

Preparing for Pandemic Influenza: Recommendations for Protocol Development for 9-1-1 Personnel and Public Safety Answering Points (PSAPs)

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**Task 6.1.4.2
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.

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

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].

Transportation, Department of Justice and others. The stakeholders provided input throughout the 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 J.

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 µm 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 may also occur

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]

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.

New information continues to emerge about the threat of an influenza pandemic and may be found online at www.pandemicflu.gov.

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]

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 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 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

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 Appendix E-1a). In Figure 4, 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.

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 Appendix E and E-1b.)

CDC has created the Pandemic Severity Index (Appendix F) 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.

Federal Disease Containment Strategies

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

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

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/commmitigation.html> [21 March 2007]

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].

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 shown in Appendix E-1c 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.

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:

- **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.

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/commmitigation.html> [21 March 2007]

CDC recommends a strategy that initiates these measures based on the severity of pandemic influenza as defined in the Pandemic Severity Index (Appendix F).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*:

- 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.

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/commmitigation.html> [21 March 2007]

- 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.

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].

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 Appendix B. 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.

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].

Section 1 – Guiding Principles for Public Safety Answering Points (PSAPs)

*Objective: To establish the basic tenets for creating plans and protocols that involve **Primary and Secondary Public Safety Answering Points (PSAPs)**, where 9-1-1 calls from the public are routed. While our primary audience for these principles are State 9-1-1 and EMS administrators, PSAP managers and 9-1-1 stakeholders, it is also intended to be read by other local, State and Federal officials in public health, EMS, public safety, emergency management and homeland security.*

1. The Role of 9-1-1 Public safety telecommunicators (also referred to as call-takers or **emergency medical dispatchers**) are called the “first, first responder” because they are typically trained to give critical and often lifesaving instructions over the phone. They obtain important information for the EMS providers they dispatch to the scene, helping to appropriately allocate resources and provide scene safety. The public relies on their 9-1-1 service for help and have been trained to call 9-1-1 when they need assistance. The 9-1-1 system is frequently the caller’s first point of contact with the health care system, and often the only point of contact. The public safety telecommunicators who take these calls must have accurate, up-to-date information to be effective in call taking, dispatching and relaying information to the public.

2. Overall Planning Must be Coordinated with 9-1-1 9-1-1 stakeholders must be integrated into the incident command structure and in State planning, and be fully engaged as a collaborative partner in the response to pandemic influenza. To work effectively in mitigating the impact of pandemic influenza, 9-1-1 and EMS must work collaboratively, and their planning must be coordinated together, along with other entities representing public safety, public health, health care, emergency management, and Indian Health Services.

3. “Just-in-Time” Training and Education The PSAP’s response to pandemic influenza should be flexible, scalable, dynamic, and timely with the ability to change rapidly based on new information about the virus. The ability to be flexible and quickly respond allow for protocols and algorithms to be updated readily and rapidly as more current information is obtained about the virus. A method must be in place to quickly educate call-takers and other PSAP personnel on the updated information so it can improve dispatch and provide the public with current, accurate information. In this context, **“just-in-time” training** and education refers to the timely provision of information and instructions as they become available, and when users need them.

4. Using 9-1-1 Data for Surveillance **Surveillance** and early detection of pandemic influenza has been identified as one of three “pillars” of readiness in the National Strategy for Pandemic Influenza. Surveillance for pandemic influenza has also been identified as an issue of safety for first responders by 9-1-1 and EMS stakeholder groups. PSAPs are an important, but often overlooked, source of reliable, real-time data that may aid surveillance efforts and may assist in early detection. 9-1-1 data has additional advantages of being automated, able to be aggregated across multiple jurisdictions, and able to have precise patient location information. To take advantage of this, PSAPs should use standardized **9-1-1 protocols** that capture symptoms specific to the pandemic along with other possible indicators (such as recent travel to affected

areas) that can assist in this process. The use of these protocols will be triggered by either local, State or regional declarations, depending on the specific circumstances of each jurisdiction and the application of the Incident Command System as a part of the National Incident Management System NIMS. (See Appendix B for information about NIMS and Appendix C for more information about how 9-1-1 and EMS data can be standardized, collected regionally, and analyzed against historical trends for early detection and situational awareness.)

5. Consistent with National Incident Management System 9-1-1 personnel should be trained in incident command per the requirements of the National Incident Management System (NIMS). As noted before, all pandemic influenza response activities should be conducted within an incident command system and be consistent with NIMS. 9-1-1 should be fully integrated into the incident command structure

6. Continuity of Operations Planning Pandemic influenza planning should focus both on what may be the same, as well as what is *different* about this type of emergency that will require a response unlike that needed for other hazards the jurisdiction may have planned for in the past. Continuity of Operations (COOP) plans should already be in place, but the nature of a pandemic will test system resources because mutual aid may not be available, as neighboring communities will be coping with similar problems. Many of the suggested actions in this report can be incorporated into daily operations and become a *routine* part of 9-1-1 activities.

7. 9-1-1 is Part of the Critical Infrastructure When planning their response to pandemic influenza, agencies should incorporate recommendations of the Department of Homeland Security *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*, published Sep 19, 2006. 9-1-1 personnel, and the technical staff who support them, should be considered in priority planning for vaccinations. In addition, the CDC publication: *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Non-pharmaceutical Interventions*, should provide guidance to communities as they work to mitigate the effects of a pandemic rather than focusing solely on the response.

