can use to help keep citizens safe is information. Educating people about the risks and providing them with knowledge about what to do during an influenza pandemic is vital to minimizing deaths. In 1918, public health officials, or even government officials, were stating that the Spanish Flu was not serious and no one should unduly worry. But when millions of people became sick and thousands began dying, the public became exceedingly distrustful of officials, both government and health. During the SARS outbreak in China,
government officials kept denying there was a problem, even presenting false information to the WHO. And even after the lessons learned about being truthful during SARS, several countries have lied about H5N1 attacks to avert a potential economic disaster (Barry, 2005).

When pandemics occur and information is not forthcoming, the result is often massive racism and discrimination (Barry, 2005). For instance, during the Spanish Flu of 1918, many white people blamed immigrants, Native Americans, and blacks; even the government blamed Spain by calling it the Spanish Flu when the virus likely originated in the United States (Institute of Medicine, 2005). This level of discrimination was seen again during the aftermath of Hurricane Katrina in New Orleans (Congressional Report, 2007). And the poor are almost always made to suffer disproportionately, since they lack the resources to obtain medical supplies and basic necessities, or to stockpile food and water. There is a delicate balance between informing and alarming a public. The Swine Flu incidence in the 70s led to a disbelief that the world could be at the mercy of a virus. The greatest casualties of the Swine Flu scare were people suffering adverse reactions to a vaccine given to thousands of people believed to be at risk. Likewise, during the 2009 A-H1N1 pandemic the media created a scare among the public, and when the flu symptoms were found to be relatively mild, mistrust once again surfaced among the public.

Role of Community Volunteer Organizations

Types of Community Volunteer Organizations
Every community has a myriad of volunteer organizations that support various needs within the communities they serve. Volunteer organizations typically fall into the following categories:

- Environment
- Emergency Services and Disaster Relief
- Politics
- Education
- Government
- Religion
- Community Support
- Health and Public Health
- Mental Health
- Military

Volunteer organizations, usually non-profit, rely heavily on fund raising within the community to support their missions. Others rely state and municipal funding to support their programs. Many cluster together under the United Way banner to share in the pool of donations. While some focus mostly on the youth, some focus on the elderly. Others focus on being the voice of the disenfranchised and fighting for social justice. All play a critical role in supporting the community. There are 1,823 volunteer organizations in the State of North Carolina (Volunteer Match, 2010). Of these, about 60 provide services in emergency services, such as disaster relief.

The level of commitment to a volunteer organization varies enormously, since many members hold a full-time day job. After spending a full day at work and devoting time to family and friends, there are only so many hours left for volunteerism. Typically,
volunteers place such responsibility to a community organization lower on their priority list.

**The Civil Air Patrol**

The Civil Air Patrol is a voluntary, non-profit, national organization that is the official Auxiliary of the United States Air Force. CAP was founded in December 1941 by over 150,000 citizens concerned about the defense of America’s coastline during World War II. On July 1, 1946, President Truman established CAP as a federally chartered, benevolent civilian corporation. It serves three primary missions for America: 1) Emergency Services, such as Search and Rescue and Disaster Relief, 2) Cadet Programs, for youths from 12-21 years of age, and 3) Aerospace Education for the community (Civil Air Patrol, 2010).

The Civil Air Patrol is a nonprofit, 501(c)3 corporation, divided into eight geographic regions consisting of 52 Wings (each of the 50 states, Puerto Rico, and the District of Columbia). There are approximately 60,000 members, with about a third being cadets. With the largest fleet of single-engine aircraft in the world, CAP owns 530 corporate aircraft, along with more than 4,000 member-owned aircraft. Volunteers fly in excess of 120,000 hours each year. CAP also maintains a fleet of 950 emergency service vehicles for training and mission support. In support of Emergency Services, CAP conducts over 85% of all inland search and rescue in the U.S., and members save an average of 100 lives each year. The Civil Air Patrol provides disaster relief support to local, state, and national disaster relief organizations. Members volunteer to transport time-sensitive medical materials, blood products, and other needed medical supplies.
The communication network within CAP is the most extensive in the nation, and is used to support emergency services.

In support of disaster relief, the Civil Air Patrol can assist the nation in many ways. Volunteer members continuously train for service using the National Incidence Management System (NIMS) approach, and practicing through disaster simulations in both tabletop and field exercises. Developed by U.S. Homeland Security and adopted by the Federal Emergency Management Agency (FEMA) and by most emergency responders, including the police, fire departments, EMS, military, and even Public Health officials involved in disaster planning, provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment (FEMA, 2010). Since members of the Civil Air Patrol come from varied backgrounds of skills and experiences, including medicine and public health, they can also serve as back-up personnel for a variety of administrative functions to assist other public and private organizations. During Hurricane Katrina, CAP supported disaster relief efforts by sending hundreds of volunteers (both adults and cadets) and flying thousands of hours of missions. During an influenza pandemic, members can transport medical supplies, or even basic supplies such as food and water, to citizens who may be unable to leave their homes. They could fly vital supplies across the state to areas of immediate need. And given the skills and experiences of some of the CAP members, they could supplement administrative functions in various response agencies when
absenteeism levels are high. Other support areas could be in communications, such as supplementing tactical communication systems, and assist in the sharing of information to the public.

**Developing a Contingency Plan**

Contingency Plans are developed by individuals, groups, organizations, and communities to address potential disruptions to normal daily activities during a disaster, and what precautions can be taken to avoid such disruptions. A typical influenza pandemic has an attack rate of approximately 40%, with a mortality rate that can vary from 0.1% to greater than 5%, and a duration of 6-8 weeks within a given geographic area (CDC, 2009). The more virulent the strain (higher morbidity and mortality) the greater the need to develop a Contingency Plan that addresses precautions and disruptions to the normal operations within households, businesses, and communities.

**Work Environment**

The primary purpose of an Influenza Contingency Plan is to ensure people are protected against succumbing to the virus as much as possible, while the organization continues to function in as normal a manner as can be expected during such conditions. In the work environment, employers develop Contingency Plans to account for high absenteeism during a pandemic, offer protective measures to those who continue to work, and re-deploy key individuals in critical functions to maintain business operations. There are many tools employers can use to develop appropriate Contingency Plans, such as the guidelines and templates offered by the CDC (CDC, 2010). During the 2009
influenza pandemic, many companies developed Contingency Plans to cope with potential disruptions that threatened operations, and this came during one of the worst economic downturns across the globe. A company suffering absenteeism as high as 40% could easily become crippled in trying to maintain normal operations. Many workers will refuse to come to work when family members are home suffering from a severe flu, so anticipating such high rates of absenteeism and developing contingency plans to account for key personal being unavailable to perform critical duties becomes sound business practices. A key component of an Influenza Contingency Plan is to ensure adequate protective measures are in place to minimize the spread of infection in the workplace.

**Home Environment**

Similar to protecting the work environment, it is equally necessary to have a Contingency Plan for the home. Since running a household takes planning and the implementation of daily activities to keep everything running smoothly, having a Contingency Plan should everyone become ill with the flu is critical. Who will assume the daily duties of cooking, washing, cleaning, and other essential elements should the entire household become too sick to fulfill these duties? During the Spanish Flu of 1918, children starved to death when both parents had died and no one came to check on them. Once again, the CDC offers resources to help families develop home Contingency Plans (CDC, 2010). Most people when confronted with a family that has become severely ill from the flu will elect to stay at home and tend to the sick rather than go into work, contributing to the high absenteeism in the workplace. Of course
when a home has been quarantined by state authorities, household members have no choice but to stay confined to their home. This makes contingency planning even more important, since obtaining basic and medical supplies present considerable challenges.

