

EMS Pandemic Influenza Guidelines for Statewide Adoption

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Task 6.1.13.6
National Strategy for Pandemic Influenza:
Implementation Plan



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FOREWORD

An influenza pandemic could seriously impact the Nation – its health care delivery system, its transportation system, its economy and its social structure. As the Nation’s health care “safety net,” emergency medical services (EMS) will be faced with higher demands for services while experiencing problems similar to the rest of the Nation – increased employee absenteeism, disruption of supply chains and increased rates of illness and death. 9-1-1 Public Safety Answering Points (PSAPs) serve as the public’s single point of access to EMS, law enforcement and fire services – as well as an avenue for requesting many other services. Ensuring both 9-1-1 and EMS are well-integrated into the Nation’s pandemic influenza planning and response is essential to the Nation’s health and safety in the event of a pandemic.

The *National Strategy for Pandemic Influenza: Implementation Plan* (May 2006) directed the Department of Transportation, in cooperation with its Federal partners, to develop statewide EMS pandemic influenza guidelines, as well as model protocols for 9-1-1 call centers and PSAPs. With its long-standing commitment to improving the Nation’s EMS system and sharing responsibility with the National Telecommunications Information Administration (NTIA) for the National E9-1-1 office, the National Highway Traffic Safety Administration (NHTSA) was delegated responsibility for both tasks.

From the outset, the need for joint development of the EMS guidelines and the 9-1-1 protocols was clear. 9-1-1 call taking and dispatching must be coordinated with the EMS response system and with public health officials. EMS response is dependent on 9-1-1 and upon public health coordination. Consistency of both messaging and response is essential.

Two stakeholder meetings were convened by the National Association of State EMS Officials (NASEMSO) to address the tasks and to solicit stakeholder guidance. The meetings were attended by a wide variety of national stakeholder organizations within the EMS, 9-1-1 and public health communities and by Federal agencies.

The dialogue among participants was robust and valuable. Their interactions, advice, and insights resulted in two excellent documents. Although the format of each document is slightly different, the stakeholders worked hard to ensure that the two are closely related and interconnected. It is recommended that both documents, “*EMS Pandemic Influenza Guidelines for Statewide Adoption*” and “*Preparing for Pandemic Influenza: Recommendations for Protocol Development for 9-1-1 Personnel and Public Safety Answering Points (PSAPs)*,” be reviewed together.

The audience for both documents is statewide EMS agencies, statewide 9-1-1 managers, local EMS agencies, 9-1-1 Public Safety Answering Point managers and other key stakeholders who could assist these agencies in the event of an influenza pandemic. Both documents are intended to provide guidance to State and local agencies in developing their pandemic influenza plans and operational protocols. Given the unique configuration of systems and local resources, it was not feasible to develop detailed national operational protocols for EMS or for 9-1-1. However, a sample 9-1-1 call flow sheet, integrated with the EMS system, is provided as well as sample protocols (inter-related) for both EMS and for 9-1-1.

The documents can be used to provide a framework for pandemic influenza planning. They provide general guidance, considerations, references and ideas that can enhance the optimal delivery of emergency care and 9-1-1 services during an influenza pandemic. In the process of preparing these documents, stakeholders noted an important additional benefit that PSAPs and EMS agencies can take from the effort of getting ready for pandemic influenza: The collaboration with public health can be a catalyst and model for other community initiatives for everyday operations, as well as disaster planning.

AN OVERVIEW OF THE EMS PLANNING ASSUMPTIONS AND GUIDELINES

Introduction

While this document provides broad-based Pandemic Influenza Guidelines for consideration by State and local emergency medical services agencies, the specifics of pandemic influenza preparation and response are unique to the configuration and resources of each State EMS system and local EMS agency.

The EMS Pandemic Influenza Planning Assumptions provide the basic underpinnings of the recommended guidelines. Each of the guidelines is presented in this section; the remainder of the document provides detailed information about each guideline including the rationale, considerations and pertinent background material.

Coordination among the 9-1-1 Public Safety Answering Point, the Emergency Medical Services System and the Public Health System is of paramount importance. The *Sample Call Flow for Standard EMD Calls vs. Pandemic Flu Calls* (Figure 1) illustrates a sample call flow decision to be made in a period of pandemic influenza vs. an agency's regular day-to-day operation; coordination between EMS and 9-1-1 is essential to system operation. The *Sample Pandemic Influenza EMS Dispatch Protocol* (Figure 2) shows examples of modified EMS and 9-1-1 system response plans based on the CDC's Pandemic Severity Index - again demonstrating the need for close coordination between 9-1-1 and EMS. The *Sample Pandemic Influenza EMS Operating Protocol* (Figure 3) demonstrates the potential need for EMS protocol modifications, and also utilizes the Pandemic Severity Index for planning. Each of these is a sample only and is intended to demonstrate the need for systems coordination and the difference in "conceptual thinking" necessitated by a potential influenza pandemic. State EMS agencies and local EMS and 9-1-1 systems should adopt protocols and response plans unique to their specific resources and circumstances.

EMS Pandemic Influenza Planning Assumptions

The following assumptions are the basis for the EMS Pandemic Influenza Planning Guidelines:

1. State, local, tribal, and territorial EMS agencies should integrate pandemic influenza surveillance, mitigation and response into their EMS system. An EMS system's response to pandemic influenza should be flexible, scaleable, dynamic and timely with the ability to change rapidly based on new information about the virus and other public health emergencies. Standards, protocols and other guidelines will be modified based on the specific threat to the public's health.
2. EMS must be "at the table" to provide leadership during planning of State and community pandemic influenza surveillance, mitigation and response. EMS must be a part of community-wide planning and exercises.

3. The principles of EMS systems are essential to pandemic influenza planning and response and should include medical direction, quality improvement, education, training, communications, coordination and appropriate supplies and personal protective equipment. Sufficient legal authority must be in place while still allowing the system to be responsive to the exigencies of the situation.
4. EMS is one component of a coordinated system response to an influenza pandemic involving 9-1-1, public health, public safety, emergency management, health care and others.
5. One solution or protocol may not be applicable for all EMS systems at a State or a local level. It is impossible to establish one set of protocols/procedures that works for every single jurisdiction.
6. Optimal patient outcomes will depend on an EMS system's pre-planned ability to quickly integrate emerging medical research/information. The effectiveness of patient care will require responsive medical direction, training and coordinated system oversight.
7. EMS and 9-1-1 stakeholders must be integrated into the Incident Command System and be fully engaged as collaborative partners in the response to pandemic influenza. Pandemic influenza mitigation and response may require the integration of disciplines not traditionally involved in incident mitigation and response, such as medical direction, EMS education, disease surveillance and 9-1-1.
8. EMS providers can play a role in pandemic influenza mitigation due to their capability to rapidly respond, assess, treat and report patients with signs and symptoms of pandemic influenza. Their early involvement in community mitigation strategies such as Targeted Layered Containment may help to control the spread of the virus and reduce the subsequent use of health care resources.
9. EMS pandemic influenza plans should address all patient populations including children, the elderly, and those with special needs. (See Appendix O)

EMS Pandemic Influenza Guidelines for Statewide Adoption

The guidelines below are listed for quick reference. However, each are expanded upon more fully in the following pages and are accompanied by a rationale, considerations, and supporting background to provide additional assistance to EMS pandemic influenza planners.

Section 1: EMS Planning

- 1.1 State, local, tribal, and territorial EMS agencies should adopt EMS pandemic influenza plans and operational procedures that define the role of EMS in preparing for, mitigating and responding to pandemic influenza.
- 1.2 State, local, tribal, and territorial pandemic influenza plans and operational procedures should identify leadership and authority that are consistent with the National Response Plan and the National Incident Management System, including the Incident Command System, and be carefully coordinated with local emergency management plans.
- 1.3 EMS pandemic influenza plans should establish a program of pre-pandemic training and exercising to prepare EMS personnel for their role in the local pandemic influenza plan.
- 1.4 State, local, tribal and territorial EMS agencies, in coordination with Federal, State and local public health, 9-1-1, emergency management and health care officials should ensure that EMS pandemic influenza plans define a process for gathering and developing updated pandemic influenza information, including clinical standards, treatment protocols and just-in-time training and disseminate it to local EMS medical directors and EMS agencies.
- 1.5 State, local, tribal, and territorial EMS and 9-1-1 agencies should define a public and media communications plan that is coordinated with the Incident Command System and public health officials to assure consistent education and instructions to the public.

Section 2: The Role of EMS in Influenza Surveillance and Mitigation

- 2.1 State, local, tribal, and territorial EMS pandemic influenza plans should identify the role that EMS agencies should play in ongoing disease surveillance.
- 2.2 State EMS pandemic influenza plans should establish or identify a statewide system that tracks: a) patient location, b) healthcare facility availability, and c) patient disposition to allow public health and epidemiologic analysis.
- 2.3 State, local, tribal, and territorial EMS agencies, in coordination with public health authorities and consistent with resources, legal authority and education, should define procedures for involving EMS providers in pandemic influenza community mitigation strategies, including Targeted Layered Containment.

Section 3: Maintaining Continuity of EMS Operations During an Influenza Pandemic

- 3.1 As part of a systematic all-hazards approach to EMS pandemic influenza planning, State, local, tribal, and territorial EMS agencies should have plans in place that allow EMS to maintain its response to day-to-day emergencies while addressing the demands of pandemic influenza mitigation.
- 3.2 State, local, tribal, and territorial EMS pandemic influenza plans should include a continuity of operations (COOP) plan that ensures essential functions and vital services can be performed during an influenza pandemic or other major public health emergency.
- 3.3 State, local, tribal, and territorial EMS agencies should have backup plans to augment the EMS workforce.
- 3.4 EMS agencies should plan for disruptions in the availability of equipment, supplies and services.
- 3.5 State, local, tribal, and territorial EMS pandemic influenza plans should include effective, reliable interoperable communications systems among EMS, 9-1-1, emergency management, public safety, public health and health care agencies.
- 3.6 EMS pandemic influenza plans should include compatible communications equipment and communications radio frequency plans for common hospital diversion and bed capacity situational awareness at the local, State and regional level.

Section 4: Legal Authority

- 4.1 State EMS pandemic influenza plans should establish procedures for EMS providers to deviate legally from their established treatment procedures to support mitigation of and response to pandemic influenza and other public health emergencies while still assuring appropriate education, medical oversight and quality assurance.
- 4.2 State EMS pandemic influenza plans should, in coordination with public health, emergency management, and law enforcement agencies, identify mechanisms to ensure freedom of movement of EMS assets (vehicles, personnel, etc.) when faced with restricted travel laws, isolation/quarantine or security measures.

Section 5: Clinical Standards and Treatment Protocols

- 5.1 Each State, local, tribal, and territorial EMS system should have an EMS medical director to provide medical oversight of EMS pandemic influenza planning, mitigation and response.
- 5.2 State, local, tribal and territorial EMS pandemic influenza plans should define mechanisms for rapid development, adoption or modification of prehospital clinical standards and triage and treatment protocols before or during an influenza pandemic that are based upon the most recent scientific information.

- 5.3 State, local, tribal, and territorial EMS pandemic influenza plans should define consistent, system-wide procedures for the rapid distribution of new or modified prehospital EMS treatment and triage protocols before or during an influenza pandemic.
- 5.4 State, local, tribal, and territorial EMS pandemic influenza plans should define a process for providing just-in-time training for EMS agencies, EMS providers, EMS medical directors and PSAPs.
- 5.5 State, local, tribal, and territorial EMS pandemic influenza plans should coordinate with public health and 9-1-1 officials and the local medical examiner/coroner to define protocols and processes for fatality management during pandemic influenza.
- 5.6 EMS pandemic influenza plans should consider the role EMS providers could serve in “treating and releasing” patients without transporting them to a healthcare facility.

Section 6: EMS Workforce Protection

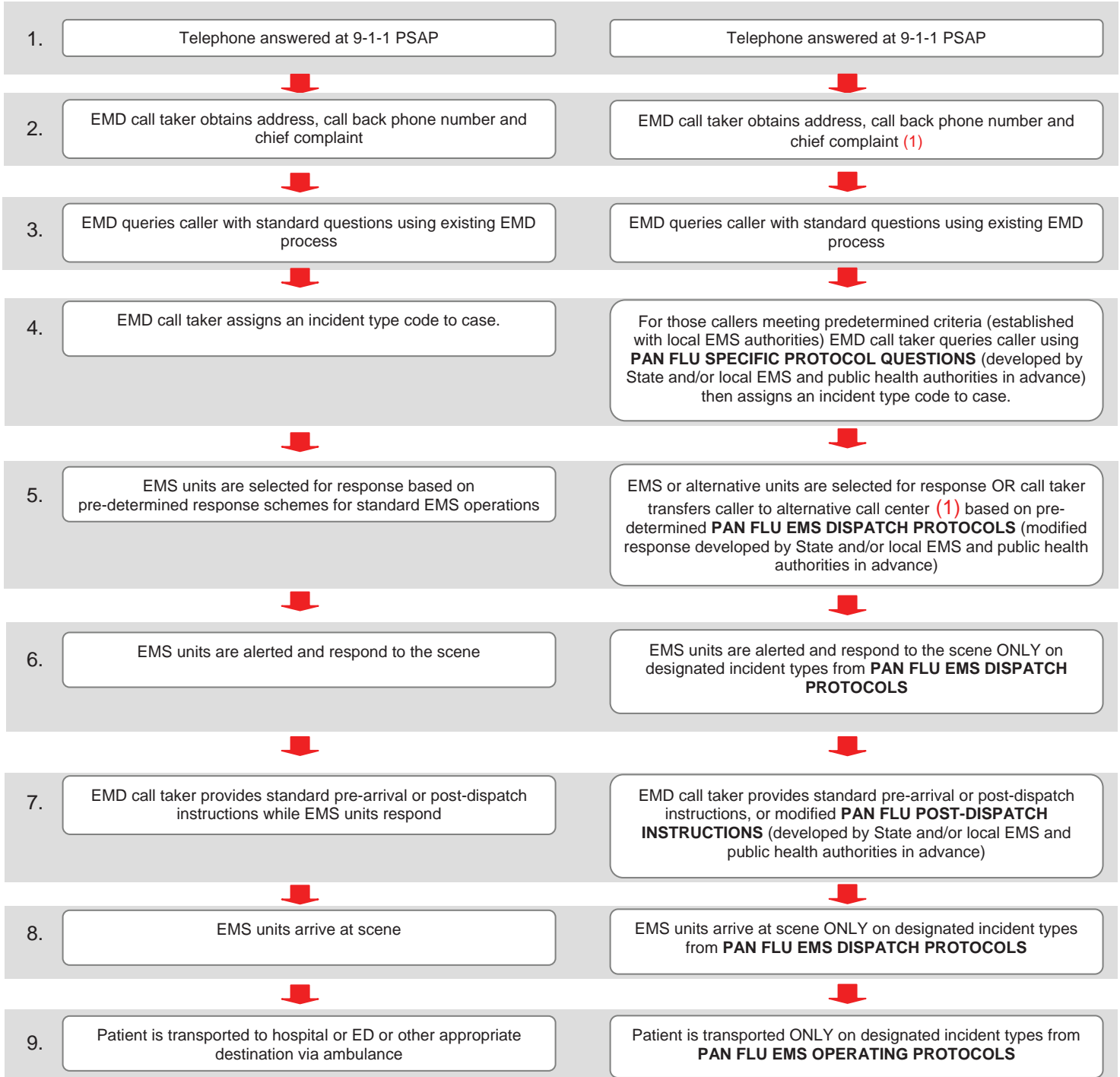
- 6.1 State, local, tribal, and territorial EMS pandemic influenza plans should identify strategies to protect the EMS and 9-1-1 workforce and their families during an influenza pandemic.
- 6.2 EMS agencies should consistently practice basic infection control procedures including vehicle/equipment decontamination, hand hygiene, cough and respiratory hygiene, and proper use of FDA cleared or authorized medical personal protective equipment (PPE) regardless of the likelihood of an influenza pandemic.
- 6.3 State, local, tribal, and territorial EMS pandemic influenza plans should define system-wide processes for providing vaccines and anti-viral medication to EMS personnel.
- 6.4 State, local, tribal, and territorial EMS agencies, in coordination with public health authorities, should identify a mechanism to address issues associated with isolation and quarantine of EMS personnel.
- 6.5 State, local, tribal, and territorial EMS pandemic influenza plans should define a process for offering support services, including mental health services, to EMS personnel and their families during an influenza pandemic.

Figure 1: Sample Call Flow for Standard EMD Calls vs. PandemicFlu Calls

This chart is for illustrative purposes only, to be modified to locally adopted protocols as need.

Standard EMD Call Flow

Pandemic Flu Call Flow (using local Pan Flu protocols)



(1) At different points in the Pandemic Flu Call Flow process, an EMD call taker may transfer a call to an alternative call center (e.g. poison control centers, nurse advice lines, health care call centers) based on pre-determined Pan Flu EMS Dispatch Protocols. PSAPs should also plan to accept incoming calls from alternative call centers. A community's mitigation strategy may include call takers instructing callers on social distancing, home care or other care options.

Figure 2: Sample Pandemic Influenza EMS Dispatch Protocol

The “Sample Pandemic Influenza EMS Dispatch Protocol” is for illustrative purposes only. It is **one example** of how resources may be reallocated within the system during an influenza pandemic utilizing the Pandemic Severity Index. EMS planners should consider other factors, including community mitigation strategies, that will impact how resources will be used.

These factors may include:

1. Increased Demand for Services
2. Reduction of EMS/Dispatch Workforce
3. Healthcare Facility Bed Availability

Dispatch Priority Level (should match vendor or call center based dispatch protocol/tiered algorithm)	Response (Standard Operating Mode)	Pandemic Severity Index Category 1	Pandemic Severity Index Category 2-3	Pandemic Severity Index Category 2-3
Classification 1 Confirmed/Suspected Cardiac Arrest (Not Breathing, Unresponsive per 911 call)	Closest AED Unit; Closest 1 st Responder; Closest ALS Ambulance (HOT)	Closest AED Unit; Closest 1 st Responder; Closest BLS Ambulance if available (HOT)	Closest AED Unit (HOT); Closest 1 st Responder if available (HOT)	Closest AED Unit if available (HOT)
Classification 2 Life Threatening Emergency/Potentially Life Threatening/Confirmed Unstable Patient(s)	Closest 1 st Responder; Closest ALS Ambulance (HOT)	Closest 1 st Responder; Closest ALS Ambulance if available; BLS ambulance if ALS unit not available (HOT)	Closest 1 st Responder; Closest Ambulance available (ALS or BLS) (HOT)	Closest 1 st Responder if available; Closest Ambulance available (ALS or BLS) (HOT)
Classification 3 Non-Critical/Currently Stable Patient(s) Requiring ALS Assessment	Closest ALS Ambulance (COLD)	Closest Ambulance available (ALS or BLS)(COLD)	Closest Ambulance Available (ALS or BLS) (COLD)	Referral to Alternate call center; or advise self-transport to Alternate Treatment Site
Classification 4 BLS Assessment for unknown/possibly dangerous scenes	Closest 1 st Responder (HOT); Closest BLS Ambulance (COLD)	Closest 1 st Responder (HOT); Closest BLS Ambulance if available	Closest 1 st Responder (HOT)	Closest 1 st Responder if available; or Closest stand-in responder unit
Classification 5 BLS Treatment	BLS Ambulance (COLD)	BLS Ambulance (COLD)	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)
Classification 6 Non Ambulance Care	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)	Alternate call center (such as Poison Control Center, Nurse advice line, health care call center, etc.)

(HOT and COLD defined in glossary, Appendix A)

*See also **SAMPLE PANDEMIC INFLUENZA EMS OPERATING PROTOCOLS**

Figure 3: Sample Pandemic Influenza EMS Operating Protocols

The “Sample Pandemic Influenza EMS Operating Protocol” is for illustrative purposes only. It is one example of how resources may be reallocated within the system during an influenza pandemic utilizing the Pandemic Severity Index. EMS planners should consider other factors, including community mitigation strategies, that will impact how resources will be used. These factors may include:

1. Increased Demand for Services
2. Reduction of EMS/Dispatch Workforce
3. Healthcare Facility Bed Availability

*See also **SAMPLE PANDEMIC INFLUENZA EMS DISPATCH PROTOCOL**

Sample Protocols	Pandemic Severity Index Category 1	Pandemic Severity Index Category 2-3	Pandemic Severity Index Category 4-5
Triage <i>(to occur both at the 9-1-1 center and on scene)</i>	Determine whether to implement triage and treatment protocols that differentiate between non-infected and potentially infected patients based on CDC case definition.	Triage would focus on identifying and reserving immediate treatment for individuals who have a critical need for treatment and are likely to survive. The goal would be to allocate resources in order to maximize the number of lives saved.	Using screening algorithm to ensure only severe get response
Treatment	Ambulatory patients will be redirected to alternate care sites within or outside of the hospital.	Treatment protocols may be modified to enable and encourage patients to receive care at home. Consider provision of antiviral prophylaxis if effective, feasible and quantities sufficient.	Certain lifesaving efforts may have to be discontinued. Provision of antiviral prophylaxis if effective, feasible and quantities sufficient.
Equipment	Prudent use of equipment Implementation of strict PPE/infection control protocols for patients meeting case definition established by CDC during the response phase of a 9-1-1 call.	Selective criteria in place for priority use. Some scarce and valuable equipment, such as ventilators, may not be used without staff available who are trained to operate them.	Strict criteria in place for equipment use. Some scarce and valuable equipment, such as ventilators, may not be used without staff available who are trained to operate them.
Transportation	Non-urgent and ambulatory victims may have to walk or self-transport to the nearest facility or hospital.	Emergency medical services may transport victims to specific quarantine or isolation locations and other alternate care sites.	Only severe cases transported via ambulance
Destination	Alternate care sites will be used for triage and distribution of vaccines or other prophylactic measures, as well as for quarantine, minimum care, and hospice care.	Ambulatory and some non-ambulatory patients may be diverted to alternate care sites (including non-medical space, such as cafeterias within hospitals, or other non-medical facilities)	Emergency department access may be reserved for immediate-need patients.

Introduction and Background

Purpose

The *National Strategy for Pandemic Influenza*¹ guides our Nation's preparedness and response to an influenza pandemic and provides a framework for coordinating planning efforts consistent with the National Security Strategy and the National Strategy for Homeland Security. The *National Strategy for Pandemic Influenza: Implementation Plan*² directs Federal departments and agencies to undertake more than 300 actions in support of the *National Strategy for Pandemic Influenza*. Among these are two tasks assigned to the Department of Transportation (DOT), one with a focus on emergency medical services and one with a focus on 9-1-1. These tasks are:

- 6.1.13.6. DOT, in coordination with HHS, DHS, State, local, and tribal officials and other EMS stakeholders, shall develop suggested EMS pandemic influenza guidelines for statewide adoption that address: clinical standards, education, treatment protocols, decontamination procedures, medical direction, scope of practice, legal parameters, and other issues, within 12 months. *Measure of performance:* EMS pandemic influenza guidelines completed.
- 6.1.4.2. DOT, in cooperation with HHS, DHS, and DOC, shall develop model protocols for 9-1-1 call centers and public safety answering points that address the provision information to the public, facilitate caller screening, and assist with priority dispatch of limited emergency medical services, within 12 months. *Measure of performance:* model protocols developed and disseminated to 9-1-1 call centers and public safety answering points.

While two separate documents were developed to address each task, the documents are intended to be used in tandem.

How the document was developed

The document was developed based on existing Federal guidelines; international, national, State and regional pandemic influenza and disaster response plans; and relevant research, publications and expert interviews. In addition, two stakeholder meetings (October 12-13, 2006 and March 1-2, 2007) were convened by the National Association of State EMS Officials (NASEMSO) to address the tasks and gain stakeholder guidance, with funding from the National Highway Traffic Safety Administration. The meetings were attended by a wide variety of national stakeholder organizations within the EMS, 9-1-1 and public health communities. In addition, Federal agency representation and expertise was involved from the Department of Health and Human Services, Department of Homeland Security, Department of Commerce, Department of Transportation, Department of Justice and others. The stakeholders provided input throughout the

¹ Homeland Security Council. ONLINE. 2005. *National Strategy for Pandemic Influenza*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [18 March 2007].

² Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

development of these guidelines. A list of the participating stakeholder organizations, as well as a list of participants in the development process, may be found in Appendix S.

Pandemic Influenza – Overview

An influenza pandemic may occur when a novel influenza virus emerges that infects humans, causes illness in humans, and can be efficiently transmitted between humans. Novel influenza viruses are newly identified influenza viruses to which the population has little or no immunity and that require close monitoring to determine whether they are capable of causing a pandemic.

To better understand the role of EMS before and during an influenza pandemic, it is useful to identify how the term “pandemic influenza,” commonly referred to as “pandemic flu,” is used to distinguish between an influenza pandemic and other influenza outbreaks.

- **Pandemic Influenza (or pandemic flu)** is virulent human influenza A virus that causes a global outbreak, or pandemic, of serious illness in humans. Because there is little natural immunity, the disease spreads easily and sustainably from person to person. At the time of publication of this document, there is no pandemic influenza.
- **Seasonal (or common) Influenza** is a respiratory illness caused by both human influenza A and B viruses that can be transmitted person to person. Most people have some immunity and a vaccine is available.
- **Avian (or bird) Influenza** is caused by influenza A viruses that occur naturally among wild birds. Low pathogenic avian influenza is common in birds and causes few problems. Highly pathogenic avian influenza A (H5N1), or HPAI H5N1, is deadly to domestic fowl and can be transmitted from birds to humans. There is no human immunity and at this point in time only one Food and Drug Administration (FDA) approved human vaccine has been approved. The FDA has approved this vaccine for individuals who may be at increased risk of exposure to the HPAI H5N1 virus, but it is not commercially available. This vaccine has been included within the Strategic National Stockpile (SNS).

Animals are the most likely reservoir for an emerging influenza virus. Avian influenza viruses played a role in the development of the human influenza viruses associated with the last three influenza pandemics. Two of these viruses remain in circulation among humans today and are responsible for the majority of seasonal influenza cases each year.

There will be very little discussion of specifics regarding avian influenza in this document as it is impossible to predict whether an avian influenza virus will in fact be the cause of a future pandemic. Concern is high with the current circulating HPAI H5N1 virus due to its high mortality among reported human cases and its broad geographic distribution. Most cases of HPAI H5N1 virus infection in humans have resulted from direct or close contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces possibly contaminated from feces and/or respiratory secretions from

infected birds. While there have been a few cases of probable person-to-person spread of HPAI H5N1, it has been limited, inefficient and unsustainable as of this point in time.

EMS planners should be able to distinguish among the following:

- **Endemic Levels** is the constant presence of a disease or infectious agent in a certain geographic area or population group.
- **Epidemic** is the rapid spread of a disease in a specific area or among a certain population group.
- **Pandemic** is a worldwide epidemic - an epidemic occurring over a wide geographic area and affecting a large number of people.

For example, the Severe Acute Respiratory Syndrome (SARS) epidemic from 2002-2003 never progressed to a pandemic even though SARS moved to Canada from its origins in Asia. Although SARS covered a wide geographic area, the number of people affected by the disease was limited.

Additional terms used in this document are defined in the Glossary (Appendix A).

Influenza – What is it and how is it transmitted?

Although it is recognized that a pandemic influenza virus may not present and/or affect patients in the same fashion as seasonal influenza, a general awareness of the clinical presentation and transmission of seasonal influenza may assist in planning and responding to an influenza pandemic. In addition, information about prior pandemics as well as the circulating HPAI H5N1 viruses is useful in establishing considerations for planning a response.

As described by the Department of Health and Human Services³, seasonal influenza typically has an abrupt onset, with symptoms of fever (usually high), headache, extreme tiredness, dry cough, sore throat, runny or stuffy nose, muscle aches. Stomach symptoms such as nausea, vomiting and diarrhea also can occur, but are more common in children than adults. The time from exposure to illness onset is usually 1 to 4 days, with an average of 2 days. Most patients recover within 3 to 7 days. Most healthy adults may be able to infect others beginning 1 day before symptoms develop and up to 5 days after becoming sick. Children can be infectious for 10 or more days, and young children can shed the virus for several days before the onset of illness.

Influenza is primarily transmitted from person to person via large virus-laden droplets (particles $>5 \mu\text{m}$ in diameter) that are generated when infected persons cough or sneeze; these large droplets can then settle on the mucosal surfaces of the upper respiratory tracts of susceptible persons who are near (e.g., within 3 feet of) infected persons. Transmission

³ US Department of Health and Human Services. ONLINE. 2005. *HHS Pandemic Influenza Plan*. Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/> [3 April 2007]

may also occur through direct contact or indirect contact with respiratory secretions such as when touching surfaces contaminated with influenza virus and then touching the eyes, nose or mouth.⁴

Likelihood of an Influenza Pandemic

Three conditions must be met for a pandemic to begin:

- A new influenza virus must emerge for which there is little or no human immunity;
- It must infect humans and cause illness; and
- It must spread easily and sustainably (continue without interruption) among humans

Although these three conditions were met in previous pandemics, to date the first two conditions have been met with the HPAI H5N1 virus, but the third condition has not been met.

Global Perspective

Pandemics have occurred intermittently for centuries. The last three pandemics, in 1918, 1957 and 1968, killed approximately 50 million, 1-2 million and 700,000 people worldwide, respectively. Although neither timing nor severity can be predicted, history and science suggest that we will face one or more pandemics in this century.

The most concerning current pandemic threat stems from widespread and expanding outbreaks of HPAI H5N1 virus infection among birds in Asia, Europe, Middle East and Africa. HPAI H5N1 virus does not usually infect people, but infections with these viruses have occurred in humans. In fact, of the few avian influenza viruses that have crossed the species barrier to infect humans, HPAI H5N1 has caused the largest number of detected cases of severe disease and death in humans. However, at this time, the HPAI H5N1 virus has not shown an ability to transmit efficiently between humans as is seen with the seasonal influenza viruses. There is concern that the HPAI H5N1 virus may acquire this capability through genetic mutation or exchange of genetic material with a human influenza virus.

It is impossible to know whether the currently circulating HPAI H5N1 viruses will cause a human influenza pandemic. The widespread occurrence of HPAI H5N1 in birds and the likelihood of mutations over time raise concerns that the virus will become transmissible between humans, with potentially catastrophic consequences. Even if this does not happen with the current HPAI H5N1 viruses, history suggests that a different influenza virus will emerge and result in the next pandemic.

⁴ Centers for Disease Control and Prevention. ONLINE. 2007. *Guidelines and Recommendations Infection Control Guidance for the Prevention and Control of Influenza in Acute-Care Facilities*. CDC. Available: <http://www.cdc.gov/flu/professionals/infectioncontrol/healthcarefacilities.htm> [3 April 2007]

New information continues to emerge about the threat of an influenza pandemic and may be found online at www.pandemicflu.gov. [See Appendix M for additional resources and Web sites that are updated regularly with the latest information about pandemic influenza.]

Potential Impacts of an Influenza Pandemic

The global impact of pandemic influenza could be severe in terms of lives lost and individual and community suffering, as well as severe negative impact upon social and economic systems. The following are potential impacts of pandemic influenza:

- **Rapid Worldwide Spread:** When a pandemic influenza virus emerges, its global spread is likely inevitable. Preparedness activities should assume that the entire world population will be affected by the virus. Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but would not be able to stop it.
- **Health Care Systems Overloaded:** Most people have little or no immunity to a pandemic virus. Infection and illness rates will be very high. A substantial percentage of the world's population will require some form of medical care. Nations are unlikely to have the staff, facilities, equipment and hospital beds needed to cope with large numbers of people who suddenly fall ill. Death rates may be high, depending on four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations and the effectiveness of preventive measures.
- **Medical Supplies Inadequate:** The need for vaccine and antiviral medications is likely to outstrip supply early in a pandemic period. In addition, a pandemic may create a shortage of hospital beds, ventilators and other supplies. Surge capacity at non-traditional sites such as schools may be created to cope with demand. Shortages may result in the need for difficult decisions regarding who should get antiviral drugs and vaccines.
- **Economic and Social Disruption:** Travel bans, closings of schools and businesses and cancellations of events could have major impact on communities and citizens. Care for sick family members and fear of exposure can result in significant worker absenteeism.

As part of the effort to prepare for pandemic influenza, State and local EMS and 9-1-1 planners will want to predict how such a disease outbreak might impact their community. The Centers for Disease Control and Prevention (CDC) offers a software program, FluAid, to assist planners in determining the impact that pandemic influenza may have in their community.

FluAid is a test version of software designed to assist State and local level planners by providing estimates of potential impact specific to their locality. FluAid provides only a range of estimates of impact in terms of deaths, hospitalizations and outpatient visits due

Pandemic Influenza in History

Historically, the 20th century has seen three pandemics of influenza:

- 1918 influenza pandemic caused at least 675,000 U.S. deaths and up to 50 million deaths worldwide
- 1957 influenza pandemic caused at least 70,000 U.S. deaths and 1-2 million deaths worldwide
- 1968 influenza pandemic caused about 34,000 U.S. deaths and 700,000 deaths worldwide

Source: www.pandemicflu.gov

to pandemic influenza. The software cannot describe when or how people will become ill, or how a pandemic may spread through a society over time. FluAid is available at <http://www.cdc.gov/flu/tools/fluaid/index.htm>

Pandemic Influenza Phases

EMS and 9-1-1 planners should familiarize themselves with the phases of pandemic influenza identified by the World Health Organization (WHO) and the US Government pandemic stages. EMS and 9-1-1 planning for pandemic influenza should be done in the context of these phases.

The WHO recognizes six phases of pandemic influenza as well as specific objectives and strategic actions for each phase (See Figure 4). In Appendix R there are a list of suggested 9-1-1 and EMS activities and readiness steps that could be taken based on the different WHO pandemic phases.

Figure 4: WHO Influenza Stages and Strategies

Influenza Pandemic – Phases and Strategic Actions

	Phases	Transmission	Objectives	Strategic actions
Inter-pandemic period (planning and preparedness)	1	Influenza virus subtype in animals only (risk to humans low)	Strengthen pandemic preparedness at all levels	<ul style="list-style-type: none"> • Prepare Pandemic Preparedness Plan • Establish surveillance in animal • Establish human influenza surveillance • Establish collaboration between human and animal sectors
	2	Influenza virus subtype in animals only (risk to humans substantial)	Minimize the risk of transmission to humans; Detect and report rapidly, if it occurs	<ul style="list-style-type: none"> • Enhance animal surveillance and aggressive response to animal outbreaks • Strengthen human surveillance • Stockpile antiviral, PPE etc • Strengthen collaboration between different sectors and WHO/OIE/FAO • Develop and implement risk communication strategy • Prepare health and essential service contingency plan
Pandemic Alert (emergency and pre-emptive response)	3	Human infection (transmission in close contacts only)	Ensure rapid characterization of new virus Detect, notify and respond to additional cases	<ul style="list-style-type: none"> • Enhance animal surveillance and aggressive animal outbreak containment • Enhance human surveillance and aggressive outbreak management • Early strategic use of antivirals • Social distancing • Implement risk communication strategy • Issue alert for quick implementation of health and essential service contingency plan
	4	Limited human-to-human spread; small clusters <25 cases lasting <2 weeks	Contain the virus or delay its spread	
	5	Localized human to human spread; Larger clusters 25-50 cases over 2-4 weeks	Maximum efforts to contain or delay the spread	
Pandemic (minimizing impact)	6	Widespread in general population	Minimize the impact of the pandemic	<ul style="list-style-type: none"> • Implement health and essential services contingency plan • Risk communication; • Treat cases and contacts with antivirals, if available, • Social distancing: close schools, ban gatherings

Like WHO, the Federal Government also has developed a model that identifies various stages of pandemic influenza that correlates with the WHO phases, but further breaks down the pandemic period to allow for additional flexibility. (See Figures 5 and 6.)