8. Infection Control Procedures Need to Be Implemented Infection control measures and industrial hygiene practices should be followed by all PSAP personnel and should be a standard part of daily practices, as well as reinforced with continuing education. Infection control procedures in the PSAP need to be in place well before a pandemic strikes. Appendix I will contain the Occupational Safety and Health Administration's *Pandemic Influenza Preparedness and Response Guidance for Healthcare Workers and Healthcare Employers* which is pending publication. Appendix D contains examples of infection control procedures and industrial hygiene practices.

9. Exercises and Drills are Critical In addition to drills specific to the functioning of PSAPs, community-wide exercises and drills are critical to demonstrating the readiness for pandemic influenza. 9-1-1 stakeholders, as a fundamental component of emergency response, should be included in community drills, along with elected officials. It is critical that PSAP line and staff personnel participate, and that questions of authority and responsibility be tested in these simulations. Readiness plans should be updated based on the after-action reports. Historically

pandemic influenza events occurred in waves, meaning we can learn from the initial response to better plan for future waves.

10. Plans Must Take Into Account and Be Consistent with Recognized Phases and Severity Index of Pandemic Influenza Plans and activities within PSAPs should generally be consistent with the phases of pandemic influenza as defined by both the World Health Organization (WHO) and the U.S. Federal Government’s Response Stages. (See Appendix E for information about the phases.) It is recognized that local jurisdictions will need to modify and adapt these recommendations based on their individual circumstances. (Figure 4 provides a matrix of suggested 9-1-1 and EMS activities/readiness steps based on the WHO phases of pandemic influenza.)

In addition to the WHO phases and the corresponding stages of the U.S. Federal Government response to pandemic influenza, the Centers for Disease Control and Prevention has created a Pandemic Severity Index (See Appendix F), 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 to allow better forecasting of the impact of a pandemic and to enable recommendations to be made on the use of mitigation interventions that are matched to the severity of future influenza pandemics. Future 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.

11. Effective Use of Limited Resources In general, EMS and public safety resources available to the public will be limited during a pandemic. There will be fewer public safety telecommunicators to take calls, and they cannot effectively be replaced with clerical staff without training or experience in the PSAP. Quickly identifying non-urgent calls, and alternative ways of assisting them, will be critical in managing this situation. PSAPs should use call-taking protocols that provide for specific influenza-symptom monitoring, triage and priority dispatch of EMS and public safety resources. The proper legal and medical authority, in coordination with the *emergency medical services system*, should be predetermined in the planning process. Many agencies use algorithmic or formalized structured systems called EMD (Emergency Medical Dispatch) which their public safety telecommunicators use to gather valuable patient information, categorize patients, as well as to give instructions to callers. Implementation of EMD should be with the oversight of an EMS medical director. (For information about the elements of an Emergency Medical Dispatch system see Appendix G.)

12. Special Needs Communities Plans should take into account specific accommodations and considerations for those with special-needs, for example plans should address those with mental health needs and persons with limited English proficiency as well as being accommodating for children, the elderly, and individuals with disabilities. This also includes the group of patients who routinely receive home health care. This service may be interrupted and special needs patients may need to be directed to other resources by 9-1-1.

Section 2 – Provision of Information to the Public

Objective: The public has been trained to call 9-1-1 when help is needed, whether the problem is small or large, urgent or not. The PSAP is a trusted source of information for the public and will be inundated with calls for help during a pandemic. Plans need to ensure that PSAPs have current, factual information regarding the events affecting their communities, that they have resources to update that information as changes arise, and that they can effectively communicate that information to the public.

2a. Contacting the Incident Commander and Key Groups

The PSAP director should be in contact with the Incident Commander (in accordance with the Incident Command System, as a part of the National Incident Management System), to facilitate the flow of information, both to and from all relevant groups, including the following:

- Public information officer from the agency acting as Command
- County or District Public Health Officer
- EMS Medical Director(s) or designee(s)
- Local Emergency Management Agency or Emergency Operations Center
- State Emergency Management Agency or Emergency Operations Center
- Local Fire/EMS/Law Enforcement
- Private Ambulance Companies
- Local Hospitals
- Any other agency deemed appropriate (State Police, local shelters)

Routine contact with these groups should occur under the authorization of the Incident Commander, in keeping with the Incident Command System, in order to report data and status from the PSAP and to post information for call taker and dispatcher review.

Examples of information to be recorded:

- Status and scope of the emergency
- Recommendations for pre-arrival assistance
- Resources other than 9-1-1 for assistance
- Current availability of EMS, Fire, Police
- Current bed availability in local hospitals

2b. Post-dispatch Instructions

Protocols may allow for expanded post-dispatch instructions for special care of infected patients, and may change depending on the phase of the influenza. The following should be considered in this context:

- Advise caller that no ambulance transport is available or may be delayed because requests for assistance have exceeded system overcapacity
- As may be appropriate to support community mitigation strategies, provide instructions for isolation of ill patients and quarantine of exposed family members (don't send children to school, don't go shopping, etc)
- Advise caller of locally designated patient collection and treatment points
- Utilize secondary triage when available
- Advise caller of preparatory steps for next wave

2c. Consistency of Information

In the event of pandemic influenza, the PSAP will be a primary source of information for those who are accustomed to call 9-1-1 for their perceived emergencies, whether urgent or not. 9-1-1 officials need to be included in local and State information distributions and briefings to ensure consistency of information is provided to the media and to the public.

2d. Special Needs Community

For many in the Special Needs Community, or for those who speak a foreign language, 9-1-1 might be a primary source of information (such as through translation services and access to TTY) PSAPs need to be prepared to assist these groups.