**Community Environment**

How does a community develop a Contingency Plan? If a person’s first loyalty is to family, then to the company that employs that person, the last place to receive volunteer support is the community. Yet, it is often the community that has the greatest need during a pandemic since members of that community need support, such as basic and medical supplies. Volunteers are critical to keep communities functioning, especially during disasters like Hurricane Katrina. But when people are needed at home and at work during these difficult times, there are few to help out. In a situation like this, often volunteers from outside that community appear to give a lending hand. In fact, during Hurricane Katrina, most of the volunteers were from outside New Orleans, and during the first year after the hurricane hit, there were over 550,000 volunteers and over 600,000 volunteers during the second year, according the Corporation for National and Community Services (USA Today, 2008). One volunteer, Dr. Cranmer, MD MPH, stated that one of the greatest challenges when arriving at New Orleans to volunteer her services was the need for coordination among all the volunteers (Cranmer, 2005). But during a pandemic that sweeps across an entire nation, there may be no one to come to the rescue of a community in need. So contingency planning may be valuable within a community in order to maintain public services, but if no one is left to actually volunteer, then people’s needs will go unmet and many will suffer. However, there are a few
volunteer organizations that are dedicated to disaster relief, such as the American Red Cross, the Peace Corps, the Salvation Army, and the Civil Air Patrol. These organizations are always ready and willing to help when disaster strikes, but since no one is immune to a new pandemic attack, even these organizations may have their army of volunteers decimated by the flu virus.

**Civil Air Patrol Contingency Plan**

Since the Civil Air Patrol is a volunteer organization, developing a Contingency Plan to maintain normal operations during a pandemic is less relevant than a private or public business. Nonetheless, in order to assist state and local agencies during such a pandemic, it is important for the Civil Air Patrol to have a plan to deal with those volunteer members who will be unable to assist with the Response Plan. Up to 40% of people within any organization can be expected to be absent either from having influenza, or due to providing care to someone else. In any given Wing (state) there are staff members whose primary responsibilities are at the Wing level, and there are those who are involved at the field operations level (Group or Unit). At the Wing level, there can be 30-50 members within defined roles that support the three primary missions, in addition to administrative and other functional areas. Within a squadron or unit level there are often both cadet and officer volunteers and the size of the unit varies between less than 10 to well over 100.

At the Wing level, there is an Emergency Services (ES) Officer that coordinates all Disaster Relief activities. The ES Officer works for the Director of Operations and together with the Director of Communications support any requests for assistance.
Since the Civil Air Patrol follows the National Incident Management System (NIMS), there are several individuals that can fill in various functions should members be absent for a mission. At the unit level there is less redundancy, so when 30-40% of unit members are absent with the flu it is more difficult to find suitable members to assume additional responsibilities. The Wing staff tends to meet one day a month, whereas, unit members tend to meet one day a week. Most members can carry on their duties and responsibilities remotely (at home or at work), so if social distancing prohibits CAP members from attending regular meetings, the organization would still be able to function reasonably well at both the Wing and field levels. At the Wing level, staff functions are often 2-3 deep, so if there is a high level of absenteeism there can be members to assume higher level duties.

As part of the Contingency Plan for a Wing within CAP, precautions should be carried out to avoid unnecessary gatherings at all levels. All members should adopt non-pharmacological interventions during a pandemic, especially when meetings are necessary. Where appropriate, hand sanitizers and N-95 facemasks should be made available. All members should ensure proper hand washing procedures and proper sneezing and coughing techniques to minimize transmission. Wherever activities can be organized remotely, this should take precedence over meeting in person, especially for essential personnel. A list of critical and essential staff should be developed in advance of the influenza outbreak, with fallback personnel for each important area. Even during an influenza pandemic response, the Civil Air Patrol might be called upon to provide routine Emergency Services independent of the support provided to state agencies for the pandemic. The level of responsiveness will be a function of the preparedness of our
members to adjust for high absenteeism and unexpected emergency missions. An Emergency Response Priority List should be prepared by Emergency Services to know which activities will take precedence over others. For instance, would delivering medical supplies to a family isolated in a rural area take precedence over a request to search for a downed airplane, or the search for a missing person?

Each Wing should assign a Pandemic Coordinator who will maintain records of members infected with the virus, or members who are unable to volunteer their services. This Coordinator should collaborate closely with the Emergency Services Officer and the Director of Operations to determine responsiveness to requests for services. The Coordinator should also assess the potential impact on outside resources that CAP depends upon for services, such as supplies, travel, communications, etc. This Coordinator should also be responsible for keeping the membership up-to-date with appropriate information from state and local health departments regarding the pandemic. Additional field staff should be identified that could help at the Wing level and be trained quickly to accept additional responsibilities (cross training). The Pandemic Coordinator should also develop procedures and policies to deal with members who may be suspected of having the flu and are wishing to volunteer their services. The Coordinator should also develop a plan for obtaining non-pharmacological supplies for the members who volunteer their services for the Pandemic Response Plan, such as facemasks, hand sanitizers, etc. The Coordinator should be the primary contact person for dealing with state and local public health agencies and emergency management agencies to participate in responding to needs. And lastly, the Coordinator should be responsible for activating the Pandemic Response Plan.
Developing a Response Plan – Civil Air Patrol

Key Assumptions

Before a Response Plan can be developed, a set of key assumptions should be developed, such as how many volunteers are likely to be available to respond to a request for assistance, how extensive will the demands for assistance be, what will be the geographic area needing assistance, how many hours of volunteer work will be required, what funding will be available for supplies, etc. Depending on the need by the state and other agencies, a range of scenarios should be created to understand the scope of responsiveness based on capabilities. During an influenza pandemic, epidemiological assumptions also need to be built into the scenarios, such as the prevalence and virulence of the virus, the attack rate and case-fatality rate, the duration of symptoms, the likelihood of isolation and quarantine procedures, etc. There are also social and environmental issues to consider, such as: will some members of the community be disproportionately affected by the pandemic, will there be civil unrest within the community, will all areas across the state be impacted at the same time, are some locations more difficult to access, will supplies become more difficult to obtain, etc? A list of planning assumptions will need to be created in order to prepare various scenarios. A key component of NIMS is the Planning Section, which is responsible for developing a set of assumptions and situations to anticipate a changing landscape throughout a disaster. The Civil Air Patrol would be able to participate with other Emergency Management agencies throughout the state to develop a coordinated set of assumptions and situations appropriate for a Response Plan. Using a model for
identifying vulnerabilities and risk assessment developed for the U.S. Special Forces by the American International Securities Corporation, known as the CARVER methodology, the Civil Air Patrol can determine key assumptions about using responses and the risks associated with these resources (Taylor, 2002). CARVER stands for Criticality, Accessibility, Recuperability, Vulnerability, Effects, and Recognizability.

The first part of criticality looks at what elements of the Response Plan are critical to fulfilling the mission. For instance, if too many volunteer members become ill or need to care for family members who are ill, then there might be an insufficient number to form an aircrew or ground team to carry out the mission. Another example might be if businesses close due to excessive illnesses and fuel shortages occur, there may be no fuel to fly aircraft or drive vans. Determining what is critical to fulfill the missions must be part of the risk assessment. Contingency plans would need to be developed for each situation that poses a risk to critical elements of a Response Plan.

Accessibility to assets represents the second part of this model, and relates to how accessible would the assets be should barriers hinder the mission. For instance, if a ground team is unable to fulfill a mission due to an insufficient number of team members and the aircraft or van cannot be mobilized, how accessible would this asset be to other teams? A plan would need to be prepared to assess the risk of asset accessibility on an ongoing basis. Accessibility might also address the ability of team members to access internal supplies if storage facilities are closed, thus placing the mission at a potentially unacceptable risk.

Recuperability relates to the ability of systems, processes, and people to recover. If services are temporarily closed due to shortages or a lack of people to manage these
services, it is important to determine how quickly these services will return to order so that missions can be fulfilled in a timely manner. For instance, the Wing might have 25 ground teams ready to be mobilized for various missions at the beginning of the Response Plan implementation; however, midway through the Plan only 15 teams can be deployed due to illness or absenteeism of the volunteers. Then after two more weeks, the number of ground teams might be restored to 20. Alternatively, if the influenza sweeps across the state in an organized pattern, resources may become unavailable in one geographic region for 2-3 weeks while another region is at full capacity, but over time, the region impacted earlier may recover as the next region is demobilized for a period of time. Therefore, preparing a recuperability plan for resources will help prepare for a meaningful Response Plan.