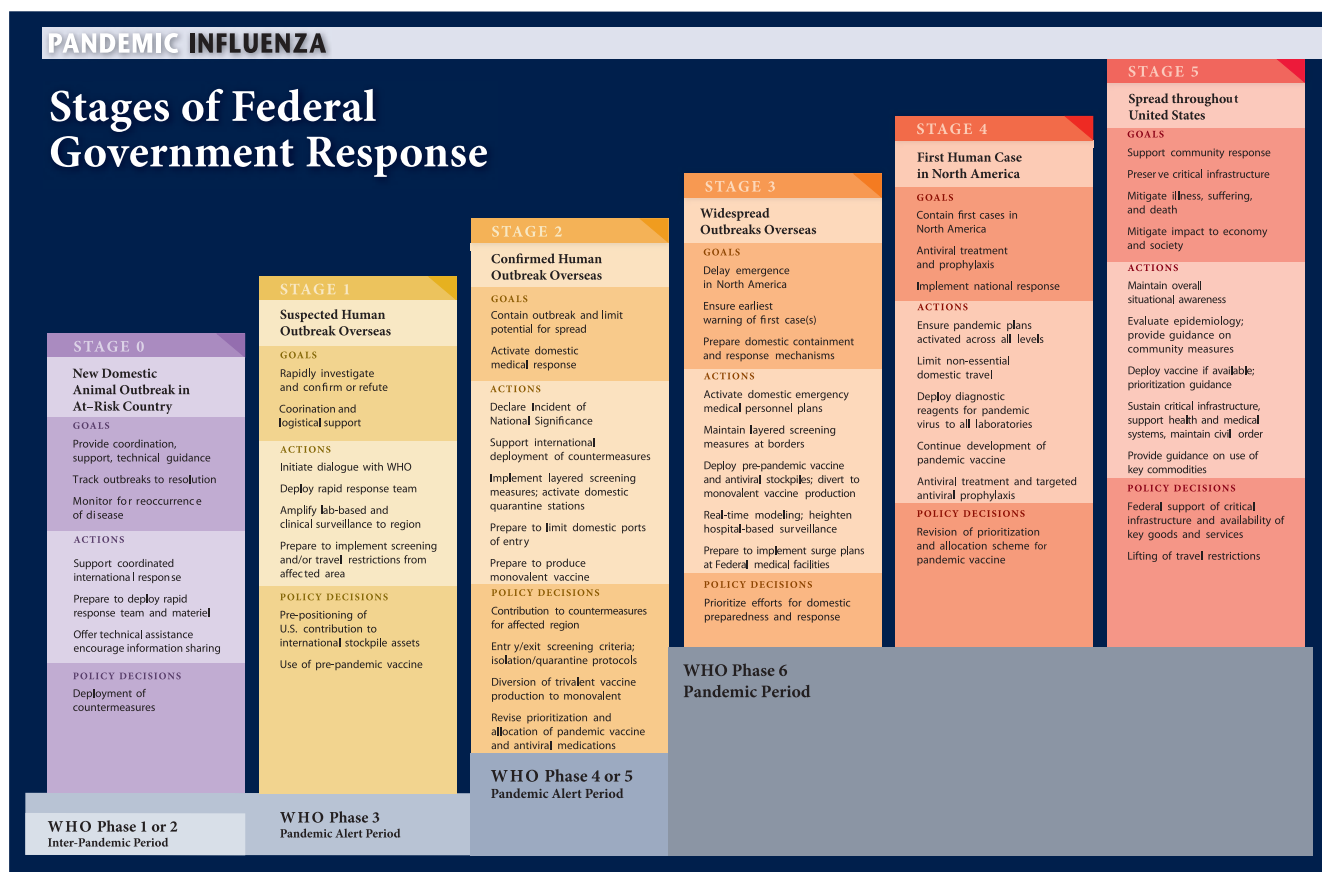
Figure 5: WHO and Federal Government Response Phases

PANDEMIC INFLUENZA

WHO Global Pandemic Phases and the Stages for Federal Government Response

WHO Phases		Federal Government Response Stages	
INTER-PANDEMIC PERIOD			
1	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human disease is considered to be low.	0	New domestic animal outbreak in at-risk country
2	No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.		
PANDEMIC ALERT PERIOD			
3	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	0	New domestic animal outbreak in at-risk country
		1	Suspected human outbreak overseas
4	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	2	Confirmed human outbreak overseas
5	Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).		
PANDEMIC PERIOD			
6	Pandemic phase: increased and sustained transmission in general population.	3	Widespread human outbreaks in multiple locations overseas
		4	First human case in North America
		5	Spread throughout United States
		6	Recovery and preparation for subsequent waves

Figure 6: Stages for Federal Government Response

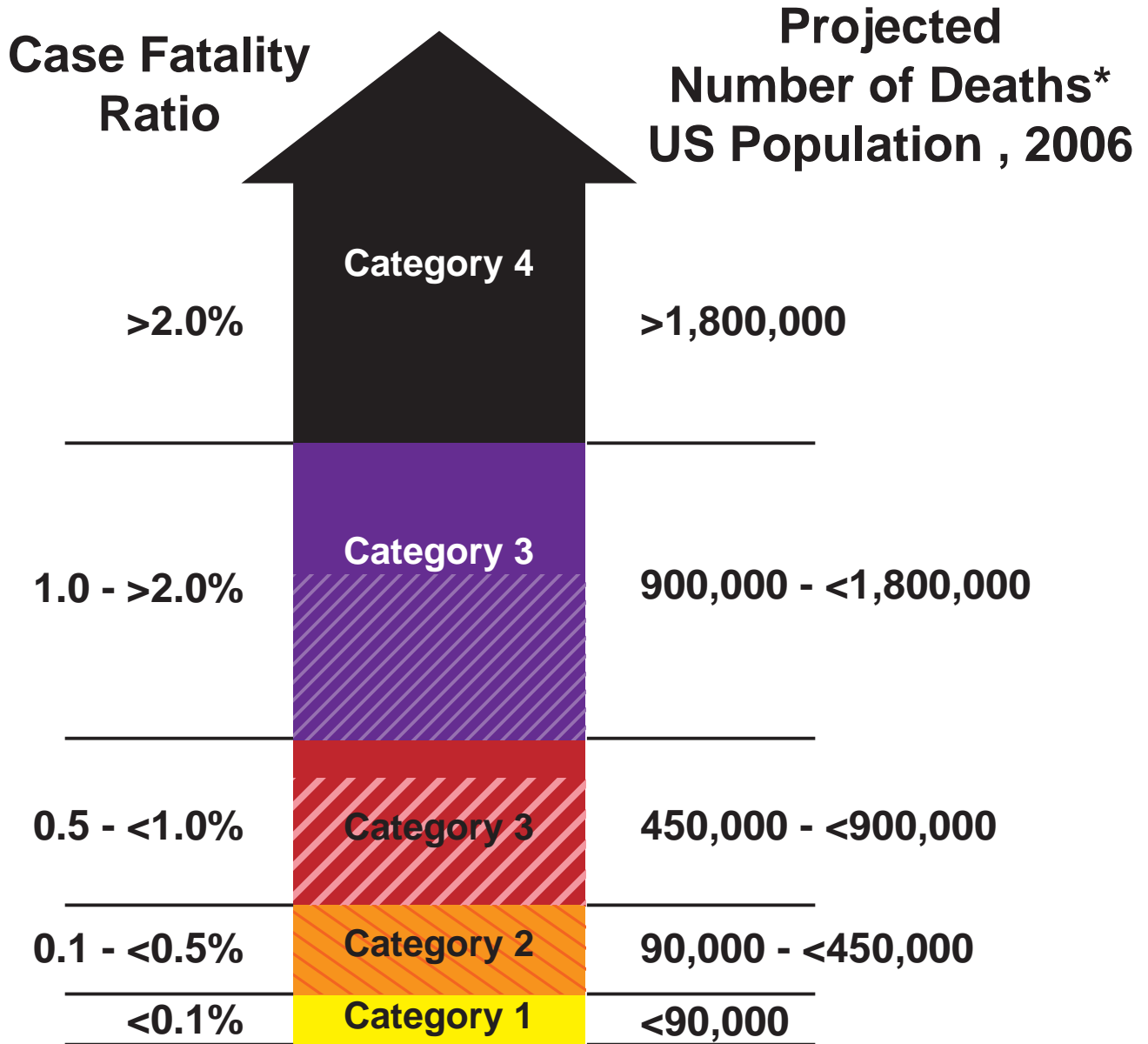


CDC has created the Pandemic Severity Index (Figure 7) which uses case fatality ratio as the critical driver for categorizing the severity of a pandemic. The index is designed to estimate the severity of a pandemic on a population level, allow better forecasting of the impact of a pandemic and enable recommendations on the use of mitigation interventions matched to the severity of influenza pandemics.

Pandemics will be assigned to one of five discrete categories of increasing severity (Category 1 to Category 5). The Pandemic Severity Index provides communities a tool for scenario-based contingency planning to guide local pre-pandemic preparedness efforts. Accordingly, communities facing the imminent arrival of pandemic disease will be able to use the pandemic severity assessment to define which pandemic mitigation interventions are indicated for implementation.⁵ This document uses the Pandemic Severity Index to guide planning of protocol development and alteration of response mechanisms.

⁵ US Department of Health and Human Services. ONLINE. 2007. *Community Strategy for Pandemic Influenza Mitigation*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commitigation.html> [21 March 2007]

Figure 7: CDC Pandemic Severity Index



*assumes 30% illness rate and unmitigated pandemic without interventions

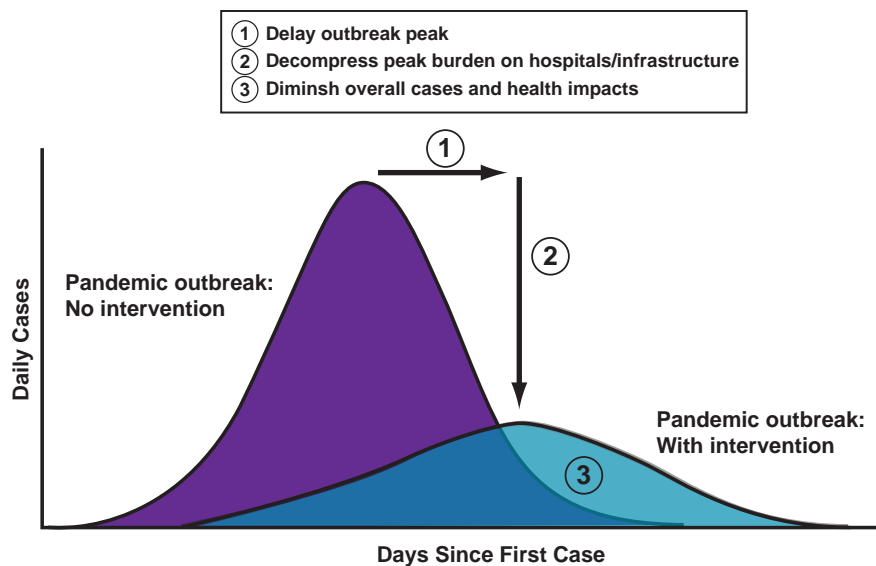
Federal Disease Containment Strategies

The *National Strategy for Pandemic Influenza: Implementation Plan*⁶ lists four primary strategies for preventing pandemic influenza:

- o Early detection;
- o Treatment with antiviral medications; and
- o The use of infection control measures to prevent transmission.
- o Vaccination;

CDC's *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States*⁷, issued on February 1, 2007, advocates for a pandemic mitigation framework that is based upon an early, targeted, layered application of multiple partially effective non-pharmaceutical measures. The curve below (Figure 8) demonstrates the overall goals of the community mitigation strategy in reducing the burdens of an influenza pandemic on a community. As shown, these include: (1) delaying the pandemic outbreak peak to allow for additional time to plan and respond, (2) decompressing the peak burden on the local infrastructure and (3) diminishing the overall number of cases and health impacts.

Figure 8: Goals of Community Mitigation



To accomplish these goals, the pandemic community mitigation interventions recommended by CDC, used in combination with individual infection control measures, such as hand-washing and cough etiquette, include:

⁶ Homeland Security Council. ONLINE. 2006. National Strategy for Pandemic Influenza: Implementation Plan. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

⁷ US Department of Health and Human Services. ONLINE. 2007. Community Strategy for Pandemic Influenza Mitigation. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commitigation.html> [21 March 2007]

- **Isolation and treatment (as appropriate) with influenza antiviral medications** of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
- **Voluntary home quarantine** of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.
- **Dismissal of students from school** (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
- **Use of social distancing measures** to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the non-pharmaceutical interventions (NPIs).

These community containment strategies, along with vaccination and the use of antiviral medications for prevention, should they be available, comprise the Targeted Layered Containment (TLC) strategy. The TLC strategy is based on the concept that when multiple methods of containment and treatment are appropriately coordinated at the community level, the effects of an influenza pandemic may be decreased.

CDC recommends a strategy that initiates these measures based on the severity of pandemic influenza as defined in the Pandemic Severity Index (Figure 7).⁸

Federal Planning Assumptions

While history offers useful benchmarks, the characteristics of a pandemic influenza viral strain are not known before it emerges. However, to facilitate planning, the Federal planning efforts make the following assumptions, based on the *National Strategy for Pandemic Influenza: Implementation Plan*:

⁸ US Department of Health and Human Services. ONLINE. 2007. Community Strategy for Pandemic Influenza Mitigation. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commitigation.html> [21 March 2007]

- Susceptibility to the pandemic influenza virus will be universal.
- Efficient and sustained person-to-person transmission signals an imminent pandemic.
- The clinical disease attack rate will be 30 percent in the overall population during the pandemic. Illness rates will be highest among school-aged children (about 40 percent) and decline with age. Among working adults, an average of 20 percent will become ill during a community outbreak.
- Some persons will become infected but not develop clinically significant symptoms. Asymptomatic or minimally symptomatic individuals can transmit infection and develop immunity to subsequent infection.
- While the number of patients seeking medical care cannot be predicted with certainty, in previous pandemics about half of those who became ill sought care. With the availability of effective antiviral medications for treatment, this proportion may be higher in the next pandemic.
- Rates of serious illness, hospitalization, and deaths will depend on the virulence of the pandemic virus and differ by an order of magnitude between more and less severe scenarios. Risk groups for severe and fatal infection cannot be predicted with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic or immunosuppressive medical conditions.
- Rates of absenteeism will depend on the severity of the pandemic. In a severe pandemic, absenteeism attributable to illness, the need to care for ill family members and fear of infection may reach 40 percent during the peak weeks of a community outbreak, with lower rates of absenteeism during the weeks before and after the peak. Certain public health measures (closing schools, quarantining household contacts of infected individuals) are likely to increase rates of absenteeism.
- The typical incubation period (interval between infection and onset of symptoms) for seasonal influenza is approximately 2 days.
- Persons who become ill may shed virus during and before the onset of illness. Viral shedding and the risk of transmission are likely to be greatest during the first 2 days. Children will play a major role in transmission of infection as their illness rates are likely to be higher, they shed more virus over a longer period of time, and they control their secretions less well.
- On average, infected persons will transmit infection to approximately two other people.
- Epidemics will last 6 to 8 weeks in affected communities.
- Multiple waves (periods during which community outbreaks occur across the country) of illness are likely to occur with each wave lasting 2 to 3 months. Historically, the largest waves have occurred in the fall and winter, but the seasonality of a pandemic cannot be predicted with certainty.

Federal planning assumptions are subject to change as new information about pandemic influenza becomes available.

Federal Preparedness Documents

EMS and 9-1-1 planners may find the following documents useful to their Pandemic Influenza preparedness efforts:

*National Strategy for Pandemic Influenza*⁹

The *National Strategy for Pandemic Influenza* identifies responsibilities for Federal, State and local government as well as non-governmental organizations, businesses and individuals. It is built on three pillars: preparedness and communication, surveillance and detection, and response and containment.

- **Preparedness and Communication:** Activities that should be undertaken before a pandemic to ensure preparedness, and the communication and coordination of roles and responsibilities to all levels of government, segments of society and individuals.
- **Surveillance and Detection:** Domestic and international systems that provide continuous situational awareness to ensure the earliest warning possible to protect the population.
- **Response and Containment:** Actions to limit the spread of the outbreak and to mitigate the health, social and economic impacts of a pandemic.

*National Response Plan*¹⁰

Pandemic influenza in the United States may result in activation of the National Response Plan (NRP). The NRP is the primary mechanism for coordination of the Federal Government response to terrorist attacks, major disasters and other emergencies, and forms the basis of the Federal pandemic response. Management of a pandemic response during NRP activation will be driven by decisions at the State and local level. Additional information about the NRP may be found in Appendix C.

*National Incident Management System (NIMS)*¹¹

While most emergency situations are handled locally, a major incident may require help from other jurisdictions, the State and the Federal Government. The National Incident Management System (NIMS) was developed so that responders from different jurisdictions and disciplines can work together better to respond to natural disasters and emergencies, including acts of terrorism. NIMS benefits include a unified approach to incident management; standard command and management structures; and emphasis on preparedness, mutual aid and resource management. Additional information about NIMS requirements may be found in

⁹ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

¹⁰ US Department of Homeland Security. ONLINE. 2004. *National Response Plan*. Department of Homeland Security. Available: www.dhs.gov/xlibrary/assets/NRP_FullText.pdf [18 March 2007].

¹¹ US Department of Homeland Security. ONLINE. 2004. *National Incident Management System*. Department of Homeland Security. Available: www.fema.gov/pdf/emergency/nims/nims_doc_full.pdf [18 March 2007].

Appendix I. An influenza pandemic has the potential of affecting the entire country simultaneously. Therefore certain aspects of NIMS, such as mutual aid, may be less pertinent than during other location specific disasters. However, many of the other concepts within NIMS, such as the incident command system (ICS), will continue to be vital to pandemic influenza planning and response.

Guidelines published by other Federal agencies may also be useful to EMS and 9-1-1 planners. The EMS system and the 9-1-1 system must be dynamic and capable of responding quickly to new guidance and new or revised treatment modalities. Current guidance documents are listed in Appendix M.

EMS Pandemic Influenza Guidelines for Statewide Adoption

Section 1 – EMS Planning

Guideline 1.1 – Plans and Operational Procedures

State, local, tribal, and territorial EMS agencies should adopt EMS pandemic influenza plans and operational procedures that define the role of EMS in preparing for, mitigating and responding to pandemic influenza.

Rationale

EMS pandemic influenza plans and operational procedures help assure thoughtful pre-event consideration of the role of EMS in mitigating and responding to pandemic influenza.

Considerations

- State, local, tribal, and territorial EMS agencies should coordinate with their public health, health care, emergency management, 9-1-1 and public safety counterparts to ensure a coordinated, integrated community-wide mitigation of and response to pandemic influenza.
- Public involvement in the planning process is encouraged.
- Steps should be taken to ensure that EMS pandemic influenza plans are consistent with Federal, State, and local guidance, plans, and policies in order to support a coordinated approach.

Background

The threat of pandemic influenza has caused both non-governmental and public sector agencies throughout the world to recognize the need for pandemic influenza planning as essential to preparing for a severe public health threat. As a discipline within the emergency services sector, EMS is critical to the protection of all Critical Infrastructure/Key Resources¹² in the United States. Therefore, early and consistent planning regarding the EMS role will help ensure that when a pandemic reaches the United States the most appropriate actions can be taken to support the Nation.

¹² US Department of Homeland Security. ONLINE. 2006. *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. Department of Homeland Security. Available: www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf [18 March 2007].

Guideline 1.2 – Leadership and Authority

State, local, tribal, and territorial pandemic influenza plans and operational procedures should identify leadership and authority that are consistent with the National Response Plan and the National Incident Management System, including the Incident Command System, and be carefully coordinated with local emergency management plans.

Rationale

Pre-established delegations of authority and methods of operation are vital to ensuring that all organizational personnel know who has the authority to make key decisions during a public health emergency, as well as the appropriate operational procedures to follow.

Considerations

- EMS operations and personnel should already have clearly established authority under their EMS medical director and in accordance with the Incident Command System (ICS) and the National Incident Management System (NIMS). This authority should be maintained during an influenza pandemic.
- Drills and exercises, coordinated with public health and emergency management officials, should be used to validate pandemic influenza response plans and training programs.
- All Federal, State, local, tribal, and non-governmental personnel with a direct role in emergency management and response should be NIMS compliant, including ICD training. This includes EMS, 9-1-1, healthcare, emergency management, public health, fire service, law enforcement, public works/utilities and other personnel.

Background

National Response Plan (NRP)

The National Response Plan¹³ establishes a comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents. The plan incorporates best practices and procedures from incident management disciplines — homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector — and integrates them into a unified structure. It forms

¹³ US Department of Homeland Security. ONLINE. 2004. *National Response Plan*. Department of Homeland Security. Available: www.dhs.gov/xlibrary/assets/NRP_FullText.pdf [18 March 2007]. See also: www.dhs.gov/nrp

the basis of how the Federal Government coordinates with State, local, and tribal governments and the private sector during incidents. Pandemic influenza in the United States may result in activation of the NRP. Management of a pandemic response during NRP activation will be driven by decisions at the State, local, tribal, and territorial level. Excerpted information about the NRP may be found in Appendix C.

National Incident Management System (NIMS)

The National Incident Management System¹⁴ was developed so responders from different jurisdictions and disciplines can work together better to respond to natural and manmade disasters, including acts of terrorism. NIMS benefits include a unified approach to incident management; standard command and management structures; and emphasis on preparedness, mutual aid and resource management. While most emergency situations are handled locally, a major incident likely will warrant help from other jurisdictions, the State and the Federal Government.¹⁵ However, during a pandemic additional assets may be limited or unavailable for mutual aid because they are already committed to service within their own communities. Regional coordination prior to the event may optimize the utilization of assets among multiple jurisdictions during an event.

NIMS Training Requirements:

The applicable NIMS and ICS training requirements¹⁶ are included in Appendix I.

¹⁴ US Department of Homeland Security. ONLINE. 2004. *National Incident Management System*. Department of Homeland Security. Available: www.fema.gov/pdf/emergency/nims/nims_doc_full.pdf [18 March 2007].

¹⁵ See <http://www.fema.gov/emergency/nims/index.shtml>

¹⁶ US Department of Homeland Security. ONLINE. 2006. *NIMS Alert 004-06. Our Top Five Most Frequently Asked Questions*. FEMA. Available: http://www.fema.gov/pdf/emergency/nims/5_common_faqs.pdf [18 March 2007].

Guideline 1.3 – Training and Exercising

EMS pandemic influenza plans should establish a program of pre-pandemic training and exercising to prepare EMS personnel for their role in the local pandemic influenza plan.

Rationale

A pre-pandemic preparedness training and exercising program will help EMS agencies ensure EMS personnel have baseline training to support and understand their role in responding to pandemic influenza.

Considerations

- Drills and exercises, coordinated with public health and emergency management, should be used to validate pandemic influenza response plans and training programs.
- Priority should be given to all-hazards preparedness training that incorporates pandemic influenza as a scenario to consider.
- Pre-pandemic exercises should test mechanisms to provide just-in-time training needed during an event.
- Exercises should incorporate NIMS principles to ensure responders are comfortable with NIMS principles and to allow problems to be identified and remedied prior to an actual event.

Background

Exercises allow EMS and 9-1-1 personnel, as well as personnel from other disciplines, to train and practice prevention, protection, response, and recovery capabilities in a realistic but risk-free environment. Exercises are also a valuable tool for assessing and improving performance, while demonstrating community resolve to prepare for major incidents.

The Homeland Security Exercise and Evaluation Program (HSEEP) is a capabilities and performance-based exercise program which provides a standardized policy, methodology, and terminology for exercise design, development, conduct, evaluation, and improvement planning.

Further information on the HSEEP is available at <http://www.hseep.dhs.gov>.

Guideline 1.4 – A Systems Approach

State, local, tribal and territorial EMS agencies, in coordination with Federal, State and local public health, 9-1-1, emergency management and health care officials should ensure that EMS pandemic influenza plans define a process for gathering and developing updated pandemic influenza information, including clinical standards, treatment protocols and just-in-time training and disseminate it to local EMS medical directors and EMS agencies.

Rationale

Establishing a dynamic, coordinated and sustainable process will assure that State, local, tribal, and territorial EMS and 9-1-1 systems are able to rapidly incorporate updated disease and treatment information on pandemic influenza and other emerging public health threats into their practices.

Considerations

- There should be clearly defined procedures for rapid dissemination of pandemic influenza information among EMS, public health, 9-1-1 PSAPs and other officials. This should include coordination with the CDC's Health Alert Network,¹⁷ Public Health Information Network (PHIN),¹⁸ and/or Public Health Information Rapid Exchange (PHIRE)¹⁹.
- There should be a dynamic statewide system for developing and implementing EMS response and treatment protocols for pandemic influenza and other public health emergencies consistent with legal authorities and medical direction and accompanied by just-in-time training.
- Medical direction, education, quality improvement and legal authority are essential components of the EMS system's role in mitigating and responding to Pandemic Influenza and other public health emergencies.
- EMS and 9-1-1 should be integrated into comprehensive pandemic influenza planning efforts.

Background

During a pandemic, the medical community must have awareness of the ongoing epidemiological analysis and community-wide interventions being recommended by public health leaders. Likewise, the public health community must have situational awareness of the evolution of disease that can come from collaboration with 9-1-1, EMS, emergency departments and other acute care and outpatient

¹⁷ Centers for Disease Control and Prevention. ONLINE. 2007. *Health Alert Network*. CDC. Available: <http://www.bt.cdc.gov/documentsapp/HAN/han.asp> [18 March 2007]

¹⁸ Centers for Disease Control and Prevention. ONLINE. 2007. *Public Health Information Network*. CDC. Available: <http://www.cdc.gov/phinf/> [3 April 2007]

¹⁹ Centers for Disease Control and Prevention. ONLINE. 2007. *Public Health Information Rapid Exchange*. CDC. Available: <http://www.cdc.gov/phire/> [3 April 2007]

settings where patients seek medical care. The pre-pandemic planning period presents an opportunity to establish and test these relationships.

A goal of the PHIN is to enable real-time data flow, computer assisted analysis, decision support, professional collaboration, and rapid dissemination of information to public health officials, the clinical care community and the public. The Health Alert Network functions as PHIN's Health Alert component. This includes collaborating with Federal, State and city/county partners to develop protocols and stakeholder relationships that will ensure a robust interoperable platform for the rapid exchange of public health information.

The Centers for Disease Control and Prevention is a trusted source of important, timely information concerning actual or potential public health emergencies. PHIRE, the CDC Public Health Information Rapid Exchange, is a system that sends important real-time health information to select subscribers based on their preferences. For example, the system enables CDC to rapidly disseminate alerts about evidence of suspected pandemic influenza in the United States.

PHIRE is a secure electronic communication system designed to keep health care providers informed to protect our Nation's health. The information is provided in real time during an emergency and also allows subscribers the ability to have scheduled moderated forums. The information registrants provide regarding their county and work setting enables CDC to target relevant emergency health information specific to the registrants needs.

More information, including the ability to register can be done at www.cdc.gov/phire.

Guideline 1.5 – Public and Media Communications

State, local, tribal, and territorial EMS and 9-1-1 agencies should define a public and media communications plan that is coordinated with the Incident Command System and public health officials to assure consistent education and instructions to the public.

Rationale

A clear, coordinated communications strategy will provide information so the public can understand the potentially evolving and changing role of EMS during an influenza pandemic.

Considerations

- Message coordination with public health and emergency management officials, elected officials and others is essential to ensuring public confidence.
- The role of EMS in Pandemic Influenza mitigation and response should be clearly communicated to the public.
- There should be early public feedback to ensure the messages are understandable and useful to the public.

Background

To maintain public confidence and enlist the support of individuals and families in disease containment efforts, EMS and 9-1-1 agencies should coordinate their public messages and guidance with the Incident Command System. The public will respond favorably to messages from EMS that acknowledge their concerns, allay anxiety and uncertainty, and provide clear direction.

This may include dissemination of information on what individuals can do to protect themselves, how to care for family members at home, when and where to seek medical care, and how to protect others and minimize the risks of disease transmission. The public will respond favorably to messages which are coordinated and consistent between authorities.

The language, timing, and detail of key messages will depend on a number of factors, including demographics and group psychological profiles of intended audiences, available or preferred media, and urgency.²⁰ The Department of Health and Human Services will provide communications materials for states and localities throughout all pandemic phases. Many of these resources will be made

²⁰ US Department of Health and Human Services. ONLINE. 2005. *HHS Pandemic Influenza Plan*. Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/> [3 April 2007]

available at appropriate times on the www.pandemicflu.gov website. Others will be disseminated by using the Health Alert Network (HAN), Epidemic Information Exchange (Epi-X), and other resources for health professionals. Additional resources for information such as links to fact sheets are included in Appendix M.

One of the resources for communications professionals is the *CDCynergy* CD-ROM set produced by CDC. *Emergency Risk Communication CDCynergy* is applicable to communicating before and during an influenza pandemic. Communications staff also may find the *CDCynergy 3.0* disk helpful. Information about *CDCynergy* is available on CDC's website at <http://www.cdc.gov/communication/cdcynergy.htm>.

Communicating in a Crisis: Risk Communication Guidelines for Public Officials is available on SAMHSA's website at <http://www.riskcommunication.samhsa.gov/index.htm>. This reference describes basic skills and techniques for clear, effective crisis communications and information dissemination, and provides some of the tools of the trade for media relations.

CDC's Office of Communication is offering Emergency Risk Communication Training for appropriate public health workers and communicators both inside and outside the government. Additional information on this program including slide sets and course books can be found at <http://www.bt.cdc.gov/erc/index.asp>.

Section 1: EMS Planning

SEE RELATED APPENDICES

- 1. Appendix B-- EMS and Non-Emergent Medical Transport Organizations
Pandemic Influenza Planning Checklist from the Centers for Disease Control and Prevention**
- 2. Appendix C—National Response Plan, ESF 8 (Excerpt)**
- 3. Appendix M—Pandemic Influenza Resources**

Section 2 - The Role of EMS in Influenza Surveillance and Mitigation

Guideline 2.1 – EMS Role in Surveillance

State, local, tribal, and territorial EMS pandemic influenza plans should identify the role that EMS agencies should play in ongoing disease surveillance.

Rationale

EMS systems are ubiquitous and collect patient information, including signs and symptoms, of persons calling 9-1-1 and persons receiving prehospital emergency care for a defined geographic area. Aggregation of this patient information may be useful in disease surveillance.

Considerations

- Disease surveillance plays an important role in pandemic influenza mitigation.
- EMS and 9-1-1 agencies should have a secure system for managing and collecting patient and system data.
- A real-time EMS and 9-1-1 data collection and reporting system enhances its utility as a component of the surveillance system;
- EMS agencies should define policies, procedures and legal authorities for sharing EMS and 9-1-1 data with public health agencies as part of a comprehensive surveillance system.
- EMS and 9-1-1 agencies should address any legal and technological barriers to participating in a disease surveillance process.
- EMS and 9-1-1 data elements for pandemic influenza surveillance should be outlined clearly among all appropriate agencies, including public health.
- There should be a mechanism for rapid modification of data elements and reporting mechanisms based upon updated information on an emerging pathogen (e.g., during the SARS epidemic, questions pertaining to foreign travel were pertinent).
- In coordination with State and local public health authorities, a mechanism should be identified to relay probable signs and symptoms of an emerging viral strain (i.e. “pandemic influenza symptom set”) to EMS and 9-1-1 as soon as such information becomes available from the CDC.
- Because fever is a typical symptom of influenza, EMS agencies may consider acquiring and recording patient temperature as part of their influenza surveillance.

Collaboration with public health officials may help identify other opportunities for improving surveillance.

Background

The CDC recognizes the important role that EMS plays in disease surveillance. The *EMS and Non-Emergent Medical Transport Organizations Pandemic Influenza Checklist* (Appendix B) recommends “a system ... to track influenza-like illness in patients transported to hospitals and among EMS staff and to report this information to the pandemic response coordinator...”

There are several EMS systems that are participating in community disease surveillance systems. For example, Richmond, Virginia, has access to real-time awareness of emerging threats by monitoring 9-1-1, law enforcement, fire and emergency medical services data from computer aided dispatch (CAD) and advanced telephone triage, as well as poison control center data. [See companion document *Preparing for Pandemic Influenza: Recommendations for 9-1-1 Personnel and Public Safety Answering Points.*]

Most health surveillance efforts are not focused on specific patients, but are looking at trends and patterns in the aggregate. However, there may be cases when public health officials are called upon to investigate specific cases which would require receiving and working with Protected Health Information (PHI), as that term is defined by the Privacy Rule promulgated pursuant to the Health Insurance Portability and Accountability Act (HIPAA) of 1996. The HIPAA Privacy Rule is the Federal law governing the use and disclosure of PHI by “covered entities” (certain health care providers, health plans and health care clearinghouses). Some government agencies are “covered entities” and some are not. State law may also address such use and disclosure, and the HIPAA Privacy Rule does not preempt contrary state laws that provide greater privacy protection. The Privacy Rule does not cover the use and disclosure of health information by non-covered entities. Moreover, the Privacy Rule permits “covered entities” to disclose PHI to public health authorities to prevent or control disease, injury or disability (including the conduct of public health surveillance.)

When considering mechanisms to obtain and share EMS data from CAD systems and patient care reports, EMS planners should coordinate with local and State public health agencies to identify data elements that will be most useful in tracking influenza-like symptoms. The National EMS Information System²¹ (NEMSIS) data elements may provide an additional mechanism for uniformity of data collection.

As part of a coordinated, community-wide strategy, PSAPs and other emergency call centers should be authorized to use modified caller queries containing the

²¹ The National EMS Information System (NEMSIS) information and NHTSA Dataset is available at www.nemsis.org

pandemic influenza symptom set when the community considers the threat of a local outbreak to be elevated. Such information must be coordinated with EMS.

The CDC notes that the symptoms²² typically associated with influenza (“pandemic influenza symptom set”) are:

- Fever (usually high)
- Headache
- Extreme tiredness
- Dry cough
- Sore throat
- Runny or stuffy nose
- Muscle aches
- Stomach symptoms, such as nausea, vomiting, and diarrhea, also can occur but are more common in children than adults

These influenza symptoms are meant for guiding planning only. The definitive “pandemic influenza symptom set” affiliated with a pandemic influenza strain will not be known until the actual strain emerges and is appropriately monitored.

²² US Department of Health and Human Services Centers for Disease Control and Prevention. ONLINE. 2006. *Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP)* MMWR 2006 Jul 28;55(RR10):1-42). CDC. Available: <http://www.cdc.gov/mmwr/preview/mmwrhtml/tr5510a1.htm> [28 March 2007]

Guideline 2.2 – Statewide Tracking System

State EMS pandemic influenza plans should establish or identify a statewide system that tracks: a) patient location, b) health care facility availability, and c) patient disposition to allow public health and epidemiologic analysis.

Rationale

Improved situational awareness through information sharing regarding both patients and resources will enable better management of assets during a pandemic and provide for real time epidemiological analysis.

Considerations

- Compatible communications equipment and communications radio frequency plans should be in place for common hospital diversion and bed capacity situational awareness at the local, State and regional levels.
- A statewide interoperable patient tracking system should be in place that allows patient tracking from the first response site to a healthcare facility and allows data to be accessible among statewide users.
- The ability to track healthcare facility availability in real-time allows EMS providers to make timely patient destination decisions in the field.
- Information that allows public health officials to make links between original patient location and patient disposition can strengthen the ability for public health officials to track disease spread.
- Although not identical, this guideline is generally consistent with the current version of the Department of Homeland Security's Target Capability List²³ for "Triage and Pre-hospital Treatment."
- The plan should address patient confidentiality issues in establishing the statewide tracking system.

Background

Mechanisms for tracking EMS calls, emergency department visits and hospital admissions and discharge of pandemic influenza patients is needed to monitor the progress and impact of the pandemic. Several examples currently exist:

²³ US Department of Homeland Security. ONLINE. 2005. *Target Capabilities List Version 1.1*. ODP Secure Portal. Available: <https://odp.esportals.com>. Lessons Learned Information Sharing. Available: www.llis.gov [18 March 2007].

Patient Identification/Location Tracking

The ability to track patient location from the initial site of response to arrival at a health care facility has previously been demonstrated to be of vital importance (including Hurricanes Katrina and Rita). In an influenza pandemic, this is also essential to support the community mitigation strategies that may help protect the public's health (e.g., voluntary isolation and quarantine and social distancing measures in areas where patients have been positively diagnosed with the pandemic influenza strain).