2e. Working with the Media

Adherence to NIMS, and working through the Public Information Officer (PIO) designated by the Incident Commander, will provide consistent messages for the media. The PIO needs to alert the PSAP in advance of any notices to the public to ensure information given to callers is consistent.

2f. Working with the CDC and Local Public Health Offices

Official information for the public on the pandemic will be developed through local public health offices based on information provided to them by Centers for Disease Control and Prevention (CDC). The local public health office will be the official reference point for information that PSAPs will use when providing information to the public. PSAPs should plan on frequent updates of information. Resources available to the PSAP and the local public health office include the Public Health Information Network (PHIN), an initiative of the CDC. One goal of PHIN is to enable real-time data flow, computer assisted analysis, decision support, professional collaboration, and rapid dissemination of information to the public health service, 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.

2g. Included in Planning for Closures

PSAPs need to be included in the planning and notification for the closing of schools, government, or industry, so that information provided to callers is consistent.

2h. Emergency Alert Systems

The use and coordination of automated emergency alerts to the public, in the form pre-recorded phone messages and through other media, should be considered in the overall strategy for delivering information to the public.

Section 3 – Facilitation of Call Screening

Objective: For purposes of monitoring, surveillance, treatment and the potential of contamination and quarantine, during the influenza pandemic period it will be important for the PSAP to be able to identify callers who are likely afflicted by the pandemic influenza virus and to assign the appropriate resource to help them. This resource may not be a responding EMS unit, but an alternative source of care, such as a nurse assist line or other health care call line.

3a. Automated Data Gathering & Surveillance

Protocols allow for automated data gathering and data packaging of specific symptoms for purposes of real-time analysis to identify geographic and temporal clusters of symptoms and patients. Data for each case will include, at a minimum, the patient's chief complaint, specific influenza-like symptoms established for the pandemic, time of case (time of origination of call), and street address or latitude/longitude of call. The collection of this information will allow more effective utilization of limited EMS resources and timely dispatch for patients requiring ambulance service. The PSAP will establish and maintain policies and procedures for sharing these data with State and local public health authorities, especially in regards to the legal requirements for sharing such data.

Most health surveillance efforts are not focused on specific patients, but are looking at trends and patterns in aggregate. However there are certainly times when public health officials are called upon to investigate specific cases which would require working with Protected Health Information (PHI). The Health Insurance Portability and Accountability Act (HIPAA) of 1996 clearly defines the rules for sharing data and PHI. The Act has a broad exclusion related to the gathering and sharing of data to prevent or control disease or injury. (Furthermore, many PSAPs, as governmental agencies, may not be required to comply with HIPAA.) See Appendix C for more information on this and the 9-1-1 Working Group's review of the topic of *surveillance* and the use of 9-1-1 and EMS data for this purpose.

3b. Protocol Expansion/Modification

Protocols will provide for specific caller queries for pandemic influenza-like symptoms in cases where the reported chief complaint may indicate an infected patient. There should be communication with the incident commander (in consultation with the local medical director) to determine the triage guidelines used to identify an influenza patient. In addition to the PSAP's standard EMD interrogation, the EMD will query the caller for "*pandemic influenza symptom set*" consistent with recommendations by the local public health office and based on criteria established by the Centers for Disease Control and Prevention. The definitive "pandemic influenza symptom set" cannot be established in advance of the disease. PSAPs need to be prepared to act quickly to implement protocols when the symptom set is provided to them.

The controlling State and local EMS authorities may authorize PSAPs and other emergency call centers to use modified caller queries containing the pandemic influenza symptom set when they consider the threat of a local outbreak to be elevated, based on information provided by local,

State, and Federal public health authorities, including the city or county health department(s), State health department(s), and the CDC.

3c. Protocol Updates (dynamic)

Protocols will provide a mechanism for dynamic and rapid updates of the symptoms in the caller queries (above), so that when more disease specific information is discovered protocols can be updated in a timely manner.

The controlling State and local EMS authorities may authorize changes in the pandemic influenza symptom set, based on new information (as it becomes available) from local, State, and Federal public health authorities, including the city or county health department(s), State health department, and CDC.

3d. Triage/Patient classification

Protocols provide scripted caller questions, relevant to specific chief complaints, signs, and symptoms that allow for triage and patient classification to different levels of severity. Patient classification should be based on a consistent, reproducible coding system that can be used to assign a specified type of EMS response. Also, codes should be specific enough to identify patients who don't require an ambulance response, especially when ambulance resources are depleted by system overcapacity.

Section 4 - Assistance with Priority Dispatch of Limited Emergency Medical Services (EMS)

Objective: During an influenza pandemic, EMS and public health resources will likely be limited and normal services curtailed. In addition to identifying and assisting likely pandemic flu patients, PSAPs will need to safely triage other non-influenza related requests for help, appropriately matching need to resource, including alternative treatments, such as nurse assist lines. Telecommunicators need to know what to tell callers if no response is available or will be delayed. This should be part of the pre-pandemic planning effort. PSAPs need to have pre-established links with other types of call centers (such as 2-1-1 or nurse assist lines) or alternate care centers to ensure these resources can effectively be utilized in transferring or referring callers. PSAPs should ensure that any such plans are in concert with the appropriate medical and legal authority. An example of the types of call flow decisions to be made in a period of pandemic influenza versus the norm is shown in Figure 1. Figure 2 shows an example of a modified dispatch protocol based on the pandemic severity index. Figure 3 shows an example of how triage, treatment, equipment, transportation and destination can vary depending on the severity of the influenza pandemic. These figures, taken together, are meant to put the planning process in perspective, and provide a possible template, to be modified to meet local needs and to accommodate local resources.