Regardless of how much care is built into a Response Plan to account for risks, certain processes and resources will inherently have vulnerabilities or weaknesses that must be addresses in the risk assessment. A vulnerability of the Civil Air Patrol to respond could be a reduced staff to fulfill the mission. This is particularly important if attempts are made to cover an entire state and volunteers are directly impacted by the flu in those geographic areas most in need of assistance. Finding volunteers to complete a mission by acquiring medical or basic supplies from one staging area and delivering them to various points in the community where people might be unable to leave their homes could prove impractical if sufficient volunteers are not available. Since the most likely form of assistance CAP might provide to state and local communities is delivering medical and basic supplies, the greatest vulnerability would be people resources. Transportation assets (vehicles and aircraft) are not likely to be vulnerable
during an influenza pandemic, other than on a temporary basis if they are located too remotely to be redeployed quickly.

The next element addressed by the CARVER approach is the effect on services or systems during a pandemic. One possible concern is the exposure of volunteers to the virus in the course of performing their duties, and then the subsequent infection of those they service. Every time a CAP volunteer comes into contact with anyone during the mission there is a risk of exposure. This risk could translate into the entire response team becoming infected and, in turn, infecting other CAP volunteers at mission base. This transmission risk could quickly impair the entire mission if too many volunteers are disabled by the flu. This effect could be devastating for the Response Plan, so measures should be undertaken to minimize exposure of volunteer response teams to other members essential to the overall mission. One protective measure that could be employed during the Response Plan is to have two qualified pilots in each air crew in the event that one pilot suddenly becomes ill (i.e. nausea, vomiting, blurred vision, etc). Likewise, van crews could have two qualified drivers should one become too ill to drive. Lastly, the element of recognizability relates to the planning team and the response teams to recognize all the risks and vulnerabilities present in the situation, and to develop contingency plans to adapt to changes in the scenarios. The Civil Air Patrol trains for disaster relief, and most of these disasters are environmental (weather-related, such as floods, hurricanes, tornados), or accidents (i.e. chemical spills, large-scale airplane crashes, etc). Within CAP, currently very little training takes place for biological disasters, such as an influenza pandemic, and as such it will be difficult to anticipate all the risks and vulnerabilities that can occur during a pandemic. For
instance, reducing risk to exposure to the virus might mean not shaking hands upon greeting fellow volunteers, being careful not to touch surfaces that might be contaminated without protective barriers (i.e. latex gloves), such as door knobs, door bells, hand railings, etc., and keeping a safe distance (7-8 feet) from people who may be infected with the virus. If the virus mutates and becomes more transmissible by air, additional precautions might have to be adopted to minimize risk.

In order to develop a proper response list of activities to support state and local communities, it is important to understand all the risks associated with each activity and have contingency plans to respond to a changing environment. Using the CARVER model to identify those risks will help with the planning assumptions in developing a Response Plan. Unlike many static disasters that take place in a single event, an influenza pandemic can be a very dynamic situation changing repeatedly and impacting resources over time and location. Thus, the implementation of a Pandemic Response Plan can be running smoothly one week, be completely disabled the next week, and then recover to some level of functionality another week. A proper Pandemic Response Plan will take into account such a changing landscape and be ready to adapt to all potential scenarios.

**Target Capabilities**

The Federal Emergency Management Agency, under a mandate from the U.S. Department of Homeland Security, has developed a set of Target Capabilities (Table 1) that are used by public health officials, emergency responders, and emergency organizations to help define four key missions of disaster preparedness: Prevent,
Protect, Respond, and Recover. FEMA developed a set of 37 core capabilities in 2007, which were updated in 2009, in order to establish national guidance for preparing for major all-hazards events (FEMA, 2009).

**Table 1. Target Capabilities developed by U. S. Department of Homeland Security**

<table>
<thead>
<tr>
<th>Common Capabilities</th>
<th>Respond Mission Capabilities</th>
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<tbody>
<tr>
<td>Planning</td>
<td>Responder Safety and Health</td>
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<tr>
<td>Communications</td>
<td>Emergency Public Safety and Security</td>
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<tr>
<td>Community Preparedness and Participation</td>
<td>Animal Disease Emergency Support</td>
</tr>
<tr>
<td>Risk Management</td>
<td>Environmental Health</td>
</tr>
<tr>
<td>Intelligence and Information Sharing and Dissemination</td>
<td>Explosive Device Response Operations</td>
</tr>
<tr>
<td>Prevent Mission Capabilities</td>
<td>Fire Incident Response Support</td>
</tr>
<tr>
<td>Information Gathering and Recognition of Indicators and Warning</td>
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<tr>
<td>Intelligence Analysis and Production</td>
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</tr>
<tr>
<td>Counter-Terror Investigation and Law Enforcement</td>
<td>Isolation and Quarantine</td>
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<tr>
<td>CBRNE Detection</td>
<td>Search and Rescue (Land-Based)</td>
</tr>
<tr>
<td>Protect Mission Capabilities</td>
<td>Emergency Public Information and Warning</td>
</tr>
<tr>
<td>Critical Infrastructure Protection</td>
<td>Emergency Triage and Pre-Hospital Treatment</td>
</tr>
<tr>
<td>Food and Agriculture Safety and Defense</td>
<td>Medical Surge</td>
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<tr>
<td>Epidemiological Surveillance and Investigation</td>
<td>Medical Supplies Management and Distribution</td>
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<td>Laboratory Testing</td>
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<tr>
<td>Respond Mission Capabilities</td>
<td>Mass Care (Sheltering, Feeding and Related Services)</td>
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<tr>
<td>On-Site Incident Management</td>
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<td>Emergency Operations Center Management</td>
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<td>Critical Resource Logistics and Distribution</td>
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<tr>
<td>Volunteer Management and Donations</td>
<td>Restoration of Lifelines</td>
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<td></td>
<td>Economic and Community Recovery</td>
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</tbody>
</table>

There are five Common Capabilities that encompass the primary capabilities of disaster preparedness that all emergency responder organizations should follow when developing a Response Plan (Table 1).
The Civil Air Patrol can provide services in many of the target capabilities; however, the most likely areas of support called upon by state and communities would be 1) Critical Resource Logistics and Distribution, 2) Medical Supplies Management and Distribution, 3) Search and Rescue, and 4) Emergency Operations Center Management. The Civil Air Patrol could provide assistance in distributing basic and medical supplies either between centers or directly to people in the community. Support could also come from infrastructure staffing support in the Emergency Operations Centers, especially if there are high levels of absenteeism among the emergency response staff. Since the Civil Air Patrol has an excellent communications system, support could also come from supplementing the Emergency Management communications capabilities.

Capabilities of the Civil Air Patrol

The Civil Air Patrol has developed a set of capabilities to fulfill its three primary missions: 1) Emergency Services, 2) Cadet Programs, and 3) Aerospace Education. In addition to these missions, the Civil Air Patrol can provide assistance to state and local communities in the following areas: 1) transporting supplies (via air or ground), 2) conducting aerial surveillance and assessment of designated disaster areas, 3) using an extensive communications network, 4) deploying volunteers to assist in various functions to support infrastructure staffing needs (both adults and cadets), and 5) conducting search and rescue missions.

Members of CAP participate in ongoing training exercises, participate in group and self-initiated skills enhancement courses, conduct real-world missions, give
presentations and lectures to their local communities in a variety of areas, and advance in specialty areas through study and experience. Since members are volunteers, they come from various backgrounds and levels of experience, such as military, private sector, public sector, and other volunteer organizations. In addition to the skills and experiences they bring from their professional lives, they acquire new skills within the Civil Air Patrol. Some acquire highly specialized skills in defined areas and others gain a broader experience in a variety of areas. Many members have command and leadership experience, and others have sound technical and administrative skills. CAP has a national training system to ensure consistency across the entire organization. CAP has members from professional fields, such as physicians, nurses, lawyers, accountants, social workers, teachers, EMS personnel, commercial airline pilots, law enforcement officers, etc. As such, should state and local municipalities require support staff during a pandemic that has a significant effect on human resources, CAP members may be in a position to lend assistance in a variety of functional areas. In addition, the CAP cadets can also volunteer to help with staffing needs in several areas.