Hospital Resource Availability

The National Hospital Available Beds for Emergencies and Disasters (HAvBED) System²⁴, funded by the Agency for Healthcare Research and Quality (AHRQ), explores the feasibility of a national real-time hospital-bed tracking system to address a surge of patients during a mass casualty event.

The Health Emergency Response Data System²⁵ (HERDS) is a statewide electronic web based data collection system linked to health care facilities (all New York State hospitals) through a secure internet site that allows hospitals to relay resources or needs to the New York State Department of Health during emergencies, or respond immediately to rapid request surveys in preparedness planning efforts. HERDS combines Geographic Information Systems and a comprehensive, interactive database to provide health officials with online, real time data describing available hospital beds, medical supplies, personnel, numbers, status and immediate care needs of ill or injured persons, along with other urgent information to facilitate a rapid and effective emergency response.

Operational features of HERDS:

- Routine Data Collection and Surveillance Surveys
- Emergency Events Data Collection
- Secure Messaging Forum
- Patient Locator/Tracking Function
- Activation/Deactivation Alerting Tool

FRED is the Facility Resource Emergency Database²⁶, a secure Internet-based system that provides rapid, efficient, alert-driven emergency event or disaster vetted notification with reporting of resources available to mitigate mass casualty incidents or similar situations that produce a surge of patients. It was originally developed by the Maryland Institute for EMS Systems (MIEMSS) and has since

²⁴ Agency for Healthcare Research and Quality. ONLINE. 2005. *National Hospital Available Beds for Emergencies and Disasters (HAvBED) System: Final Report*. AHRQ Publication No. 05-0103 Available: <http://www.ahrq.gov/research/havbed/> [3 April 2007]

²⁵ New York State Department of Health. Health Emergency Response Data System resides on NYSDOH secure network requiring user authentication for access.

²⁶ Maryland Institute of Emergency Medical Services System. Facility Resource Emergency Database resides on a MIEMSS secure network requiring user authentication for access.

been adopted by the Pennsylvania Department of Health (PA DOH). In Maryland, FRED allows MIEMSS to send an alert to all hospitals requesting an update on their current status. This includes not only beds, but also staffing and medications, as well as information from the local jurisdictions regarding EMS staffing. Initial plans call for establishing Continuous FRED Monitoring Sites at all Pennsylvania receiving hospitals, Public Safety Answering Points (PSAPs / 911 centers), Emergency Management Agencies, and emergency information centers such as Poison Centers.

Public Health/Epidemiologic Issues

Public health is a field that is concerned with any and all threats to the overall health of a community and is based on analysis done at the population level, rather than at that of the individual patient. Epidemiology is a subsection of the public health structure that deals with incidence, distribution, and control of disease within a population. By identifying the numerous factors that affect the health of a specific population, epidemiologic studies further guide interventions that can be made to preserve the health of the public.

Utilizing public health surveillance and epidemiologic techniques during an influenza pandemic would not only help with situational awareness by detecting disease in the area, but then would lead to appropriate response and containment mechanisms necessary to protect both the community and the providers. This can only occur if proper mechanisms are in place to securely communicate influenza patient disposition to the appropriate authorities within the public health, EMS, 9-1-1, and health care arenas. The ability to track patient disposition and suspected influenza contacts allows for important information regarding disease severity, characteristics of the affected population, and impacts on the healthcare system to be followed and addressed.

One method of tracking patient disposition is through an Electronic Health Record (EHR). There are a number of Federal EHR initiatives underway including those at: the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), the Department of Defense (DOD), the Department of Veterans Affairs (VA), and the Department of Transportation (DOT).

Guideline 2.3 – EMS and Community Mitigation

State, local, tribal, and territorial EMS agencies, in coordination with public health authorities and consistent with resources, legal authority and education, should define procedures for involving EMS providers in pandemic influenza community mitigation strategies, including Targeted Layered Containment.

Rationale

A comprehensive community mitigation strategy may slow the spread of pandemic influenza ultimately saving lives and reducing demand on healthcare resources including EMS. EMS operational infrastructure, including 9-1-1, is well positioned for supporting community mitigation strategies.

Considerations

- An investment of resources in the pandemic alert phase may help to significantly reduce the spread of pandemic influenza, reduce mortality and reduce the consumption of healthcare resources that would otherwise occur. Early intervention by EMS could reduce the surge during the response phase. The primary mission of EMS is the reduction of patient morbidity and mortality through the delivery of fast and efficient prehospital care. EMS agencies should be engaged with State and local planners to define their role in community mitigation strategies such as distribution of medical countermeasures (i.e. vaccines and antiviral medications) to the general population.
- EMS pandemic influenza plans should address how EMS providers will care for isolated and quarantined patients in support of a community mitigation strategy.
- EMS pandemic influenza plans should address how EMS providers will adequately protect themselves when treating isolated and quarantined patients in support of a community mitigation strategy.
- Drills and exercises, coordinated with public health and emergency management officials, should be used to validate EMS agencies' roles in community mitigation strategies.
- Although public health authorities will be primarily responsible for coordination of community mitigation strategies, EMS system involvement may be beneficial.
- EMS agencies should have contingency plans in the event that community mitigation strategies have varying levels of effectiveness.
- EMS planners should be aware of ethical decision-making considerations that may affect public perceptions and response to community mitigation strategies.

Background

In its *EMS and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*²⁷, the Centers for Disease Control and Prevention (CDC) calls upon EMS agencies to hold discussions with local and/or State health departments regarding the role of EMS organizations in a large-scale program to distribute vaccine and antivirals to the general population.

EMS agencies have successfully piloted influenza immunization programs.²⁸ Authors of a 2003 article in *Prehospital and Disaster Medicine*²⁹ stated that, “As soon as the next pandemic is identified, a large-scale vaccination program will be needed. Paramedics and other EMS personnel could be a valuable supplement to the public health workforce in such a situation. However, in order for such a project to be successful, early preparation, training, and, in some cases, legislative changes must be implemented in advance of the catastrophe. ... With >70,000 paramedics in the US, paramedics are a substantial medical resource in most communities in the US.” It should be noted that vaccines are not likely to be available early in a pandemic.

EMS system planners should work closely with their local public health officials to further explore the role that EMS should play as part of a community-wide, integrated disease surveillance and mitigation system. EMS planners are encouraged to develop comprehensive, well-defined systems, planned ahead of time, to assure sufficient legal authority to permit EMS to participate in community mitigation strategies, including modifications to scopes of practice if needed, medical direction, just-in-time training and quality improvement.

The States and their political subdivisions are primarily responsible for isolation and quarantine within their borders. Public health officials generally have the authority to declare and enforce mandatory isolation and/or quarantine. Coordination of isolation and/or quarantine policies with EMS and 9-1-1 will be critical to the success of community mitigation strategies.

²⁷ US Department of Health and Human Services. ONLINE. 2006. *Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/healthcare/emgncymedical.html> [18 March 2007].

²⁸ Mosesso VN Jr, Packer CR, McMahon J, Auble TE, Paris PM. *Influenza immunizations provided by EMS agencies: the MEDICVAX Project*. *Prehosp Emerg Care*. 2003 Jan-Mar;7(1):74-8.

²⁹ Walz BJ, Bissell RA, Maguire B, Judge JA. *Vaccine administration by paramedics: A model for bioterrorism and disaster response preparation*. *Prehosp Disast Med* 2003;18(4):321–326.

Community Mitigation

The CDC's *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States*³⁰ advocates for a pandemic mitigation framework that is based upon an early, targeted, layered application of multiple partially effective non-pharmaceutical measures, in combination with pharmaceutical measures, when available. The interim guidance includes a Pandemic Severity Index to characterize the severity of a pandemic, provides planning recommendations for specific interventions that communities may use for a given level of pandemic severity, and suggest when these measures should be started and how long they should be used.

Researchers using computer models³¹ have investigated the effectiveness of containment strategies in limiting an emerging influenza strain at the source. Simulations showed that a prepared response with targeted strategies would have a high probability of limiting the spread of a pandemic. Preliminary analysis of historical data and mathematical modeling suggest that the early, coordinated application of multiple interventions may be more effective in reducing transmission than the use of a single intervention.

The pandemic community mitigation interventions recommended by CDC, to be used in combination with individual infection control measures, such as hand-washing and cough etiquette, include:

- **Isolation and treatment (as appropriate) with influenza antiviral medications** of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
- **Voluntary home quarantine** of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.
- **Dismissal of students from school** (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
- **Use of social distancing measures** to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules

³⁰ US Department of Health and Human Services. ONLINE. 2007. *Community Strategy for Pandemic Influenza Mitigation*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commitigation.html> [21 March 2007]

³¹ Institute of Medicine Board on Population Health and Public Health Practice. ONLINE. 2006. *Modeling Community Containment for Pandemic Influenza: A Letter Report*. 2006. The National Academies Press. Available: www.nap.edu/catalog/11800.html [28 March 2007]

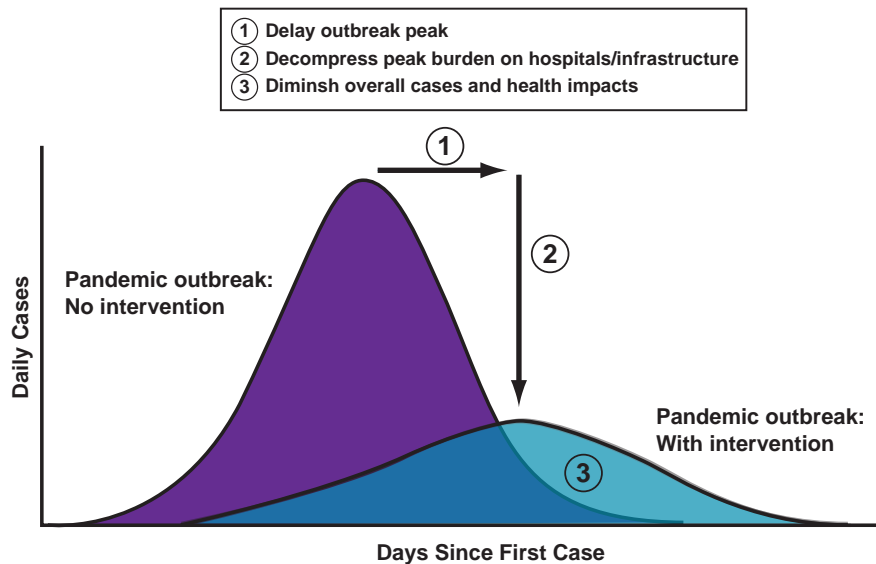
to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the non-pharmaceutical interventions (NPIs).

These community containment strategies, along with vaccination and anti-viral prophylaxis, should they be available, comprise the Targeted Layered Containment (TLC) strategy. The TLC strategy is based on the concept that when multiple methods of containment and treatment are targeted at the local level in an appropriate manner, the effects of an influenza pandemic could potentially be decreased.

CDC recommends a strategy that initiates these measures based on the severity of pandemic influenza as defined in the Pandemic Severity Index.³²

The curve below (Figure 9) demonstrates the overall goals of the community mitigation strategy in reducing the burdens of an influenza pandemic on a community. As shown, these include: (1) delaying the pandemic outbreak peak to allow for additional time to plan and respond, (2) decompressing the peak burden on the local infrastructure and (3) diminishing the overall number of cases and health impacts.

Figure 9: Goals of Community Mitigation



Community mitigation strategies may slow the spread of pandemic influenza ultimately saving lives and reducing demand on healthcare resources including

³² US Department of Health and Human Services. ONLINE. 2007. Community Strategy for Pandemic Influenza Mitigation. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commmitigation.html> [21 March 2007]

EMS. EMS operational infrastructure, including 9-1-1, is well positioned for supporting community mitigation strategies. EMS providers are an established mobile healthcare workforce experienced in providing prehospital care to patients in their homes. EMS agencies should be engaged with State and local planners to define their role in community mitigation strategies such as distribution of medical countermeasures (i.e. vaccines and antiviral medications) to the general population.

The CDC worked with the Ethics Subcommittee of the Advisory Committee to the CDC Director to identify ethical considerations relevant to public health decision-making during planning for and responding to pandemic influenza. The Ethics Subcommittee provided input on ethical considerations in vaccine and antiviral drug distribution prioritization and in the development of interventions that would limit individual freedom and create social distancing. The resulting document, *Ethical Guidelines in Pandemic Influenza*³³ provides guidance that the Ethics Subcommittee proposes serve as a foundation for ethical decision making for pandemic influenza.

The Federal strategy³⁴ for community mitigation is evolving and will be updated when new information emerges. Planners should check www.pandemicflu.gov for the most current information and strategies to assist in their planning efforts.

Section 2 - Surveillance and Mitigation

SEE RELATED APPENDICES

- 1. Appendix B—EMS and Non-Emergent Medical Transport Organizations
Pandemic Influenza Planning Checklist from the Centers of Disease Control and Prevention**
- 2. Appendix C—National Response Plan, ESF 8 (Excerpt)**
- 3. Appendix M--Pandemic Influenza Resources**

³³ Centers for Disease Control and Prevention. ONLINE. 2007. *Ethical Guidelines in Pandemic Influenza*. CDC. Available: www.cdc.gov/od/science/phcc/panFlu_Ethic_Guidelines.pdf [2 April 2007].

³⁴ US Department of Health and Human Services. ONLINE. 2007. *Community Strategy for Pandemic Influenza Mitigation*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/commitigation.html> [21 March 2007]

Section 3 – Maintaining Continuity of EMS Operations During an Influenza Pandemic

Guideline 3.1 – Maintaining the Day-to-Day Response

As part of a systematic all-hazards approach to EMS pandemic influenza planning, State, local, tribal, and territorial EMS agencies should have plans in place that allow EMS to maintain its response to day-to-day emergencies while addressing the demands of pandemic influenza mitigation.

Rationale

As the provider of prehospital emergency medical triage, treatment and transport, EMS plays an important role in every community's efforts to reduce morbidity and mortality from all sudden illness and injury. Community-wide efforts to mitigate the spread of pandemic influenza may increase the demand for EMS services.

Considerations

- To ensure continued delivery of critical services during a pandemic, EMS agencies should function within an established Incident Command System.
- As part of the coordinated community-wide effort to mitigate the spread of pandemic influenza, EMS may experience an increase in demand for its services.
- EMS agencies should systematically manage and adapt resources, capabilities and procedures to provide maximum benefit to the public's health in response to varying surges in demand.
- Establish coordinated procedures for the use of alternate resources (e.g. call centers) to reduce demand on EMS resources. (See Figure 1)
- EMS agencies should implement surge capacity procedures as appropriate.
- EMS and 9-1-1 agencies' medical directors, in coordination with local public health authorities, should modify dispatch procedures and treatment and transport protocols as appropriate. (See Figures 1, 2, & 3)
- Illness and absenteeism during a pandemic may impact an EMS agency's ability to satisfy demand for services. Flexibility in staffing configurations, recruitment and training programs may help alleviate the impact of worker illness and absenteeism.

Background

The *National Strategy for Pandemic Influenza: Implementation Plan*³⁵ addresses the importance of prehospital EMS during a pandemic scenario:

Pre-hospital EMS transportation capability will play a critical role in responding to requests for assistance, providing treatment, and in triaging patients. 9-1-1 call centers/public safety answering points (PSAPs) will experience a significant surge in calls and will determine how and when EMS units are dispatched. Coordination and communication among public health, PSAPs, EMS, and hospital officials will be necessary to ensure optimal patient care as hospital bed availability and pre-hospital resources are strained. Planners should consider modifying PSAP call-taker and dispatch protocols and developing pandemic-specific prehospital triage and treatment protocols. A robust statewide or regional system for monitoring PSAP medical calls, EMS responses and transports, and hospital bed availability will be critical for tracking and responding to a pandemic.

In planning for an influenza pandemic, it must be recognized that persons with medical conditions unrelated to influenza will continue to require emergency, acute and chronic care. Alterations to an EMS system's practices during an influenza pandemic will likely impact all EMS patients, regardless of the nature of their illness. It is important to keep the EMS system functioning as effectively as possible and to deliver optimal care to both these patients (e.g. motor vehicle crashes and cardiac events) as well as to patients with influenza related symptoms.

At the same time as it experiences a surge in calls, EMS is likely to be adversely impacted by illness and absenteeism among its workforce, as well as by increases in hospital diversion. EMS will be tasked with providing high-quality EMS care and patient transportation to the community despite a surge in demand and a concomitant loss of trained personnel, an increase in ED diversion and the potential for shortages of necessary prehospital equipment and supplies.

While planners should address the potential for additional duties associated with pandemic influenza mitigation, the public demand for EMS services may limit this ability.

FluSurge is a spreadsheet-based model that estimates the surge in demand for hospital-based services during the next influenza pandemic. FluSurge estimates the number of hospitalizations and deaths of an influenza pandemic (whose length

³⁵ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

and virulence are determined by the user) and compares the number of persons hospitalized, the number of persons requiring ICU care, and the number of persons requiring ventilator support during a pandemic with existing hospital capacity. FluSurge may be downloaded from <http://www.cdc.gov/flu/tools/flusurge/>.

Guideline 3.2 – Continuity of Operations Plan

State, local, tribal, and territorial EMS pandemic influenza plans should include a continuity of operations (COOP) plan that ensures essential functions and vital services can be performed during an influenza pandemic or other major public health emergency.

Rationale

One of the challenges that EMS may face during an influenza pandemic is to keep operations functioning despite increases in call volume, workforce shortages and absenteeism, supply chain disruptions and other threats to continued operations.

Considerations

- EMS agencies should develop and test their COOP plans based on guidance from Federal, State and local governments.
- EMS COOP plans should be coordinated with emergency management agencies.
- Pre-established delegations of authority are vital to ensuring that all organizational personnel know who has the authority to make key decisions in a COOP situation.
- An order of succession is essential to an organization's COOP plan. Personnel should know who has authority and responsibility if the leadership is incapacitated or unavailable.
- EMS COOP plans should address workforce health protection.
- EMS agencies should establish policies for flexible worksite (e.g. telecommuting) and flexible work hours (e.g. staggered shifts) whenever possible.
- EMS agencies should establish policies for employee compensation and sick-leave absences unique to a pandemic (e.g. non-punitive liberal leave),

Background

Maintaining operations during crisis situations is referred to as Continuity of Operations, or COOP. The foundation of a viable COOP program is the development and documentation of a COOP plan that, when implemented, will provide for the continued performance of an organization's essential functions under all circumstances.

The *National Strategy for Pandemic Influenza: Implementation Plan*³⁶, references the following Continuity of Operations (COOP) program elements:

³⁶ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

1. Planning
2. Essential functions
3. Delegation of authority
4. Succession planning
5. Alternate physical facilities
6. Effective communications
7. Business record-keeping
8. Human capital
9. Training
10. Devolution
11. Reconstitution.

Appendix N contains a description of these eleven program elements. Two additional elements that do not appear in the original document, Logistics and Supplies and Financial Continuity, have been suggested.

The Department of Homeland Security's *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*³⁷ was developed to assist the private sector in addressing business continuity during a pandemic. The framework, Continuity of Operations Plan-Essential (COP-E) supports DHS's national-level Critical Infrastructure/Key Resources (CI/KR) preparedness and protection mission and urges private sector business planners to expand upon their traditional notions of business continuity. The Guide states that "Eighty-five percent of critical infrastructure resources reside in the private sector, which generally lacks individual and system-wide business continuity plans specifically for catastrophic health emergencies such as a pandemic influenza."

³⁷ US Department of Homeland Security. ONLINE. 2006. *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. Department of Homeland Security. Available: www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf [18 March 2007].

Guideline 3.3 – Workforce Augmentation

State, local, tribal, and territorial EMS agencies should have backup plans to augment the EMS workforce.

Rationale

Illness, absenteeism, increased workload, and death during a pandemic may impact an EMS agency's ability to satisfy demand for services. Planned flexibility in staffing configurations, recruitment and expedited training programs may help augment the EMS workforce.

Considerations

- Planning for alternative workforce strategies should include medical direction, quality improvement, education, supervision and legal authority.
- EMS planners should be mindful that the primary purpose of regulatory models for licensing professionals is to protect the public's health, safety, and welfare.
- EMS systems might consider a variety of mechanisms to augment their workforce including:
 - Mechanisms for temporary licensure of EMS providers from other jurisdictions
 - Innovative mechanisms to rapidly recruit, train and license new EMS providers
 - Consider non-traditional system configurations and alternate staffing configurations
 - Utilization of retired EMS and healthcare personnel
 - Coordination with local Medical Reserve Corps³⁸ (MRC) Community Emergency Response Teams³⁹ (CERT), or cross staffing between EMS, healthcare and other sectors
 - Proactively determine competencies and bridge courses from other professions and levels of EMS licensure
 - Temporary modification of licensure and credentialing procedures to meet the exigencies of the situation while assuring public health and safety.
 - Engaging temporary workers, contractors and recent retirees, and/or cross-training the existing workforce
- EMS agencies should support telecommuting when feasible.

³⁸ <http://www.medicalreservecorps.gov/HomePage>

³⁹ <https://www.citizencorps.gov/cert/>

Background

The Federal Government, as mentioned in the *National Strategy for Pandemic Influenza: Implementation Plan*,⁴⁰ recommends that government entities and the private sector plan with the assumption that up to 40 percent of their staff may be absent for periods of about two weeks at the height of a pandemic wave, with lower levels of staff absent for a few weeks on either side of the peak.

Absenteeism will increase not only because of personal illness or incapacitation but also because employees may be caring for ill family members, under voluntary home quarantine due to an ill household member, minding children dismissed from school, following public health guidance, or simply staying at home out of safety concerns.

FluWorkLoss⁴¹ is a tool available from the CDC that estimates the potential number of days lost from work due to an influenza pandemic. Users can change almost any input value, such as the number of workdays assumed lost when a worker becomes ill or the number of workdays lost due to a worker staying home to care for a family member. Users can also change the length and virulence of the pandemic so that a range of possible impacts can be estimated. FluWorkLoss provides a range of estimates of total workdays lost, as well as graphic illustrations of the workdays lost by week and percentage of total workdays lost to influenza-related illnesses.

⁴⁰ US Department of Homeland Security. ONLINE. 2006. *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. Department of Homeland Security. Available: www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf [18 March 2007].

⁴¹ Praveen Dhankhar, Zhang X, Meltzer MI, Bridges CB. ONLINE. 2006. *FluWorkLoss 1.0: a manual to assist state and local public health officials in estimating the impact of an influenza pandemic on work day loss (Beta test version)*. CDC. Available: www.cdc.gov/flu/pdf/FluWorkLoss_Manual_102306.pdf [22 March 2007]

FluWorkLoss software may be downloaded from <http://www.cdc.gov/flu/tools/fluworkloss/>

Guideline 3.4 – Disruption of Equipment, Supplies and Services

EMS agencies should plan for disruptions in the availability of equipment, supplies, and services.

Rationale

The unpredictable nature of an influenza pandemic makes it difficult to ensure the consistent availability of essential equipment, supplies and services.

Considerations^{42,43,44}

- EMS planners should:
 - work with suppliers and clients to maintain business continuity in the event of transportation or distribution disruptions in accordance with local priorities and critical needs.
 - recognize that normal supply lines may be slowed or inoperable for an extended period of time and to make personal and business preparations for pandemics for up to 12 weeks (e.g., stockpiling food, water, oxygen and delivery supplies, suction unit disposables, IV and medical supplies, and medications).
 - identify business functions that could be outsourced or transferred to other facilities within the organization in the event of high employee absenteeism.
- EMS agencies should:
 - maintain a contact list of current suppliers and develop an alternate list of suppliers for critical supplies and essential resources and services including fuel distributors.
 - maintain sufficient and accessible, infection control supplies (e.g., hand-hygiene products, tissues, PPE(gloves, FDA-approved surgical masks, NIOSH-certified N95 or higher respirators, etc.) and receptacles for their disposal)

⁴² US Department of Health and Human Services. ONLINE. 2006. *Pandemic Preparedness Planning for US Businesses with Overseas Operations Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/workplaceplanning/index.html> [18 March 2007].

⁴³ US Department of Health and Human Services. ONLINE. 2006. *Business Pandemic Influenza Planning Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/workplaceplanning/index.html> [18 March 2007].

⁴⁴ Vermont Department of Health. ONLINE. 2007. *EMS Strategies for Pandemic Flu Response Working Draft*. VT Department of Health. Available: <http://healthvermont.gov/hc/ems/documents/EMSSstrategiesforPandemicFluResponse.pdf> [21 March 2007].

- work with local law enforcement and security firms to develop security plans to protect operations, facilities, supplies, and other infrastructure critical to an EMS response.
- should maintain a supply of food staples or other feeding arrangements at work facilities to avoid personnel needs to shop or eat out while on duty
- EMS and 9-1-1 planners should coordinate with State, local, tribal, and territorial public health authorities in planning for the storage and distribution of medications and other medical materiel, including countermeasures to support Targeted Layered Containment, consistent with local laws and regulations.

Background

The impact of disasters is generally felt most severely at the local level. During an influenza pandemic, State, local, and private stocks of material may be depleted quickly. A severe pandemic could have substantial impact on the global economy and on the functioning of society. Worker absenteeism, and other difficulties, will likely impact transportation networks, manufacturers, and other sectors upon which EMS systems rely. Public and private sector businesses should familiarize themselves with the various community mitigation strategies in the jurisdictions where they operate including social distancing, quarantine laws, and movement restrictions.

The Department of Homeland Security⁴⁵ encourages system planners to assess legal and regulatory authorities, issues, and restraints that could affect the supply chain, transportation of goods and services, priority for delivery, and workplace safety issues. Additionally, EMS planners should consider the risks, impacts, and implications of pandemic-related disruptions to international production, supply chain, goods, and personnel movement. The majority of U.S. businesses rely on a global network of essential material and support functions. Disruptions in international trade could result in cascading impacts across EMS agencies even before pandemic disease outbreaks reach the United States.

⁴⁵ US Department of Homeland Security. ONLINE. 2006. *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*. Department of Homeland Security. Available: www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf [18 March 2007].

Guideline 3.5 - Interoperable Communications

State, local, tribal, and territorial EMS pandemic influenza plans should include effective, reliable interoperable communications systems among EMS, 9-1-1, emergency management, public safety, public health and health care agencies.

Rationale

Coordination of reliable communications systems among public health, 9-1-1 PSAPs, EMS, emergency management, public safety and health care officials is necessary to ensure optimal patient care.

Considerations

- EMS pandemic plans should address the ability of emergency communications systems to support the incident command system.
- Communications systems should support the EMS provider's role in providing optimal patient care during a pandemic (e.g., just-in-time training, disease surveillance, patient tracking, resource tracking, etc.).
- This guideline is consistent with the current version of the Department of Homeland Security's Target capability List⁴⁶ for "Triage and Pre-hospital Treatment."

Background

EMS agencies rely on communications systems at multiple points in the emergency response process. EMS communications systems may include:

- Accepting communications into a 9-1-1 center.
- Dispatching communications from a 9-1-1 center.
- Routing communications to and between emergency operations centers including lateral transfer of 9-1-1 calls when appropriate.
- Routing selected communications to non-emergency call centers as defined by local policies or protocols.
- Coordination of communications between field EMS personnel, incident command, medical control and healthcare facilities.
- Emergency communication with the public (e.g., emergency alert system and outbound emergency communications systems).

EMS pandemic influenza planners should consider each of these communications systems and their capacities in terms of call volume, interoperability, and

⁴⁶ US Department of Homeland Security. ONLINE. 2005. *Target Capabilities List Version 1.1*. ODP Secure Portal. Available: <https://odp.esportals.com>. Lessons Learned Information Sharing. Available: www.llis.gov [18 March 2007].

redundancy and consider how to ensure the effectiveness of these communications systems during an influenza pandemic.

The communications discipline is one of the keys to effective incident management, and ideally, these systems would be centralized through established ICS channels. There should also be a plan for backup or redundant communication strategies in case there are failures in primary communication methods. Similarly, other backup procedures for actions that can be taken when systems fail should be planned, tested in advance, and integrated into the planning process.

Guideline 3.6 – Compatible Communications Equipment and Communications Frequencies

EMS pandemic influenza plans should include compatible communications equipment and communications radio frequency plans for common hospital diversion and bed capacity situational awareness at the local, State and regional level.

Rationale

Communications is important to maintaining situational awareness and to effective EMS operations during an influenza pandemic or other public health emergency.

Considerations

- The use of an Internet-Protocol based communications system could facilitate redundancy and real-time communications.
- Alternative or secondary telephone systems and radio frequencies could be established to reduce the load on the primary systems.
- This guideline is consistent with the current version of the Department of Homeland Security’s Target capability List⁴⁷ for “Triage and Pre-hospital Treatment”

Background

Using existing communications systems is critical to maintaining efficient and effective EMS operations during an evolving pandemic. As the availability of EMS response, hospital beds, and regional pandemic influenza status changes, it is essential that all entities receive consistent communication in a timely fashion. This involves planning for the use of the communications infrastructure and may also involve nontraditional use of existing communication systems.

There should be backup or redundant communication strategies in case there are failures in primary communication methods. Similarly, other backup procedures for actions that can be taken when systems fail should be planned, tested in advance, and integrated into the planning process.

Upgrading emergency communications technology offers additional advantages. “Next Generation” 9-1-1 technology enhances emergency communications and enables the transmission of voice, data, text, and video/photographs from a variety

⁴⁷ US Department of Homeland Security. ONLINE. 2005. *Target Capabilities List Version 1.1*. ODP Secure Portal. Available: <https://odp.esportals.com>. Lessons Learned Information Sharing. Available: www.llis.gov [18 March 2007].

of communication devices, directly to the PSAP and on to emergency responders via their communication networks. Based upon Internet Protocol enabled (IP-enabled) technology, it transmits information as a digital data packet, from the source to the PSAP, and on to emergency responders, as deemed appropriate. Within the context of Pandemic Influenza, this technology offers the following advantages to 9-1-1 service:

- Allows voice, data, text and video/photographs to be transmitted directly to the PSAP
- Allows all transmissions to arrive at the PSAP as a native 9-1-1 call (some data currently is shared by person-to-person transmission, or via an administrative phone line versus 9-1-1 trunk line.
- Allows call centers to transfer calls directly to the appropriate PSAP as a 9-1-1 call.
- Allows data to be shared with emergency responders and other health care provider agencies, as deemed appropriate.
- Allows 9-1-1 calls to be transferred to other PSAPs locally as well as “long distance,” enabling call transfer, rerouting, and back-up in the event of system overload or PSAP closure.
- Allows interoperable communications between 9-1-1 and traditional “push-to-talk” radio communications systems.

Additional information on Next Generation 9-1-1 technology can be found on the Department of Transportation’s Intelligent Transportation System website at: <http://www.its.dot.gov/ng911/index.htm> or the National Emergency Number Association’s Next Generation 9-1-1 Partner Program, at: <http://www.nena.org/>.

Section 3 - The Role of EMS in Pandemic Influenza Response

SEE RELATED APPENDICES

- 4. Appendix B—EMS and Non-Emergent Medical Transport Organizations Pandemic Influenza Planning Checklist from the Centers of Disease Control and Prevention**
- 5. Appendix N—Continuity of Operations Program Elements**

Section 4 - Legal Authority

Guideline 4.1 – Deviation from Established Procedures

State EMS pandemic influenza plans should establish procedures for EMS providers to deviate legally from their established treatment procedures to support mitigation of and response to pandemic influenza and other public health emergencies while still assuring appropriate education, medical oversight and quality assurance.

Rationale

Providing established and dynamic procedures for EMS providers to deviate legally from their established, day-to-day treatment procedures supports the evolving role of EMS while still providing for high quality patient care.

Considerations

- State and local EMS pandemic influenza plans should provide for expedited review and approval of new treatment modalities and procedures. They should provide sufficient flexibility to EMS Medical Directors to credential EMS providers to perform procedures and to administer medications to match the exigencies of the situation while still protecting public safety through appropriate education, medical oversight and quality assurance.
- There should be an EMS statewide system to “trigger” the authorization of new procedures and medications by EMS providers in coordination with public health officials.
- A just-in-time training program, combined with appropriate and coordinated information to the EMS medical directors and EMS providers, will help to ensure appropriate and competent medical care.
- There should be mechanisms for temporary licensure of EMS providers from other jurisdictions or those who may be retired or inactive providing there are sufficient safeguards to protect public health and safety.
- EMS pandemic influenza plans might consider opportunities to make optimum use of volunteer health personnel through the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP⁴⁸).

⁴⁸ Public Health Security and Bioterrorism Preparedness and Response Act of 2002, Pub. L.No. 107-188 § 107, 116 STAT. 595 (2002). See also <http://www.hrsa.gov/esarvhp/>

- EMS pandemic influenza plans should integrate the capabilities and resources of various governmental jurisdictions, incident management and emergency response disciplines, and the private sector to conform to the National Incident Management System⁴⁹ (NIMS).
- There should be pre-event coordination between those administering the EMS licensing laws and those administering laws that may waive certain health occupation licensing provisions in emergency situations such as emergency health powers acts.
- Public health, law enforcement, emergency management officials and fire officials, Public Safety Answering Points (PSAPs) and EMS first responders will benefit from joint training on the legal authorities essential to effective response in public health emergencies before the emergency occurs.
- Deviation from established treatment protocols might, for instance, also include administration of vaccines and anti-virals, new medications, declaration of death or other activities.

Background – Scope of Practice

Scope of practice is a description of what a licensed individual legally can, and cannot, do. Each State has the statutory authority and responsibility to regulate EMS within its borders and to determine the scope of practice of State-licensed EMS personnel. Scopes of practice are typically defined in law, regulations or policy documents. In contrast, credentialing is a local process by which an individual is permitted by a specific entity (EMS medical director) to practice in a specific setting (EMS agency).

It is virtually impossible to create a scope of practice that takes into account every unique situation, extraordinary circumstance, and possible practice situation. This is further complicated by the fact that EMS personnel are an essential component of disaster preparedness and response. In many cases, EMS personnel are the only medically trained individuals at the scene of a disaster when other healthcare resources may be overwhelmed.

The *National EMS Scope of Practice Model*⁵⁰ states that it cannot account for every situation, but rather is designed to establish a system that works for entry-level personnel under normal circumstances. It is assumed that the scope of practice of EMS personnel may be modified or changed in times of disaster or crisis with proper education, medical oversight and quality assurance to reasonably protect patient safety.

If predictions about the surge of patients and the concomitant increase in absenteeism among EMS personnel become a reality, EMS providers' regular

⁴⁹ US Department of Homeland Security. ONLINE. 2004. *National Incident Management System*. Department of Homeland Security. Available: www.fema.gov/pdf/emergency/nims/nims_doc_full.pdf [18 March 2007].

⁵⁰ National Highway Traffic Safety Administration. 2007. *National EMS Scope of Practice Model*. Washington, DC, National Highway Traffic Safety Administration.

day-to-day practices may need to be modified during pandemic influenza. In addition, staff may be apprehensive about leaving home, need to care for sick family members and/or may find it difficult to travel to work. Burnout from stress and long hours may occur, and replacement staff may be needed.

EMS pandemic influenza plans should identify sufficient State legislative authority, administrative rules/regulations and liability protection to support the role of EMS providers during a pandemic influenza event or other major public health emergencies. The legal authority should provide for a system in which the procedures and medications that EMS providers are authorized to use may be dynamically modified, if necessary, to reflect the evolving roles of EMS providers during an influenza pandemic, while simultaneously assuring medical direction, appropriate education and quality assurance.

Background – Other legal issues

The organization and delivery of healthcare is highly regulated. During a public health emergency such as an influenza pandemic, it is likely there may be temporary modification of other regulatory requirements at all levels of government. For instance, the *National Strategy for Pandemic Influenza: Implementation Plan*⁵¹ suggests waivers and modification of certain legal requirements during pandemic influenza. It asserts, “Depending on the severity of a pandemic, certain requirements may be waived or revised to facilitate efficient delivery of health care services.”