4a. Tiered Responses/Altered Responses

Protocols will provide for tiered response of different EMS unit types. The protocol will include a resource deployment table that lists the response for each severity level by EMS response resources type, consistent with resource typing defined by the Department of Homeland Security (DHS) for the National Incident Management System (NIMS), in FEMA document 508-3 (May 2005). This table will allow for changes and updates when responses are altered by local authorities.

Local EMS authorities will determine when altered response is necessary and notify the PSAP. Local EMS authorities will determine which specific call types will receive an altered response.

4b. Dispatch Protocol Modifications

In some instances, there may be no ambulances immediately available to be sent and the public safety telecommunicator may be unable to pass the call on to another resource. As a part of their planning, PSAPs need to address the need for dispatch protocols with their EMS medical director when limited response, severely restricted response or no response occurs.

4c. Secondary Triage

Protocols will identify those 9-1-1 callers or patients appropriate for transfer to a secondary triage specialist or alternate call center (e.g. nurse-advice center). Local EMS, emergency management and operational authorities will determine when secondary triage should be incorporated into PSAP processes. They will also determine when and how to notify the 9-1-1 center and the secondary call triage agencies (if those agencies are separate from EMS/medical

call-taking PSAP). Local EMS and EMD system physician medical director(s) will determine which specific call types will be transferred to a secondary triage center (e.g. asymptomatic and influenza-like symptoms with no abnormal breathing or other call types that are identified as non-acute, such as a minor injury).. The PSAP will establish and maintain policies and procedures for an effective transfer process to a secondary triage agency.

4d. Fatality Management and Effective Use of 9-1-1

PSAPs will likely get calls from family members about the deceased as well as for general information. Plans should take this likelihood into account, with a coordinated effort with alternate call centers and resources. The goal is to identify and divert these non-emergency calls to a more appropriate alternate source.

4e. Managing the 9-1-1 Queue

During a pandemic outbreak, public safety telecommunicators will be faced with the significant challenge of managing the incoming 9-1-1 call queue. They will need to quickly identify those callers who are seeking help for the ill and injured from those who are simply calling for information or non-emergency advice. In order to prevent 9-1-1 system overload, these "worried well" must be efficiently managed and directed to a non-emergency, non 9-1-1 call queue as quickly as possible.

Public safety telecommunicators may need to enhance their standard call taking routine by asking several clarifying questions when obtaining a complaint type or patient chief complaint. As an example, a modified chief complaint query may include a question such as:

“Are you calling for ambulance, police, fire services, or non-emergency information?”

OR, for EMS call centers (secondary PSAPs): “Do you have a medical emergency or need urgent medical care right now?”

If the caller is able to clearly communicate that his or her needs are informational or non-emergency only, the calltaker may transfer the caller to a non-emergency call queue, or when available, an outside agency that can provide the proper help or advice.

Local governments should also consider 9-1-1 overcapacity mitigation strategies such as public service announcements that provide information on accessing 3-1-1, 2-1-1, mental health hotlines, animal control, and other 24-hour community service help lines. PSAPs may also want to consider the use of automated answering systems, as an alternative of last resort to callers unable to access 9-1-1 or getting busy signals because of call overload.

Section 5 - Other Considerations

Objective: To put into place operations, training and technology that will prepare the PSAP and provide for continuity of operations in the event of pandemic influenza. It may be necessary to consolidate PSAPs in a region to temporarily make best use of available resources. The technology, processes and policies to provide this kind of redundancy need to be considered in the planning stages.

5a. Education and training of PSAPs

- Assess the PSAP's needs in terms of education and training. Determine what responsibilities can be handled by non-PSAP staff. Identify processes and curriculum for regular continuing education and training as well as "just in time" training to address the specifics of the pandemic.
- Identify existing tools and resources to support the PSAP during a pandemic
- Ensure 9-1-1 personnel are aware of the overall emergency action plan
- Address infection control training for 9-1-1 personnel
- In the planning process, PSAPs need to address how they will staff different positions based on the skill levels needed. More routine tasks within the PSAP may be handled with alternative staffing, with the goal to have trained public safety telecommunicators available to interface with the public for the most critical 9-1-1 calls.

5b. Continuity of Operations

Consider the needs of the PSAP beyond the normal planning that exists in the Continuity of Operations Plan. Considerations should include:

- Identify staffing alternatives (retirees, former employees, staff from other departments to free up trained staff and supervisors to answer critical 9-1-1 calls)
- Identify infection control procedures specifically for the pandemic influenza virus
- Identify isolation and quarantine policies and procedures
- To limit the exposure of 9-1-1 staff, identify isolation and lock-down procedures. Identify on-site treatment areas for those who have become infected.
- Identify policies related to paid and unpaid leave and care of the families of PSAP staff.
- State and local 9-1-1 pandemic influenza plans should define system-wide processes for vaccinating 9-1-1 personnel, as an element of the critical infrastructure.
- State 9-1-1 pandemic influenza plans should, in coordination with public health, law enforcement and emergency management agencies, identify mechanisms for freedom of movement of PSAP personnel when faced with restricted travel laws, isolation/quarantine or security measures.