As mentioned previously, the Civil Air Patrol conducts missions in Emergency Services, and is frequently tasked by the U.S. Air Force to conduct Search and Rescue missions related to private aviation. The Civil Air Patrol also works closely with other agencies and organizations, such as the U.S. Coast Guard Auxiliary, the local law enforcement offices, and EMS organizations, such as Community Emergency Response Team (CERT).
The CAP disaster relief services most relevant during an influenza pandemic include transportation of medical and basic supplies (by air or ground), contributing to a communication network, volunteering for infrastructure staffing needs, and distributing information. While CAP is sometimes asked to assist with crowd control during community events, should civil unrest manifest during a moderate to severe pandemic the Civil Air Patrol would be unable to conduct any policing role due to the Posse Comitatus Act of 1878, which is a federal statute prohibiting the military from direct participation in certain civilian law enforcement activities (United States Code, 1878).

Prior to being asked to assist with infrastructure staffing needs, it will be necessary to take an inventory of skills and experiences of the members willing to volunteer for this task to ensure competency in the various functional areas. Despite the need for ancillary staff during a pandemic, it is very likely that CAP members active in the workforce will be asked to fill in for high levels of absenteeism, thus diminishing the time they may have for volunteer services.

The assets that could be available to state and local communities fall into four categories:

- Aircraft (fixed-wing, single-engine airplanes)
- Vehicles (vans and mini-vans)
- Communications Equipment (fixed and remote radios)
- Human Resources (adults and cadets)

Across the United States, the Civil Air Patrol has approximately 550 aircraft, and its members fly about 110,000 hours each year (Civil Air Patrol, 2009). CAP also owns a fleet of over 900 emergency service vehicles (mostly vans) used for training and
mission support. CAP performs aerial reconnaissance for Homeland Security (HLS). During routine disaster relief missions, the Civil Air Patrol provides services to local, state, and national organizations, and typically transports time-sensitive medical materials, such as blood products and body tissues, critical personnel, and urgent medical supplies.

CAP maintains the most extensive High Frequency (HF) and Very-High Frequency (VHF) communications network in the nation, in addition to other communication devices, such as 800 Hz radios, Inter-Squad Radios (ISR), etc. This communication network can act as either a primary network or as a supplemental one. With dedicated frequencies provided to CAP, all of the CAP volunteers can be on a single network for communications, yet have the flexibility to link with other ES communication systems.

Nationally, the Civil Air Patrol has almost 60,000 volunteer members, with about a third being cadets from the ages of 12 to 18 years old (Civil Air Patrol, 2009). Each member willing to volunteer time to support a Pandemic Response Plan could be mobilized to assist in critical infrastructure staffing needs at various agencies. Cadets can play a role in administrative support to state and local agencies, and adults may have qualifications to assume some functional responsibilities. Providing staffing support during a moderate to severe pandemic could ultimately prove to be the greatest contribution of the Civil Air Patrol.
Concept of Operations and Risk Management

The next part of the Response Plan is the development of how the operations will function to support the community needs. The concept of operations defines the missions, and then necessary actions needed to implement the Response Plan. One of the first elements of this operational plan is to create an Operational Risk Management (ORM) plan, which is a decision-making tool to systematically help identify operational risks and benefits and determine the best courses of action for any given situation (FAA, 2000). Should the Civil Air Patrol be asked to provide assistance to state and local communities, a risk assessment must be made to evaluate any hazards that might be present while fulfilling those duties. The Civil Air Patrol follows the Operational Risk Management (ORM) plan adopted by the military. This process follows six steps to develop the plan: 1) Identify the hazards, 2) Assess the risks, 3) Analyze risk control measures, 4) Make control decisions, 5) implement risk control measures, and 6) Supervise and review. In order to minimize exposure to the virus during support activities, each response team should conduct an appropriate ORM plan prior to completing a mission. For instance, if a CAP team is asked to deliver food and water to a family under self-quarantine, the team should identify any possible risks of being exposed to an infected person, the distance they will be from that person, the possibility of that infected person coughing or sneezing in their vicinity, the direct contact they may have with an infected person or someone suspected to be infected, the availability of non-pharmacological interventions pre and post exposure, and the subsequent contact they may have with other members of their team, other CAP members outside of their team, and their own family members after completing the mission.
An overall ORM plan should be developed by the Pandemic Coordinator, in cooperation with Incident Commanders and Mission Coordinators, before responding to any requests for assistance. This plan should identify all the potential hazards for any member of a response team, be it an aircrew or a ground team. This ORM plan should not only address the risks associated with contacts that are potentially infected with the influenza virus (directly or indirectly), but also other potential hazards that they may encounter throughout the mission. For instance, if vital medical supplies are scarce and in high demand, and people are aware that CAP volunteers are carrying such vital supplies, it might be possible that desperate citizens will attempt to steal such supplies, and inflict bodily harm to volunteer members in the process. Thus, the general ORM should take into account all circumstances that are possible in any situation. Having accurate and up-to-date information is critical to appraising the situation as the pandemic unfolds within a given community. The ORM should have a priority ranking of risks based on the incidence levels of infection, the seriousness of the illness, and the amount of civil unrest of the population. There should also be an element of the plan where the risks outweigh the benefits and the mission is called off.

Another important area the general ORM should take into account is the illness rate of CAP volunteers. While it can be assumed that 30-40% of volunteer members will become ill with the flu, the situation could change quickly whereby there is an insufficient number of members to support a response team in a given geographic area, especially if a team member becomes infectious and spreads the virus to other teammates. Development of the general ORM plan should be deliberate and carefully planned in advance of the implementation of any response plan. It should address the
probability and severity of each hazard with appropriate control decisions. In addition to the general ORM Plan developed for the Wing, each team implementing a mission should develop a time-critical ORM Plan that will address any immediate risks encountered throughout the mission. Before accepting a mission, the Team Leader will have a checklist of potential hazards based on the most current information of the situation. The Team Leader in coordination and concurrence with the Incident Commander or Operations Section Chief recommends whether to proceed or cancel the mission. Frequent radio communication will be vital during each mission to ensure the IC and Pandemic Coordinator is aware of any changes to the situation.

**Organization and Responsibilities**

One of the critical elements of implementing a volunteer community organization Response Plan is to define the organizational structure and the roles and responsibilities of each of the volunteers. The Civil Air Patrol would create a structure consistent with the National Incident Management System (NIMS), since this is the structure Public Health officials and Emergency Management officials would deploy during a disaster, such as an influenza pandemic (FEMA, 2008). Since the lead agency would be the Department of Public Health, the Civil Air Patrol, like any other community volunteer organization, would create a structure appropriate for the level of support needed by the Incident Commander (IC) (Figure 1). For instance, if Public Health officials simply required the Civil Air Patrol to deliver medical supplies and vaccines to local Health Units across the state, then the appropriate structure adopted would likely be a CAP IC in charge of the following groups: 1) Operations Section with an Air
Operations Branch, 2) Planning Section to develop an Incident Action Plan, 3) Logistics Section to manage the assets, 4) Finance Section to handle all expenditures, 5) a Safety Officer, 6) a Public Information Officer, and 7) a Liaison Officer to interact with the lead IC. Should the requirements expand to need vans delivering basic supplies, like food and water, to various communities, then the structure would expand to include a Ground Branch under the Operations Section, with appropriate transportation crews ready to become deployed for various missions. Consistent with the NIMS approach, the structure expands and contracts to fit the needs of the situation. Establishing redundant roles for key positions becomes even more important in a pandemic flu, since

Figure 1. Incident Command System: Command Staff and General Staff
many members will simply be unavailable to volunteer given family or work commitments. Thus, the structure needs to be flexible and adapt to various members becoming unavailable to fulfill missions during phases of the pandemic. Once the missions are defined, the appropriate organizational structure can be delineated with clear responsibilities for each participant, and back-up plans for those who become ill and unable to fulfill their missions throughout the Response Plan.