While significant progress has been made since the terrorist attacks on September 11, 2001, in establishing joint investigative protocols and linkages among the key components of public health, emergency management, Public Safety Answering Points, law enforcement and emergency response communities, pandemic influenza will present new challenges. As a result, it is important that all concerned understand their roles and the governing legal authorities so that they can coordinate their efforts under a complex set of Federal, State, tribal, and local laws. Federal, State, local and tribal governments should review their legal authorities to respond to an influenza pandemic and identify needed changes.

To the extent possible, existing laws and other mechanisms should be used to the fullest. It is therefore important to examine existing State public health laws, licensing/certification laws, interstate emergency management compacts and mutual aid agreements, and other legal and regulatory arrangements to determine the extent to which they permit necessary planning for pandemic influenza.

A summary of several different applicable Federal laws and a variety of legal, regulatory and accreditation issues is included in Appendix P. *The Draft Checklist*

⁵¹ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007]

*for State and Local Government Attorneys to Prepare for Possible Disaster*⁵² may also provide helpful information to EMS services. The checklist includes lists of questions pertaining to authority in general, authority for surveillance, and intergovernmental joint powers agreements. In addition, it addresses public information, administrative and fiscal issues, contracting, personnel, and liability.

The Model State Emergency Health Powers Act⁵³ grants specific emergency powers to State governors and public health authorities in the event of a large public health emergency and addresses liability issues. The Model Act was developed for the Centers for Disease Control and Prevention (CDC) by the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities to ensure an effective response to large-scale emergency health threats while protecting the rights of individuals. (Additional information is provided in Appendix E.)

Colorado has chosen to plan for disaster emergencies by using draft executive orders⁵⁴ to create a legal framework for an emergency including the suspension of certain statutory provisions. These may provide another option for states to consider when seeking regulatory relief in an emergency. (Document included as Appendix F.)

⁵² American Bar Association. ONLINE. 2003. *Draft Checklist for State and Local Government Attorneys to Prepare for Possible Disasters*. American Bar Association. Available: www.abanet.org/statelocal/disaster.pdf [18 March 2007].

⁵³ Lawrence O. Gostin, et al. *The Model State Emergency Health Powers Act: Planning for and Response to Bioterrorism and Naturally Occurring Infectious Diseases*, 288 JAMA 622 (2002). See also The Center for Law and the Public's Health web site <http://www.publichealthlaw.net/Resources/Modellaws.htm>

⁵⁴ Colorado Department of Public Health and Environment. ONLINE 2006. *CDPHE Internal Emergency Response Plan Governor's Emergency Epidemic Response Committee (GEEERC) Draft Executive Orders Updated Oct. 23, 2006*. CDPHE. Available: <http://www.cdphe.state.co.us/bt/HealthProviders/Attachment3.pdf> [20 March 2007]

Guideline 4.2 – EMS Freedom of Movement

State EMS pandemic influenza plans should, in coordination with public health, emergency management, and law enforcement agencies, identify mechanisms to ensure freedom of movement of EMS assets (vehicles, personnel, etc.) when faced with restricted travel laws, isolation/quarantine or security measures.

Rationale

Ensuring EMS personnel are able to move freely even though there may be travel restrictions is essential to the performance of their duties.

Considerations

- Movement of EMS personnel and resources during isolation and quarantine should be coordinated, in advance, with public health, emergency management, and law enforcement officials.
- This guideline is consistent with the current version of the Department of Homeland Security's Target capability List⁵⁵ for "Triage and Pre-hospital Treatment"

Background

A jurisdiction's chief executive may have the authority, depending upon State and local law, to order quarantine in coordination with the local health authority. Quarantine has the potential to impact the transportation of patients by ambulance, as well as the ability of EMS and Public Safety Answering Point (PSAP) personnel to travel from their homes to their places of employment. State and local planners must be cognizant of this possibility and include processes in their pandemic influenza plans to allow EMS and PSAPs to maintain continuity of operations during these extraordinary circumstances.

Section 4 - Legal Authority

SEE RELATED APPENDICES

1. Appendix E-- Model State Emergency Health Powers Act (excerpt)
2. Appendix F-- Colorado Draft Executive Orders
3. Appendix P—Other legal and regulatory issues

⁵⁵ US Department of Homeland Security. ONLINE. 2005. *Target Capabilities List Version 1.1*. ODP Secure Portal. Available: <https://odp.esportals.com>. Lessons Learned Information Sharing. Available: www.llis.gov [18 March 2007].

Section 5 - Clinical Standards and Treatment Protocols

Guideline 5.1 – EMS Medical Direction

Each State, local, tribal, and territorial EMS system should have an EMS medical director to provide medical oversight of EMS pandemic influenza planning, mitigation and response.

Rationale

An EMS medical director provides medical leadership, oversight, coordination, system quality management, and research to ensure the safest and highest-quality care for patients.

Considerations

- EMS medical directors should play a lead role in pandemic influenza planning efforts in collaboration with public health officers.
- EMS medical directors should have knowledge and experience with the clinical and operational aspects of the EMS System.
- EMS medical directors should provide medical oversight of the EMS system, including 9-1-1, during an influenza pandemic.
- There should be a statewide system, coordinated with public health and emergency management officials, that ensures EMS medical directors are promptly notified of the latest disease information.
- Local EMS medical director oversight, including credentialing of additional EMS personnel skills, modification of treatment protocols should be consistent with State laws, rules and policies.

Background

Given the uncertainty of the disease, its treatment and progression, the ongoing role of EMS medical directors is critically important. The guidance provided in this document is based on current knowledge of routes of influenza transmission, the pathogenesis of influenza, and the effects of influenza control measures used during past pandemics and inter-pandemic periods. Given some uncertainty about the characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that take new information into account as the situation unfolds.

The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain unknown until the viral strain is identified. Therefore, the ongoing involvement of EMS medical directors is essential.

Appendix M contains suggested resources for EMS medical director training.

Guideline 5.2 – Modification of Treatment and Triage Protocols

State, local, tribal and territorial EMS pandemic influenza plans should define mechanisms for rapid development, adoption or modification of prehospital clinical standards and triage and treatment protocols before or during an influenza pandemic that are based upon the most recent scientific information.

Rationale

If a pandemic exceeds the healthcare capacity of a community, it may be necessary to modify the provision of emergency medical care during an influenza pandemic.

Considerations

- EMS and 9-1-1 planning efforts should include thresholds for modification of triage and treatment algorithms (e.g., trigger points).
- Local EMS plans should establish rapid mechanisms for modifying prehospital treatment and triage protocols taking into consideration current State and Federal guidance that are consistent with established “trigger points”.
- EMS medical directors should play a lead role in planning efforts that identifies areas for potential protocol modification related to dispatch, triage, and treatment concerns in advance of a pandemic.
- The prehospital triage protocols and 9-1-1 triage protocols should be coordinated to determine who receives emergency care or transport. (See sample Figure 2)
- The system should include points of referral for patients who need information but do not need emergency care or transport. [Refer to companion document *Preparing for Pandemic Influenza: Recommendations for Protocol Development for 9-1-1 Personnel and Public Safety Answering Points* for more information.]
- In support of community mitigation strategies, the appropriate care may be to have individuals stay at home and practice social distancing and quarantine measures rather than be transported to a healthcare facility.
- Local EMS plans should coordinate with receiving facilities (e.g., hospital emergency departments), other EMS and non-emergent (medical) transport organizations, and local planning groups to manage the transportation of large numbers of patients during an evolving pandemic.
- EMS should be involved in community-wide planning for establishing alternate-care sites.
- The process for allocating health and medical resources during an influenza pandemic should be fair, clinically sound, and include public input.

Background

The allocation of scarce resources⁵⁶ and the decision-making that allocates resources to the most viable patients is at the heart of existing EMS triage protocols. EMS planners are familiar with the difficult challenges of triaging multiple patients. Alternate Care Facilities may be established to function as primary triage sites, providing limited supportive care, offering alternative isolation locations to influenza patients, and serving as recovery clinics to assist in expediting the discharge of patients from hospitals.

Planning should therefore include thresholds for modifying triage algorithms and otherwise optimizing the allocation of scarce resources. In addition, the appropriate method of care for certain patients may involve social distancing and quarantine strategies rather than transport to a health care facility. These community mitigation strategies may help to ensure health care resources are best utilized. Additionally they may be the best method of managing a section of the population who would otherwise be exposed to additional illness at overwhelmed health care facilities. Where prospective and mature data are available, changes in clinical care algorithms should be evidence-based.

According to the *National Strategy for Pandemic Influenza: Implementation Plan*⁵⁷, should pandemic influenza occur, preference should be given to “those patients whose medical condition suggests that they will obtain greatest benefit from them.” This rationale differs from approaches to care in which resources are provided on a first-come, first-served basis or to patients with the most severe illnesses or injuries.

*Altered Standards of Care in Mass Casualty Events*⁵⁸ offers a framework and guiding principles for planning for health and medical care in a mass casualty event. Excerpts from that document can be found in Appendix G.

In planning for a prolonged public health emergency, it must be recognized that persons with unrelated medical conditions will continue to require emergency, acute and chronic care. It is important to keep the healthcare system functioning as effectively as possible for these patients, as well as for influenza patients.

A sample of an EMS protocol, modified according to the Pandemic Influenza Severity Index, is included in the *PLANNING ASSUMPTIONS AND GUIDELINE OVERVIEW- A SUMMARY*. (Figure 3)

⁵⁶ Agency for Healthcare Research and Quality. ONLINE. 2006. *Providing Mass Medical Care with Scarce Resources: A Community Planning Guide*. AHRQ. Available: <http://www.ahrq.gov/research/mce/> [21 March 2007].

⁵⁷ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

⁵⁸ Agency for Healthcare Research and Quality. ONLINE. 2005. *Altered Standards of Care in Mass Casualty Events: Bioterrorism and Other Public Health Emergencies*. AHRQ. Available: www.ahrq.gov/research/altstand/ [21 March 2007].

Guideline 5.3 – Rapid Distribution of New Protocols

State, local, tribal, and territorial EMS pandemic influenza plans should define consistent, system-wide procedures for the rapid distribution of new or modified prehospital EMS treatment and triage protocols before or during an influenza pandemic

Rationale

EMS providers' practice should be based on the most up-to-date pandemic influenza clinical recommendations and treatment protocols/information from appropriate public health authorities and EMS medical direction.

Considerations

- EMS pandemic influenza plans must be sufficiently dynamic and flexible to allow EMS treatment protocols to be developed and distributed as soon as information about the viral strain and Federal and State treatment recommendations become available.
- EMS agencies should coordinate with local public health authorities to include a process to obtain and disseminate a “pandemic influenza symptom set” (case definition) that helps identify potential pandemic influenza patients as soon as the information becomes available.
- EMS pandemic influenza plans must include specific, time-sensitive processes for State, local, tribal, and territorial EMS agencies and EMS medical directors to coordinate with Federal, State, and local public health authorities to immediately obtain new information about emerging disease threats.
- There should be clearly defined procedures for rapid dissemination of pandemic influenza information among EMS, 9-1-1, public health, PSAPs and other officials. This should include coordination with the CDC's Health Alert Network and/or PHIRE⁵⁹.
- Available technologies should be considered in distributing information in a timely fashion.

Background

Given the uncertainty about the characteristics of a new pandemic strain, all aspects of preparedness planning must allow for flexibility and real-time decision-making based on evolving information. The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different

⁵⁹ Centers for Disease Control and Prevention. ONLINE. 2007. *Health Alert Network*. CDC. Available: <http://www.bt.cdc.gov/documentsapp/HAN/han.asp> [18 March 2007]

age groups and subpopulations, and drug susceptibility—will remain unknown until the viral strain is identified.

The Centers for Disease Control and Prevention is a trusted source of important, timely information concerning actual or potential public health emergencies. PHIRE, the CDC Public Health Information Rapid Exchange, is a system that sends important real-time health information to select subscribers based on their preferences. For example, the system enables CDC to rapidly disseminate alerts about evidence of suspected pandemic influenza in the United States.

PHIRE is a secure electronic communication system designed to keep health care providers informed to protect our Nation's health. The information is provided in real time during an emergency and also allows subscribers the ability to have scheduled moderated forums. The information registrants provide regarding their county and work setting enables the CDC to target relevant emergency health information specific to the registrants needs.

More information, including the ability to register can be done at www.cdc.gov/phire.

Guideline 5.4 – Just-in-Time Training

State, local, tribal, and territorial EMS pandemic influenza plans should define a process for providing just-in-time training for EMS agencies, EMS providers, EMS medical directors and PSAPs.

Rationale

Just-in-time training (information) will ensure that EMS providers and PSAPs receive information and education to support the rapid adoption of new or modified clinical algorithms, treatment protocols or other pertinent information.

Considerations

- There should be clearly defined procedures for rapid dissemination of pandemic influenza information (clinical and non-clinical) among EMS, 9-1-1, public health, PSAPs and other officials.
- The adoption of modified triage and treatment protocols will require sufficient information related to the emerging viral strain, as well as medical oversight to ensure quality of care.
- Drills and exercises, coordinated with public health and emergency management officials, should be used to validate pandemic influenza response plans and training programs.
- Various technologies may be useful in assuring just-in-time training.

Background

“Just-in-time” training and education refers to the timely provision of information and instructions as they become available, and when users need them.

As an example of just-in-time training, the Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control (NCIPC), Division of Injury Response (DIR) has been working with seven communities as best practice models for how emergency medical services (EMS) can work with other safety and public health agencies in times of disaster.

Constructed around the interrelated activities of partnership building, learning lessons from terrorist events, and disseminating information, the Terrorism Injuries Information, Dissemination and Exchange (TIIDE) Project⁶⁰ was established through a cooperative agreement in response to the urgent, ongoing need to develop, disseminate and exchange information about injuries from

⁶⁰ Centers for Disease Control and Prevention. ONLINE. 2006. *Terrorism Injuries Information, Dissemination and Exchange (TIIDE) Project*. CDC. Available: <http://www.bt.cdc.gov/masscasualties/tiidefacts.asp> [21 March 2007]

terrorism. As part of CDC's TIIDE Project, Model Communities identify where relationships between the emergency care community and public health officials are established and operate at levels that effectively respond to events that may cause large numbers of injuries. Fact sheets⁶¹ will be developed for health care audiences such as EMS providers and a variety of prehospital care professionals, in-hospital clinicians and others. (A sample is included as Appendix D.) Such models could be used by local planners to enhance HAN notices and to disseminate case definitions, fact sheets, and other important information to EMS medical directors, PSAPs, and EMS providers during an influenza pandemic.

Guidance regarding just-in-time pandemic influenza training is incorporated in the *CDC EMS and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*⁶².

⁶¹ Sample fact sheet available at <http://www.bt.cdc.gov/masscasualties/pdf/blastinjuries.pdf>

⁶² US Department of Health and Human Services. ONLINE. 2006. *Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/healthcare/emgncymedical.html> [18 March 2007].

Guideline 5.5 – Fatality Management

State, local, tribal, and territorial EMS pandemic influenza plans should coordinate with public health and 9-1-1 officials and the local medical examiner/coroner to define protocols and processes for fatality management during pandemic influenza.

Rationale

While not traditionally part of their day-to-day duties, EMS personnel may be called upon to assist with fatality management during an influenza pandemic or other public health emergency.

Considerations

- EMS planners should collaborate with appropriate State authorities to identify roles, policies, and procedures for handling fatalities during a pandemic.
- EMS plans for pandemic influenza should coordinate with the State and local medical examiner/coroner to determine legal authority and appropriate protocols for the presumption or pronouncement of death including documentation requirements and proper handling of human remains during an influenza pandemic.

Background

An influenza pandemic is expected to result in an increased number of deaths both in and out of medical facilities. Existing fatality management systems in communities will require an increased capacity and capability to manage deaths resulting from a pandemic.

Deaths of persons at home or away from healthcare facilities fall under the jurisdiction and surveillance of medicolegal death investigators. Medical Examiners/Coroners have State statutory authority to investigate deaths that are sudden, suspicious, violent, unattended, or unexplained; therefore, these investigators have a role in recognizing and reporting fatal outbreaks as part of the larger public health system and can be instrumental in developing relevant local protocols that help mitigate the burden that case fatalities can place on the system⁶³.

⁶³ Centers for Disease Control and Prevention.. ONLINE. 2004. *Medical examiners, coroners, and biologic terrorism: a guidebook for surveillance and case management*. MMWR 2004;53(No. RR-8):[inclusive page numbers]. CDC. Available: <http://www.cdc.gov/mmwr/PDF/RR/RR5308.pdf> [21 March 2007]

Additional information on the role of EMS in fatality management⁶⁴ may be found in Appendix H as excerpted from the *White Paper: The Provision of Family Assistance and Behavioral Health Services in the Management of Mass Fatalities Resulting from a Pandemic Influenza in the United States*.

⁶⁴ Excerpted from US Northern Command and Department of Health and Human Services Fatality Management Pandemic Influenza Working Group Conference. ONLINE. 2006. *White Paper: The Provision of Family Assistance and Behavioral Health Services in the Management of Mass Fatalities Resulting from a Pandemic Influenza in the United States*. Joint Task Force Civil Support. Available [www.jtfc.northcom.mil/pages/WP_SceneOps\(FINAL\).pdf](http://www.jtfc.northcom.mil/pages/WP_SceneOps(FINAL).pdf) [21 March 2007].

Guideline 5.6 – EMS Treat and Release

EMS pandemic influenza plans should consider the role EMS providers could serve in “treating and releasing” patients without transporting them to a healthcare facility.

Rationale

Community containment strategies designed to limit the spread of the influenza virus may require patients be treated and released without transport. Additionally, healthcare facilities may become overwhelmed with patients, making it necessary to consider alternative options for patients who can be safely treated without transport.

Considerations

- If a treatment without transport role is deemed appropriate for EMS providers, the EMS medical director, in coordination with local public health authorities, should establish criteria and reporting requirements.
- “Treat and release” and “treatment without transport” protocols require oversight by EMS medical directors.
- EMS agencies and EMS medical directors should coordinate with the local public health authorities to pre-determine the destination of both suspected influenza and non-influenza patients.
- EMS provider credentialing and Scope of Practice issues should be addressed, as appropriate. In many cases (e.g., treatment of hypoglycemia Type I diabetics with IV D50, listening to lung sounds, providing IVs for hydration, and assessment of oxygen saturation levels) may fall within existing Scopes of Practice.
- Appropriate education programs for EMS personnel, physicians, and the public should be established before the implementation of non-transport policies.
- Educational materials and referral services should be established and provided to patients who are not transported to medical facilities, including instructional material for follow-up care and other services.

Background

The concept of “treat and release” is familiar to EMS providers. During an influenza pandemic the “treat and release” concept is vital to maintain community mitigation strategies, such as social distancing and voluntary quarantine. Additionally “treat and release” may be the best method of managing a section of the population who would otherwise be exposed to additional illness at overwhelmed health care facilities.

Several studies have been reported regarding successful in-home EMS treatment of patients such as IV hydration and limited pharmacologic intervention (i.e., hypoglycemia) that does not include patient transport to a healthcare facility. According to the 2005 JEMS 200-City Survey, 71.3% of U.S. EMS systems allow providers to treat patients without transporting them, and 35.7% have a policy that allows EMS to refuse transport⁶⁵.

Section 5 - Clinical Standards and Treatment Protocols

SEE RELATED APPENDICES

- 1. Appendix B—EMS and Non-Emergent Medical Transport Organizations
Pandemic Influenza Planning Checklist from the Centers of Disease Control
and Prevention**
- 2. Appendix D—Sample TIIDE Fact Sheet**
- 3. Appendix G—Excerpt from Altered Standards of Care in Mass Casualty Events**
- 4. Appendix H—Excerpt from the: White Paper on Scene Operations, to
Include Identification, Medico-legal Investigation Protocols and Command and
Control of Mass Fatalities Resulting from a Pandemic Influenza (PI) in the
United States**
- 5. Appendix M—Pandemic Influenza Resources**

65 Maggiore WA. ONLINE. 2006. *To Transport or Not to Transport? Part 1 of 2*. Journal of Emergency Medical Services. Available: <http://www.jems.com/columnists/Maggiore/articles/15830/> [21 March 2007]

Section 6 - EMS Workforce Protection

Guideline 6.1 – Protection of EMS and 9-1-1 Workforce and Families

State, local, tribal, and territorial EMS pandemic influenza plans should identify strategies to protect the EMS and 9-1-1 workforce and their families during an influenza pandemic.

Rationale

As a component of the Nation's critical infrastructure, emergency medical services will play a vital role in responding to requests for assistance, triaging patients, and providing emergency treatment to patients during a pandemic. Strategies to protect the EMS and 9-1-1 workforce and their families are essential to maintaining an EMS systems' ability to satisfy demand for services.

Considerations

- EMS and 9-1-1 agencies should promote educational and operational strategies for infectious disease control and prevention that contribute to personnel health and safety.
- EMS and 9-1-1 pandemic influenza planners should work with public health officials and occupational health personnel to establish internal surveillance protocols and tracking systems to monitor the health of workers and to determine whether ongoing strategies of ensuring workplace safety and operational continuity are successful or need to be altered as a pandemic evolves.
- EMS planners should consider the impact of an influenza pandemic on workers and their families and include labor and non-labor representatives whenever possible in planning efforts intended to protect the workforce.
- EMS planners should consider mechanisms that could be sustained throughout a pandemic period to maintain physical and mental capabilities of providers.
- EMS pandemic influenza plans should consider opportunities for off-duty EMS personnel to have alternative housing arrangements during a pandemic, thereby protecting providers from transmitting disease to family members or visa versa.
- EMS planners should consider methods to offer prophylaxis/treatment to EMS providers.⁶⁶

⁶⁶ US Department of Health and Human Services. ONLINE. 2005. HHS Pandemic Influenza Plan Appendix D: NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use. Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/appendixd.html> [20 March 2007].

- Contingent upon the availability of countermeasures, EMS planners should also consider methods to offer medications to family members of personnel.
- EMS agencies should ensure ongoing availability of and encourage proper use of infection control measures and personal protective equipment to reduce risk of exposure (e.g., eye protection, personal respirators such as N95s for providers and masks for patients as appropriate, gowns for responders, gloves, hand disinfectant, disposable tissues, and effective containment of contaminated materials that may require disposal into biohazardous waste containers.)

Background

An influenza pandemic is expected to have substantial impact on the healthcare system with large increases in demand for healthcare services. EMS will be treating influenza-infected patients and will be at risk of repeated exposures. To support continued work in a high-exposure setting and to help lessen the risk of EMS workers transmitting influenza to other patients and EMS family members, their protection must be given high priority^{67,68,69}

The prospect of absenteeism due to illness, quarantine, fear, or death reinforces the need to develop plans to proactively protect and support the workforce and their families before and during an influenza pandemic. The vulnerability of the healthcare workforce was apparent when both Hong Kong and Toronto dealt with SARS. Transmission of SARS appeared to result primarily from direct patient contact or contact with large respiratory droplets in the close vicinity of an infected person. Despite apparent limited modes of transmission, SARS has been known to spread extensively among HCWs [health care workers] in various settings. For example, among 138 cases of secondary and tertiary spread in Hong Kong, 85 (62%) occurred among HCWs; among 144 cases in Toronto, 73 (51%) were HCWs. SARS infection of HCWs might be related to increased contact with respiratory secretions, contact with patients during a more contagious phase of critical illness, contact with particular patients at increased likelihood of spreading SARS (i.e., super spreaders), or exposure to aerosol-generating patient-care procedures.⁷⁰

⁶⁷ US Department of Health and Human Services. ONLINE. 2006. *Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/healthcare/emgncymedical.html> [18 March 2007].

⁶⁸ . US Department of Health and Human Services. ONLINE. 2005. *HHS Pandemic Influenza Plan Appendix D: NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use*. Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/appendixd.html> [20 March 2007].

For the most current information about vaccines and antivirals, including the latest prioritization strategies, see <http://www.pandemicflu.gov/vaccine/index.html>

⁶⁹ Occupational Safety and Health Administration. *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers*. Unpublished.

⁷⁰ Centers for Disease Control and Prevention. ONLINE. 2003. *Cluster of Severe Acute Respiratory Syndrome Cases Among Protected Health-Care Workers --- Toronto, Canada, April 2003*

EMS agencies and personnel should practice infection control procedures. In the *Morbidity and Mortality Weekly Report Cluster of Severe Acute Respiratory Syndrome Cases Among Protected Health-Care Workers --- Toronto, Canada, April 2003*, the CDC reports that although infections among health care workers were a common feature of severe acute respiratory syndrome (SARS), the majority of these infections occurred in locations where infection-control precautions either had not been instituted or had been instituted but were not followed. In addition, Health Canada and the CDC are aware of several unpublished reports of SARS clusters among unprotected healthcare workers involved with intubation, both in Canada and outside North America. The cluster described in this report might be unique, as healthcare workers appear to have followed infection-control precautions recommended by Health Canada. The Health Canada recommendations, although similar to those of CDC, differ from CDC guidelines with respect to respiratory protection. CDC guidelines specify use of respirators certified the National Institute for Occupational Safety and Health (NIOSH) and rated at an N95 level of protection or greater. Health Canada recommends use of "N95 equivalent" respirators. The respirators used by one hospital, although compliant with Canadian public health recommendations, were not NIOSH-certified. In addition, at the time these exposures occurred, fit testing was not recommended by Canadian public health authorities; such testing has been mandated in the United States since 1972.^{71 72}

MMWR. May 16, 2003 / 52(19);433-436. CDC. Available:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5219a1.htm> [3 April 2007]

⁷¹ OSHA Respiratory Protection Standard, 29 CFR 1910.134

⁷² Occupational Safety and Health Administration. *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers*. For complete document go to www.osha.gov

Guideline 6.2 – Infection Control and Decontamination

EMS agencies should consistently practice basic infection control procedures including vehicle/equipment decontamination, hand hygiene, cough and respiratory hygiene, and proper use of FDA cleared or authorized medical personal protective equipment (PPE) regardless of the likelihood of an influenza pandemic.

Rationale

The consistent practice of basic infection control and decontamination measures is essential to protect EMS providers and their patients by reducing transmission of infectious diseases and other pathogens.

Considerations

- EMS agencies should adopt day-to-day infection control and decontamination procedures consistent with the most recent CDC and OSHA guidance. (Appendices K, L, and Q)
- EMS agencies should define mechanisms of rapidly modifying infection control and decontamination procedures based on the most recent research and scientific information, including Federal, State and local pandemic influenza guidelines.
- When a pandemic influenza symptom set is available from the CDC, EMS and 9-1-1 agencies should consider a screening algorithm to identify potentially infected patients and ensure proper use of PPE and infection control practices.
- EMS agencies should ensure ongoing availability of and encourage proper use of infection control measures and personal protective equipment to reduce risk of exposure (e.g., eye protection, personal respirators such as N95s for providers and masks for patients as appropriate, gowns for responders, gloves, hand disinfectant, disposable tissues, and effective containment of contaminated materials that may require disposal into biohazardous waste containers.)
- For office staff, consideration should be given to having in place social distancing measures (e.g., spacing people farther apart in the workplace, teleworking when feasible, substituting teleconferences for meetings.)

Background

Potential Contamination from Direct Patient Contact⁷³

The ability to limit transmission of pandemic influenza in healthcare settings will rely heavily on the appropriate and thorough application of infection control measures.

The CDC *EMS and Non-Emergent (Medical) Transport Organization Pandemic Influenza Planning Checklist*⁷⁴ identifies infection control elements for EMS. CDC makes numerous additional recommendations regarding infection control in the healthcare setting in Supplement 4 of the *Department of Health and Human Services Pandemic Influenza Plan*⁷⁵.

The Supplement states:

While it is commonly accepted that influenza transmission requires close contact—via exposure to large droplets (droplet transmission), direct contact (contact transmission), or near-range exposure to aerosols (airborne transmission)—the relative clinical importance of each of these modes of transmission is not known... Given some uncertainty about the characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that take new information into account as the situation unfolds. The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain unknown until the pandemic gets underway. If the new virus is unusual in any of these respects, HHS and its partners will provide updated infection control guidance.

These recommendations, edited to include only those recommendations that are relevant to EMS are provided in Appendix K.

A CDC guideline^{76,77} that addresses isolation precautions in hospitals can also be useful in developing EMS and 9-1-1 policies and procedures for infection control.

⁷³ Occupational Safety and Health Administration. *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers*. For complete document, go to www.osha.gov

⁷⁴ US Department of Health and Human Services. ONLINE. 2006. *Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/healthcare/emgncymedical.html> [18 March 2007].

⁷⁵ US Department of Health and Human Services. 2005. *HHS Pandemic Influenza Plan Supplement 4 Infection Control* Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/sup4.html> [20 March 2007].

⁷⁶ US Department of Health and Human Services. ONLINE. 1996. *Guideline for isolation precautions in hospitals*. CDC. Available: http://www.cdc.gov/ncidod/dhqp/gl_isolation.html [18 March 2007].

This guideline is particularly informative with regard to standard precautions⁷⁸ and droplet precautions⁷⁹.

Potential Contamination from Environmental Contact

“Some microbes are infectious at very low doses and can survive for hours to weeks on nonporous surfaces, such as countertops and telephone headpieces. A number of viruses, including influenza A virus... can be found in oral secretions of those infected and survive 2-24 hours on hard surfaces.”⁸⁰ A University of Arizona⁸¹ study using an invisible fluorescent tracer showed that artificial contamination from outside surfaces (e.g. such as doorknobs, telephones, faucets, and copier buttons) was transferred to 86% of 35 exposed individual’s hands. In addition, 82% of the 35 participants subsequently tracked the contaminant to their home or personal belongings. The study identified phones, desktops, and keyboards among the top five “dirtiest” work surfaces. Viruses detected using such a tracer method may no longer be viable (able to infect a human with disease), however, the study illustrates the potential transfer rates of human pathogens.

⁷⁷ Centers for Disease Control and Prevention. ONLINE. 2007. *Guidelines and Recommendations Infection Control Guidance for the Prevention and Control of Influenza in Acute-Care Facilities*. CDC. Available: <http://www.cdc.gov/flu/professionals/infectioncontrol/healthcarefacilities.htm> [3 April 2007]

⁷⁸ Excerpted from US Department of Health and Human Services. ONLINE. 1996. *Guideline for isolation precautions in hospitals*. CDC. Available: http://www.cdc.gov/ncidod/dhqp/gl_isolation.html [18 March 2007]. Standard precautions available: http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html [20 March 2007]

⁷⁹ Excerpted from US Department of Health and Human Services. ONLINE. 1996. *Guideline for isolation precautions in hospitals*. CDC. Droplet precautions available: http://www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html [20 March 2007]

⁸⁰ Reynolds KA, Watt PM, Boone SA, Gerba CP. 2005. *Occurrence of bacteria and biochemical markers on public surfaces*. Int J Environ Health Res. Jun;15(3):225-34

⁸¹ Reynolds KA, Watt PM, Boone SA, Gerba CP. 2005. *Occurrence of bacteria and biochemical markers on public surfaces*. Int J Environ Health Res. Jun;15(3):225-34

Guideline 6.3 – Vaccines and Anti-Virals for EMS Personnel

State, local, tribal, and territorial EMS pandemic influenza plans should define system-wide processes for providing vaccines and anti-viral medication to EMS personnel.

Rationale

Assuring the viability of the EMS workforce is essential to supporting their role in mitigating and responding to an influenza pandemic. As a component of the Nation's critical infrastructure, EMS will play a vital role in responding to requests for assistance, triaging patients, and providing emergency treatment to patients during a pandemic. Strategies to provide pharmaceutical countermeasures to protect the EMS workforce are essential to maintaining an EMS systems' ability to satisfy demand for services.

Considerations

- EMS pandemic flu planners should maintain familiarity with Federal guidance on prioritization of vaccinations and administration of anti-viral medications⁸². (See Appendix J)
- EMS agencies should be engaged with State and local pandemic influenza planners in allocation decisions regarding pharmaceutical and non-pharmaceutical countermeasures and ensure EMS and 9-1-1 personnel are included in the allocation plans.
- There should be an EMS agency-specific plan for the acquisition, distribution and administration of pharmaceutical and non-pharmaceutical countermeasures to EMS and 9-1-1 personnel. EMS pandemic influenza planners can establish this process through collaboration and planning with State and local public health agencies.

Background

Federal priorities for vaccine and antiviral drug use will vary based on pandemic severity as well as the vaccine and drug supply. Federal vaccination guidelines are subject to change as the Federal Government refines its guidelines to assist State, local, tribal, and territorial governments and the private sector in defining groups that should receive priority access to medical countermeasures. Priority recommendations will reflect the pandemic response goals of limiting mortality

⁸² US Department of Health and Human Services. ONLINE. 2005. *HHS Pandemic Influenza Plan Appendix D: NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use*. Department of Health and Human Services. Available: <http://www.hhs.gov/pandemicflu/plan/appendixd.html> [20 March 2007].

and severe morbidity; maintaining critical infrastructure and societal function; diminishing economic impacts; and maintaining national security. Currently, the EMS workforce is considered a high priority group for vaccination. EMS agencies are encouraged to monitor revised guidance at <http://www.pandemicflu.gov/vaccine/index.html>. The Federal guidance (Appendix J) relating to vaccine and antiviral prioritization has been undergoing extensive review and will be updated in the near future. Readers should consult www.pandemicflu.gov for the latest information.

Guideline 6.4 – Isolation and Quarantine Considerations

State, local, tribal, and territorial EMS agencies, in coordination with public health authorities, should identify a mechanism to address issues associated with isolation and quarantine of EMS personnel.

Rationale

As one element of a community mitigation strategy, isolation and quarantine may prevent transmission of disease by separating ill and exposed persons from those who have not yet been exposed. EMS and 9-1-1 agencies should anticipate the potential need to isolate and quarantine staff who have been exposed to pandemic influenza or become ill.

Considerations

- EMS agencies should establish policies for employees who have been exposed to pandemic influenza or are suspected to be ill.
- EMS agencies should establish a clear expectation that staff do not come into work when ill with a febrile respiratory illness and support this expectation with appropriate attendance policies.
- EMS and 9-1-1 agencies should collaborate with occupational health and public health officials to establish policies on when a previously ill person is no longer infectious and can return to work after illness.
- EMS pandemic influenza plans should consider opportunities for off-duty EMS personnel to have alternative housing arrangements during a pandemic. Alternative housing arrangement may be used to protect the provider from infecting family members or vice versa.

Background

According to the *National Strategy for Pandemic Influenza: Implementation Plan*⁸³, the response to an influenza pandemic could require, if necessary and appropriate, measures such as isolation or quarantine. Isolation is a standard public health practice applied to persons who have a communicable disease. Isolation of pandemic influenza patients may prevent transmission of the disease by separating ill persons from those who have not yet been exposed. Quarantine is a contact management strategy that separates individuals who have been exposed to infection but are not yet ill from others who have not been exposed to the transmissible infection; quarantine may be voluntary or mandatory.

⁸³ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

Persons who become ill may shed virus and can transmit infection for one-half to one day before the onset of illness. Viral shedding and the risk for transmission will be greatest during the first two days of illness⁸⁴.

⁸⁴ US Department of Health and Human Services. ONLINE. 2007. *Community Strategy for Pandemic Influenza Mitigation*. Department of Health and Human Services. Available: <http://www.pandemicflu.gov/plan/community/committigation.html> [21 March 2007]

Guideline 6.5 – Support for EMS Personnel and Their Families

State, local, tribal, and territorial EMS pandemic influenza plans should define a process for offering support services, including mental health services, to EMS personnel and their families during an influenza pandemic.

Rationale

Assuring the viability of the EMS workforce and their families through social support services is essential to supporting the workforce's role in mitigating and responding to an influenza pandemic.

Considerations

- EMS planners should collaborate with psychosocial or mental health professionals to assist in formulating messages and communications strategies that will minimize negative impacts on emergency workers by managing expectations and helping achieve desired behaviors and outcomes.
- Planning should involve identifying and providing additional support services, including mental health services, which EMS providers and their families may need during an influenza pandemic.
- EMS planners should identify and coordinate with community resources to support workers and their families at the onset, during, and following a pandemic. (e.g., Community Emergency Response Teams⁸⁵ (CERT), the American Red Cross, faith-based organizations, and other family assistance groups).