5c. Interoperable Communications

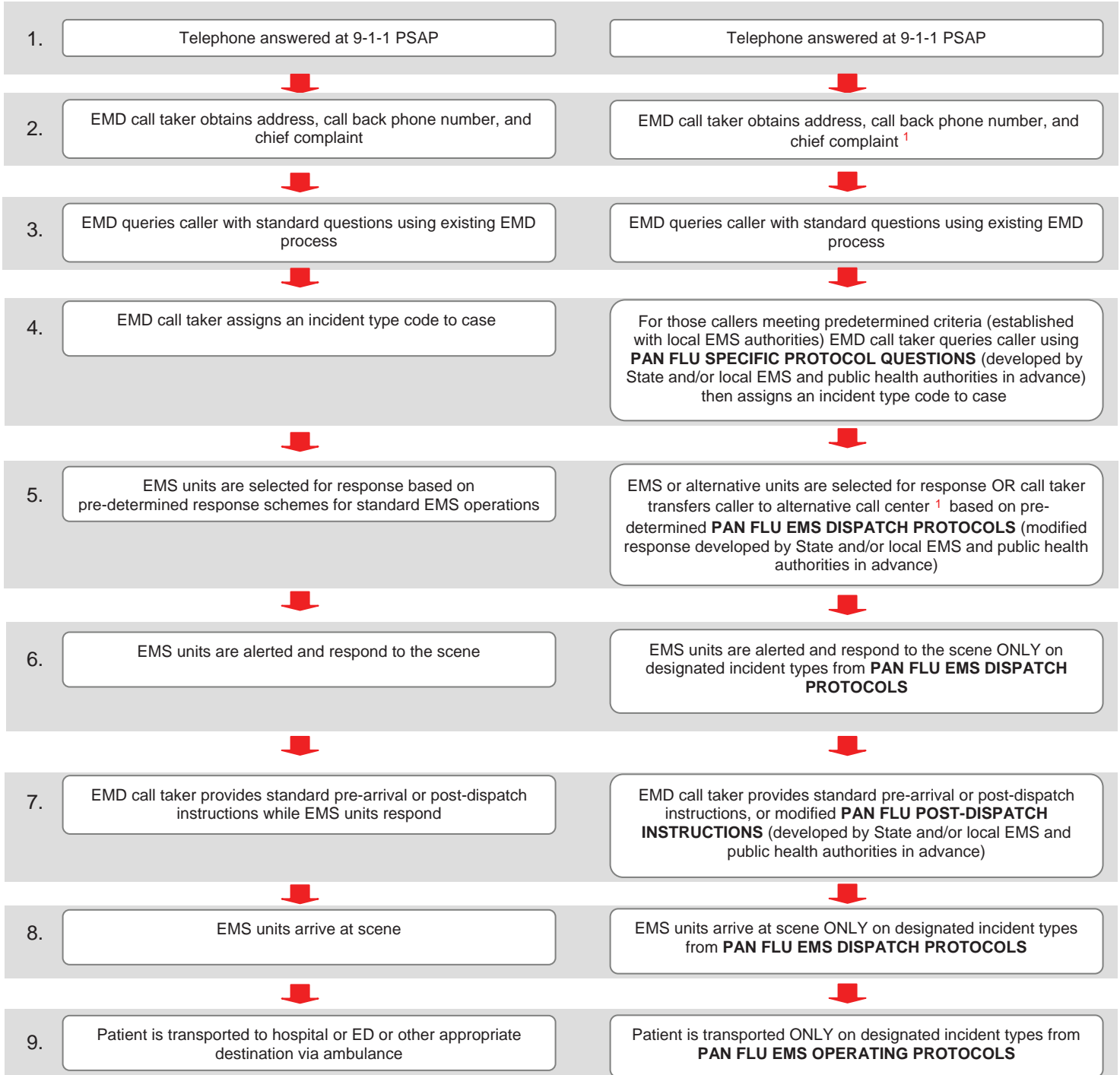
Consider and evaluate how *Next Generation* technology and the *IP-enabled PSAP* could allow each community to be served by a remotely run PSAP or to more effectively exchange information with the public and the many groups involved in a response. (See Appendix H for further information.)

Figure 1: Sample Call Flow for Standard EMD Calls versus Pandemic Flu 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 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

Sample Protocols	Pandemic Severity Index Category 1	Pandemic Severity Index Category 2-3	Pandemic Severity Index Category 4-5
Triage (to occur both at the 9-1-1 center and on scene)	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.

*See also SAMPLE PANDEMIC INFLUENZA EMS DISPATCH PROTOCOL

Figure 4: Suggested 9-1-1 & EMS Activities/Readiness Steps Based on Different Phases of Pandemic Influenza

Pandemic Phase (Based on WHO)	9-1-1 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 9-1-1 can help your local public health 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"> • 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 • 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 • 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 211 non-medical public information points • Educate staff on prevention techniques • Develop security plan for facility, vehicles, and personnel 	<ul style="list-style-type: none"> • Local PH, 9-1-1, EMS, EMA to plan for when you will begin active surveillance for pandemic influenza patients • 9-1-1 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 EMD or field protocols

<p>Phase 3 (continued)</p>		<ul style="list-style-type: none"> • 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 9-1-1, 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 available from the CDC • Consider develop of plans for alternative transportation • Participate in planning or be aware of planning for alternate destinations 	
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Phase 3: (continued)		<ul style="list-style-type: none">• Consider protocols for non-transport• Develop a plan with 9-1-1 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	
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<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 public health 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 9-1-1 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 • 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 • 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 • 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 	<ul style="list-style-type: none"> • Local PH, 9-1-1, 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
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<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 9-1-1 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 9-1-1 are appropriate Coordinate plans of alternative care sites Aggressive infection control procedures put in place Eliminate clinical procedures that increase the risk of dissemination of droplets or sputum 	<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 9-1-1, 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 Provide public information consistent with the local PH, 9-1-1, 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 9-1-1, EMS, PH, EMA interaction several times per day Hospital or alternative care site coordinators Regional PSAP and EMS managers