A Pandemic Flu Response Plan prepared by the Civil Air Patrol can include both primary and secondary missions. The four primary missions identified in this Pandemic Response Plan are: 1) transportation of medical supplies, 2) transportation of basic supplies (i.e. food and water), 3) supplement infrastructure staffing needs, and 4) providing routine disaster relief services. The two secondary missions are: 1) information sharing, and 2) ancillary communications.

The first primary mission is to assist state and local agencies with the transportation of medical supplies and critical personnel (public health officials, healthcare professionals, law enforcement personnel, etc). Medical supplies, such as vaccines or anti-viral agents could be transported from a central depot to local Health Units, or healthcare institutions, or between local Health Units to nearby institutions and clinics, depending on the needs identified by Public Health officials. The assets available for this mission are CAP aircraft and vehicles. If medical supplies need to be flown due to critical time-sensitive issues then an aircrew can be mobilized fairly quickly. A CAP or state vehicle can deliver the medical supplies to the nearest airport and the aircrew can fly the medical supplies to the determined destination. There are weight limits to the aircraft flown by CAP that need to be taken into consideration. The goal of
this mission is to be as responsive as possible in order to deliver the supplies as quickly as possible. Medical supplies may include pharmacological and non-pharmacological interventions, such as anti-virals, vaccines, facemasks, gloves, hand sanitizers, ventilators, and any other supplies of a medical nature.

The next primary mission involves transporting basic supplies like food and water. While this mission is similar to the first one, it differs in that volumes and weights might become a factor. Certainly when it comes to air transportation of personnel in addition to assigned aircrew and these basic supplies, weight plays a primary role since the small aircraft of CAP have weight limitations. On the other hand, the CAP vehicles are able to carry more material. Most missions will likely be from depot to homes, rather than depot to depot due to the volume restrictions of CAP vehicles. Again, the goal of this mission is to be responsive and deliver supplies as quickly as possible, especially if some of the goods are perishable.

The third primary mission is to supplement infrastructure staffing needs. The greatest need during a pandemic is people, since many are ill and cannot come to work, or fulfill their duties. Members of the Civil Air Patrol come from all walks of life and have a variety of skills and experiences, including Public Health, Medicine, Nursing, EMS, etc. In addition, the volunteers of the Civil Air Patrol are assigned various duties within the organization and continue to develop new skills. Thus, if the infrastructure within a state or community begins to collapse due to absenteeism, CAP members could volunteer their time to helping maintain the systems and processes needed during a pandemic. While it is true that those members with full time jobs may be asked to do the same in their place of business, it is expected that CAP volunteers
will donate some of their time to fulfill missions from the Pandemic Response Plan. Before any government department, agency, or support organization can request staffing support, it will be necessary to create an inventory of skills and experiences outside of CAP that our members have that could be of value. Part of the Pandemic Response Plan will be to provide various agencies with a list of skills and experiences of CAP volunteers, and to determine a set of priorities for volunteers as to which missions they might support over the course of the response. The goal of this mission is to assist with infrastructure staffing needs to support systems and processes that will maintain an appropriate level of services within the state and local communities, including the state Public Health officials.

The fourth primary mission is to respond to routine requests for disaster relief services. Most of the emergency service activities performed by the Civil Air Patrol relate to search and rescue missions; however, CAP is always ready to assist with any disaster. While this mission relates to performing the usual duties of CAP, it can be expected that during a moderate to severe pandemic there will be more requests to provide assistance outside of the three missions mentioned above. Of course, clear priorities for responding to all four primary missions will need to be developed, and plans will need to be flexible. The goal of this mission is to have sufficient resources and flexible plans to be able to carry out our usual missions in the area of disaster relief while supporting the Pandemic Response Plan in the other three missions.

There are two secondary missions that the Civil Air Patrol should be able to carry out as part of the overall Pandemic Response Plan, and the first one is information sharing in cooperation with Public Health personnel. CAP is involved in several local
community activities throughout the year, from participating in public events to organizing community events, such as open houses, model rocketry, and aerospace days. In addition to interacting with local communities, members of the Civil Air Patrol have a large network of connections with business, church, and family. As such, one role CAP can play in support of a pandemic response is to help keep the public informed of situations pertaining to the pandemic. CAP can distribute approved information about personal protective equipment, infection control measures, immunization clinics, and other relevant information. In conducting the first two primary missions (transportation of medical and basic supplies), CAP volunteers can distribute valuable information regarding the status of the outbreak. Working closely with the state Public Health authorities, CAP volunteers can act as a supplemental conduit for information on containment measures and infection control. Members of the Civil Air Patrol typically wear a military-style uniform that may engender trust by the public. The goal of this mission is to assist state Public Health officials with the dissemination of vital and valuable information to the public by working closely with local Public Health personnel. One approach is to develop joint “town hall” meetings with Public Health personnel to reach out into the community and help inform the public about planning for a pandemic and adopting appropriate containment measures.

The next secondary mission is in the area of supplemental communications. The Civil Air Patrol has an extensive communication network with several levels (i.e. HF, VHF, etc) used internally to communicate among its members. With dedicated communication bands, the network can relay vital information on behalf of the state Public Health officials to other interested parties. The network also communicates with
other emergency agencies, so interagency cooperation can be achieved in fulfilling missions. Most of the CAP volunteers are trained in radio communications, including the cadets. The CAP communications network can assist other government divisions and agencies during a pandemic to enhance the flow of information and improve the coordinated effort of an overall response plan. The goal of this mission is to provide an additional layer of tactical communications to support state and local communities. For instance, if too many Emergency Management personnel become sick with the flu and were unable to communicate critical information across the state using their own communication network, the Civil Air Patrol could assign various communication functions to its members using CAP equipment to supplement the state communication system.

**Administration and Logistics**

Once the missions have been defined by the lead agency (state Public Health officials) and the organizational structure needed to implement the Response Plan has been created following the NIMS approach, the Incident Action Plan must be carefully developed to account for potentially high absenteeism by members over the span of the pandemic, usually 7-8 weeks. People will become ill during the Response Plan and be unable to participate any longer, while others who may have been out earlier with the flu could quickly recover and be ready to volunteer once again. Maintaining detailed records of volunteer lists becomes critical to the mission. The Civil Air Patrol would have an Administration Section and a Logistics Section to manage these important aspects of the Response Plan. Since volunteers may come and go during the duration of the
pandemic, having an Administration Section to manage the human resources during an extended period of time becomes a significant challenge. The CAP Incident Commander would mobilize appropriate assets in a timely manner, depending on resources and volunteers available at that time.

One aspect of logistics pertains to supplies for the assets, such as fuel for aircraft and vehicles, maintenance for equipment, batteries for portable radios, food for volunteers, etc. But another vital part of logistics during an influenza pandemic is personal protection equipment. A key assumption in being able to respond to requests for assistance from state and local communities is the ability to protect the CAP volunteers from exposure to the virus so they can fulfill their missions. The clinical attack rates for seasonal influenza tend to be low (5-15%), however, the attack rates for a pandemic tend to be in the range of 25-50% (Global Security, 2010). Thus, if the usual attack rate is approximately 35%, and assuming participation in disaster relief efforts presents an even higher exposure level to the virus, it becomes critical that CAP volunteers are afforded extra protection against exposure. A Response Plan to a pandemic relies heavily on people resources, since the very nature of a pandemic removes people from the workforce. If CAP members are to volunteer to assist in the Response Plan they must feel it is safe to do so, and they must not be placing their family and immediate contacts in harm’s way. To this end, the Civil Air Patrol must secure appropriate personal protective equipment (PPE) to minimize exposure risks.