Background

It is important that planning efforts consider the impact of pandemic influenza on EMS personnel and their families. The *National Strategy for Pandemic Influenza: Implementation Plan*⁸⁶ recognizes that during a pandemic, psychosocial issues may “significantly contribute to, or hinder, the effectiveness of the response.” Public anxiety and subjective perception of risk during the initial phases will impact the degree of medical surge; overall compliance with quarantine, office closures, and other control procedures; and participation of the workforce, including healthcare workers, in response efforts.

⁸⁵ For additional information regarding the CERT program, see <https://www.citizencorps.gov/cert/>

⁸⁶ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

During the 1918-1919 Spanish influenza, for example, people experienced significant distress due to loss of family members and anxiety about work, food, transportation, and basic infrastructure.⁸⁷

During a modern-day pandemic, EMS and 9-1-1 workers will likely be called upon to implement policies and protocols that evoke a range of responses, including decisions of a moral and ethical nature. They may witness human pain and suffering on the job and may experience illness and death in their personal lives. The SARS outbreak in 2003 led to psychological distress for healthcare workers and the general public because of social isolation, stigmatization of groups perceived to be high risk, and general fears about safety and health.⁸⁸

Research on social behavior following disasters by the National Science Foundation suggests that “Recovery processes are significantly influenced by differential societal and group vulnerability; by variations in the range of recovery aid and support that is available; and by the quality and effectiveness of the help that is provided. The available ‘mix’ of recovery activities and post-disaster coping strategies varies across groups, societies, and different types of disasters.”⁸⁹

Section 6 - EMS Workforce Protection

SEE RELATED APPENDICES

- 1. Appendix K—Infection Control: Excerpts from Federal Documents**
- 2. Appendix J—Excerpts from the HHS Pandemic Influenza Plan, Appendix O**
- 3. Appendix M— Pandemic Influenza Resources**
- 4. Appendix Q—OSHA Guidance**

⁸⁷ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

⁸⁸ Homeland Security Council. ONLINE. 2006. *National Strategy for Pandemic Influenza: Implementation Plan*. The White House. Available: <http://www.pandemicflu.gov/plan/federal/index.html> [20 March 2007].

⁸⁹ Institute of Medicine. ONLINE. 2006. *Committee on Disaster Research in the Social Sciences: Future Challenges and Opportunities, National Research Council. Facing Hazards and Disasters: Understanding Human Dimensions*. National Academies Press. Available: www.nap.edu

Appendix A - Glossary of Terms

Avian influenza	Avian (or bird) influenza is caused by influenza viruses that occur naturally among wild birds. The highly pathogenic avian influenza A (H5N1), or HPAI H5N1, viruses are deadly to domestic fowl and can be transmitted from birds to humans. There is no human immunity and only one FDA vaccine has been approved, but it is not commercially available. The vaccine is approved for those who may be at increased risk of exposure to the HPAI H5N1 virus and has been included in the Strategic National Stockpile. Most cases of HPAI H5N1 virus infections in humans have resulted from direct or close contact with infected poultry (e.g., domesticated chicken, ducks, and turkeys) or surfaces possibly contaminated from feces and/or respiratory secretions of infected birds.
Chief Complaint	Reason the patient is seeking medical care (in some cases the mechanism of injury). It must contain sufficient information to allow categorization according to the PSAP's established protocols.
Cold	An EMS vehicle involved in a non-emergency response or transport while not using emergency signaling equipment (i.e., no lights and siren).
Command and Control Center	(Central Communications Center) - A place where responsibility rests for establishing communications channels and identifying the necessary equipment and facilities to permit immediate management and control of an EMS patient. This operation provides access and availability to public safety resources essential for efficient management of the immediate EMS problem.
Communication	The act of communicating. The exchange of thoughts, messages or information, as by speech, signals, writing or behavior. The art and technique of using words effectively and with grace in imparting one's ideas. Something communicated; a message.
Communications	A means of communicating, especially: a system, such as mail, telephone, television or radio, for sending and receiving messages. A network of routes or systems for sending messages. The technology employed in transmitting messages.

Community Health Resource	Capability that may be offered within a neighborhood or community to aid in the detection, surveillance, and support of community health. This may include a municipal organization such as the fire service or EMS, department of public health, social service organization, volunteer organization, and others.
Component	An individual element, aspect, subgroup, or activity within a system. Complex systems (such as EMS) are composed of many components.
Computerized Record	Data maintained on computer for easy access, manipulation, refinement and review.
Continuity of Operations Planning:	Planning the ability to survive and sustain critical core business operations and functions during an unforeseen enterprise interruption event, such as an Influenza Pandemic.
Cost-effective	Providing the maximal improved health care outcome improvement at the least cost.
Cost-effective Analysis	Analysis that determines the costs and effectiveness of an intervention or system. This includes comparing similar alternative activities to determine the relative degree to which they obtain the desired objective or outcome. The preferred alternative is the one that requires the least cost to produce a given level of effectiveness or provides the greatest effectiveness for a given level of cost.
Credentialing Agency	An organization that certifies an institution's or individual's authority or claim to confidence for a course of study or completion of objectives.
Data	Crude, isolated, unanalyzed measures that reflect the status or degree of a measured attribute of a component or system.
Effective	Capable of producing or designed to produce a particular desired effect in "real world" circumstances.
Efficacy	The effect of an intervention or series of interventions on patient outcome in an idealized setting (e.g. a randomized, placebo controlled trial)..

Efficiency	The effect or results achieved in relation to the effort expended (resources, money, time). It is the extent to which the resources used to provide an effective intervention or service are minimized. Thus, if two services are provided that are equally effective, but one requires the expense of fewer resources, that service is said to be more efficient.
Emergency Medical Dispatch	The function of providing prompt and accurate processing of calls, for emergency medical assistance by trained individuals, using a medically approved dispatch protocol system and functioning under medical supervision.
Emergency Medical Dispatcher (EMD)	A trained public safety telecommunicator with additional training and specific emergency medical knowledge essential for the efficient management of emergency medical communications.
Emergency Medical Technician (EMT)	A member of the emergency medical services team who provides out-of-facility emergency care; includes certifications of EMT-Basic, EMT-Intermediate, and EMT-Paramedic progressively advancing levels of care.
Emergency Physician	A physician specialized in the emergency care of acutely ill or injured patients.
EMS	Emergency Medical Services
EMS Medical Director	The physician who has the ultimate responsibility and authority to provide management, supervision, and guidance for all aspects of EMS in an effort to assure its quality of care (may be on a local, regional, State, and national level).
EMS Personnel	Paid or volunteer individuals who are qualified, by satisfying formalized existing requirements, to provide some aspect of care or service within the EMS system.
EMS Physician	A physician with specialized knowledge and skills in the area of emergency medical services, including clinical care and systems management; a physician who specializes in emergency medical services system management, in which the provision of direct patient care is only one component.
EMS Protocol	Written medical instructions or algorithms authorized by an EMS medical director to be used by personnel in the field without the necessity of on-line or real-time consultation with the physician or nurse providing medical direction.

EMS System	Any specific arrangement of emergency medical personnel, equipment, and supplies designed to function in a coordinated fashion. May be local, regional, State, or National.
Enabling EMS Legislation	Law that grants authority to specific entities to undertake activity related to the provision or establishment of an EMS system. Generally, enabling legislation represents a legislature's delegation of authority to a State agency to regulate some or all aspects of an EMS delivery system. This may include technical support, funding, or regulation.
Endemic Levels	Endemic levels are the constant presence of a disease or infectious agent in a certain geographic area or population group.
Epidemic	Epidemic is the rapid spread of a disease in a specific area or among a certain population group.
Episodic care	An acute, relatively brief, intervention representing a segment of continuous health care experience.
Expanded Role/ Expanded Scope	Increased dimensions of the services, activities, or care provided by EMS.
Federal Communications Commission (FCC)	A board of five commissioners appointed by the President under the Communications Act of 1934 to formulate rules and regulations and to authorize use of radio communications. FCC regulates all communications in the United States by radio or wireline, including television, telephone, radio, facsimile, and cable systems, and maintains communications in accordance with applicable treaties and agreements to which the United States is a party.
First Responder	The initial level of care within an EMS system as defined by the EMS Education and Practice Blueprint, as opposed to a bystander.
Health Alert Network	The Health Alert Network (HAN) is a nationwide program to establish the communications, information, distance-learning, and organizational infrastructure for a new level of defense against health threats, including the possibility of bioterrorism. The HAN will link local health departments to one another and to other organizations critical for preparedness and response: community first-responders, hospital and private laboratories, State health departments, CDC, and other Federal agencies
Health Care Delivery System	A specific arrangement for providing preventive, remedial, and therapeutic services; may be local, regional, or national.

Health Care Facility	A site at which dedicated space is available for the delivery of health care. This may include physicians' offices and urgent care centers, as well as hospitals and other medical facilities.
Health Care Provider Network	Conglomerate of both community and hospital resources participating in a common contractual agreement to provide all health care needs to individual members of society.
Hot	An EMS vehicle involved in an emergency response or transport while using appropriate audible and visual emergency signaling equipment (i.e., lights and siren) in accordance with statutes.
Information	A combination of data, usually from multiple sources, used to derive meaningful conclusions about a system (health resources, costs, utilization of health services, outcomes of populations, etc.). Information cannot be developed without crude data. However, data must be transformed into information to allow decision making that improves a given system.
Informed Consent	Voluntary consent by a given subject, or by a person responsible for a subject, for participation in an investigation, treatment program, medical procedure, etc., after being informed of the purpose, methods, procedures, benefits, and potential risks. Awareness of risk is necessary for any subject to make an informed choice.
Infrastructure	The basic facilities, equipment, services, and installations needed for functioning; the substructure, components, or underlying foundation of a community or system.
Interpandemic Period	WHO Phases 1 & 2. (See Figure 5)
Isolation	Isolation is a standard public health practice applied to persons who have a communicable disease. Isolation of pandemic influenza patients may prevent transmission of the disease by separating ill persons from those who have not yet been exposed.
Just-in-time training	Timely provision of information and instructions as they become available, and when users need them.
Legislation	Lawmaking; the procedure of legislating; law or laws made by such a procedure.

Licensing	The act of granting an entity permission to do something which the entity could not legally do absent such permission. Licensing is generally viewed by legislative bodies as a regulatory effort to protect the public from potential harm. In the health care delivery system, an individual who is licensed tends to enjoy a certain amount of autonomy in delivering health care services. Conversely, the licensed individual must satisfy certain initial proficiency criteria and may be required to satisfy ongoing requirements which assure certain minimum levels of expertise. A license is generally considered a privilege and not a right.
Linkage	Connected; combining crude data from various sources to provide information that can be analyzed. This analyzed information allows meaningful inferences to be made about various aspects of a system. (Example: linking EMS dispatch records, out-of-hospital patient care records, and hospital discharge data.)
Medicaid	A Federal program, administered by the States, designed to provide health care coverage to the indigent. Established by Title XIX of the Social Security Act.
Medical Direction	The provision of management, supervision, and guidance for all aspects of EMS to assure its quality of care.
Medical Facility	A stationary structure with the purpose of providing health care services (e.g., hospital, emergency department, physician office, and others).
Medical Oversight	The ultimate responsibility and authority for the medical actions of an EMS system.
Medicare	A Federal program designed to provide health care coverage to individuals 65 and over. Established on July 30, 1965, by Title XVIII of the Social Security Act.
Network	A formal system linking multiple sites or units.
Next Generation 9-1-1 Technology	The enabling of the transmission of voice, data, or video from different types of communication devices to the Public Safety Answering Points (PSAPs) and onto emergency responder networks; wireless, IP-enabled technology that significantly enhances communications into the PSAP and back out to the public safety community.
Noninvasive Monitoring	Measurement/scanning accomplished without penetrating the viscera or superficial tissues.

Novel influenza strain	Novel strains of influenza are newly identified influenza viruses against which the population has little or no immunity. There is potential to spread among humans.
On-line Medical Direction	The moment-to-moment contemporaneous medical supervision/guidance of EMS personnel in the field, provided by a physician or other specialty qualified health professional (e.g., mobile intensive care nurse), via radio transmission, telephone, or on the scene.
Outcome	The short, intermediate, or long-term consequence or visible result of treatment, particularly as it pertains to a patient's return to societal function.
Pandemic	Pandemic is a worldwide epidemic; an epidemic occurring over a wide geographic area and affecting a large number of people. Note: Even though SARS transferred to North America from its origins in Asia, it was considered an epidemic, not a pandemic, because of the limited number of people affected by the disease.
Pandemic Influenza Symptom Set	As established by CDC, those symptoms associated with pandemic influenza infection.
Pandemic Alert Period	WHO Phases 3, 4, & 5. (See Figure 5)
Pandemic Influenza	Pandemic influenza is virulent human influenza that causes a global outbreak, or pandemic, of serious illness. Because there is little natural immunity, the disease can spread easily from person to person. Currently, there is no pandemic influenza.
Pandemic Period	WHO Phase 6. (See Figure 5)
Primary PSAP	A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 Control Office (see Public Safety Answering Point).

Private 9-1-1 Emergency Answering Point	An answering point operated by non-public safety entities with functional alternative and adequate means of signaling and directing response to emergencies. Includes training to individuals intercepting call for assistance that is in accordance with applicable local emergency telecommunications requirements. Private 9-1-1 Emergency Answering Points are an adjunct to public safety response and as such must provide incident reporting to the public safety emergency response centers per local requirements.
Protocol	The plan for a course of medical treatment; the current standard of medical practice. In emergency dispatch, it is the specified steps, in particular order with a specific script, in which a trained public safety telecommunicator is to question a caller or to provide instructions.
Provider	An individual within an EMS system with a specific credential(s) that defines a specific level of competency (i.e., first responder, EMT- Basic, EMT-Intermediate, EMT-Paramedic, or other).
Public Education	Activities aimed at educating the general public concerning EMS and health related issues.
Public Health	The science of providing protection and promotion of community health through organized community effort.
Public Safety Answering Point (PSAP)	A facility equipped and staffed to receive and control 9-1-1 emergency telephone calls. (See also Primary PSAP, Secondary PSAP, and Private 9-1-1 Answering Point.)
Public Safety Telecommunicator	An individual trained to communicate remotely with persons seeking emergency assistance and with agencies and individuals providing such assistance.
Quarantine	A contact management strategy that separates individuals who have been exposed to infection but are not yet ill from others who have not been exposed to the transmissible infection; quarantine may be voluntary or mandatory.
Real-time Patient Data	Current patient information provided by a field technician at the patient location to a physician or health care facility at a remote site, potentially for the purpose of assisting the physician to make a better informed decision on patient treatment and/or transport.

Reciprocity	The ability for a license or certificate to be mutually interchangeable between jurisdictions.
Redundancy	Duplication of components, running in parallel, to increase reliability. A backup system (either a device or a connection) that serves in the event of a primary system failure.
Regional EMS System	A systematic approach to the delivery of Emergency Medical Services defined by distinct geographic boundaries that may or may not cross State boundaries.
Regulation	Either a rule, or standard which prescribes the management, governance, or operating parameters for a given group; tends to be a function of administrative agencies to which a legislative body has delegated authority to promulgate rules/regulations to “regulate a given industry or profession. Many regulations are intended to protect the public health, safety and welfare.
Reimbursement	To compensate; to repay.
Research	The study of questions and hypotheses using the scientific method.
Safe Communities	An integrated injury control system—incorporating prevention, acute care, and rehabilitation—to understand and solve injury problems and identify new partners to help develop and implement solutions.
Scope of Practice	Defined parameters of various duties or services which may be provided by an individual with specific credentials. Whether regulated by a rule, regulation, statute, or court decision, it tends to represent the limits of what services an individual may perform.
Seasonal influenza	Seasonal (or common) influenza is caused by influenza viruses that circulate annually among humans. Most people have some immunity, and a vaccine is available.
Secondary PSAP	A PSAP to which 9-1-1 calls are transferred from a Primary PSAP. (See Public Safety Answering Point)
Stabilizing Care	The medical attention needed to achieve physical equilibrium in a person.
Standardized Nomenclature	An authoritative system of designated names for a specific item or configuration.
State-of-the-art	The highest use of technology or technique known at the time.

Statute	An act of a legislative body which has been adopted pursuant to constitutional authority, by certain means and in such form that it becomes a law governing conduct or actions.
Subscription Program	A prepayment program; a prepayment made to secure future events; a prepayment made to secure a reduced ambulance bill either through assignment or discount. Must be actuarially sound.
System Preparedness	Efforts necessary to ensure the readiness to provide a specific standard of care.
Systems Analysis	The research discipline that evaluates efficacy, effectiveness, and efficiency based upon all relevant components that contribute to a system. This entails the examination of various elements of a system to ascertain whether the proposed solution to a problem will fit into the system and, in turn, effect an overall improvement in the system.
Targeted Layered Containment	Targeted Layered Containment includes a combination of interventions to mitigate the impact of pandemic influenza, including: <ul style="list-style-type: none"> • targeted antiviral treatment and isolation of ascertained cases, • targeted prophylaxis and quarantine of household contacts of index cases, • school closure and keeping children at home for the duration of the closure, • social distancing in workplace (e.g., via telecommuting), and • social distancing in the community (e.g., cancellation of public events)
Telephone Aid	Ad-libbed telephone instructions provided by either trained or untrained dispatchers, differing from “dispatch life support pre-arrival instructions” in that the instructions provided to the caller are based on the dispatcher’s knowledge or previous training in a procedure or treatment without following a scripted pre-arrival instruction protocol. They are not medically pre-approved since they do not exist in written form.
Telephone Treatment Protocol	Specific treatment strategy designed in a conversational script format that directs the EMD step-by-step in giving critical pre-arrival instructions such as CPR, Heimlich maneuver, mouth-to-mouth breathing, and childbirth instruction.
Third Party Payor	Insurance; an entity which is responsible to pay for services even though it is not directly involved in the transaction.

Triage	Triage is the process of sorting of patients into categories and assigning them priority for care and transport based on the severity of their injury or illness (and their ability to survive). The initial triage process can be followed by secondary triage, in which additional sorting and assignments for care and transportation are made in the attempt to best match resources to need.
Virulence	Measure of severity of a disease caused by an infectious agent or toxin.

Appendix B - EMS and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist

Source: US Department of Health and Human Services. 2006. Emergency Medical Services and Non-Emergent (Medical) Transport Organizations Pandemic Influenza Planning Checklist. Washington, DC, Department of Health and Human Services retrieved March 18, 2007 at <http://www.pandemicflu.gov/plan/healthcare/emgncymedical.html>

EMERGENCY MEDICAL SERVICE AND NON-EMERGENT (MEDICAL) TRANSPORT ORGANIZATIONS PANDEMIC INFLUENZA PLANNING CHECKLIST



Planning for pandemic influenza is critical for ensuring a sustainable health care response. The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) have developed the following checklist to help emergency medical services (EMS) and non-emergent (medical) transport organizations assess and improve their preparedness for responding to pandemic influenza. EMS organizations will be involved in the transport of acutely ill patients with known or suspected pandemic influenza to emergency departments; some of these patients might require mechanical ventilation for life support and/or other lifesaving interventions. Non-emergent (medical) transport organizations will be called upon to transport recovering pandemic influenza patients to their home, residential care facility, or possibly to alternate care sites set up by state or local health departments. This checklist is modeled after one included in the HHS Pandemic Influenza Plan (www.hhs.gov/pandemicflu/plan/sup3.html#app2). The list is comprehensive but not complete; each organization will have unique and unanticipated concerns that also will need to be addressed as part of a pandemic planning exercise. Also, some items on the checklist might not be applicable to all organizations. Collaborations among hospital, public health and public safety personnel are encouraged for the overall safety and care of the public. Further information can be found at www.pandemicflu.gov.

This checklist identifies key areas for pandemic influenza planning. EMS and non-emergent (medical) transport organizations can use this tool to self-assess and identify the strengths and weakness of current planning. Links to websites with information are provided throughout the document. However, actively seeking information that is available locally or at the state level will be necessary to complete the development of the plan. Also, for some elements of the plan (e.g., education and training programs), information may not be immediately available and monitoring of selected websites for new and updated information will be necessary

1. Structure for planning and decision making.

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pandemic influenza has been incorporated into emergency management planning and exercises for the organization.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A planning committee¹ has been created to specifically address pandemic influenza preparedness.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A person has been assigned responsibility for coordinating pandemic influenza preparedness planning (hereafter referred to as the pandemic response coordinator) for the organization. (Insert name, title, and contact information.) _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Members of the planning committee include the following: (Insert below or attach a list with name title and contact information for each.) <input type="checkbox"/> Administration: _____ <input type="checkbox"/> Medical staff: _____ <input type="checkbox"/> EMS providers: _____ <input type="checkbox"/> Phone triage personnel/dispatch center: _____ <input type="checkbox"/> Emergency management officer: _____ <input type="checkbox"/> State/local health official: _____ <input type="checkbox"/> Law enforcement official (for quarantine/security): _____ <input type="checkbox"/> Other member ² : _____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A point of contact (e.g., internal staff member assigned infection control responsibility for the organization or an outside consultant) for questions/consultation on infection control has been identified. (Insert name, title, and contact information.) _____

1. Size of committee can vary, depending on the size and needs of the organization.

2. Some organizations may need or want to include a school official or volunteer coordinator for local civic and preparedness groups (e.g., Medical Reserve Corps, Citizen Corps, Community Emergency Response Teams, Rotary Club, Lions, Red Cross).



2. Development of a written pandemic influenza plan.

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Copies of relevant sections of the Department of Health and Human Services Pandemic Influenza Plan have been obtained. www.hhs.gov/pandemicflu/plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Copies of available community and state pandemic plans have been obtained.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A written plan has been completed or is in progress that includes the elements listed in #3 below.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The plan describes the organizational structure (i.e., lines of authority) that will be used to operationalize the plan.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The plan complements or is part of the community response plan.

3. Elements of an influenza pandemic plan.

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>A plan is in place for surveillance and detection of pandemic influenza in the population served and the appropriate organizational response.</p> <p><input type="checkbox"/> Responsibility has been assigned for monitoring national and state public health advisories (e.g., www.cdc.gov/flu/weekly/fluactivity.htm) and informing the pandemic response coordinator and members of the pandemic influenza planning committee when cases of pandemic influenza have been reported in the United States and when they are nearing the geographic area (e.g., state or city). (Insert name, title, and contact information of person responsible.)</p> <hr/> <p><input type="checkbox"/> A system has been created to track influenza-like illness in patients transported to hospitals and among EMS staff and to report this information to the pandemic response coordinator (i.e., weekly or daily number of patients with influenza-like illness). For more information see www.cdc.gov/flu/professionals/diagnosis/. (Having a system for tracking illness trends in patients and staff during seasonal influenza will ensure that organizations can detect stressors that may affect operating capacity, such as staffing and supply needs, and hospital and emergency department capacity during a pandemic.)</p>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>A communication plan has been developed.</p> <p><input type="checkbox"/> Key public health points of contact for pandemic influenza have been identified. (Insert below or attach a list with the name, title, and contact information for each.)</p> <p><input type="checkbox"/> Local health department contact: _____</p> <p><input type="checkbox"/> State health department contact: _____</p> <p><input type="checkbox"/> Local emergency management contact: _____</p> <p><input type="checkbox"/> State emergency management contact: _____</p> <p><input type="checkbox"/> Federal health emergency contact(s): _____</p> <p><input type="checkbox"/> The organization's point person for external communication has been assigned. (Insert name, title, and contact information.)</p> <hr/> <p>(Having one person who speaks with the health department, and if necessary, media, local politicians, etc., will help ensure consistent communication is provided by the organization.)</p> <p><input type="checkbox"/> A list of healthcare entities and their points of contact (e.g., other local EMS and non-emergent [medical] transport organizations, local hospitals and their emergency departments, community health centers, residential care facilities) has been created. (Insert location of or attach copy of contact list.) _____</p> <hr/> <p><input type="checkbox"/> The pandemic response coordinator has contacted local or regional pandemic influenza planning groups to obtain information on communication and coordination plans, including how EMS will be represented in the planning process. (For more information on state and local planning, see www.hhs.gov/pandemicflu/plan/part2.html#overview.)</p> <p><input type="checkbox"/> The pandemic response coordinator has contacted other EMS and non-emergent (medical) transport organizations regarding pandemic influenza planning and coordination of services.</p>

3. Elements of an influenza pandemic plan. (continued)

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>A plan is in place to ensure that education and training on pandemic influenza is provided to ensure that all personnel understand the implications of, and control measures for, pandemic influenza and the current organization and community response plans.</p> <ul style="list-style-type: none"> <input type="checkbox"/> A person has been designated to coordinate education and training (e.g., identify and facilitate access to education and training programs, ensure that staff attend, and maintain a record of attendance at education and training programs). (Insert name, title, and contact information.) <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Current and potential opportunities for long-distance (e.g., web-based) and local (e.g., health department or hospital sponsored programs, programs offered by professional organizations or federal agencies) education of EMS and medical transport personnel have been identified. (For more information see www.cdc.gov/flu/professionals/training/.) <input type="checkbox"/> Language and reading-level-appropriate materials for professional and non-professional personnel on pandemic influenza (e.g., available through state and federal public health agencies and professional organizations) have been identified and a plan is in place for obtaining these materials. <input type="checkbox"/> Education and training include information on infection control measures to prevent the spread of pandemic influenza. <input type="checkbox"/> Differences between responding to pandemic influenza and a mass casualty event have been incorporated into education and training programs.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>A plan has been developed for triage and management of patients during a pandemic that includes the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A system for phone triage of patients calling 911 or other emergency numbers that might be used (provide/post list of appropriate numbers) that includes pre-established criteria and coordination protocols to determine who needs emergency transport. The system includes points of referral for patients who do not need emergency transport. <input type="checkbox"/> A plan for coordination with receiving facilities (e.g., hospital emergency departments), other EMS and non-emergent (medical) transport organizations, and local planning groups to manage the transportation of large numbers of patients at the height of the pandemic. <input type="checkbox"/> A policy and procedure for transporting multiple patients with pandemic influenza during a single ambulance run. <input type="checkbox"/> The plan considers the possible necessity of sharing transportation resources or using vehicles other than those designed for emergency or medical transport (e.g., buses).
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>An infection control plan is in place and includes the following: (For information on infection control recommendations for pandemic influenza, see www.hhs.gov/pandemicflu/plan/sup4.html).</p> <ul style="list-style-type: none"> <input type="checkbox"/> A plan for implementing Respiratory Hygiene/Cough Etiquette for patients with a possible respiratory illness. <input type="checkbox"/> The plan includes distributing masks³ to symptomatic patients who are able to wear them (adult and pediatric sizes should be available), providing facial tissues and receptacles for their disposal, and hand hygiene materials in EMS and medical transport vehicles. <input type="checkbox"/> Implementation of Respiratory Hygiene/Cough Etiquette has been exercised during seasons when seasonal influenza and other respiratory viruses (e.g., respiratory syncytial virus, parainfluenza virus) are circulating in communities. <input type="checkbox"/> A policy that requires healthcare personnel to use Standard Precautions (www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html) and Droplet Precautions (i.e., mask for close contact) (www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html) with symptomatic patients.

3. Masks include both surgical and procedure types. Procedure masks that are affixed to the head with ear loops might be used more easily by patients and are available in pediatric and adult sizes. Either surgical or procedure masks may be used as a barrier to prevent contact with respiratory droplets.

3. Elements of an influenza pandemic plan. (continued)

Completed	In Progress	Not Started	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>An occupational health plan has been developed that includes the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A liberal/non-punitive sick leave policy for managing EMS and non-emergent (medical) transport personnel who have symptoms of, or documented illness with, pandemic influenza. <input type="checkbox"/> The policy considers the following: <ul style="list-style-type: none"> • Handling of staff who become ill at work. • When personnel may return to work after recovering from pandemic influenza. • When personnel who are symptomatic but well enough to work will be permitted to continue working. • Personnel who need to care for their ill family members. <input type="checkbox"/> A system for evaluating symptomatic personnel before they report for duty that has been tested during a non-pandemic influenza period. <input type="checkbox"/> A list of mental health and faith-based resources available to provide counseling to personnel during a pandemic. <input type="checkbox"/> Management of personnel who are at increased risk for influenza complications (e.g., pregnant women, immunocompromised healthcare workers) by placing them on administrative leave or altering their work locations. <input type="checkbox"/> The ability to monitor seasonal influenza vaccination of personnel. <input type="checkbox"/> Offering annual influenza vaccine to personnel.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>A vaccine and antiviral use plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Websites containing current CDC and state health department recommendations for the use and availability of vaccines and antiviral medications have been identified. (For more information, see www.hhs.gov/pandemicflu/plan/sup6.html and www.hhs.gov/pandemicflu/plan/sup7.html.) <input type="checkbox"/> An estimate has been made of the number of personnel who will be targeted as first and second priority for receipt of pandemic influenza vaccine and antiviral prophylaxis, based on HHS guidance for use. (For more information, see www.hhs.gov/pandemicflu/plan/appendixd.html.) <input type="checkbox"/> Discussions have been held with the local and/or state health department regarding the role of the organization in a large-scale program to distribute vaccine and antivirals to the general population.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>Concerns related to surge capacity during a pandemic have been addressed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> A plan is in place for managing a staffing shortage within the organization because of illness in personnel or their family members. <input type="checkbox"/> The minimum number and categories of personnel necessary to sustain EMS and non-emergent (medical) transport services on a day-to-day basis have been determined. <input type="checkbox"/> Contingency staffing plans have been developed in collaboration with other local EMS and non-emergent (medical) transport providers. <input type="checkbox"/> Hospitals and regional planning groups have been consulted regarding contingency staffing resources. <input type="checkbox"/> Anticipated consumable resource needs (e.g., masks, gloves, hand hygiene products) have been estimated. <input type="checkbox"/> A primary plan and contingency plan to address supply shortages have been developed. These include detailed procedures for the acquisition of supplies through normal channels and requesting resources for replenishing supplies when normal channels have been exhausted. <input type="checkbox"/> Plans include stockpiling at least a week's supply of resources when evidence exists that pandemic influenza has reached the United States. <input type="checkbox"/> An understanding of the process exists for requesting and obtaining assets for the organization made available through the community response plan.

Appendix C – Excerpt from National Response Plan, Emergency Support Function #8

Source: US Department of Homeland Security. 2004. National Response Plan. Washington, DC, Department of Homeland Security available at www.dhs.gov/xlibrary/assets/NRP_FullText.pdf

Emergency Support Function (ESF) #8 – Public Health and Medical Services provides the mechanism for coordinated Federal assistance to supplement State, local and tribal resources in response to public health and medical care needs for potential or actual Incidents of National Significance and/or during a developing potential health and medical situation.

ESF #8 is coordinated by the Secretary of the Department of Health and Human Services (HHS) principally through the Assistant Secretary for Public Health Emergency Preparedness (ASPHEP).

ESF #8 resources can be activated through the Robert T. Stafford Act or the Public Health Service Act (pending the availability of funds) for the purposes of Federal-to-Federal support or in accordance with the memorandum for Federal mutual aid included in the National Response Plan (NRP) Financial Management Support Annex.

ESF #8 provides supplemental assistance to State, local, and tribal governments in identifying and meeting the public health and medical needs of victims of an Incident of National Significance. This support is categorized in the following core functional areas:

- Assessment of public health/medical needs (including behavioral health);
- Public health surveillance;
- Medical care personnel; and
- Medical equipment and supplies.

As the primary agency for ESF #8, HHS coordinates the provision of Federal health and medical assistance to fulfill the requirements identified by the affected State, local and tribal authorities. ESF #8 uses resources primarily available from:

- HHS, including the Operating Divisions and Regional Offices;
- The Department of Homeland Security (DHS); and
- Other ESF #8 support agencies and organizations.

ESF #8 continuously acquires and assesses information on the incident. The staff continues to identify the nature and extent of public health and medical problems, and establishes appropriate monitoring and public surveillance. Other sources of information may include:

- ESF #8 support agencies and organizations;
- Various Federal officials in the incident area;
- State health, agricultural or animal health officials;
- State emergency medical services authorities;
- Tribal officials;

- State incident management authorities; and
- Officials of the responsible jurisdiction in charge of the disaster scene.

Because of the potential complexity of the public health and medical response, conditions may require ESF #8 subject-matter experts to review public health and medical information and advise on specific strategies to manage and respond to a specific situation most appropriately.

Activation of Health/Medical Response Teams: Assets internal to HHS are deployed directly as part of the ESF #8 response. Public health and medical personnel and teams provided by ESF #8 organizations are requested by HHS and deployed by the respective organizations to provide appropriate public health and medical assistance.

Coordination of Requests for Medical Transportation: In a major public health or medical emergency, local transportation assets may not be sufficient to meet the demand. State or tribal requests for Federal medical transportation assistance are executed by ESF #8 in coordination with ESF #1 (Transportation)

Coordination for Obtaining, Assembling and Delivering Medical Equipment and Supplies to the Incident Area: Representatives of HHS, DHS, the Department of Veterans Affairs (VA), the Department of Defense (DOD), the Department of Transportation (DOT), and the General Services Administration (GSA) coordinate arrangements for the procurement and transportation of medical equipment and supplies.

Communications: ESF #8 establishes communications necessary to coordinate Federal public health and medical assistance effectively.

Information Requests: Requests for information may be received at ESF #8 from various sources, such as the media and the general public, and are referred to ESF #15 (External Affairs) for action and response.

After-Action Reports: HHS, on completion of the incident, prepares a summary after-action report. The after-action report identifies key problems, indicates how they were solved, and makes recommendations for improving response operations. ESF #8 organizations assist in the preparation of the after-action report.

In the event State and local emergency medical services resources are overwhelmed, the Emergency Response Team ESF #9 Urban Search and Rescue leader, in conjunction with the Joint Management Team leader and JMT Medical Unit Leader, coordinate with field representatives of ESF #8 – Public Health and Medical Services to develop procedures for the transfer of victims extricated from collapsed structures to Disaster Medical Assistance Teams (DMATs) for stabilization and transport to definitive medical care locations.

[Source: National Response Plan, 2004]

Appendix D – Sample TIIDE Fact Sheet

Terrorism Injuries Information, Dissemination and Exchange (TIIDE)

Source: Centers for Disease Control and Prevention. 2006. Terrorism Injuries Information, Dissemination and Exchange (TIIDE) Project retrieved March 21, 2007 at <http://www.bt.cdc.gov/masscasualties/pdf/blastinjuries.pdf>

Note: While not specific to pandemic influenza, this fact sheet is an example of “just-in-time” training that provides concise, updated information about a specific, infrequent event.