<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 9-1-1, EMS, EM, PH, PIO and elected officials
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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.)
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 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: Overview of National Incident Management System

Excerpted from NATIONAL INCIDENT MANAGEMENT SYSTEM
March 1, 2004
Department of Homeland Security

For complete document go to:
http://www.fema.gov/pdf/emergency/nims/nims_doc_full.pdf

CHAPTER I INTRODUCTION AND OVERVIEW

A. INTRODUCTION.

Since the September 11, 2001, attacks on the World Trade Center and the Pentagon, much has been done to improve prevention, preparedness, response, recovery, and mitigation capabilities and coordination processes across the country. A comprehensive national approach to incident management, applicable at all jurisdictional levels and across functional disciplines, would further improve the effectiveness of emergency response providers¹ and incident management organizations across a full spectrum of potential incidents and hazard scenarios. Such an approach would also improve coordination and cooperation between public and private entities in a variety of domestic incident management activities. For purposes of this document, incidents can include acts of terrorism, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, typhoons, war-related disasters, etc. On February 28, 2003, the President issued Homeland Security Presidential Directive (HSPD)-5, which directs the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). According to HSPD-5: This system will provide a consistent nationwide approach for Federal, State² and local³ governments to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity to provide for interoperability and compatibility.

1

As defined in the Homeland Security Act of 2002, Section 2(6), "The term 'emergency response providers' includes Federal, State, and local emergency public safety, law enforcement, emergency response, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities." 6 U.S.C. 101(6)

2

As defined in the Homeland Security Act of 2002, the term "State" means any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States. 6 U.S.C. 101(14).

3

As defined in the Homeland Security Act of 2002, Section 2(10), the term, "local government" means "(A) county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or

instrumentality of a local government; an Indian tribe or authorized tribal organization, or in Alaska a Native village or Alaska Regional Native Corporation; and a rural community, unincorporated town or village, or other public entity." 6 U.S.C. 101(10). among Federal, State, and local capabilities, the NIMS will include a core set of concepts, principles, terminology, and technologies covering the incident command system; multiagency coordination systems; unified command; training; identification and management of resources (including systems for classifying types of resources); qualifications and certification; and the collection, tracking, and reporting of incident information and incident resources. While most incidents are generally handled on a daily basis by a single jurisdiction at the local level, there are important instances in which successful domestic incident management operations depend on the involvement of multiple jurisdictions, functional agencies, and emergency responder disciplines. These instances require effective and efficient coordination across this broad spectrum of organizations and activities. The NIMS uses a systems approach to integrate the best of existing processes and methods into a unified national framework for incident management. This framework forms the basis for interoperability and compatibility that will, in turn, enable a diverse set of public and private organizations to conduct well-integrated and effective incident management operations. It does this through a core set of concepts, principles, procedures, organizational processes, terminology, and standards requirements applicable to a broad community of NIMS users.

Appendix C: Using 9-1-1 and EMS Data for Situational Awareness and Surveillance

A Review by the Working Group on 9-1-1 Readiness for Pandemic Influenza For the National Association of State EMS Officials

March 21, 2007

Members of the 9-1-1 Working Group: Rick Jones, National Emergency Number Association; Bill Jermyrn, MD, National Association of State EMS Officials; Jan Ogar, RN, Emergency Nurses Association; Greg Scott, National Academies of Emergency Dispatch; Pamela Kaufman, Association of Public Safety Communication Officials; Bob Oenning, National Association of State 9-1-1 Administrators; Sharon Counterman, National Emergency Number Association; Jerry Turk, PowerPhone.

(Note: This review was done as part of the 9-1-1 Working Group's efforts in the creation of the document Preparing for Pandemic Influenza: Recommendations for Protocol Development for 9-1-1 Personnel and Public Safety Answering Points (PSAPs), part of the Implementation Plan for the National Strategy for Pandemic Influenza. It is intended to introduce the topic of public health surveillance to 9-1-1 and EMS stakeholders and review the relatively new body of experience in the use 9-1-1 and EMS data to date.)

"Syndromic surveillance for early outbreak detection is an investigational approach where health department staff, assisted by automated data acquisition and generation of statistical signals, monitor disease indicators continually (real-time) or at least daily (near real-time) to detect outbreaks of diseases earlier and more completely than might otherwise be possible with traditional public health methods (e.g., by reportable disease surveillance and telephone consultation). The distinguishing characteristic of syndromic surveillance is the use of indicator data types." (1)

May 7, 2004 report of the Centers for Disease Control and Prevention (CDC) Working Group paper "Framework for Evaluating Public Health Surveillance Systems for Early Detection of Outbreaks"

"911 call data are one of the more commonly used data sources for syndromic surveillance. People who are becoming ill may call 911 for assistance. As a result, an increase in health-related calls to 911 may provide a sign that an epidemic is emerging. Other types of data that are being used include school or work absentee records, pharmacy sales, calls to nurse hotlines, doctor visits, emergency department visits and EMS trip logs. Each of these may provide a warning of the emergence of an increase in disease and prompt public health officials to conduct an investigation." (2)

Dr. James Buehler (member of the CDC Surveillance Working Group) in "The Promise of Syndromic Surveillance," Homeland First Response

Background

The terrorist attacks on 9-11 and the subsequent anthrax attacks called attention to the need to improve the timeliness and predictive abilities of traditional public health surveillance. The CDC Working Group was created to review and offer recommendations to help guide the development of surveillance systems and the use/evaluation of alternative sources of data. It introduced a key concept in

expanding traditional surveillance: Indicators within a population can precede a formal diagnosis and allow earlier detection of an outbreak.