Since a pandemic typically strikes quickly within a community before any effective vaccines are available in sufficient quantities to offer protection, other means of infection control must be available before the Response Plan can be activated. At
the moment, the best non-pharmacological interventions to aid in infection control are:
1) latex gloves, 2) facemasks (N-95, or surgical masks), and 3) hand sanitizers. There are three ways a Wing might acquire an adequate supply of these PPEs: 1) using existing funds within the Wing budget to purchase these supplies, 2) to seek a grant to be able to purchase them, since the federal government usually makes funds available to address a pandemic, and 3) to obtain supplies from the Strategic National Stockpile (SNS). If a state department or agency formally requests assistance from the Civil Air Patrol, it may be possible to request infection control supplies from the state’s allocation of the SNS. Conducting early discussions with state departments and agencies and participating in disaster relief planning discussions is a key way to ensure infection control supplies may be available prior to activating a Response Plan. Without infection control supplies readily available to all members who volunteer their services, the Civil Air Patrol may be prohibited from offering disaster relief services.

Another form of infection control is prophylaxis with an anti-viral agent, such as oseltamivir (Tamiflu) or zanamivir (Relenza). At this point in time, both prescription medications are effective against A-H1N1 virus; however, there have been isolated reports of this virus developing resistance to oseltamivir. Should this resistance expand world-wide over the coming years, the use of this product for either treatment or prophylaxis could be minimal. Since governments in many countries have been stockpiling oseltamivir over the past several years, the results of massive resistance would not only be economically disastrous, but would seriously impede containment plans. Should resistance continue to be isolated, it may be possible to secure limited supplies of oseltamivir from the SNS for prophylaxis of first responders and other
volunteers. The state Public Health Departments would likely be the decision makers in releasing the supplies of oseltamivir to at risk responders. Since the Civil Air Patrol would act as a supporting volunteer agency to the state Public Health Department, it is anticipated that supplies of oseltamivir would be allocated to the CAP volunteers. However, this is a medication only available by prescription, and a physician’s permission would be needed before administration to any CAP members participating in the Response Plan.

In addition to the pharmacological and non-pharmacological interventions to address infection control, another approach would be to identify those individuals within the Civil Air Patrol that are at high risk to suffering complication from influenza. By preparing a list of high-risk members who for medical reasons should not participate in the Response Plan, this will help minimize unnecessary risks and serve as one element of infection control. It will be necessary to have every volunteer’s medical records up-to-date, and members belonging to specific high-risk groups should be cautioned from participating in the Response Plan.

**Activation Triggers and Deployment of Response Plan**

Any Response Plan should have a list of events that trigger the activation of the Plan, such as being tasked by state and local authorities. As the disaster escalates, the Response Plan should expand to react appropriately to the situation, as is suggested using the NIMS approach. A Pandemic Flu Response Plan should assume three levels of response: 1) high demand for assistance with critical disruptions to services and systems, 2) medium demand with only moderate disruptions of services and systems,
and 3) low demand with almost no disruptions. Clearly, a low response level would not tax volunteers or assets too heavily, and all missions should be completed as planned. But a high response level could pose several challenges, not least of which would be finding enough volunteers to deliver supplies to those in need. It might be necessary to utilize a supplemental communication network to become an important addition to other state-wide communication systems. Priorities would have to be developed to decide if people should be deployed to assist other agencies over that of delivering needed supplies to people in their homes. If fuel shortages result in aircraft or vehicle assets unable to be mobilized, then redeployment of people to others areas of assistance might be necessary. The most extreme scenario could begin to resemble that of New Orleans during Hurricane Katrina where civil unrest and lawlessness disrupted attempts to restore order and aid the needy. One can only imagine a scenario like New Orleans in every city and town across the country all occurring at the same time to understand the level of disruptions that are possible during a severe pandemic. If it became unsafe for CAP volunteers to fulfill their mission due to civil unrest, the Response Plan would either have to be terminated or altered radically.

A Pandemic Flu Response plan is usually triggered for activation by the rapid appearance of the virus within the community. Depending on the level of services needed, the Plan could be deployed in stages, or ramped up quickly if attack rates are considerably high, or the virulence is high (Category 4-5). Once activated, the Response Plan would remain in force until the need has diminished, supplies have become exhausted, or there are insufficient volunteers to fulfill the mission. The Civil Air Patrol, following the NIMS procedures, would activate the Response Plan upon
receiving official requests from state or local authorities. Working closely with these agencies, and most likely with other supporting agencies, CAP would deploy appropriate resources in a timely manner, and keep these agencies up-to-date on any changes to the response Plan.

Interaction with Other Agencies and Other Volunteer Organizations

The state Public Health Department, working closely with the state Emergency Management division is usually the lead agency during disaster relief efforts related to health matters, such as influenza pandemics, and they often coordinate with other agencies and volunteer organizations. As such, it is important for any emergency response volunteer organization to understand how such lead agencies operate before, during, and after a disaster. Establishing a Memorandum of Understanding (MOU) between agencies and volunteer organizations are imperative to being allowed to participate in operations. There are frequently MOUs established between different volunteer organizations, since they are likely to be subordinate to the lead agency during a disaster. During an influenza pandemic the state Health Department would initiate a request for assistance with the state Emergency Management division, which would in turn request assistance from various other agencies and volunteer organizations, such as the Civil Air Patrol (Figure 2). Under NIMS, the size of the response team expands to meet the needs of the disaster, and this can often mean a staging of which volunteer organizations are needed by specific timeframes or capabilities. Thus, the lead agency and the Incident Commander (IC) for that agency will often dictate the structure of the volunteer organization.
Since the North Carolina Civil Air Patrol is a Division within the NC Crime Control and Public Safety (NCCC&PS), there already exists a legal working relationship that precludes the need for an official Memorandum of Understanding (MOU). However, other CAP Wings throughout the United States may require an MOU in order to work with their state during an influenza pandemic. The NC Civil Air Patrol Division within NCCC&PS coordinates with the NC Wing and CAP National Headquarters to respond to the needs of the State. Should the Governor declare a state of emergency, or simply request assistance from state and local agencies, the Emergency Management division organizes the appropriate response and identifies agencies and volunteer organizations to respond to the disaster. Therefore, it is imperative that the Emergency Management division has a copy of a volunteer organization’s Response Plan. However, before mobilizing an volunteer organization, the State Public Health
division would want to ensure that the organization had a Contingency Plan, since protecting one’s volunteers during an outbreak is an essential component of a flu pandemic Response Plan. The Civil Air Patrol would have copies of its Contingency Plan and Response Plan readily available to the lead agency (State Emergency Management division) and any other potential volunteer organizations they would likely be interacting with during the disaster, such as American Red Cross. In fact, the Civil Air Patrol often conducts cross-training exercises with other agencies in order to best understand the skills and capabilities of other organizations. In fact, the North Carolina Civil Air Patrol has conducted cross-training exercises with the United States Coast Guard Auxiliary to ensure coordination efforts on land, water and air.

Post-Incidence Assessment

Dr. Julie Casani, Director of the North Carolina Division of Public Health Preparedness and Response, has stated that the faster a community can return to normal after a disaster, the more stable people will be in dealing with the disaster. In fact, she states that post-incidence assessment and planning is one of the most critical steps in disaster relief efforts (personal communication, 2009). Once the situation has been relatively stabilized and deployment operations are underway, it is critical to have a post-incidence plan to work with not only members of the community, but also the flood of volunteers that may be ready to assist in the recovery phase. As stated earlier, over 500,000 volunteers came to New Orleans during the year following Hurricane Katrina, and another 600,000 in the second year. Coordinating all these volunteers requires sound planning and management principles.
Planning for the recovery of an influenza pandemic is a function of the extent of the disruption that occurred during the outbreak. If the pandemic was particularly virulent, like that of 1918 where there were thousands of deaths in every city and town across America, recovery is much slower and involves a considerable effort. Unlike the influenza pandemic of 2009, which was deemed a mild one (Category 1), subsequent pandemics could be considerably worse. If the H5N1 virus comesling with the prevalent H1N1 strain to create a new pandemic of high attack rates coupled with high mortality rates, then every city and town across America could potentially resemble New Orleans after Hurricane Katrina. This time, there would not likely be a wave of volunteers coming to assist with recovery efforts, and each community would have to seek their own volunteers.