Blast Injuries: Essential Facts

Key Concepts

- Bombs and explosions can cause unique patterns of injury seldom seen outside combat
- Half the initial casualties seek medical care over a one-hour period
- Most severely injured arrive after the less injured, who bypass EMS triage and go directly to the closest hospitals
- Most injuries involve multiple penetrating wounds and blunt trauma
- Confined space explosions (buildings, vehicles, mines) and explosions resulting in structural collapse lead to greater morbidity and mortality
- Primary blast injuries among survivors usually result from confined-space explosions
- Standard protocols apply for triage, trauma resuscitation, treatment, and transfer

Blast Injuries

Primary: Injury from overpressurization force (blast wave) impacting the body surface (i.e., TM rupture, pulmonary damage, hollow viscus rupture)

Secondary: Injury from projectiles such as bomb fragments or flying debris (i.e., penetrating trauma, blunt trauma)

Tertiary: Injuries from displacement of victim by the blast wind or structural collapse (i.e., crush injuries, blunt/penetrating trauma, fractures, traumatic amputations)

Quaternary: Other injuries from the blast (i.e., burns, asphyxia, toxic exposures)

Primary Blast Injury

Lung Injury

- Signs are usually present at initial evaluation, but may be delayed up to 48 hours
More common among patients with skull fractures, greater than 10% BSA burns, or penetrating injury to the head or torso
- Presentation varies from scattered petechiae to confluent hemorrhages
- Suspect in anyone with dyspnea, cough, hemoptysis, or chest pain following blast
- Characteristic “butterfly” pattern produced on CXR
- Sufficient high-flow O₂ to prevent hypoxemia is administered via NRB mask, CPAP, or ET tube
- Fluid management is similar to that of pulmonary contusion; ensure adequate tissue perfusion, but avoid volume overload
- Endotracheal intubation mandated for massive hemoptysis, impending airway compromise, or respiratory failure
 - Selective bronchial intubation may be necessary for significant air leaks or massive hemoptysis
 - Positive pressure ventilation may result in alveolar rupture or air embolism
- Clinical signs of pneumothorax or hemothorax require prompt decompression
- Prophylactic chest tube must be considered before general anesthesia or air transport
- Air embolism can present as stroke, MI, acute abdomen, blindness, deafness, spinal cord injury, or claudication

Blast Injuries: Essential Facts

(continued from previous page)

- Administer high-flow O₂; prone, semi-left lateral, or left lateral positioning
- Transfer for hyperbaric O₂ therapy may be considered

Abdominal Injury

- Gas-filled structures are most vulnerable, especially the colon
- Presentation may include bowel perforation, hemorrhage (small petechiae to large hematomas), mesenteric shear injuries, solid organ lacerations, or testicular rupture
- Suspect in anyone with abdominal pain, nausea, vomiting, hematemesis, rectal pain, tenesmus, testicular pain, or unexplained hypovolemia
- Clinical signs can be initially subtle until acute abdomen or sepsis is advanced

Ear Injury

- Tympanic membrane is the most common primary blast injury
- Signs of ear injury are usually evident on presentation (hearing loss, tinnitus, otalgia, vertigo, bleeding from external canal, otorrhea)
- Isolated TM rupture is not a marker for morbidity

Other Injury

- Traumatic amputation of a limb is a marker for multisystem injuries
- Concussions are common and easily overlooked; symptoms of mild TBI and post-traumatic stress disorder can be similar
- Grossly contaminated wounds are candidates for delayed primary closure
- Compartment syndrome, rhabdomyolysis, and acute renal failure are associated with structural collapse, prolonged extrication, severe burns, and some poisonings
- Exposure to inhaled toxins (CO, CN, MetHgb) must be considered in industrial and terrorist explosions
- Significant percentage of survivors have serious eye injuries

Disposition

- No definitive guidelines exist for observation, admission, or discharge
- Discharge decisions depend on associated injuries
- Second- and third-trimester pregnancies should be admitted for monitoring
- Follow-up is needed for wounds; head injury; and eye, ear, and stress-related complaints
- Patients with ear injury may have tinnitus or deafness and need written instruction

For more information, visit www.bt.cdc.gov/masscasualties,
or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

Appendix E – Excerpt from Model State Emergency Health Powers Act

Source: The Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities. (2001) Model State Emergency Health Powers Act retrieved March 23, 2007 at <http://www.publichealthlaw.net/Resources/Modellaws.htm>

The Model State Emergency Health Powers Act (Model Act) grants specific emergency powers to State governors and public health authorities in the event of a large public health emergency. The Model Act was developed for the Centers for Disease Control by the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities to ensure an effective response to large-scale emergency health threats while protecting the rights of individuals. It provides a broad set of powers for an entity called the Public Health Authority.

As it may relate to altered standards of care, the Model Act provides that a declaration of an emergency activates the disaster response and recovery aspects of State, local and interjurisdictional disaster emergency plans. There is no mention of local-level involvement. The Public Health Authority is empowered to take control over facilities (health care and other) and "materials," such as food, fuel, clothing and other commodities, and roads. It may control health care supplies by rationing resources; establishing priority distribution to health care providers, disaster response personnel and mortuary staff; and establishing a general distribution to all others. It may establish and enforce quarantine and other infection control measures.

The following provisions of the Model Act have provoked considerable discussion among public health scholars and practitioners:

Quarantine: "Special Powers" of the Public Health Authority apply to: performing physical examinations, necessary tests, and/or vaccination. Any person refusing examination, tests, or vaccination may be isolated or quarantined. These sections (§601, §603) have been subject to media and public scrutiny. States have designed widely differing solutions. However, the Model act has helped to modernize State laws on quarantine and encourages greater consistency among State laws regarding quarantine provisions.

Liability: Health care providers are not held liable for any civil damages, except in cases where they are found to be negligent in treating or in failing to provide treatment. This includes out-of-State health care providers for whom relevant permits to practice have been waived by the Public Health Authority. The Model Act also explicitly states that except in cases of gross negligence or willful misconduct, the State (and the State and local officials specified in the act) is not liable for any property damage, death, or injury incurred as a result of complying with the Act (§804(a)).

Compelling Provider Participation: The Model Act states (§608(a)) that the Public Health Authority can compel in-State health care providers to assist in vaccination, testing, treatment, or examination of an individual as a licensure condition.

Other Provisions: Other provisions of the Model Act include the use of otherwise protected private medical information, public information obligations, access to mental health services and personnel, compensation for private property (calculated according to non-emergency eminent domain procedures) and reimbursement for health care supplies.

Appendix F – Colorado Executive Orders

Source: CDPHE Internal Emergency Response Plan Governor’s Emergency Epidemic Response Committee (GEEERC) Draft Executive Orders Updated Oct. 23, 2006 retrieved March 20, 2007 at <http://www.cdphe.state.co.us/bt/HealthProviders/Attachment3.pdf>

CDPHE Internal Emergency Response Plan DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT Annex U: Disease Outbreak	Appendix 1: Pandemic Influenza Attachment 3
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Attachment 3

Governor’s Expert Emergency Epidemic Response Committee Draft Executive Orders

In 2000, the Governor’s Expert Emergency Epidemic Response Committee (GEEERC) was statutorily created in 2000 to develop a public health response to “acts of bioterrorism, pandemic influenza and epidemics caused by novel and highly fatal infectious agents.” See. C.R.S. § 24-32-2104(8).

This 22-member committee was established to serve in an advisory capacity to the Governor in the event of an emergency epidemic caused by bioterrorism, pandemic influenza or novel and highly fatal infectious agents or biological toxins. The Committee’s priorities include: protecting human life (highest priority); controlling the further spread of disease; meeting the immediate emergency needs of people, specifically medical services, shelter, food, water and sanitation; restoring and continuing operations of facilities and services essential to the health, safety and welfare of people and the environment; preserving evidence for law enforcement investigations and prosecutions. The following executive orders have been drafted for the Governor to use in a public health emergency. These orders are not in effect now; they would have to be signed by the Governor at the time of the emergency.

The Governor has the broad powers to meet an emergency. See C.R.S. § 24-32-2104(7). In any disaster, the Governor may “Suspend the provisions of any regulatory statute prescribing the procedures for conduct of state business or the orders, rules, or regulations of any state agency, if strict compliance with provisions of any statute, order, rule, or regulation would in any way prevent, hinder, or delay necessary action in coping with the emergency.” C.R.S. § 24-32-2104(7)(a)

Executive Order 0.0 - Declaration of a State of Disaster Emergency due to Criminal Acts of Biological Terrorism.

This order activates the Colorado Emergency Operations Plan.

Executive Order 1.0 - Ordering Hospitals to Transfer or Cease the Admission of Patients to Respond to the Current Disaster Emergency

Authorizes the CDPHE to order hospital emergency departments to cease admissions and transfer patients to a hospital or facility as directed by CDPHE. CDPHE would control the determination of when a hospital has reached capacity and when the hospital may resume admission.

Executive Order 1.1 - Ordering Hospitals to Transfer or Cease the Admission of Patients to Respond to the Current Disaster Emergency

Directly authorizes hospitals to cease admissions and transfer patients. Provides that hospital emergency departments may determine on their own, without central direction from CDPHE,

whether they have reached capacity to examine and treat patients. Authorizes hospital emergency departments to resume admissions when they have determined that they have the capacity.

Executive Order 2.0 - Concerning the Procurement and Taking of Certain Medicines and Vaccines Required to Respond to the Current Disaster Emergency

Authorizes the seizure of named drugs from “outlets” (as defined in the pharmacy statutes.) Embargoes the supply of the named drugs in the possession of the outlets except for those supplies that CDPHE regulation requires certain facilities and organizations to keep for chemoprophylaxis of their employees.

Executive Order 3.0 - Concerning the Suspension of Certain Statutes and Regulations to Provide for the Rapid Distribution of Medication in Response to the Current Disaster Emergency

Implements Colorado’s Strategic National Stockpile Plan. Provides for the rapid distribution of medication by suspending the pharmacy statutes and regulations pertaining to the compounding, dispensing and delivery of any drug. Suspends the “single patient- single prescription” requirement and authorizes the Executive Director or Chief Medical Officer of the CDPHE or the director of a local department of health to direct listed health care providers to compound, dispense or deliver prescription drugs.

Executive Order 3.1 – Concerning the Rapid Distribution of Influenza Vaccine in response to the Current Disaster Emergency

Authorizes volunteers to administer vaccines. Authorizes rapid distribution of vaccines to specified groups. Requires data collection and reporting of the vaccinations. May implement Colorado’s Strategic National Stockpile Plan for mass dispensing.

Executive Order 3.2 – Concerning the Rapid Distribution of Antiviral Medication in Response to the Current Influenza Pandemic Disaster Emergency

Authorizes volunteers to administer vaccines. Authorizes rapid distribution of antiviral medication to specified groups. Requires data collection and reporting of the vaccinations. May implement Colorado’s Strategic National Stockpile Plan for mass dispensing.

Executive Order 4.0 - Concerning the Suspension of the Physician and Nurse Licensure Statutes to Response to the Current Disaster Emergency

Authorizes physicians and nurses who hold a license issued by another state to practice under the supervision of a Colorado licensed physician or nurse to meet the current emergency epidemic.

Executive Order 5.0 - Concerning the suspension of Certain Licensure Statutes to Enable More Colorado Licensed Physician Assistants and Emergency Medical Technicians to Assist in Responding to the Current Disaster Emergency

Authorizes Colorado licensed physician assistants and EMT’s to practice outside of their normal supervision but under the supervision of another physician to meet the emergency epidemic.

Executive Order 6.0 - Concerning the Isolation and Quarantining of Individuals and Property in Response to the Current Disaster Emergency Epidemic

Authorizes CDPHE to establish, maintain, and enforce isolation of all individuals infected with the disease or to quarantine all individuals exposed to the disease.

Executive Order 7.0 - Ordering Facilities to Transfer or Receive Patients with Mental Illness and Suspending Certain Statutory Provisions to Respond to the Current Disaster Emergency

Authorizes the transfer of mental patients to different facilities when necessary to combat the current epidemic and promote the public health.

Executive Order 8.0 - Concerning the Suspension of Certain Statutes Pertaining to Presumptions of Death and Burial Practices in Response to the Current Disaster Emergency

Authorizes suspension of statutes to allow for the rapid burial of epidemic victims without following normal funeral procedures, religious practices or death certificates in all cases.

Executive Order 9.0 – Concerning the Cancellation of Public Events and the Closure of Public Buildings in Response to the Current Public Health Emergency

Orders cancellation of public events and closure of certain public buildings and schools.

Appendix G – Excerpt from Altered Standards of Care in Mass Casualty Events

(Chapter 3, pp. 15-18)

Source: Agency for Healthcare Research and Quality. 2005. Altered Standards of Care in Mass Casualty Events: Bioterrorism and Other Public Health Emergencies. Washington, DC, Agency for Healthcare Research and Quality.

A Framework and Guiding Principles When Planning for Health and Medical Care in a Mass Casualty Event

A framework for planning should take into account the ways in which response to a mass casualty event is both similar to and different from responses to current surge capacity issues. The goal is to devise a framework that is applicable to both ordinary (daily routine) and extraordinary situations. To this end, plans for a medical care response to a mass casualty event should:

- Be compatible with or capable of being integrated with day-to-day operations;
- Be applicable to a broad spectrum of event types and severities;
- Be flexible, to permit graded responses based on changing circumstances; and
- Be tested, to determine where gaps in the framework exist.

AHRQ articulates five principles that should steer the development of pandemic influenza clinical guidelines. Incorporating these five principles will ensure that standards of care are altered sufficiently to respond to issues arising from a mass casualty event, such as pandemic influenza.

Principle 1: In planning for a mass casualty event, the aim should be to keep the healthcare system functioning and to deliver acceptable quality of care to preserve as many lives as possible.

Adhering to this principle will involve:

- Allocating scarce resources in order to save the most lives.
- Developing a basis for the allocation of resources that is fair, open, transparent, accountable and well understood by both professionals and the public.
- Ensuring, to the possible extent, a safe environment for the provision of care, and placing a high priority on infection control measures, and other containment processes.

Principle 2: Planning a health and medical response to a mass casualty event must be comprehensive, community-based, and coordinated at the regional level.

Effective planning should:

- Be done at the facility level. However, facility-level planning alone is not sufficient.
- Integrate facility-level planning into a regional systems approach.
- Involve a broad array of public and private community stakeholders.
- Begin with the agreement on shared responsibility among all partners in the planning process. It is not adequate for individual institutions and systems to have emergency response plans unless those plans are coordinated into a single unified response system.
- Be consistent. Planning also should be integrated with Federal, State and local emergency plans.

Principle 3: There must be an adequate legal framework for providing health and medical care in a mass casualty event.

An adequate legal framework for providing health and medical care in a mass casualty event would do the following:

- Include a designation of the authority to declare an emergency and implement temporary alterations in standards of care.
- Define the conditions for temporary modification of laws and regulations that govern medical care under normal conditions.
- Be simple, clear, and easy to communicate to providers and the public.
- Be flexible enough to accommodate the demands of events that vary in size and velocity, such as an explosive or biological event.

Principle 4: The rights of individuals must be protected to the extent possible and reasonable under the circumstances.

The rights of individuals must be protected to the extent possible and reasonable:

- In establishing and operationalizing an adequate legal framework for the delivery of care.
- In determining the basis on which scarce resources will be allocated.
- When considering limiting personal freedom through quarantine or isolation as well as the conditions for release.
- When privacy and confidentiality may have to be breached.

Principle 5: Clear communication with the public is essential before, during, and after a mass casualty event.

It may be necessary to vary the modes of communication according to the type of information to be communicated, the target audience for which it is intended, and the operating condition of media outlets, which may be directly affected. Variations that illustrate this point but that do not reflect expert discussion include the need to use languages other than English and the need to use alternatives to usual media outlets in the

affected area. Also, national audience messages would be less detailed and specific than messages to the affected area.

Appendix H - Excerpt from the White Paper on Scene Operations, to Include Identification, Medico-legal Investigation Protocols and Command and Control of Mass Fatalities Resulting from a Pandemic Influenza (PI) in the United States

Source: US Northern Command and Department of Health and Human Services Fatality Management Pandemic Influenza Working Group Conference. 2006. White Paper: The Provision of Family Assistance and Behavioral Health Services in the Management of Mass Fatalities Resulting from a Pandemic Influenza in the United States.

Key Assumptions

- Pandemic influenza will result in a surge of deaths above which is normally managed by a community's "normal" medico legal systems.
- Medico legal systems will continue to experience a "normal" case load for their jurisdiction with the possibility of an increase in accidental deaths, (due to therapeutic complications as well as those resulting from the increased use and operation of motor vehicles/heavy equipment), homicidal (due to civil unrest) and/or suicide cases.
- Some medical examiner/coroner jurisdictions are required to investigate/autopsy and certify deaths of persons dying "in custody" regardless of the circumstances, thus further overwhelming these systems in pandemic influenza.
- Human remains will require proper identification for the issuance of a death certificate.
- Deaths will require an adequate investigation to determine the cause and manner of death.
- Many people will seek medical attention during the event and will have primary care physicians and/or medical treatment facilities, which will have documented and confirmed laboratory results indicating influenza.
- In all US jurisdictions, treating or primary care physicians are authorized to sign a death certificate provided the patient dies from natural causes.
- A pandemic influenza death is a natural manner of death.
- Some jurisdictions may have a Medical Examiner/Coroner system, which is capable of managing a surge in the number of unattended deaths resulting from of pandemic influenza in addition to its normal caseload.
- Many Medical Examiner/Coroner systems will not be able to manage pandemic influenza due to limitations of personnel, resources, funding and lack of planning.
- Some deceased will not have primary care physicians to sign death certificates, requiring Medical Examiner/Coroner to assume jurisdiction over the deaths.
- There will be a general lack of available physicians due to illness.
- There may be a lack of available personal protective equipment and chemoprophylaxis to support the mortuary community.

- Location of bodies will not be restricted to a geographical or jurisdictional area with a percentage (50% to 75%) of the deaths occurring outside of a hospital or medical treatment facility; this will place additional stress on all community responders in the field.
- Most human remains will be intact and will allow for traditional identification means (visualization by witnesses and/or fingerprinting). Some human remains will be found in a decomposed state will require further investigation by a medical examiner/coroner possibly utilizing more scientific methods such as dental, radiological, anthropological, or DNA to confirm identification.
- Existing laws authorizing the pronouncement of death (jurisdictional dependent) may need to be amended in order to increase the personnel strength to manage the surge in influenza deaths.
- Existing laws on the certification of death (jurisdictional dependent) may need to be amended in order to increase the personnel strength to manage the surge in influenza deaths.
- Federal or military assistance in fatality management may not be available to the local jurisdictions.
- Human remains may be positively identified, by a certifying physician or medical examiner/coroner with a known cause and manner of death but next-of-kin may not be available or known or may refuse to claim human remains for final disposition through a funeral home.
- There is no need for extreme urgency in managing the human remains processing, as the human remains from the event should not pose additional health risks to the community.
- Those who physically handle remains may be at risk of blood borne or body fluid exposure requiring universal precautions and proper training for handling the dead.
- Behavioral health professionals, social service organizations and religious leaders will have to be educated in the human remains process at all levels to ensure the process is understood and can be properly communicated to the general population in their response activities.
- It is more important to ensure accurate and complete death investigations and identification of the dead than it is to quickly end the response.
- The time to complete fatality management of pandemic influenza may exceed six months to a year.

Notification and Tracking of Deaths to the Appropriate Authorities

Medico-legal death investigation systems are not designed to be the first responders in death reporting by private citizens and/or medical institutions. Emergency dispatch systems managed by local law enforcement/fire/EMS will receive the calls from citizens (via the 9-1-1 system) and will dispatch resources to respond to death scenes. Depending upon the jurisdictional code, medical examiner/coroner staff, will be notified by the first responders at the scene. The dispatching of resources to the initial death scenes by traditional first responders will be stretched due to the first priority calls – those pertaining to life safety missions. Actionable recommendation to senior leaders:

- Separate call dispatch systems may be required for death reporting by private citizens to ensure life safety calls are dispatched by the most expeditious system in existence.
- Establishing “Family Assistance/Patient Tracking Centers” to manage death calls and patient tracking information from medical treatment facilities and community care centers would establish a centralized data collection and dispatch point.
- Request that all medical treatment facilities and private care physicians report their influenza patient contacts to the central facility to allow for a complete and accessible patient tracking information for medical examiner/coroner, law enforcement and other death investigation responders.
- Amending HIPAA regulations to accommodate additional investigative medico-legal authorities (LE, EMS, CERT, etc. as dictated by communities) during a confirmed influenza event for the purposes of collecting the required medical data on influenza patients for the determination of cause and manner of death and victim identity.

A central data base for confirmed patient and primary care physicians/treatment facilities would allow for the investigating and certifying authorities to quickly coordinate the required response by the scene investigators.

Identified human remains could be immediately transported and released to the funeral home (or appropriate holding facility) of the next-of-kin’s choice for final disposition processing and the death certificate requirements would be immediately established and acted upon by the certifying officials.

Response of Appropriate Medico-legal Death Authorities to Unattended Deaths

In some jurisdictions, medical examiners/coroners rely upon police, fire, EMS, and trained lay investigators (funeral directors) to “initially screen” deaths. Medical examiners/coroners, police, fire and EMS resources will require a surge capacity to respond to the increased number of out of medical treatment facility or “unattended” deaths. Responders will need the knowledge and capability to identify influenza-related deaths verses non-influenza-related deaths to ensure proper actions are taken at the scene.

Actionable recommendation to senior leaders:

- Medical examiners/coroners, police and public health should develop specific investigative checklists, which clarifies the concepts of medico-legal determination of cause and manner of death, victim identification procedures, scene documentation, overall investigative requirements, as well as required PPE and personal decontamination, for all call centers and responders to unattended deaths during pandemic influenza
- Communities could reach out to retired or non-practicing medical examiners/coroners, law enforcement and EMS providers to augment the community death investigation response.

- Medical examiners/coroners systems should train all other first responders in the field about the symptoms of influenza deaths and the actions to take when a suspected influenza-related death is found verses when non-influenza-related deaths are found.
- The centralized patient tracking system with the patient/doctor data base should be made available to all identified responders in the field to allow for the most expeditious means of case management from the field into the system. (i.e. Can human remains be released to the funeral home with a primary care physician signing the death certificate or will human remains require processing by the medical examiner/coroner at another location?)
- Establish a process to provide an adequate training program managed by the medical examiner/coroner and law enforcement to increase the lay investigator staff to support operations in the field before an event occurs.

Taking these steps will ensure accurate death reporting and investigation and reassure the public that deaths have been accurately investigated and certified by the proper authorities: public confidence.

Pronouncement of Unattended Deaths

Local/state laws dictate who may or may not pronounce deaths in each jurisdiction. Some jurisdictions do not have pronouncement laws. In areas with pronouncement laws, there may not be enough personnel resources. Actionable recommendation to senior leaders:

- Legal requirements for pronouncement may require amendment during a pandemic event to allow for additional personnel to complete the task.
- Areas with pronouncement laws may have to bring additional personnel under their control and supervision to act in their behalf during pandemic influenza as well as amending their pronouncement laws/statutes.

The result will be an increased number of trained personnel to augment the medical examiner/coroner during pandemic influenza, increased response resources, better public relations and public confidence.

Medico-legal Determination of the Cause and Manner of Deaths for Unattended Deaths

Medico-legal death investigations demand trained responders with appropriate backgrounds. Many medical examiner/coroner systems rely upon police investigations and/or lay deputy coroners (trained funeral directors) to conduct an initial investigation and then to notify the medical examiner/coroner of the death for response. Police and medical examiner/coroner systems will be overwhelmed during pandemic influenza requiring additional trained staff

Some families/friends may deliver the deceased directly to funeral homes, medical facilities (including urgent care centers) police and fire stations and medical examiner/coroner offices which will impact the scene investigations since the remains have been moved from the place of death. Appropriate and timely interviews are required for these circumstances. Attending physicians who hold the records for their patients may

not have the ability to respond to telephone calls from the scene responders. Actionable recommendation to senior leaders:

- Identify additional personnel to train (based upon the medico-legal checklist procedures previously mentioned) and assist the medical examiner/coroner and police operations in death investigations (i.e. other sworn officers such as correctional officers, school truancy officers, etc.).
- If not already in use, recruit former medical examiner/coroner, police, fire, EMS, funeral directors, personnel and train to assist in the scene determination investigations.
- Establish a call-in line for medical examiner/coroner consultations and physician-patient data to assist in the determination of the cause of death.
- Training funds should be made available to communities for medico legal death instruction to those groups identified who will augment existing systems. By accomplishing these objectives, responders will have ready access to medico-legal resources to assist in the investigations. Physicians have access to resources to assist in the determination of the cause and manner of death. Individual “at-home” cases can be tracked in a centralized database.

Transportation of PI Human Remains to Appropriate Facilities

Some medical examiner/coroner, EMS and law enforcement systems have human remains transport capabilities built into their existing systems. EMS will most likely require every available vehicle to transport the living to treatment facilities. Some medical examiner/coroner and police only utilize existing contractors (Funeral Directors and/or transport companies) who will be overwhelmed during pandemic influenza. Families and or friends may transport human remains to a facility in their private vehicles. Non-traditional human remains transporters may be required to conduct movement from homes, scenes, hospitals, morgues, funeral homes, cemeteries, and crematories. Human remains pouches, PPE, gurneys, and other basic morgue supplies will be in short supplies. Actionable recommendation to senior leaders:

- Review existing codes on the requirements to transport human remains in your jurisdiction. Amend code, if necessary, to allow for surge capacity with non-traditional vehicles if required.
- Solicit volunteers from other communities (churches, social services, salvation army, etc.) to assist in human remain transport, and provide training to ensure standard procedures are followed (including documentation, PPE usage and human and respectful treatment).
- Obtain additional transport vehicles to augment the existing “fleet”. (School buses with seats removed, rented cargo vans, vehicles from funeral homes, etc.)
- Human remains supplies should be purchased by communities with the pandemic influenza funding provided by the Federal government.

The accomplishment of these measures will increase capacity to transport the increased number of human remains to appropriate facilities and freeing up funeral homes to complete their human remains preparations and allow for more timely response and less waiting times for families.

Appendix I - National Incident Management System (NIMS) Training Requirements

At publication time, the following are the NIMS training requirements. Review of current requirements and resources at: <http://www.fema.gov/emergency/nims/index.shtm> is encouraged.

Entry Level

- FEMA IS-700: NIMS, An Introduction
- ICS-100: Introduction to ICS or equivalent

First Line, Single Resource, Field Supervisors

- IS-700, ICS-100 and ICS-200: Basic ICS or its equivalent

Middle Management: Strike Team Leaders, Division Supervisors, EOC Staff, etc.

- IS-700, IS-800 NRP, ICS-100, ICS-200 and in FY07, ICS-300

Command and General Staff; Area, Emergency and EOC Managers

- IS-700, IS-800, ICS-100, ICS-200 and in FY07, ICS-300 and ICS-400

Appendix J - Excerpts from the HHS Pandemic Influenza Plan, Appendix D

NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use (The priority group recommendations are currently under revision)

Source: US Department of Health and Human Services. 2005. HHS Pandemic Influenza Plan Appendix D: NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use. Washington, DC Department of Health and Human Services at <http://www.hhs.gov/pandemicflu/plan/appendixd.html>

Two Federal advisory committees, the Advisory Committee on Immunization Practices (ACIP) and the National Vaccine Advisory Committee (NVAC), provided recommendations to the Department of Health and Human Services on the use of vaccines and antiviral drugs in an influenza pandemic. Advisory Committee recommendations presented in that report are intended to provide guidance for planning purposes and to form the basis for further discussion of how to equitably allocate medical countermeasures that will be in short supply early in an influenza pandemic.

Based on this guidance, State, local and tribal implementation plans should be developed to 1) include more specific definitions of the priority groups (e.g., which functions are indeed critical to maintaining continuity) and their size; 2) define how persons in these groups will be identified; and 3) establish strategies for effectively and equitably delivering vaccines and antiviral drugs to these populations.

The committees acknowledged that further work is needed, in particular, to identify the functions that must be preserved to maintain effective services and critical infrastructures and to identify the groups that should be protected to achieve this goal. The committees also acknowledge that the specific composition of some priority groups may differ between states or localities based on their needs and that priority groups should be reconsidered when a pandemic occurs and information is obtained on its epidemiology and impacts.

On July 19, 2005, ACIP and NVAC voted unanimously in favor of the vaccine priority recommendations. These votes followed deliberations of a joint Working Group of the two committees, which included as consultants representatives of public and private sector stakeholder organizations and academic experts. There was limited staff level participation from DoD, DHS, and VA. Several ethicists also served as consultants to the Working Group.

Vaccine Priority Group Recommendations*

Tier	Subtier	Population	Rationale
1	A	Vaccine and antiviral manufacturers and others essential to manufacturing and critical support (~40,000) <u>Medical workers and public health workers who are involved in direct patient contact, other support services essential for direct patient care, and vaccinators (8-9 million)</u>	Need to assure maximum production of vaccine and antiviral drugs Healthcare workers are required for quality medical care (studies show outcome is associated with staff-to-patient ratios). There is little surge capacity among healthcare sector personnel to meet increased demand

**The committee focused its deliberations on the U.S. civilian population. ACIP and NVAC recognize that Department of Defense needs should be highly prioritized. DoD Health Affairs indicates that 1.5 million service members would require immunization to continue current combat operations and preserve critical components of the military medical system. Should the military be called upon to support civil authorities domestically, immunization of a greater proportion of the total force will become necessary. These factors should be considered in the designation of a proportion of the initial vaccine supply for the military.*

Other groups also were not explicitly considered in these deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

Definitions and rationales for priority groups: Healthcare workers and essential healthcare support staff

a) Definition

Healthcare workers (HCW) with direct patient contact (including acute-care hospitals, nursing homes, skilled nursing facilities, urgent care centers, physician's offices, clinics, home care, blood collection centers, and EMS) and a proportion of persons working in essential healthcare support services needed to maintain healthcare services (e.g. dietary, housekeeping, admissions, blood collection center staff, etc.). Also included are healthcare workers in public health with direct patient contact, including those who may administer vaccine or distribute influenza antiviral medications, and essential public health support staff for these workers.

b) Rationale

The pandemic is expected to have substantial impact on the healthcare system with large increases in demand for healthcare services placed on top of existing demand. HCW will be treating influenza-infected patients and will be at risk of repeated exposures. Further, surge capacity in this sector is low. To encourage continued work in a high-exposure setting and to help lessen the risk of healthcare workers transmitting influenza to other patients and HCW family members, this group was highly prioritized. In addition, increases in bed/nurse ratios have been associated with increases in overall patient mortality. Thus, substantial absenteeism may affect overall patient care and outcomes.

NVAC Recommendation

On July 19, 2005, NVAC voted unanimously in favor of the antiviral drug use priority recommendations. These votes followed deliberations of a Working Group, which included as consultants representatives of public and private sector stakeholder organizations and academic experts. There was limited staff level participation from DoD, DHS, and VA. Several ethicists also served as consultants to the Working Group.

The recommendations were made considering pandemic response goals, assumptions on the impacts of a pandemic, and after thorough review of past pandemics, annual influenza disease, data on antiviral drug impacts, and recommendations for pandemic vaccine use.

Recommendations were made to guide planning needed for effective implementation at State and local levels. The committee recognizes that recommendations will need to be reconsidered at the time of a pandemic when information on the available drug supply, epidemiology of disease, and impacts on society are known.

The committee considered the primary goal of a pandemic response to decrease health impacts including severe morbidity and death. Minimizing societal and economic impacts were considered secondary and tertiary goals.

Antiviral Drug Priority Group Recommendations*

	Group	Estimated population (millions)	Strategy**	# Courses (millions)		Rationale
				For target group	Cumulative	
1	Patients admitted to hospital***	10.0	T	7.5	7.5	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die.
2	<u>Health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers</u>	9.2	T	2.4	9.9	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.

3	Highest risk outpatients— immunocompromised persons and pregnant women	2.5	T	0.7	10.6	Groups at greatest risk of hospitalization and death; immunocompromised cannot be protected by vaccination.
4	Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers	3.3	T	0.9	11.5	Groups are critical for an effective public health response to a pandemic.

**The committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DoD) needs should be highly prioritized. A separate DoD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.*

****Strategy: Treatment (T) requires a total of 10 capsules and is defined as 1 course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) is assumed to require 40 capsules (4 courses) though more may be needed if community outbreaks last for a longer period.**

****There are no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.*

Definitions and rationale for draft priority groups: Healthcare workers and emergency medical service providers who have direct patient contact

a) Definition

Persons providing direct medical services in inpatient and outpatient care settings. This includes doctors, nurses, technicians, therapists, EMS providers, laboratory workers, other care providers who come within 3 feet of patients with influenza, and persons performing technical support functions essential to quality medical care.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Maintaining high quality patient care is critical to reduce health impacts of pandemic disease and to prevent adverse outcomes from other health conditions that will present for care during the pandemic period. Treatment of healthcare providers will decrease absenteeism due to influenza illness and may decrease absenteeism from fear of becoming ill, given the knowledge that treatment can prevent serious complications of influenza. Good data exist documenting the impacts of early treatment on duration of illness and time off work, and on the occurrence of complications such as lower respiratory infections. Treating healthcare providers is feasible to implement, especially for inpatient care providers who can be provided drugs through the occupational health clinic. It also would be acceptable to the public, who would recognize the importance of maintaining quality healthcare and would understand that persons with direct patient contact are putting themselves at increased risk.

d) Population size

There are about 12.6 million persons designated as healthcare workers by the Bureau of Labor Statistics and about 820,000 EMS providers. Among HCWs, two-thirds are estimated to provide direct patient care services.

e) Unresolved issues

Further work is needed to hone definitions and estimate population sizes. Implementation issues include the approach to identifying healthcare providers who would be eligible for treatment and where the treatment would be provided, particularly for outpatient care providers.

Appendix K – Infection Control: Excerpts from Federal Documents

The following comments are excerpted from the HHS Pandemic Influenza Plan, Supplement 4: Infection Control (pp 220-225)⁹⁰:

The following infection control principles apply in any setting where persons with pandemic influenza might seek and receive healthcare services (e.g. hospitals, emergency departments, out-patient facilities, residential care facilities, homes), according to the CDC.

- Limit contact between infected and non-infected persons
- Isolate infected persons
- Limit contact between nonessential personnel and other persons and patients who are ill with pandemic influenza.

Protect persons caring for influenza patients in healthcare settings from contact with the pandemic influenza virus. Persons who must be in contact should:

- Wear a surgical or procedure mask for close contact with infectious patients.
- Use contact and airborne precautions, including the use of NIOSH-certified N95 respirators, when appropriate.
- Wear gloves (gown if necessary) for contact with respiratory secretions.
- Perform hand hygiene after contact with infectious patients.

Contain infectious respiratory secretions:

- Instruct persons who have “flu-like” symptoms to use respiratory hygiene/cough etiquette.
- Promote use of masks by symptomatic persons in common areas (e.g., waiting rooms in physician offices or emergency departments) or when being transported (e.g., in emergency vehicles).

Respiratory Hygiene/Cough Etiquette

Respiratory hygiene/cough etiquette has been promoted as a strategy to contain respiratory viruses at the source and to limit their spread in areas where infectious patients might be awaiting medical care.

The impact of covering sneezes and coughs and/or placing a mask on a coughing patient on the containment of respiratory secretions or on the transmission of respiratory infections has not been systematically studied. In theory, however, any measure that limits the dispersal of respiratory droplets should reduce the opportunity for transmission.

Masking may be difficult in some settings, e.g., pediatrics, in which case the emphasis will be on cough hygiene.

⁹⁰ US Department of Health and Human Services. 2005. HHS Pandemic Influenza Plan Supplement 4 Infection Control Washington, DC, Department of Health and Human Services retrieved March 20, 2007 at <http://www.hhs.gov/pandemicflu/plan/sup4.html>

The elements of respiratory hygiene/cough etiquette include:

- Education of healthcare facility staff, patients, and visitors on the importance of containing respiratory secretions to help prevent the transmission of influenza and other respiratory viruses
- Posted signs in languages appropriate to the populations served with instructions to patients and accompanying family members or friends to immediately report symptoms of a respiratory infection as directed
- Source control measures (e.g., covering the mouth/nose with a tissue when coughing and disposing of used tissues; using masks on the coughing person when they can be tolerated and are appropriate)
- Hand hygiene after contact with respiratory secretions, and
- Spatial separation, ideally >3 feet, of persons with respiratory infections in common waiting areas when possible.

Droplet Precautions

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of 5 days from the onset of symptoms. Because immunocompromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness.

Healthcare personnel should wear appropriate PPE. If the pandemic virus is associated with diarrhea, contact precautions (i.e., gowns and gloves for all patient contact) should be added.

CDC will update these recommendations if changes occur in the anticipated pattern of transmission (www.cdc.gov/flu).

PPE for Standard and Droplet Precautions

PPE is used to prevent direct contact with the pandemic influenza virus. PPE that may be used to provide care includes surgical or procedure masks, as recommended for droplet precautions, and gloves and gowns, as recommended for standard precautions.

Additional precautions may be indicated during the performance of aerosol-generating procedures (see below). Information on the selection and use of PPE is provided at www.cdc.gov/ncidod/hip/isolat/isolat.htm/.

At a minimum, prehospital care providers who directly handle a patient with respiratory disease or who are in the compartment with the patient should wear PPE as recommended for Standard, Contact, and All Precautions.

These include the following:

- Disposable isolation gown, pair of disposable patient examination gloves, eye protection (i.e., goggles or face shield).
- Respiratory protection (i.e., NIOSH-certified N-95 or higher-level respirator)

Personnel in the driver's compartment who will have no direct patient contact should wear a NIOSH-certified N-95 or higher-level respirator during transport. Drivers who also provide direct patient care (e.g., moving patients on stretchers) should wear the recommended PPE for patient contact. This PPE, with the exception of the respirator, should be removed and hand hygiene performed after completing patient care and before entering driver's compartment to avoid contaminating the compartment. Instructions on how to safely don, use, and remove PPE is available on CDC's website.