As described by the CDC Working Group, public health surveillance is the on-going, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health. In their review, they note surveillance serves at least eight public health interventions. These include:

- Supporting case detection and public health interventions
- Estimating the impact of a disease or injury
- Portraying the natural history of a health condition
- Determining the distribution and spread of illness
- Generating hypothesis and stimulating research
- Evaluating prevention and control measures
- Facilitating planning
- Outbreak detection (i.e. identifying an increase in frequency of disease above the background occurrence of the disease).

Syndromic surveillance is a technique in the last, but very important, intervention: outbreak detection. It utilizes data, such as that obtained during 9-1-1 and EMS, that are not diagnostic of a disease but which might indicate the early stages of an outbreak. (3)

How 9-1-1 and EMS Data Can Be Used in Surveillance

For nearly 30 years people in the U.S. have been conditioned to call 9-1-1 for help. They call 9-1-1 not only for life-threatening emergencies, but frequently for common medical complaints and sometimes as the first access to primary medical care. It is conservatively estimated there are at least 200 million calls made to 9-1-1 every year (4). Continuous “situational awareness” through surveillance and detection of pandemic influenza has been identified as one of three “pillars” of readiness in the National Strategy for Pandemic Influenza (5). Surveillance for pandemic influenza has also been identified as an issue of safety for first responders by 9-1-1 and EMS stakeholder groups.

Tapping into 9-1-1 data for syndromic surveillance offers several advantages. Many 9-1-1 agencies use sophisticated software systems called **CAD (Computer Aided Dispatch)** These systems assist the public safety telecommunicators by helping them to manage the call, quickly gather information, and effectively triage incoming calls into pre-defined categories. This triage is based on the patient’s chief complaint, or primary reason for calling.

Many agencies also use algorithmic or formalized structured expert systems called EMD (Emergency Medical Dispatch) which augment CAD and gather other valuable patient information. Many response agencies use a software version of EMD, which automatically prompts the public safety telecommunicator with specific questions, and which stores information in easily accessible databases. These tools allow the public safety telecommunicator to effectively and quickly categorize/triage patients. Table 1 (see page 52) shows how EMS chief complaints correlate to CDC syndrome definitions.

Comparing Data in Real Time

Once this process is completed (typically within seconds from the time the call is received) syndromic surveillance systems can analyze the information. These systems compare data for differences with historical data. This can be done in real-

time, unlike other systems where diagnostic data can take hours, days or longer before it is available.

Effective syndromic surveillance systems allow EMS and public health officials to determine alerting thresholds, deciding on how sensitive the triggers will be. When a trigger alerts, automatic notification can be sent to designated individuals in public health, EMS, 9-1-1 or others in the system, through fax, email, pager, voice or text message. These personnel can then analyze the data and make a determination as to whether there is a cause for additional action.

Not only are the data from 9-1-1 provided in real-time but they frequently include the precise patient location at the time the call was received by the PSAP. (Patient location can include address, latitude/longitude, map coordinates, postal codes, or other indicators. Which hospital or other facility received the patient, or whether the patient was treated and released, can also be captured.) PSAPs typically serve larger geographic regions which may include an entire city, county or multi-county area. Other health data systems may require numerous separate and distinct systems in order to cover such a large geographic area.

Furthermore, the data generated locally can, in real-time, be sent up-stream, to be part of regional, State or national analysis, which can identify trends that might not be apparent at the local level. Finally, beyond health surveillance, 9-1-1 data typically provide insight and information related to everyday operations as well as other disaster and multi-casualty incidents.

Multiple Data Sets

Increasingly, information from **electronic patient care reports** (ePCRs) may also be available in real-time. ePCRs are computer-based reports filled out by the paramedics or other first responders on the scene with information about the patient's vital signs, presenting symptoms and general assessment. Typically, the ePCR form is originally populated by data begun at the dispatch level in CAD and so has continuity within the system, providing additional accuracy in updating chief complaints and patient information first provided by dispatch. Increasingly, ePCRs are consistent with the National Emergency Medical Services Information System (NEMSIS) and can therefore be compared across jurisdictions.

A call to 9-1-1 results in the acquisition of multiple data sets that have potential for utilization in syndromic surveillance. This data permits both early analysis and detection of potential outbreaks while providing the capability to track individual cases into the health care system for further analysis or other actions. This potential is supported by activities aimed at providing data standards for electronic patient care records. Examples include the work of the Agency for Healthcare Research and Quality (Department of Health and Human Services), and the Integrated Patient Tracking Initiative of Comcare.

Attributes of an Effective Syndromic Surveillance System Using 9-1-1/EMS Data

To be most effective, a community-based syndromic surveillance system is established as a collaborative partnership between many diverse stakeholders including 9-1-1, EMS, law enforcement, fire service, public health, and emergency management, as well as private sector entities. The establishment of such a surveillance system can be a catalyst for relevant communication and the sharing of information between public health and public safety.