The Civil Air Patrol can assist in the recovery phase of a disaster by continuing to transport basic and medical supplies to those in need. They can continue to offer infrastructure staffing support until people return to their normal duties. And they can continue to offer their routine Emergency Services (Disaster Relief and Search and Rescue) to the community. And lastly, the Civil Air Patrol can conduct a post-incidence assessment and prepare an after action report for the State Emergency Management division.

**Ethical and Legal Issues**

**Protecting Volunteers**

In a publication by the Institute of Medicine titled, "Ethical and Legal Considerations in Mitigating Pandemic Disease," a group of experts from around the
world gathered for a two-day meeting to discuss ethical and legal issues surrounding a pandemic, with particular emphasis on influenza (IOM, 2007) During a pandemic where resources are in short supply, it is vital to develop policies with transparency and fairness. Closing the door to the public to participate in these policies can be the greatest mistake any government could make in attempting to protect its citizens. Lack of knowledge instills panic. Quackery prevails when ignorance dominates, as desperate people attempt anything to survive.

A serious pandemic will present numerous ethical and legal challenges that unless addressed properly, could lead to tremendous civil unrest and social disorder. With the production of vaccines likely to cover less than 2% of the world’s population, who will receive it? In order for a two-dose vaccine to be effective, the first dose must be given in advance of the pandemic. Again, who should qualify to receive it? Similarly, if the availability of stock-piled anti-virals would only cover at most 25% of a country’s population (or in the case of the United States, only 3% of Americans), who should receive these medicines? Unfortunately, in many countries government officials have become more concerned with self-preservation than they are about public welfare, and have earmarked themselves to receive anti-viral medication even before many healthcare workers (Greger, 2006). Luckily, the pandemic of 2009 was not a particularly virulent strain, and we were not faced with some of the ethical and legal challenges that might have confronted us had the outcome been different.

The healthcare delivery system in most countries would quickly become overwhelmed with 30-40% of the population becoming sick. Who would get a hospital bed? Who would receive care first, or at all? If a new pandemic caused intense
respiratory distress and many patients needed a ventilator, who would be first in line to have access to such a limited resource? The shortage of ventilators will not only affect those patients with influenza, but also those who are in need due to respiratory failure from other causes. And what about those patients already on a ventilator, should they given up their machine to save the life of someone younger and potentially healthier, save but for the acute infection? The State of New York has published a plan to allocate ventilators to people during a flu pandemic. This plan calls for a combination of voluntary guidelines based on sound ethical and clinical principles, coupled with legislation to protect healthcare providers complying with these guidelines, as a means of developing a fair and equitable public health policy to allocate ventilators in a pandemic (NYS Work Group, 2007). Another ethical question is how should patients in respiratory failure be managed if a ventilator is not provided? What are the legal ramifications of denying someone a ventilator?

There are many ethical and legal issues surrounding the use of quarantine and isolation (Q&I) as control measures, such as what should be the event that triggers quarantine, who should be quarantined, how long should it last, who will bring food and supplies to those quarantined, who will provide medical care to those quarantined? Initially, quarantine measures should be voluntary, but if necessity dictates, public health officials are empowered by the state to make quarantine mandatory. During the 2009 influenza pandemic, very few people were actually quarantined or isolated due to the mild nature of the A-H1N1 strain. However, one should not underestimate the power of Public Health officials in instituting quarantine and isolation measures should the situation warrant it. There are both ethical and legal ramifications of initiating quarantine
and isolation measures. There are those in the community that may feel racial
discrimination and social injustices may come into play during the enactment of such
measures. And one of the greatest challenges to using Q&I measures is enforcing it.
Unless authorities are willing to police such containment measures, it may be nearly
impossible to control. Thus, having the power to initiate containment measures may be
meaningless if social unrest and lawlessness prevails during an extreme influenza
pandemic.

There are ethical and legal issues surrounding social distancing, such as who
decides which groups should stop meeting, when do you restrict religious gatherings,
who bears the consequences of restricting gatherings when it impacts the economy or
restricts trade, how long do you prohibit meetings, how many people constitute a
gathering, who enforces social distancing? During the Spanish Flu of 1918, there were
prohibitions on most social gatherings, such as schools, churches, movie theaters,
sporting events, etc. In the early part of the last century, people were more willing to
heed the directives of authorities, but today in the United States people are very
concerned with their civil liberties, and enforcing prohibition on public gathering may be
difficult to enforce in most communities. If social gathering restrictions were in place, the
Civil Air Patrol would have to implement its Response Plan using remote techniques of
command and control.

Other ethical and legal concerns regarding a Contingency Plan or a Response
Plan is requiring volunteer members to take protective measures against being infected
with the virus. If you insist volunteers wear N-95 protective face masks, then it is
important to understand some of the medical and legal guidelines surrounding the use
of these personal protective devices, such as those with respiratory problems may exacerbate their condition wearing a face mask for long periods of time, or having a clear understanding of the guidelines when using a face mask developed by the Occupation Safety and Health Administration (OSHA) (U.S. Dept of Labor, 2010). In addition to these guidelines, OSHA has a legal respiratory protection standard found in 29 CFR 1910.134. The Department of Health and Human Services, in cooperation with the CDC has developed a checklist for EMS and non-emergent transport organizations to better prepare and respond to an influenza pandemic, and this publication highlights the use of personal protective equipment (PPE) (CDC, 2010).

Lastly, there are ethical and legal issues surrounding the use of anti-viral medications and vaccines as a means of protecting volunteers. Many states develop priority lists for a vaccine that fail to follow egalitarian principles of justice (Melnick, 2007). Can a volunteer organization insist that it’s members take a prophylactic prescription medicine or have a vaccine administered before they can perform their duties in responding to an influenza pandemic? What are the legal ramifications of insisting members have some form of pharmacological intervention, and then suffering an unwanted side effect? The Civil Air Patrol needs to delineate its policies and procedures regarding these ethical and legal issues in its Response Plan.

**Duty to Perform – Duty to Rescue**

The duty to perform issue usually pertains to healthcare professionals and relates to their commitment to provide services despite personal issues to deal with, such as family members who become ill with the flu (Thomas, 2007). And while this
issue is critical to maintaining healthcare services during a disaster, it nonetheless plays an important role in volunteer organizations that support emergency services. The ethics of duty to perform and duty to rescue have been debated by many professionals in the healthcare field, and there are several principles evoked when trying to decide the right course of action by an individual. Healthcare professionals have a duty to perform based on their commitment to the medical profession, and the various medical associations can take action on their members by revoking their license to practice medicine. However, duty to rescue is more nebulous. In the United States under common law, there is no general duty to come to the rescue of another person, and as such a person cannot be held liable for standing by and doing nothing to aid someone in peril (Rosenbaum, 2004). However, emergency workers have a general duty to rescue the public within the definition of their job responsibilities, but where does that leave volunteers in an emergency services organization? Under the Good Samaritan law, a person is permitted to “render first aid or emergency care at the scene of an accident, casualty, or disaster to a person injured therein, he or she shall not be liable for any civil damages as a result of his or her acts or omissions in rendering first aid or emergency care, nor shall he or she be liable for any civil damages as a result of any act or failure to act to provide or arrange for further medical treatment or care for the injured person” (Legal Definitions, 2010). During an influenza pandemic, it would be possible for a member of a volunteer organization to render emergency care to a person if such measures were necessary. For instance, if a member of the Civil Air Patrol was delivering medical supplies to a family that was quarantined and found a member of the household in severe respiratory distress from the flu and rendered care, that volunteer
would be protected under the Good Samaritan law. But there is no duty to rescue or a
duty to perform obligation on the part of the volunteer. Despite legal parameters
surrounding the duty to perform and duty to rescue issues, there are also ethical
justifications to act accordingly. Both Kantian and Utilitarian principles would support a
duty to perform and a duty to rescue, since it is the right thing to do for the benefit of the
person in need. Care ethics would support such actions since the essence of morality is
to tend to the need of humans in distress. However, legal and ethics aside, a volunteer
organization cannot force a member to participate in the Pandemic Influenza Response
Plan, and as such contingency plans have to take into consideration those individuals,
for whatever reasons, who decide not to participate in response operations