Masks

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.
- Change masks when they become moist.
- Do not leave masks dangling around the neck.
- Upon touching or discarding a used mask, perform hand hygiene.

Gloves

- A single pair of patient care gloves should be worn for contact with blood and body fluids, including during hand contact with respiratory secretions (e.g., providing oral care, handling soiled tissues). Gloves made of latex, vinyl, nitrile, or other synthetic materials are appropriate for this purpose; if possible, latex-free gloves should be available for healthcare workers who have latex allergy.
- Gloves should fit comfortably on the wearer's hands.
- Remove and dispose of gloves after use on a patient; do not wash gloves for subsequent reuse.
- Perform hand hygiene after glove removal.
- If gloves are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for glove use might need to be established. In this circumstance, reserve gloves for situations where there is a likelihood of extensive patient or environmental contact with blood or body fluids, including during suctioning.
- Use other barriers (e.g., disposable paper towels, paper napkins) when there is only limited contact with a patient's respiratory secretions (e.g., to handle used tissues). Hand hygiene should be strongly reinforced in this situation.

Gowns

- Wear an isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. Most patient interactions do not necessitate the use of gowns. However, procedures such as intubation and activities that involve holding the patient close (e.g., in pediatric settings) are examples of when a gown may be needed when caring for pandemic influenza patients.

- A disposable gown made of synthetic fiber or a washable cloth gown may be used.
- Ensure that gowns are of the appropriate size to fully cover the area to be protected.
- Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.
- If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply) priorities for their use may need to be established. In this circumstance, reinforcing the situations in which they are needed can reduce the volume used. Alternatively, other coverings (e.g., patient gowns) could be used. It is doubtful that disposable aprons would provide the desired protection in the circumstances where gowns are needed to prevent contact with influenza virus, and therefore should be avoided. There are no data upon which to base a recommendation for reusing an isolation gown on the same patient. To avoid possible contamination, it is prudent to limit this practice.

Goggles or Face Shield

In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary. If sprays or splatter of infectious material is likely, goggles or a face shield should be worn as recommended for standard precautions. Additional information related to the use of eye protection for infection control can be found at <http://www.cdc.gov/niosh/topics/eye/eye-infectious.html>. [Source: Supplement 4 to the *HHS Pandemic Influenza Plan*]

PPE for Special Circumstances

PPE for Aerosol-Generating Procedures

During procedures that may generate increased small-particle aerosols of respiratory secretions (e.g., endotracheal intubation, nebulizer treatment, bronchoscopy, suctioning), healthcare personnel should wear gloves, gown, face/eye protection, and a N95 respirator or other appropriate particulate respirator. Respirators should be used within the context of a respiratory protection program that includes fit-testing, medical clearance, and training. If possible, and when practical, use of an airborne isolation room may be considered when conducting aerosol-generating procedures.

PPE for Managing Pandemic Influenza with Increased Transmissibility

The addition of airborne precautions, including respiratory protection (an N95 filtering face piece respirator or other appropriate particulate respirator), may be considered for strains of influenza exhibiting increased transmissibility, during initial stages of an outbreak of an emerging or novel strain of influenza, and as determined by other factors such as vaccination/immune status of personnel and availability of antivirals. As the epidemiologic characteristics of the pandemic virus are more clearly defined, CDC will provide updated infection control guidance, as needed.

Precautions for Early Stages of Pandemic

Early in a pandemic, it may not be clear that a patient with severe respiratory illness has pandemic influenza. Therefore precautions consistent with all possible etiologies, including a newly emerging infectious agent, should be implemented. This may involve the combined use of airborne and contact precautions, in addition to standard precautions, until a diagnosis is established.

Caring for Patients with Influenza

Healthcare personnel should be particularly vigilant to avoid:

- Touching their eyes, nose or mouth with contaminated hands (gloved or ungloved). Careful placement of PPE before patient contact will help avoid the need to make PPE adjustments and risk self-contamination during use. Careful removal of PPE is also important. (See also: <http://www.cdc.gov/ncidod/hip/ppe/default.htm>.)
- Contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches)

Hand Hygiene

Hand hygiene has frequently been cited as the single most important practice to reduce the transmission of infectious agents in healthcare settings (see <http://www.cdc.gov/handhygiene/pressrelease.htm>) and is an essential element of standard precautions. The term “hand hygiene” includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that do not require the use of water.

- If hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either non-antimicrobial or antimicrobial) and water.
- In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
- Always perform hand hygiene between patient contacts and after removing PPE.
- Ensure that resources to facilitate handwashing (i.e., sinks with warm and cold running water, plain or antimicrobial soap, disposable paper towels) and hand disinfection (i.e., alcohol-based products) are readily accessible in areas in which patient care is provided. For additional guidance on hand hygiene see <http://www.cdc.gov/handhygiene/>.

Disposal of Solid Waste

Standard precautions are recommended for disposal of solid waste (medical and non-medical) that might be contaminated with a pandemic influenza virus:

- Contain and dispose of contaminated medical waste in accordance with facility-specific procedures and/or local or State regulations for handling and disposal of medical waste, including used needles and other sharps, and non-medical waste.
- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

Linen and Laundry

Standard precautions are recommended for linen and laundry that might be contaminated with respiratory secretions from patients with pandemic influenza:

- Place soiled linen directly into a laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.
- Wear gloves for transporting bagged linen and laundry.
- Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.
- Wash and dry linen according to routine standards and procedures (www.cdc.gov/ncidod/hip/enviro/guide.htm).

Patient-Care Equipment

Follow standard practices for handling and reprocessing used patient-care equipment, including medical devices:

- Wear gloves when handling and transporting used patient-care equipment.
- Wipe heavily soiled equipment with an EPA-registered hospital disinfectant before removing it from the patient's room.
- Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.
- Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with an EPA-registered hospital disinfectant upon removal from the patient's room.

Environmental Cleaning and Disinfection

Cleaning and disinfection of environmental surfaces are important components of routine infection control in healthcare facilities. Environmental cleaning and disinfection for pandemic influenza follow the same general principles used in healthcare settings.

[Source: Supplement 4 to the *HHS Pandemic Influenza Plan*]

Postmortem Care

Follow standard facility practices for care of the deceased. Practices should include standard precautions for contact with blood and body fluids.

EMS Infection Control Recommendations

- Screen patients requiring emergency transport for symptoms of influenza.
- Follow standard and droplet precautions when transporting symptomatic patients.
- Consider routine use of surgical or procedure masks for all patient transport when pandemic influenza is in the community. (See mask guidance below.)
- If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing, or use the most practical alternative to contain respiratory secretions.
- Oxygen delivery with a non-rebreather face mask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.⁹¹
- Unless medically necessary to support life, aerosol-generating procedures (e.g., mechanical ventilation, nebulized breathing treatments) should be avoided during prehospital care.
- Optimize the vehicle's ventilation to increase the volume of air exchange during transport. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area. (See additional guidance below.)
- Notify the receiving facility that a patient with possible pandemic influenza is being transported.
- Follow standard operating procedures for routine cleaning of the emergency vehicle and reusable patient care equipment.

The following information is from *Interim Guidance on Planning for the Use of Surgical Masks and Respirators in Health Care Settings during an Influenza Pandemic*⁹²:

Use of Surgical Masks and Respirators in Health Care Settings

Surgical mask and respirator use is one component of a system of infection control practices to prevent the spread of infection between infected and non-infected persons. During an influenza pandemic, surgical masks and respirators—along with other forms of personal protective equipment (e.g., gloves, gowns, and goggles)—should be used by

⁹¹ **Stakeholder note:** Oxygen delivery devices (e.g., masks for patients) are emerging in the equipment marketplace capable of high oxygen flow rates while providing containment and exhaled air and droplet particles through the use of an inline filter. These devices are commonly used in Canada.

⁹² *Interim Guidance on Planning for the Use of Surgical Masks and Respirators in Health Care Settings during an Influenza Pandemic*. CDC, October, 2006. Available at: <http://www.pandemicflu.gov/plan/healthcare/maskguidancehc.html>

healthcare personnel in conjunction with Standard and Droplet Precautions, respiratory hygiene, cough etiquette, vaccination, and early diagnosis and treatment.

Recommendations

National Institute for Occupational Safety and Health (NIOSH)-certified respirators (N95 or higher) are recommended for use during activities that have a high likelihood of generating infectious respiratory aerosols.

- Aerosol-generating procedures (e.g., endotracheal intubation, nebulizer treatment, and bronchoscopy) performed on patients with confirmed or suspected pandemic influenza;
- Resuscitation of a patient with confirmed or suspected pandemic influenza (i.e., emergency intubation or cardiac pulmonary resuscitation); and
- Providing direct care for patients with confirmed or suspected pandemic influenza-associated pneumonia (as determined on the basis of clinical diagnosis or chest x-ray), who might produce larger-than-normal amounts of respirable infectious particles when they cough

In the event of actual or anticipated shortages of N-95 respirators:

- Other NIOSH-certified N-, R-, or P-class respirators should be considered in lieu of the N95 respirator.
- If re-useable elastomeric respirators are used, these respirators must be decontaminated according to the manufacturer's instructions after each use.
- Powered air purifying respirators (PAPRs) may be considered for certain workers and tasks (e.g., high-risk activities). Loose-fitting PAPRs have the advantages of providing eye protection, being comfortable to wear, and not requiring fit-testing; however, hearing (e.g., for auscultation) is impaired, limiting their utility for clinical care. Training is required to ensure proper use and care of PAPRs.

Planning assumptions and projections suggest that shortages of respirators are likely in a sustained pandemic. Therefore, in the event of an actual or anticipated shortage, planners must ensure that sufficient numbers of respirators are prioritized for use during the high-risk procedures. This will require careful planning as well as real-time supply monitoring to ensure that excess respirators are not held in reserve while healthcare personnel are conducting activities for which they would otherwise be provided respiratory protection. Conversely, excessive use of respirators could result in their unavailability for high-risk procedures. Decision guidance for determining respirator wear should consider factors such as duration, frequency, proximity and degree of contact with the patient.

If supplies of N-95 (or higher) respirators are not available, surgical masks can provide benefits against large droplet exposure, and should be worn for all healthcare activities for patients with confirmed or suspected pandemic-influenza.

Guidance for Correct Use

Respirator use should be in the context of a complete respiratory protection program in accordance with Occupational Safety and Health Administration (OSHA) regulations. Detailed information on respiratory protection programs, including fit test procedures, can be accessed at OSHA's Respiratory Protection eTool (www.osha.gov/SLTC/etools/respiratory). Staff with responsibility for direct patient care should be medically cleared, trained, and fit-tested for respirator use. Training topics should include the following:

- Proper fit-testing, wearing, and use of respirators
- Safe removal of respirators
- Safe disposal of respirators
- Medical contraindications to respirator use

Persons who wear surgical masks or respirators should be advised that:

- Surgical mask or respirator use should not take the place of preventive interventions, such as respiratory etiquette and hand hygiene.
- To offer protection, surgical masks and respirators must be worn correctly and consistently throughout the time they are used.
- Wearing a surgical mask or respirator incorrectly, or removing or disposing of it improperly, could allow contamination of the hands or mucous membranes of the wearer or others, possibly resulting in disease transmission.
- Proper surgical mask or respirator use and removal includes the following:
 - Prior to putting on a respirator or surgical mask, wash hands thoroughly with soap and water or use an alcohol-based hand sanitizer to reduce the possibility of inadvertent contact between contaminated hands and mucous membranes.
 - If worn in the presence of infectious persons, a respirator or surgical mask may become contaminated with infectious material; therefore, avoid touching the outside of the device to help prevent contamination of hands.
 - Once worn in the presence of a patient with patient with pandemic influenza, the disposable surgical mask or disposable N95 respirator should be removed and appropriately discarded.
 - After the surgical mask or respirator has been removed and discarded, wash hands thoroughly with soap and water, or use an alcohol-based hand sanitizer.
 - Further information about masks and respirators can be found at <http://www.cdc.gov/ncidod/sars/respirators.htm> and <http://www.cdc.gov/niosh/npptl/topics/respirators/factsheets/respsars.html#F>.

Additional information (see referenced sources) regarding ambulance ventilation

Negative pressure isolation is not required for routine patient care of individuals with pandemic influenza. When possible, however, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area. Close the

door/window between these compartments before bringing the patient on board. Set the vehicle's ventilation system to the non-recirculating mode to maximize the volume of outside air brought into the vehicle. If the vehicle has a rear exhaust fan, use it to draw air away from the cab, toward the patient-care area, and out the back end of the vehicle. Some vehicles are equipped with supplemental recirculating ventilation units that pass air through HEPA filters before returning it to the vehicle. Such units can be used to increase the number of [air changes per hour] (ACH)^{93,94}.

If a vehicle without separate compartments and ventilation must be used, open the outside air vents in the driver area and turn on the rear exhaust ventilation fans to the highest setting. This will create a negative pressure gradient in the patient area.

⁹³ Centers for Disease Control and Prevention. ONLINE. 2005. *Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2 Supplement I: Infection Control in Healthcare, Home, and Community Settings Section IV. Infection Control for Prehospital Emergency Medical Services (EMS)* CDC. Available: <http://www.cdc.gov/ncidod/sars/guidance/1/index.htm> [24 March 2007]

⁹⁴ National Institute for Occupational Safety and Health. ONLINE. 1996. Health Hazard Evaluation Report 95-0031-2601. NIOSH Hazard Evaluations and Technical Assistance Branch. Available: www.cdc.gov/niosh/hhe/reports/pdfs/1995-0031-2601.pdf [3 April 2007]

Appendix L - Cleaning and Disinfecting Strategies for Environmental Surfaces in Patient-Care Areas

Adapted from the 2003 CDC *Guidelines for Environmental Infection Control in Health-Care Facilities*.

Source: Schulster L, Chinn RY. Guidelines for environmental infection control in health-care facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) [Published errata appear in MMWR Recomm Rep 2003 Oct 24;52(42):1025-6]. MMWR Recomm Rep 2003 Jun 6;52(RR-10):1-42.

Rating Categories

Recommendations are rated according to the following categories:

- **Category IA.** Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.
- **Category IB.** Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretical rationale.
- **Category IC.** Required by State or Federal regulation, or representing an established association standard. (Note: Abbreviations for governing agencies and regulatory citations are listed, where appropriate. Recommendations from regulations adopted at State levels are also noted. Recommendations from AIA guidelines cite the appropriate sections of the standard).
- **Category II.** Suggested for implementation and supported by suggestive clinical or epidemiologic studies, or a theoretical rationale.
- **Unresolved Issue.** No recommendation is offered. No consensus or insufficient evidence exists regarding efficacy.

1. Select EPA-registered disinfectants, if available, and use them in accordance with the manufacturer's instructions. Category IB, IC (EPA: 7 United States Code [USC] § 136 et seq)
2. Do not use high-level disinfectants/liquid chemical sterilants for disinfection of either noncritical instrument/devices or any environmental surfaces; such use is counter to label instructions for these toxic chemicals. Category IB, IC (FDA: 21 CFR 801.5, 807.87.e)
3. Follow manufacturers' instructions for cleaning and maintaining noncritical medical equipment. *Category II*
4. In the absence of a manufacturer's cleaning instructions, follow certain procedures.
 - a. Clean noncritical medical equipment surfaces with a detergent/disinfectant. This may be followed with an application of an EPA-registered hospital disinfectant with or without a tuberculocidal claim (depending on the nature of the surface and the degree of contamination), in accordance with disinfectant label instructions. *Category II*
 - b. Do not use alcohol to disinfect large environmental surfaces. *Category II*
 - c. Use barrier protective coverings as appropriate for noncritical equipment surfaces that are

- 1) touched frequently with gloved hands during the delivery of patient care;
- 2) likely to become contaminated with blood or body substances; or
- 3) difficult to clean (e.g., computer keyboards). *Category II*
- d. Keep surfaces (e.g., floors, walls, crew seats, and countertops) visibly clean on a regular basis and clean up spills promptly. *Category II*
 - 1) Use a one-step process and an EPA-registered hospital-grade disinfectant/detergent designed for general housekeeping purposes in patient-care areas when a) uncertainty exists as to the nature of the soil on these surfaces [e.g., blood or body fluid contamination versus routine dust or dirt]; or b) uncertainty exists regarding the presence or absence of multi-drug resistant organisms on such surfaces. *Category II*
 - 2) Detergent and water are adequate for cleaning surfaces in nonpatient-care areas (e.g., administrative offices). *Category II*
 - 3) Clean and disinfect high-touch surfaces (e.g., doorknobs and handles, stretcher rails, light switches, and arm rests) on a more frequent schedule than minimal touch housekeeping surfaces. *Category II*
 - 4) Clean walls in patient-care areas when they are visibly dusty or soiled. *Category II*
- e. Do not perform disinfectant fogging in patient-care areas. *Category IB*
- f. Avoid large-surface cleaning methods that produce mists or aerosols or disperse dust in patient-care areas. *Category IB*
- g. Follow proper procedures for effective use of mops, cloths, and solutions. *Category II*
 - 1) Prepare cleaning solutions daily or as needed, and replace with fresh solution frequently according to facility policies and procedures. *Category II*
 - 2) Change the mop head at the beginning of the day and also as required by facility policy, or after cleaning up large spills of blood or other body substances. *Category II*
 - 3) Clean mops and cloths after use and allow drying before reuse; or use single-use, disposable mop heads and cloths. *Category II*

Cleaning Spills of Blood and Body Substances

1. Promptly clean and decontaminate spills of blood or other potentially infectious materials. *Category IB, IC* (OSHA: 29 CFR 1910.1030 §d.4.ii.A)
2. Follow proper procedures for site decontamination of spills of blood or blood-containing body fluids. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A)
 - a. Use protective gloves and other PPE appropriate for this task. *Category IC* (OSHA: 29 CFR 1910.1030 § d.3.i, ii)
 - b. If the spill contains large amounts of blood or body fluids, clean the visible matter with disposable absorbent material, and discard the contaminated materials in appropriate, labeled containment. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.iii.B)
 - c. Swab the area with a cloth or paper towels moderately wetted with disinfectant, and allow the surface to dry. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A)

3. Use EPA-registered hospital-grade disinfectants labeled tuberculocidal or registered germicides on the EPA Lists D and E (products with specific label claims for HIV or hepatitis B virus [HBV]) in accordance with label instructions to decontaminate spills of blood and other body fluids. *Category IC* (OSHA 29 CFR 1910.1030 § d.4.ii.A memorandum 2/28/97; compliance document CPL 2-2.44D [11/99])
4. An EPA-registered sodium hypochlorite product is preferred, but if such products are not available, generic versions of sodium hypochlorite solutions (e.g., household chlorine bleach) may be used.
 - a. Use a 1:100 dilution (500–615 ppm available chlorine) to decontaminate nonporous surfaces after cleaning a spill of either blood or body fluids in patient-care settings. *Category II*
 - b. If a spill involves large amounts of blood or body fluids, use a 1:10 dilution (5,000–6,150 ppm available chlorine) for the first application of germicide before cleaning. *Category II*

Special Pathogens

1. Use appropriate hand hygiene, PPE (e.g., gloves), and isolation precautions during cleaning and disinfecting procedures. *Category IB*
2. Use standard cleaning and disinfection protocols to control environmental contamination during a pandemic influenza. *Category IB*
 - a. Pay close attention to cleaning and disinfection of high-touch surfaces in patient-care areas (e.g., bedrails, equipment cabinets, drug boxes, monitor/defibrillators, armrests, door knobs and handles). *Category IB*
 - b. Ensure compliance by staff with cleaning and disinfection procedures. *Category IB*
 - c. Use EPA-registered hospital-grade disinfectants appropriate for the surface to be disinfected (e.g., either low- or intermediate-level disinfection) as specified by the manufacturers' instructions. *Category IB, IC* (EPA: 7 USC § 136 et seq.)
 - 1). When contact precautions are indicated for patient care, use disposable patient-care items (e.g., blood pressure cuffs) whenever possible to minimize cross-contamination with multiple-resistant microorganisms. *Category IB*
 - 2). Follow these same surface cleaning and disinfecting measures for managing the environment of influenza patients. *Category II*
3. Thoroughly clean and disinfect environmental and medical equipment surfaces on a regular basis using EPA-registered disinfectants in accordance with manufacturers' instructions. *Category IB, IC* (EPA: 7 USC § 136 et seq.)
4. Advise families, visitors, and patients about the importance of hand hygiene to minimize the spread of body substance contamination (e.g., respiratory secretions) to surfaces. *Category II*
5. Do not use high-level disinfectants (i.e., liquid chemical sterilants) on environmental surfaces; such use is inconsistent with label instructions and because of the toxicity of the chemicals. *Category IC* (FDA: 21 CFR 801.5, 807.87.e)
6. Clean surfaces that have been contaminated with body substances; perform low- to intermediate-level disinfection on cleaned surfaces with an EPA-registered disinfectant in accordance with the manufacturer's instructions. *Category IC* (OSHA: 29 CFR 1910.1030 § d.4.ii.A; EPA: 7 USC § 136 et seq.)

7. Use disposable barrier coverings as appropriate to minimize surface contamination.

Category II

8. Use disposable, impervious covers to minimize body substance contamination to stretchers and surfaces when transferring or transporting bodies to morgue facilities.

Category IB

9. Use standard procedures for containment, cleaning, and decontamination of blood spills on surfaces as previously described (Environmental Services: II).967 *Category IC* (OSHA: 29 CFR 1910.1030 §d.4.ii.A)

a. Wear PPE appropriate for a surface decontamination and cleaning task.

Category IC (OSHA 29 CFR 1910.1030 §d.3.i, ii)

b. Discard used PPE by using routine disposal procedures or decontaminate reusable PPE as appropriate. *Category IC* (OSHA 29 CFR 1910.1030 §d.3.viii)

Post-Mortem Considerations

There are a multitude of issues surrounding the handling of human remains during a pandemic however, infection control and decontamination measures are no different than with any other infectious disease process. A pandemic influenza death is a natural manner of death. Those who physically handle remains may be at risk of blood borne or body fluid exposure requiring universal precautions and proper training for handling the dead. Responders will need the knowledge and capability to identify PI event related deaths versus non PI event related deaths to ensure proper actions are taken at the scene.

Additional information sources:

Reynolds KA, Watt PM, Boone SA, Gerba CP. Occurrence of bacteria and biochemical markers on public surfaces. *Int J Environ Health Res.* 2005 Jun;15(3):225-34.

Guidelines for Environmental Infection Control in Health-Care Facilities. *MMWR* June 6, 2003 / 52(RR10);1-42. Centers for Disease Control and Prevention. Accessed December 2006 at www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html

Centers for Disease Control and Prevention. 2005. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2 Supplement I: Infection Control in Healthcare, Home, and Community Settings Section IV. Infection Control for Prehospital Emergency Medical Services (EMS) retrieved March 24, 2007 at <http://www.cdc.gov/ncidod/sars/guidance/I/index.htm> .

U.S. Northern Command and Department of Health and Human Services Fatality Management Pandemic Influenza Working Group Conference, *White Paper: Scene Operations, to Include Identification, Medico-legal Investigation Protocols and Command and Control of Mass Fatalities Resulting from a Pandemic Influenza (PI) in the United States, September 2006* available at *Joint Task Force Civil Support*, [www.jtfc.northcom.mil/pages/WP_SceneOps\(FINAL\).pdf](http://www.jtfc.northcom.mil/pages/WP_SceneOps(FINAL).pdf)

Appendix M - Pandemic Influenza Resources

This list, while not comprehensive, offers a starting point for obtaining information on pandemic influenza. Check regularly with local, State and Federal public health experts for additional guidance.

International

Avian Influenza Response from U.S. Agency for International Development
www.usaid.gov/our_work/global_health/home/News/news_items/avian_influenza.html
This site gives information on assistance provided to affected countries.

Interim Guidance for U.S. Citizens Living Abroad
www.cdc.gov/travel/other/avian_flu_ig_americans_abroad_032405.htm
This site from the Centers for Disease Control and Prevention provides guidelines and recommendations about HPAI H5N1 for U.S. citizens living overseas.

WHO Pandemic Preparedness
www.who.int/csr/disease/influenza/pandemic/en
This site defines an influenza pandemic, explains how a new influenza virus can cause a pandemic, presents the consequences of an influenza pandemic, explains the global surveillance systems and provides links to other pandemic plans from other nations.

United States International Engagement on Avian and Pandemic Influenza
www.state.gov/r/pa/scp/2006/72923.htm
This fact sheet outlines United States actions to support avian influenza preparedness efforts in at least 53 countries, in collaboration with the World Health Organization (WHO), Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE) and other international and in-country partners.

National

Altered Standards of Care in Mass Casualty Events: Bioterrorism and Other Public Health Emergencies
Agency for Healthcare Research and Quality Publication No. 05-0043 April 2005
www.ahrq.gov/research/altstand/altstand.pdf

Avian Influenza information from the Department of Agriculture
www.usda.gov/wps/portal/usdahome?navtype=SU&navid=AVIAN_INFLUENZA
This site supplies reports of efforts to protect the United States against highly transmissible forms of avian influenza, via trade restrictions, monitoring and other actions

Avian Influenza information from the Centers for Disease Control and Prevention
www.cdc.gov/flu/avian

This site presents information on the symptoms, treatment and complications of the disease, prevention and control, the types of influenza viruses, questions and answers on symptoms, vaccination and myths.

Avian Flu information from the Environmental Protection Agency
www.epa.gov/pandemicflu/

This site provides an overview of the Environmental Protection Agency's actions.

Avian Influenza information from the Infectious Diseases Society of America
www.idsociety.org/Content/NavigationMenu/Resources/Avian_Pandemic_Flu/Avian_Pandemic_Flu.htm

This site provides information on pandemic flu from the perspective of the IDSA, a specialty organization for scientists and healthcare professionals with an interest in infectious diseases.

Avian Influenza Fact Sheet

<http://www.cdc.gov/flu/avian/gen-info/facts.htm>

Centers for Disease Control and Prevention (CDC) *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States*

February 1, 2007

<http://www.pandemicflu.gov/plan/community/commitigation.html>

Emergency Planning: Pandemic from the Department of Education
www.ed.gov/admins/lead/safety/emergencyplan/pandemic/index.html

This site provides tools to assist with disseminating health information, planning for staff and student absences and maintaining a learning environment during a pandemic.

Epi-X: The Epidemic Information Exchange

www.cdc.gov/mmwr/epix/epix.html

This Web-based communications network allows for information exchange among the CDC, State and local health departments, and other public health professionals.

Ethical Guidelines in Pandemic Influenza

Centers for Disease Control and Prevention

February 2007

www.cdc.gov/od/science/phec/panFlu_Ethic_Guidelines.pdf

This document provides the ethical background used in formulating guidelines related to community mitigation strategies.

Food and Drug Administration Pandemic Influenza WEB site:

<http://www.fda.gov/oc/op/pandemic/default.htm>

Guidance to Travelers

http://www.cdc.gov/travel/other/avian_flu_ah5n1_031605.htm

Health and Human Services (HHS) Pandemic Influenza Plan

November 2005

www.hhs.gov/pandemicflu/plan

HHS Pandemic Planning Updates

Each report provides status on five key planning areas: monitoring and surveillance, vaccines, antiviral medications, State and local preparedness, and communications.

[Update III](#), November 13, 2006

<http://www.pandemicflu.gov/plan/pdf/panflureport3.pdf>

[Update II](#), June 29, 2006

<http://www.pandemicflu.gov/plan/pdf/panflureport2.pdf>

[Update](#), March 13, 2006

<http://www.pandemicflu.gov/plan/pdf/panflu20060313.pdf>

HEALTH AND HUMAN SERVICES Request for Information (RFI): Guidance for Prioritization of Pre-pandemic and Pandemic Influenza Vaccine

<http://aspe.hhs.gov/PIV/RFI/>

Indian Health Services Pandemic Influenza Workbook -- A Planning Guide for American Indian/Alaska Native Communities (2006)

[http://www.ihs.gov/MedicalPrograms/epi/pi/documents/Pandemic Influenza Planning Workbook.pdf](http://www.ihs.gov/MedicalPrograms/epi/pi/documents/Pandemic_Influenza_Planning_Workbook.pdf)

Managing Anxiety in Times of Crisis

<http://mentalhealth.samhsa.gov/cmhs/managinganxiety/default.asp>

National Infrastructure Advisory Council (NIAC)

The Prioritization of Critical Infrastructure for a Pandemic Outbreak in the United States-- Final Report and Recommendations by the Council

January 16, 2007

http://www.dhs.gov/xlibrary/assets/niac/niac-pandemic-wg_v8-011707.pdf

National Vaccine Program Office

www.dhhs.gov/nvpo/pandemics

This site presents an historical overview of pandemics that occurred throughout the past century (Spanish influenza, Asian influenza and Hong Kong influenza), and three influenza scares (swine flu, Russian influenza and avian influenza).

National Strategy for Pandemic Influenza

Implementation Plan for the National Strategy for Pandemic Influenza

<http://www.pandemicflu.gov/plan/federal/index.html>

The National Strategy for Pandemic Influenza, issued by President Bush November 1, 2005, guides our Nation's preparedness and response to an influenza pandemic, with the intent of (1) stopping, slowing or otherwise limiting the spread of a pandemic to the United States; (2) limiting the domestic spread of a pandemic and mitigating disease,

suffering and death; and (3) sustaining infrastructure and mitigating impact to the economy and the functioning of society. The Strategy charges the U.S. Department of Health & Human Services with leading the Federal pandemic preparedness.

National Response Plan

http://www.dhs.gov/xprepresp/committees/editorial_0566.shtm

This Department of Homeland Security site contains a comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents. The National Response Plan forms the basis of how the Federal Government coordinates with State, local and tribal governments and the private sector during incidents.

Occupational Safety and Health Administration, U.S. Department of Labor

<http://www.osha.gov/Publications/OSHA3327.pandemic.pdf>

Guidance on preparing workplaces for an influenza pandemic.

Office of Personnel Management, Human Capital Planning for Pandemic Influenza

<http://www.opm.gov/pandemic>

Pandemic Influenza Fact Sheet

<http://www.cdc.gov/flu/avian/gen-info/pandemics.htm>

Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources

www.pandemicflu.gov/plan/pdf/CIKRpandemicInfluenzaGuide.pdf

This guide provides contingency planning process for a pandemic. Also provides business planners with sector-specific and common pandemic information planning variables keyed to escalating disaster phases.

PandemicFlu.gov

www.pandemicflu.gov

The official U.S. government Web site for information on pandemic flu and avian influenza.

Pandemic Influenza information from the Department of Veterans Affairs

www.publichealth.va.gov/flu/pandemicflu.htm

This site lists VA resources on pandemic flu.

Pandemic Influenza Plan from the Department of Health and Human Services

www.hhs.gov/pandemicflu/plan

This site supplies guidance to national, State and local policymakers and health departments, outlining key roles and responsibilities during a pandemic and specifying preparedness needs and opportunities.

Protecting the United States brochure from USDA

www.usda.gov/documents/AvianFluBrochure.pdf

This brochure describes two types of avian influenza and how the USDA is working with agencies nationally and internationally to protect the United States against avian influenza.

Strategic National Stockpile

www.bt.cdc.gov/stockpile

The site provides information on the availability and rapid deployment of life-saving pharmaceuticals, antidotes, other medical supplies, and equipment necessary to counter the effects of nerve agents, biological pathogens and chemical agents.

Regional/Local

American Bar Association – State and Local Government Law Section Checklist for State and Local Government Attorneys to Prepare for Possible Disasters

www.abanet.org/statelocal/disaster.pdf

CDC Cooperative Agreements on Public Health Preparedness

www.bt.cdc.gov/planning/coopagreement

This site provides information on State and local public health preparedness for and response to bioterrorism, other outbreaks of infectious diseases, and other public health threats and emergencies.

Contact Information for State Departments of Agriculture, Wildlife and Public Health

www.pandemicflu.gov/plan/states/statecontacts.html

This site gives contact mail and phone contact information by State. When available, fax numbers and Web addresses are also provided.

Local Health Department Guide to Pandemic Flu Planning

www.naccho.org/topics/infectious/influenza/LHDPanFluGuide.cfm

This guide from the National Association of County and City Health Officials is intended for local health departments (LHDs) to use as part of a multi-sector effort to coordinate planning for and response to a pandemic influenza outbreak.

Pandemic Influenza information from the Association of State and Territorial Health Officials

www.astho.org/templates/display_pub.php?pub_id=1383&admin=1

This site provides access to information and resources for State pandemic planning meetings.

Preparing for a Pandemic Influenza: A Primer for Governors and Senior State Officials

www.nga.org/Files/pdf/0607PANDEMICPRIMER.PDF

from the National Governors Association

Read the National Governors Association report focused on the considerations States must make when developing policies in preparation for a potential pandemic.

Providing Mass Medical Care with Scarce Resources: A Community Planning Guide

www.ahrq.gov/research/mce

Designed for State, local, community and facility planners, this guide discusses ethical and legal issues, and considerations regarding prehospital care, hospital/acute care, palliative care, and alternative care sites. Chapter 8 is a 29-page case study for an influenza pandemic.

State Pandemic Plans

www.pandemicflu.gov/plan/states/stateplans.html

This page provides access to all State pandemic plans that are currently available.

State & Local Pandemic Influenza Planning Checklist

www.pandemicflu.gov/plan/states/statelocalchecklist.html

This site provides checklists and planning guides to help managers prepare for a pandemic.

State Allocations of Antivirals

www.pandemicflu.gov/plan/states/antivirals.html

This site features a chart showing the individual State allocations of antivirals from the U.S. Department of Health and Human Services stockpile.

Healthcare Resources

Centers for Disease Control and Prevention (CDC) *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States*

February 1, 2007

<http://www.pandemicflu.gov/plan/community/commitigation.html>

Development of a triage protocol for critical care during an influenza pandemic

Canadian Medical Journal, (175-11), November 21, 2006

By Michael D. Christian, Laura Hawryluck, Randy S. Wax, Tim Cook, Neil M. Lazar, Margaret S. Herridge, Matthew P. Muller, Douglas R. Gowans, Wendy Fortier, Frederick M. Burkle, Jr.

Home Health Care Services Checklist

www.pandemicflu.gov/plan/healthcare/healthcare.html

This checklist identifies specific steps that home health care service providers can take now to prepare for a pandemic.

Hospital Preparedness Checklist

www.hhs.gov/pandemicflu/plan/sup3.html#app2

This checklist can help State and local hospitals prepare for a pandemic.

Long-Term Care and Other Residential Facilities Pandemic Influenza Planning Checklist

www.pandemicflu.gov/plan/healthcare/longtermcarechecklist.html

This checklist identifies key areas: a structure for planning and decision making, and a written plan with subplans.

Medical Offices and Clinics Pandemic Influenza Planning Checklist

www.pandemicflu.gov/plan/healthcare/medical.html

Specific steps are outlined in this checklist that medical offices and clinics, including outpatient care clinics, can take prepare for a pandemic.

Modeling Community Containment for Pandemic Influenza: A Letter Report Committee on Modeling Community Containment for Pandemic Influenza

<http://www.nap.edu/catalog/11800.html>

Pandemic Influenza Toolkit

www.cdc.gov/flu/pandemic/healthprofessional.htm

Prepared by the Centers for Disease Control and Prevention (CDC), the toolkit provides resources and information for clinicians to use in discussing pandemic influenza with patients and providing care in case of a flu pandemic in the United States.

Pandemic Flu Planning Guidance for MRC Units

www.medicalreservecorps.gov/POUpdates/PandemicFluGuidance

Read about the pandemic influenza planning guidance for Medical Reserve Corps (MRC) units that help identify specific activities MRC units can do now to prepare for a pandemic.

Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) Version 2 Supplement I: Infection Control in Healthcare, Home, and Community Settings

Centers for Disease Control and Protection, January 8, 2004

Outlines the infection control recommendations for prevention of SARS-CoV transmission in healthcare, household, and community settings. This and other SARS documents are online at www.cdc.gov/ncidod/sars

The Agency for Healthcare Research and Quality has provided the following sites that may be helpful in the event of a pandemic:

Development of Models for Emergency Preparedness:

www.ahrq.gov/research/devmodels/

Standardized Hospital Bed Definitions:

www.ahrq.gov/research/havbed/definitions.htm

Emergency Preparedness Resource Inventory:

<http://www.ahrq.gov/research/epri>

Reopening Shuttered Hospitals to Expand Surge Capacity:

www.ahrq.gov/research/shuttered/

Recommendations for Altered Standards of Care during a Mass Casualty Event:

www.ahrq.gov/research/altstand/

Computer Staffing Model for Disaster Preparedness Response:

www.ahrq.gov/research/biomodel.htm

Health Emergency Assistance Line and Triage Hub (HEALTH) Model:

www.ahrq.gov/research/health

Alternate Site Locator during Public Health Emergencies:

www.ahrq.gov/research/altsites.htm

Fire and EMS resources

Avian Influenza information from the International Association of Fire Chiefs

www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=191

This site gives firefighters key facts about avian influenza and influenza.

Influenza Pandemic information from the International Association of Fire Fighters

www.iaff.org/safe/content/Avian_Flu/Pan_Flu_Final.htm

This informational bulletin for firefighters provides the basics on avian influenza and pandemic influenza.

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

www.pandemicflu.gov/plan/healthcare/emgncymedical.html

EMS and medical transport organizations can use this checklist to help prepare for a pandemic.

National Association of EMS Physicians

www.naemsp.org

NAEMSP offers a “Base Station Course” for EMS medical directors. This course is designed to be of use to all physicians who provide online medical direction to prehospital providers. It is a modular course that can be used in its entirety as the basis for a formal base station course or on a section-by-section basis to augment other educational programs and learning.

Pandemic Influenza Planning Resources from the US Fire Administration

www.usfa.dhs.gov/subjects/ems/pandemicflu/

This site provides planning resources to assist first responders in preparing for a national influenza pandemic.

Appendix N - Continuity of Operations Program Elements

According to the *National Strategy for Pandemic Influenza: Implementation Plan*,⁹⁵ there are 11 Continuity of Operations (COOP) program elements for which managers must prepare when planning for pandemic influenza. These elements apply to all types and sizes of EMS operations, and are essential parts of any pandemic influenza plan:

- **Planning**

. The foundation of a viable COOP program is the development and documentation of a COOP plan that, when implemented, will provide for the continued performance of an organization's essential functions under all circumstances. In order to reduce the pandemic threat, a portion of the COOP plan's objective should be to minimize the health, social, and economic impact of a pandemic on the United States.

- **Essential Functions**

Essential functions are those functions that enable organizations to provide vital services, exercise civil authority, maintain the safety and well being of the general populace, and sustain the economic base in an emergency. During a pandemic, or any other emergency, these essential functions must be continued in order to facilitate emergency management and overall national recovery. Within the private sector, essential functions can be regarded as those core functions, services, and capabilities required for sustaining business operations.

Functions that are essential to EMS operations include:

- ◆ Maintenance of a 911 call center and other ways for the public to access EMS;
- ◆ A system to determine the caller's problem(s);
- ◆ A system to triage calls and designate appropriate medical response;
- ◆ Maintenance of emergency vehicles and equipment;
- ◆ Trained and available personnel to respond to calls;
- ◆ Supporting legislation and regulations to enable EMS to function effectively;
- ◆ Financial support to maintain a high-quality EMS system;
- ◆ Medical direction and oversight;
- ◆ Communications systems; and
- ◆ Public education.

- **Delegation of authority**

Clearly pre-established delegations of authority are vital to ensuring that all organizational personnel know who has the authority to make key decisions in a COOP situation. Because absenteeism may reach a peak of 40 percent at the height of a pandemic wave, delegations of authority are critical.

⁹⁵ Homeland Security Council. 2006. National Strategy for Pandemic Influenza. Washington, DC at <http://www.pandemicflu.gov/plan/federal/index.html>

All EMS operations should already have clearly delegated authority under their medical director and in accordance with the incident command structure (ICS) and the National Incident Management System (NIMS). This authority should be maintained during pandemic influenza.

- **Succession planning**

An order of succession is essential to an organization's COOP plan to ensure personnel know who has authority and responsibility if the leadership is incapacitated or unavailable in a COOP situation. Since an influenza pandemic may affect regions of the United States differently in terms of timing, severity, and duration, businesses with geographically dispersed assets and personnel should consider dispersing their order of succession.

Leadership training should be provided for mid- and upper-level EMS supervisory staff to ensure that in case of major illness, injuries or deaths, there will be individuals who can take on the role of EMS medical director or leadership. The determination also should be made in advance regarding who in the organization would be able to adjust standard operating procedures and the scope of practice of emergency medical providers to the needs of the situation.

- **Alternate physical facilities**

The identification and preparation of alternate operating facilities and the preparation of personnel for the possibility of an unannounced relocation of essential functions and COOP personnel to these facilities is part of COOP planning.

Because a pandemic presents essentially simultaneous risk everywhere, the use of alternative operating facilities must be considered in a non-traditional way. COOP planning for pandemic influenza will involve alternatives to staff relocation/co-location such as social distancing in the workplace through telecommuting, or other means. In addition, relocation and redistribution of staff among alternative facilities may reduce the chance of infection impacting centralized critical operations staff simultaneously.

Alternate operating facilities impact a several aspects of EMS operations, including but not limited to:

- 9-1-1 call center
- Administrative offices
- Crew quarters
- Ambulance bays/garages/repair facilities
- Emergency departments and alternate destinations

- **Effective communications**

The success of a viable COOP capability is dependent upon the identification, availability, and redundancy of critical communication systems to support connectivity of internal organizations, external partners, critical customers and the public. Systems that facilitate communication in the absence of person-to-person contact can be used to

minimize workplace risk for essential employees and can potentially be used to restrict workplace entry of people with influenza symptoms.

EMS agencies are all too familiar with the failure of communications systems on emergency scenes, particularly when responders come from multiple agencies. Additionally, EMS relies on communications systems at multiple points in the emergency response process. EMS communication systems include:

- Accepting communications in to a 9-1-1 center
- Dispatching communications from a 9-1-1 center
- Routing communications to between emergency operations centers
- Receiving communications from field personnel to medical control
- Coordination of communications within the field
- Communication with special needs populations
- Communication with destinations, such as hospitals, nursing homes
- Emergency communication with the public (e.g., warning systems)

EMS pandemic influenza planners must consider each of these communications systems and their capacities in terms of call volume, interoperability, redundancy etc. and determine how to ensure the effectiveness of these communication systems during pandemic influenza.

Communication discipline is one of the keys to effective incident management, and ideally, these systems would be centralized through established ICS channels. There should also be a plan for backup or redundant communication strategies in case there are failures in primary communication methods. Similarly, other backup procedures for actions that can be taken when systems fail should be planned, tested in advance, and integrated into the planning process.

- **Business record-keeping**

Businesses should identify, protect, and ensure the ready availability of electronic and hardcopy documents, references, records, and information systems needed to support essential functions. Pandemic influenza COOP planning must also identify and ensure the integrity of vital systems that require periodic maintenance or other direct physical intervention by employees.

EMS agencies rely on numerous business records and databases in order to maintain their continuity of operations, including but not limited to:

- Patient records
- Call records
- Billing records
- CAD data
- Compliance data

EMS agencies must maintain these records in compliance with numerous Federal and local statutes, such as the Health Insurance Portability and Accountability Act (HIPAA) (if the EMS agency is a “covered entity” for purposes of HIPAA) and response time standards, which must be maintained during pandemic influenza, unless waived.

EMS pandemic influenza planners must consider each of these records and database systems, both hardcopy and electronic, and determine how to maintain continuity of operations during pandemic influenza

- **Human capital**

State and local EMS planners should operate on the assumption that up to 40 percent of their staff may be absent for periods of about 2 weeks at the height of a pandemic wave, with lower levels of staff absent for a few weeks on either side of the peak. Absenteeism will increase not only because of personal illness or incapacitation but also because employees may be caring for ill family members, under voluntary home quarantine due to an ill household member, minding children dismissed from school, following public health guidance, or simply staying at home out of safety concerns.

Each organization must develop, update, exercise, and be able to implement comprehensive plans to protect its workforce. Although an influenza pandemic will not directly affect the physical infrastructure of an organization, a pandemic will ultimately threaten all operations by its impact on an organization’s human resources. **The health threat to personnel is the primary threat to continuity of operations during a pandemic.**

EMS agencies will face multiple challenges in maintaining their workforce during pandemic influenza. These challenges include but are not limited to:

- Educating and training EMS personnel about influenza
- Preventing EMS personnel from contracting influenza
- Infection control, PPE and enforcement
- Vaccination and administration of anti virals to EMS personnel
- Sick leave policies during pandemic influenza
- Return to work policies during pandemic influenza
- Emotional and social support of EMS personnel

Absenteeism

Estimates of workforce absenteeism can be made using a free online tool from the Centers for Disease Control and Prevention. FluWorkLoss estimates the potential number of days lost from work due to an influenza pandemic. Users can change almost any input value, such as the number of workdays assumed lost when a worker becomes ill or the number of workdays lost due to a worker staying home to care for a family member. Users can also change the length and virulence of the pandemic so that a range of possible impacts can be estimated.

FluWorkLoss provides a range of estimates of total workdays lost, as well as graphic illustrations of the workdays lost by week and percentage of total workdays lost to influenza-related illnesses. It is available at www.cdc.gov/flu/tools/fluworkloss/.

Absenteeism among the regular workforce may necessitate that EMS agencies consider temporary hiring of new personnel, such as retired or currently unemployed but qualified volunteer providers within the community and State and reserve military medical and nursing providers and other responders, as well as an expanded group of providers, such as veterinarians, dentists and dental auxiliary providers, pharmacists, and health professional students.

In considering the best way to address workforce shortages during pandemic influenza, State and local EMS planners also should consider the potential for:

- Modifying State certification and licensing requirements to allow out-of-State providers to practice on a temporary basis.
- Modifying State regulations on a temporary basis to broaden scope of practice standards among various trained providers.
- Reallocating providers from non-emergency care and non-emergency sites to emergency response assignments and from unaffected regions to affected regions (this will involve identifying skill sets of each practitioner group [e.g., paramedics, nurse midwives, etc.], so as to optimize reassignment potential).
- Creating and training a pool of non-medical responders to support health and medical care operations.
- Making adequate provisions to protect providers (and their families) who serve in mass casualty event situations to ensure their willingness to respond.
- Developing systems for the advance registration and credentialing of clinicians to augment health care personnel needs during a mass casualty event.

Pandemic influenza planners must determine which, if any, of these staffing contingencies might be appropriate in their service area and under what conditions. Decisions should be made under the supervision of the EMS Medical Director and in conjunction with State and local laws governing scope of practice, licensing and certification.

- **Training**

Testing, training and exercising of COOP capabilities are essential to assessing, demonstrating and improving the ability of organizations to execute their COOP plans and programs during an emergency. Pandemic influenza COOP plans should test, train, and exercise sustainable social distancing techniques that reduce person-to-person interactions within the workplace. [Refer to Chapter IV for additional guidance on just-in-time EMS training.]

- **Devolution**

Devolution is the capability to transfer authority and responsibility for essential functions from an organization's primary operating staff and facilities, to other employees and facilities, and to sustain operational capability under devolved authority for an extended

period. Because local outbreaks will occur at different times, have variable durations, and may vary in their severity, devolution planning may need to consider rotating operations between regional/field offices as a pandemic wave moves throughout the United States.

- **Reconstitution**

Reconstitution is the process by which an organization resumes normal operations. The objective during recovery and reconstitution after a pandemic is to expedite the return of normal services and operations as quickly as possible. Since a pandemic will not harm the physical infrastructure or facilities of an organization, and because long-term contamination of facilities is not a concern, the primary challenge for organizations after a pandemic will be the return to normal and bringing their systems back to full capacity.

Logistics and Supplies

Although logistics and supply management are not part of the COOP recommendations in the *Implementation Plan*, EMS agencies should make arrangements to ensure an adequate supply chain for equipment and supplies during pandemic influenza.

Just-in-time inventory practices typical in many EMS agencies make healthcare operations particularly vulnerable to supply shortages during pandemic influenza. “The very rules of capitalism that make the US an ultra-efficient marketplace also make it exceptionally vulnerable in a pandemic,” according to *The Wall Street Journal*.

Toronto EMS faced shortages of N-95 respirators during the SARS outbreak, and as a result is looking into stockpiling three months worth of medical supplies to prepare for pandemic influenza, according to *Best Practices in Emergency Services*.⁹⁶ Toronto EMS also has already put paper PPE on all its ambulances as well as outfitted each of its medics with their own fitted N-95 respirators and nitrile gloves.

The *National Strategy for Pandemic Influenza: Implementation Plan* confirms that EMS agencies must plan for material management in their pandemic influenza plans. It states, “Healthcare facilities typically maintain limited inventories of supplies on-site and depend on just-in-time restocking programs. Replenishment of critical inventories is thus dependent upon an intact supply chain from manufacturing and distribution to transportation and receiving. During a pandemic there would be an increased demand for both consumable and durable resources. ... Competition for these resources at a time of increased demand could result in critical shortages.”

Examples of Supplies and Equipment that May Be Scarce during Pandemic Influenza

- Consumable resources
- Hand hygiene supplies (antimicrobial soap and alcohol-based, waterless hand hygiene products)
- Disposable N95 respirators, surgical masks and procedure masks
- Face shields (disposable or reusable)

⁹⁶ Simon Ostrow L. 2006 Pandemic Flu: Are You Ready?" *Best Practices in Emergency Services*, 9(5), 54-55.

- Gowns
- Gloves
- Facial tissues
- Central line kits
- Morgue packs
- Ventilators
- Respiratory care equipment
- IV pumps

Manufacturers and suppliers are likely to report inventory shortages because of the massive simultaneity of need and supply chains may also be disrupted by the effects of a pandemic on critical personnel. EMS agencies should make provision for these considerations in their planning efforts and consider stockpiling critical medical materiel individually or collaborating with other facilities to develop local or regional stockpiles maintained under vendor managed inventory systems.

Financial Continuity

Financial continuity is another area that is absent from the Federal COOP elements, but one which is important for State and local EMS planners to address. Preparing for and providing health and medical care during pandemic influenza could result in large financial losses for all involved organizations, if issues surrounding the financing of such preparation and care are not addressed.

One potential source of disaster relief is the Stafford Act⁹⁷ (Public Law 93-288). However, financing from the Federal Government must be supplemented by funds from other public as well as private organizations.

In preparing a comprehensive plan, State and local EMS planners should include financial management experts from the participating organizations, such as hospital systems. In addition, formal mutual aid agreements or other contracts should be developed in advance to document relationships, expectations and requirements related to obtaining emergency reimbursements.

On the patient side, issues of financial access, such as requiring proof of insurance, apply. This concern is closely related to legal issues of documentation for reimbursement. It is not likely that providers will be able to maintain documentation practices beyond what is considered minimally adequate to support treatment; altered standards of documentation for reimbursement purposes may have to be defined.

The *National Strategy for Pandemic Influenza: Implementation Plan* addresses healthcare reimbursement when it states that more than one in four Americans receive health care coverage through Medicare, Medicaid, the State Children's Health Insurance Program (SCHIP), the Veterans Health Administration, TRICARE, or other Federal programs. Ensuring access to, and timely payment for, covered services during a pandemic will be

⁹⁷ Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by Public Law 93-288, June, 2006.

critical to maintaining a functional health care infrastructure. It may also be necessary to extend certain waivers or develop incident-specific initiatives or coverage to facilitate access to care.

However, the document cautions: “Pandemic influenza response activities may exceed the budgetary resources of responding Federal and State government agencies, requiring compensatory legislative action.”

EMS planners will need to consider the cash flow and financial wherewithal to sustain operations for several months without adequate Federal or local reimbursement.

Appendix O - Special Needs Patients

It is essential that plans for the delivery of health and medical care during pandemic influenza address caring for populations with special healthcare needs. These needs may vary from providing for alternate means of decontamination for babies and other non-ambulatory persons, to having translators available, to providing mental health assessment resources within the healthcare setting. Involving organizations and services designed to serve groups with special needs under normal conditions may be a successful approach.

Populations recognized as having special needs in a mass casualty event include but may not be limited to the following:

Children. The unique physiology and wide variation in physical and cognitive development by age within childhood requires that triage personnel be trained in pediatric triage standards and other pediatric assessment protocols; family care and adult care be available; appropriately-sized supplies, equipment, and medication doses be available; and safe use of decontamination procedures be ensured. Provisions for treating children whose parents are not present and for treating parents who will not leave their children are important considerations.

Persons with physical or cognitive disabilities. As under normal standards of care, provisions to accommodate the special disability-related needs of some persons are important aspects of the organization of care. These are likely to include issues of alternative and safe decontamination procedures, enhanced communication and issues involving informed consent.

Persons with preexisting mental health and/or substance abuse problems. Preexisting mental health and substance abuse conditions are known to exacerbate an individual's ability to cope with physical and emotional trauma. Provisions should be made for screening and direction to appropriate services as part of triage or other assessment protocols.

Frail or immunocompromised adults and children. Individuals in these groups who are victims may require adjustments in treatment regimens and special monitoring, but these adjustments will be made within the context of any overriding goal to maximize lives saved.

Persons with limited English proficiency. Local and regional planning may have to take into account the need for communication tools in languages other than English. Although printed materials of a general nature may be prepared in advance, printed materials and signs will not be an adequate response for those who cannot read any language. An additional challenge may be present if undocumented individuals fear discovery and reprisal if they come forward for health care in a mass casualty event. Involvement of

formal and informal networks, organizations, and media outlets that serve persons with limited English proficiency is essential.

Low socio-economic families. This population may provide a unique challenge to pandemic influenza planners because many hourly wage workers do not have the option of sick leave (should closing of schools be implemented) and many children depend on school as their main source for food and nutrition. Coordination with youth and social service agencies is important so that EMS workers are not confronted with underage children being left unattended without supervision and/or proper nutrition.

Appendix P – Other Legal and Regulatory Issues

The *National Strategy for Pandemic Influenza: Implementation Plan* discusses the waiver and modification of certain legal requirements during pandemic influenza. It asserts, “Depending on the severity of a pandemic, certain requirements may be waived or revised to facilitate efficient delivery of health care services.”

For example, the plan acknowledges that certain Emergency Medical Treatment and Active Labor Act (EMTALA), Medicare, Medicaid, State Children’s Health Insurance Program (SCHIP), and Health Insurance Portability and Accountability Act (HIPAA) requirements may be waived following a declaration of a public health emergency by the Secretary of HHS and a Presidential declaration of a major disaster or emergency.

Some of the Federal, State and local laws and regulations that govern the delivery of health and medical care under normal conditions may need to be modified. These include laws to ensure access to emergency medical care; protect patient privacy and confidentiality of medical information; shield medical providers and other rescuers from lawsuits; govern the development and use of health and medical facilities; and regulate the number of hours health and medical providers can work as well as the conditions in which they work. Relevant laws include but are not limited to the following:

- Emergency Medical Treatment and Active Labor Act (EMTALA)
- Health Insurance Portability and Accountability Act (HIPAA)
- Federal Volunteer Protection Act
- Good Samaritan Law.

Additional types of laws and regulations that relate to the delivery of health and medical care include:

- Occupational Safety and Health Administration and other workplace regulations
- Building codes and other facility standards
- Publicly funded health insurance laws (including Medicare, Medicaid, and the State Children’s Health Insurance Program)
- Laws pertaining to human subject research
- Laws and regulations governing the use and licensure of drugs and devices.

In developing a comprehensive plan for the delivery of health and medical care during pandemic influenza, it is also important to consider mechanisms to allow for legal, regulatory, or accreditation adjustments in the following areas:

- **Liability of providers and institutions for care provided under stress with less than a full complement of resources.** The plan may have to provide for hold harmless agreements or grant immunity from civil or criminal liability under certain conditions.
- **Certification and licensing.** Although it is important to ensure that providers are qualified, it is also important to have flexibility in granting temporary certification

or licenses for EMS personnel and others who are inactive, retired or certified or licensed in other States.

- **Scope of practice.** It may be necessary to grant permission to certain professionals on a temporary and emergency basis to function outside their legal scope of practice or above their level of training. The National EMS Scope of Practice Model and EMS stakeholders, however, stress the need for appropriate education, medical oversight and quality assurance of EMS providers, even during an emergency, to help assure patient safety.
- **Institutional autonomy.** If organizations and institutions cede their authority in order to participate in a unified incident management system in a crisis, the plan may have to address the legal implications for those organizations.
- **Facility standards.** Standards of care that pertain to space, equipment, and physical facilities may have to be altered in both traditional medical care facilities and alternate care sites that are created in response to the event.
- **Patient privacy and confidentiality.** Provisions of HIPAA and other laws and regulations that require signed releases and other measures to ensure privacy and confidentiality of a patient's medical information may have to be altered.
- **Documentation of care.** Minimally accepted levels of documentation of care provided to an individual may have to be established, both for purposes of patient care quality and as the basis for reimbursement from third-party payers.
- **Property seizures.** Provisions may have to be made to take over property, including facilities, supplies, and equipment for the delivery of care or to destroy property deemed unsafe.
- **Provisions for quarantine or mass immunization.** The plan may have to address the establishment and enforcement of isolation, quarantine and mass immunization and provisions for release or exception.

Any waivers granted are likely to be targeted to the affected area for a temporary and specified period of time and scope. In the case of a mass casualty event such as pandemic influenza that involves a communicable agent that moves from region to region, it will be important to have flexibility to extend or expand such waivers.

Appendix Q – OSHA Guidance

(Excepted from Occupational Safety and Health Administration. *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers*. For updated information go to www.osha.gov)

Pre-Hospital Care and Patient Transport outside Healthcare Facilities

During an influenza pandemic, patients will still require emergency transport to a healthcare facility. The following recommendations are designed to protect healthcare workers, including emergency medical services personnel, during pre-hospital care and transport. These recommendations can be instituted when patients are identified as having symptoms consistent with an influenza-like illness or routinely, regardless of symptoms, when pandemic influenza is in the community.

	<p>Screen all patients for influenza-like illness.* If influenza is suspected, implement the following strategies:</p>	<p>Without relying on patient screening, routinely implement the following strategies:</p>
Engineering Controls	<ul style="list-style-type: none"> Optimize the vehicle’s ventilation to increase the volume of air exchange during transport. The vehicle's ventilation system should be operated in the non-recirculating mode and should bring in as much outdoor air as possible. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area. In this situation, drivers do not require particulate respirators. 	<ul style="list-style-type: none"> Optimize the vehicle’s ventilation to increase the volume of air exchange during transport. The vehicle's ventilation system should be operated in the non-recirculating mode and should bring in as much outdoor air as possible. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area. In this situation, drivers do not require particulate respirators.
Administrative Controls	<ul style="list-style-type: none"> Educate healthcare workers engaged in medical transport about the risks of aerosol-generating procedures. Notify the receiving facility as soon as possible, prior to arrival, that a patient with suspected pandemic influenza infection is being transported to the facility and of the precautions that are indicated. Minimize the opportunity for contamination of supplies and equipment inside the vehicle (e.g. ensure that all cabinetry remains closed during transport.). Continue to follow standard infection control procedures, such as standard precautions, recommended procedures for waste disposal and standard practices for disinfection of the emergency vehicle and patient care equipment. 	<ul style="list-style-type: none"> Educate healthcare workers engaged in medical transport about the risks of aerosol-generating procedures. Notify the receiving facility as soon as possible, prior to arrival, that a patient with suspected pandemic influenza infection is being transported to the facility and of the precautions that are indicated. Minimize the opportunity for contamination of supplies and equipment inside the vehicle (e.g. ensure that all cabinetry remains closed during transport.). Continue to follow standard infection control procedures, such as standard precautions, recommended procedures for waste disposal and standard practices for disinfection of the emergency vehicle and patient care equipment.
Personal Protective Equipment	<ul style="list-style-type: none"> If tolerated by the patients, place a surgical mask on all patients with respiratory illness to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, or is difficult for the patient to wear), have the patient cover the mouth and nose with a tissue when coughing, or use the most practical alternative to contain respiratory secretions. Healthcare workers transporting patients with influenza-like illness should use a respirator (N-95 or better). If respirators are not available, healthcare workers should wear a surgical mask. 	<ul style="list-style-type: none"> Consider routine use of surgical or procedure masks for all patients during transport when pandemic influenza is in the community. Healthcare workers transporting patients should use a respirator (N-95 or better). If respirators are not available, healthcare workers should wear a surgical mask.

*The Sentinel Provider Network definition of influenza-like illness is fever (>100°F or 37.8°C) and sore throat and/or cough in the absence of a known cause other than influenza.

Appendix R – Suggested 9-1-1 & EMS Activities/Readiness Steps Based on Different Phases of Pandemic Influenza

Pandemic Phase (Based on WHO)	Public Safety Answering Point (PSAP) Administrative Response	EMS Administrative Response	Interactions With Other Agencies
<p>Phase 3: Human infection(s) with a new subtype but no human-to-human spread, or at most rare instances of spread to a close contact.</p> <p>(The mindset should be focused on IF pandemic influenza comes to your area.</p> <p>In general, build good habits.)</p>	<ul style="list-style-type: none"> • Surveillance mode • Plan how PSAP can help local public health (PH) officials, Emergency Medical Services (EMS), and the Emergency Management Agency (EMA) monitor and prepare for a pandemic influenza • Plan for graded responses to Phase 4-6 as detailed below • Monitor the CDC and local public health information on a monthly basis to follow the course of current infections • Plan for scripting/protocol development and agency response in the event of evolution and transmission of the infection to your area • Plan for resource protection of assets in your jurisdiction • Staff education on pandemic influenza • Plan infection control and in the center • Plan for security and isolation for the center • Plan for facility quarantine and staging/transportation of ill employees • Plan for family support of PSAP staff • Inventory operational supplies and ensure adequate sources • Do table top exercises to test your assumptions focusing on decision-making and command structure (community wide) • Identify alternative work force options (retirees, past employees, other government employee groups) • Education on signs and symptoms of mental stress • Look at next generation technology to allow for remote communications 	<ul style="list-style-type: none"> • Surveillance mode • Plan how EMS can help local public health (PH) officials, Public Safety Answering Points (PSAP), and the Emergency Management Agency (EMA) monitor and prepare for a pandemic influenza • Complete CDC Emergency Medical Services and Non-Emergency Medical Operations Check List available at www.pandemicflu.gov • Educate staff on pandemic influenza • Develop a comprehensive <u>staged response</u> considering the following: <ul style="list-style-type: none"> Continuity of operations (COOP) when 40-60% of staff are ill or exposed—e.g alternate and/or flexible staffing plans • Supply chain disruption including identification of necessary supplies, purchase, storage and distribution • Housing, food and water etc for staff who must remain close to work • Develop plan for infection control • Develop plan for employee screening • Develop security plan • Develop protocols that address system needs related to fatality management • Plan and develop protocols for assessment, triage and transport with medical control with consideration to alternative care sites and modified response and treatment protocols for all patients including those with pandemic influenza • Participate in planning with EMS, public health officials and EMA for pandemic influenza • Work with community leadership to develop plans for medical call centers and/or 	<ul style="list-style-type: none"> • Local PH, PSAP, EMS, EMA to plan for when you will begin active surveillance for pandemic influenza patients • PSAP and EMS agency medical directors contact with local PH officials (discussions should center about if a pandemic influenza infection might occur in your area) • Law enforcement to discuss resource protection • Identify who is responsible for local hospitals to plan for patient overloads, minimal or no-responses to requests for service, alternative care sites, etc. PSAP needs to be informed. • Engage all suppliers and ensure they are planning for pandemic influenza • Engage with the organizations that are responsible for updating your dispatch or field protocols • Local Medical Examiner, PH, PSAP, and EMA to plan for handling potential surge of fatalities

<p>Phase 3: (continued)</p>		<p>211 non-medical public information points</p> <ul style="list-style-type: none"> • Educate staff on prevention techniques • Develop security plan for facility, vehicles, and personnel • Participate in quarantine discussions with public health authorities-both for the public and for healthcare personnel who are exposed. Also, develop freedom of travel arrangements during restricted travel planning times • PPE level training and stockpile equipment • Plan for alternate supply lines during pandemic—"Just in time" supply lines may not be functional. Where will you get replacement supplies? • Mutual aid agreements—what will they (and you) honor? • Discuss with State leaders their resources in a pandemic and if there will be any help available from the State for you. Also, what are you expected to supply? • Plan for vaccination and/or prophylaxis of personnel and their families • Plan for supplying food/medicines/other needs of personnel who are quarantined • "Just in time" training program development • Discuss the coordination of public information planning program—what and how are you going to tell the public when you are forced to curtail services? • Develop a plan to ensure consistent messages from public health officials, EMS, PSAPs with media coordination through the regional ICS system • Patient tracking system in conjunction with PSAPs, public health officials, hospitals, Red Cross, etc. How are you going to track the patients? • Interoperable communications plan • Plan to modify operations according to level of severity of the pandemic • Fatality management • Continuity of operations planning (COOP) • Protocol development for field assessment and treatment based on latest information 	
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<p>Phase 3: (continued)</p>		<p>available from the CDC</p> <ul style="list-style-type: none"> • Consider develop of plans for alternative transportation • Participate in planning or be aware of planning for alternate destinations • Consider protocols for non-transport • Develop a plan with PSAP for coordination of information to the field providers to address infection control related to pandemic influenza • Develop the working relationship with your local public health agencies/personnel • Revise transfer agreements and transfer protocols with health care (including skilled nursing and long term care) facilities and hospitals which reflect modified procedures to be used during a pandemic • Coordinate suggested referral policies or agreements with local home health agencies 	
<p>Phase 4: Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.</p> <p>(The mind set is WHEN it will happen, not if. PSAPs have to prepare for worst scenario.)</p>	<ul style="list-style-type: none"> • Increased surveillance mode • Determine if there are any local EMS/public health surveillance tools used within their jurisdictions • Heightened awareness of the need to identify potential patients, protect the healthcare workforce, and to serve as another surveillance tool in the PH arsenal • Training staff to ask relevant questions should Phase 5 occur • Decision regarding how public information will be handled through the PSAP • Ensure information/communication tools and methods of information in and out are consistent, reliable and up-to-date • Begin modified isolation procedures • Implement infection control measures • Full scale drills (include elected officials) 	<ul style="list-style-type: none"> • Anticipate need for expedited review and approval of treatment protocols with just-in-time training based on case definition of the influenza patient • Need to participate and plan for alternate destinations/transportation modes • Engage with elected officials to plan executive orders that support PSAP and EMS needs during a pandemic • Reevaluate training needs for personnel on infection control and community mitigation efforts • Ensure medical countermeasures have been made available and/or administered to personnel per OSHA standards • Real-time supply monitoring to ensure that excess respirators are not held in reserve while healthcare personnel are conducting activities for which they would otherwise be provided respiratory protection • Decision guidance for determining respirator wear should consider factors such as duration, frequency, proximity and degree of contact with the patient • Begin modified isolation procedures 	<ul style="list-style-type: none"> • Local PH, PSAP, EMS, EMA planners (discussion should center on when a pandemic influenza infection might occur in your area) • More detailed discussions as detailed above in Phase 3 • Agree with EMS and health leadership and other EMS/public safety responders what your protocol will be to notify responders that a potentially infected patient has called for help, what infection control measures they will use, and the protocol that all will follow in this instance • Engage mental health partners in your community to address post traumatic stress syndrome

<p>Phase 4 : (continued)</p>		<ul style="list-style-type: none"> • Are food and essential supplies available in stations to minimize the need for personnel to “shop” while on duty? • Plan with community agencies to support families of EMS personnel who may be quarantined and/or isolated due to exposure • Implement local plans on fatality management • Anticipate increased illness and absenteeism and implement flexible/alternate staffing plans to augment workforce • Diversion protocols may need to be suspended or modified to reflect facilities that are or are not receiving influenza patients 	
<p>Phase 5: Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans but may not yet be fully transmissible (substantial pandemic risk).</p> <p>(Mind set: Implement aggressive infection control measures.)</p>	<ul style="list-style-type: none"> • Local surveillance mode should be at highest level • Caller questions modified as agreed by EMS medical direction and local public health authorities • Identify means to notify local EDs of a potentially infected patient • Monitor the CDC and the local PH sites every day • Preparation for providing public information—coordinate with (PIO) incident command structure to ensure appropriate public expectations of PSAP are appropriate • Coordinate plans of alternative care sites (when the public calls, what are you going to tell them?) • (No drills) • Aggressive infection control procedures put in place 	<ul style="list-style-type: none"> • Evaluate need for implementation of first level of plan • Local surveillance mode should be at highest level • Identify means to notify local EDs of a potentially infected patient • Monitor the CDC and the local PH sites every 4-7 days • Preparation for providing public information—coordinate with (PIO) incident command structure to ensure appropriate public expectations of PSAP are appropriate • Coordinate plans of alternative care sites • Aggressive infection control procedures put in place • Evaluate appropriateness of clinical procedures that increase the risk of dissemination of droplets or sputum • “Just in time” training program implemented 	<ul style="list-style-type: none"> • Discussion should center on when a pandemic influenza infection might occur in your area • Preparations for the first infected cases in your area should be almost complete • PSAP, EMS, PH and EMA discussions should occur regularly with Regional PSAP and EMS managers, elected officials, and law enforcement

<p>Phase 6: Pandemic: increased and sustained transmission in general population.</p>	<ul style="list-style-type: none"> Continued monitoring of influenza cases Caller questions and scripting should abandon the surveillance questions and shift to disaster scripting appropriate for local responses Daily CDC and PH monitoring Provide public information consistent with the local PH, EMS, and EMA message Work with mental health professionals to deal with critical incident stress Work with incident command structure to determine plans for hospital resources, alternative care centers and fatality management 	<ul style="list-style-type: none"> Maintain close contact with public health leadership to facilitate activation of plan and communication to field providers Daily CDC and PH monitoring Implementation of modified triage and treatment protocols as needed Implementation of modified staffing plans as needed Monitor equipment and supply inventories closely Provide public information consistent with the local PH, PSAP, and EMA message Work with mental health professionals to deal with critical incident stress Work with incident command structure to determine plans for hospital resources, alternative care centers and fatality management 	<ul style="list-style-type: none"> EOC and EMA activation probable PSAP, EMS, PH, EMA interaction several times per day Hospital or alternative care site coordinators can assist in destination decisions and facilitate bed exchange capabilities Regional PSAP and EMS managers are essential contacts within the incident command system Equipment and supply vendors who may be able to re-allocate supply assets to areas of greatest need
<p>Phase 6: (Recovery)</p>	<ul style="list-style-type: none"> After action reports and evaluation (completed within two week period to prepare for next wave.) Planning for the next phase Prepare for continuing challenges with stress and mental health Re-engage surveillance mode 	<ul style="list-style-type: none"> After action reports and evaluation (completed within two week period to prepare for next wave.) Ongoing communication with social support networks to help address personnel and family recovery needs Establish re-supply lines and reorder inventory 	<ul style="list-style-type: none"> Look externally to involve after action reports for entire community, involving PSAP, EMS, EM, PH, PIO and elected officials

Appendix S – Participating Organizations and Representatives

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National Stakeholders Group

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 American Academy of Pediatrics
 American Ambulance Association
 American College of Emergency Physicians
 American College of Emergency Physicians
 American College of Surgeons
 American Public Health Association
 Association of Air Medical Services
 Association of Public Safety Communications Officials
 Association of State and Territorial Health Officials
 Emergency Nurses Association
 International Association of Emergency Managers
 International Association of Fire Chiefs
 International Association of Fire Chiefs
 International Association of Fire Chiefs
 International Association of Fire Fighters
 International Association of Fire Fighters
 International Association of Flight Paramedics
 National Academy of Emergency Dispatch
 National Association of State 9-1-1 Administrators
 National Association of EMS Educators
 National Association of EMS Educators
 National Association of EMS Physicians
 National Association of EMS Physicians
 National Association of EMTs
 National Association of EMTs
 National Association of State EMS Officials
 National Association of State EMS Officials
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