Case Study – State of Michigan and the Civil Air Patrol

The State of Michigan was facing challenges in delivering urgent medical
supplies in response to the A-H1N1 pandemic to various Local Health Departments
during the winter of 2009/10 (Association of State and Territorial Health Officials, 2009).
Given the inclement weather and geographic dispersion of the 45 Local Health
Departments, the Michigan Public Health Department needed to find alternative
transportation modalities to deliver the CDC’s Strategic National Stockpile (SNS) H1N1
Medical Countermeasure supplies to Local Health Departments and federally-
recognized Native American tribes and hospitals within their jurisdictions. There are two
peninsulas in Michigan connected only by a single bridge, and travel times from Lansing
to many of the remote Health Units is 8-10 hours by road. The Public Health
Department coordinated with the State Emergency Management division, which in turn
coordinated with the Michigan State Police. Then the State Police partnered with the Michigan Civil Air Patrol to allow CAP to utilize their aircraft for SNS missions. Prior to the activation of these missions, the Office for Public Health Preparedness (OPHP) entered into discussions with the Civil Air Patrol in the winter of 2007 and a Memorandum of Understanding (MOU) was developed as part of a Response Plan. Planning exercises were conducted jointly between both groups in 2008, so when the A-H1N1 pandemic began to emerge in the spring of 2009, the Civil Air Patrol was ready to be mobilized into action. In addition to the partnership between the Civil Air Patrol, the OPHP, the Michigan State Police, and the State of Michigan Department of Management and Budget, there were also partnerships with local airports, law enforcement, and transportation agencies in delivering the SNS supplies.

In addition to the use of the Civil Air Patrol aircraft, the OPHP provided 800 MHz radios to CAP pilots and local commanders to ensure state-wide communication channels. The Civil Air Patrol was also given a seat in the Community Health Emergency Coordination Center to facilitate command and control measures during the SNS missions. The Civil Air Patrol is the official Auxiliary of the United States Air Force when sanctioned for missions, and approval of these missions meant the expenses for SNS deliveries were covered by the USAF. The Civil Air Patrol reported to the Office for Public Health Preparedness under the direction of the Michigan Department of Community Health for mission planning purposes, but also worked in partnership with the Michigan State Police and the Local Health Departments.

The results of this partnership were timely deliveries of the SNS A-H1N1 Medical Countermeasure supplies to Local Health Departments and Regional Coordination
Centers in Michigan’s Upper Peninsula all within an eight-hour time period by air, as opposed to taking several days, or longer, by road. This case study demonstrates the value of using a community volunteer organization, like the Civil Air Patrol, to assist the state in delivering valuable medical supplies during an influenza pandemic. The valuable lesson for the Office for Public Health Preparedness was that community volunteer organizations like the Civil Air Patrol could be a valuable asset during a disaster.

**Implications for Public Health**

A community volunteer organization can only be as effective as the partnerships it develops with state and local agencies. Serving the community takes a coordinated effort and requires sound working relationships with various stakeholders. These relationships can be either informal agreements or more formal Memorandums of Understanding (MOU) between the volunteer organization and state or local agencies, or between other volunteer organizations. One of the greatest challenges facing the city of New Orleans after Hurricane Katrina was the coordination of rescue efforts and disaster relief. Hordes of volunteers affiliated with various agencies and organizations flooded into New Orleans seeking to provide assistance to those in need. Apart from the lack of inter-agency coordination, the communications systems were either not functioning or not synchronized to communicate with each other. Rescue volunteer organizations each had their own communication devices tuned to frequencies that were not in harmony with other devices, and the result was a lot of people talking, but
very few communicating. The effectiveness of competing organizations can only become synergistic when there is a high level of coordination between them.

During an influenza pandemic, there are communities throughout the nation being impacted simultaneously. Unlike New Orleans, where people from neighboring states and localities can suddenly appear to lend a helping hand, a pandemic can strike multiple communities within a given geographic location at the same time resulting in a critical lack of volunteers. And a pandemic can infect anyone and everyone indiscriminately leaving the usual group of volunteers to tend sick ones at home, or succumb themselves to the virus. Interestingly, when a typical natural disaster strikes a community, it is the infrastructure that is often compromised, such as buildings, resources, communications, etc. However, during an influenza pandemic, it is the human capital that is impacted most while the infrastructure remains intact. Finding people to help maintain normal operations during a pandemic can be the greatest challenge of a community. This is where coordination within the community between the various organizations becomes essential to dealing with a crisis of any magnitude.

Most state Public Health divisions are ultimately responsible for coordinating efforts during an influenza pandemic, and often rely on the Emergency Management department to assist in disaster relief efforts. Many emergency services volunteer organizations have formal or informal agreements with the state Emergency Management. Therefore, community volunteer organizations that wish to assist during a pandemic must indirectly coordinate with the Public Health group. North Carolina, like most states, has a Director of Preparedness and Response within the Public Health Division, who is responsible for coordinating a response plan with each of the local
Health Units. The Civil Air Patrol has developed a working relationship with the Director to ensure CAP’s emergency services can be mobilized during a pandemic, should the need arise. In order to be considered as a partner with the NC State Public Health Division, the NC Civil Air Patrol had to develop a Contingency Plan and a Response Plan in line with the requirements of the Director of Preparedness and Response. Coordinating such activities well in advance of a disaster is a critical part of the planning stage for community volunteer organizations. Since the Civil Air Patrol has units throughout the state, it is also important to coordinate efforts with local Health Units, since sometimes needs are very localized and do not require a state-wide coordination.

In summary, the Civil Air Patrol is a community volunteer organization that can offer valuable services to local communities, but to be effective it must coordinate efforts with state and local agencies, and work well with other volunteer organizations. The challenges of Public Health are great and require a coordinated effort with the community organizations. When disaster strikes, this coordinated effort becomes critical to providing essential support within a community. Influenza pandemics present a unique challenge to Public Health response measures, since community infrastructures often remain intact, but human capital to provide services becomes a scarce resource. Despite a relatively mild pandemic in the 2009/20 flu season, we should not be lulled into believing a more serious pandemic will not present itself in the years to come. Community volunteer organizations can make a significant contribution to Public Health during pandemics; however, planning and coordination are essential components to disaster preparedness. Recognizing the subtle differences between influenza pandemics and other natural disasters, and developing appropriate Contingency Plans
and Response Plans to be ready to assist in time of need, community volunteer organizations can make a difference. The Civil Air Patrol is one such volunteer organization that has members who train diligently and continuously to be ready to act when needed by Public Health officials to assist during an influenza pandemic.
References


Avian Flu Cases.


Civil Air Patrol Fact Sheet (2009). Civil Air Patrol National Headquarters Publication. Maxwell AFB.


Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist.

Ethical and Legal Considerations in Mitigating Pandemic Disease; Workshop Summary (2007). Institute of Medicine of the National Academies, National Academies Press, Washington, D.C.


Thomas, J. (2007). Ethical Concerns in Pandemic Influenza Preparations and Responses. Paper commissioned by the Southeast Regional Center of Excellence for Emerging Infections and Biodefense.


U.S. Department of Health and Human Services (2007). Pandemic Severity Index, Publication by the CDC.


Useful Practice: Civil Air Patrol Delivery of Medical Countermeasure (2009). Published by The Association of State and Territorial Health Officials.