The 9-1-1 Working Group identified the following characteristics of an effective surveillance system that utilizes 9-1-1/EMS data:

- Is typically accomplished through a direct interface to health data systems (i.e. the system does NOT require separate entry of information)
- Is automated and does not rely on a user to import data, run queries or otherwise perform tasks manually
- Analyzes information in real-time or near real-time
- Includes a geographic analysis module for monitoring geo-spatial trends
- Is easily and quickly customized to account for new, evolving and emerging health threats
- Includes automated alerting tools to inform authorized individuals when a concerning trend or pattern is identified
- Can ideally be securely accessed by authorized users regardless of their location (i.e. web-based). Outbreaks can occur at any time and may require the ability to quickly share information with public health experts. Includes flexible and customizable alerting thresholds to avoid unnecessary false alerts
- Can aggregate data from disparate systems and provide regional views and analysis
- Supports secure information sharing among collaborating agencies
- Supports dual-use (or multiple use), meaning there are additional benefits and/or stakeholders who are able to use the system

Patient Confidentiality and HIPAA

Most health surveillance efforts are not focused on specific patients, but are looking at trends and patterns in 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.) Many PSAPs and EMS agencies, as governmental agencies, are not covered by HIPAA. However, covered entities, under the privacy exclusion, including ambulance services and their associated call centers, may use and disclose PHI to a public health authority that is authorized by law to collect this information to prevent or control disease or injury, and vital statistics information. (6)

Case Study

One of the first known syndromic surveillance systems for 9-1-1 was established in Kansas City (MO) in 1999 by Dr. Rex Archer. The 9-1-1 Working Group is aware of several dozen communities throughout the U.S. and Canada that are monitoring 9-1-1 and/or EMS data, (7) from locales as diverse as New York City to Oklahoma City to San Diego. Most are established collaboratively between local or State public health, 9-1-1, emergency management, public safety and EMS authorities, and many share their data to form regional networks.

On November 15, 2003, the Richmond (Virginia) Ambulance Authority (RAA) received an alert from its 9-1-1 surveillance system indicating a surge in influenza symptoms concentrated north of the James River. In Oklahoma, surveillance

software installed at the Emergency Medical Services Authority (EMSA) indicated statistically significant increases in call volume in Oklahoma City on November 16, and in Tulsa on November 20 of that year. In all three cases, the alerts provided public health officials with advance warning of impending epidemics and helped to localize data. EMS and public health officials were able to generate a geo-spatial map of the location and spread of calls that met their criteria, providing additional information to support rapid decision-making.

In the Richmond alert, the system reported that breathing problems were at a 47-percent increase over the previous year. Using the accumulated data from logs, graphs, and charts, the RAA was able to alert health officials of the emerging influenza epidemic. RAA officials were sent alerts and data via e-mail and cellular phone SMS text messages. Alerts were also sent to emergency communications managers and EMS medical directors via pager. (8)

Since then, nearly two dozen communities across the country have collaborated to share information in their regions and across jurisdictions and State lines. Called the Regional Influenza Network (9), each agency in the Network uses one system trigger, configured according to the syndrome groupings agreed upon by the participating agencies. Each trigger may vary slightly depending on local PSAP settings, but each looks at similar patient care complaints.

Conclusion

9-1-1 and EMS field data, while not a substitute for a clinical diagnosis in a hospital or clinic setting, can be a valuable component to an overall system of surveillance, helping to provide continuous situational awareness. It offers the advantages of timeliness, precise location, automation and the ability to collect and analyze information across jurisdictional boundaries. To be most effective, it must involve collaboration and coordinated action across multiple agencies. The potential for early detection of pandemic influenza or other hazards affecting the general health of the community is significant when the data are linked to other elements of the health care system as part of regular, daily operational procedures. (10)

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(<http://www.enpmagazine.com/documents/articlearchive/May05/datafusion.pdf>)
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(http://thci.org/_documents/temp/SS-2006_June%2027_K.Bassil.doc)

Table 1: Translation of EMS Chief Complaint Codes to CDC Syndrome Definitions for Critical Bioterrorism-Associated Agents

9-1-1 Chief Complaint	CDC Category
Abdominal Pain, Gastroenteritis, Gastritis	Gastrointestinal
Convulsions/Seizures, Headaches, Psychiatric, Suicide, Stroke, Unconscious Fainting	Neurological
Cardiac Arrest, Respiratory Arrest, Death	Death or Near Death
Breathing Problems, Asthma, Dyspnea	Respiratory
Hemorrhage, Non-Trauma Bleeding	Hemorrhagic Illness
Allergic Reaction, Back Pain, Chest Pain, Choking, Heart Problems, Sick Person, Unknown Problem	Undefined Medical (non-traumatic)
Elevated Temp, Hot to Touch, Fever, Flu-Like Symptoms	Fever*

*Access to fever-related data may not be available from all systems.

Appendix D: Example of Infection Control Procedures for PSAPs

(From State of Washington E9-1-1 Plan for Pandemic Influenza)

Surface Wipe-Down Policy

Overview:

Viruses are known to survive on non-porous surfaces, such as steel and plastic, for up to 24-to-48 hours after inoculation and from cloth, paper, and tissues for up to eight- to-12 hours. Viable virus can be transferred from non-porous surfaces to hands for 24 hours and from tissues to hands for 15 minutes.

Frequency:

Surfaces to be disinfected should be cleaned with each shift change or at all staff changes for shared work stations. Janitorial visits should be at least every 24 hours.

Procedure:

Listed surfaces should be cleaned with an EPA registered disinfectant by the person starting the shift. The person should wear gloves during cleaning procedures. When using chemical disinfectants, all manufacturers instructions should be followed.

List of surfaces to disinfect:

The following is only a suggestion of the items needing disinfected within a PSAP. Additional surfaces may be added to this list.

Door knobs, telephone handsets, touch pads, keyboards, mice, control knobs, all work surfaces, chair arms, seats and adjustment handles, any object that is touched or potentially coughed on in and around the PSAP.

Consider:

Use of personal keyboard and mouse to be stored in call takers/dispatchers private and clean space.

Make available an FDA approved hand sanitizer at all work stations, break rooms and in common areas.

Disinfectants

Clean and disinfect high-touch, non-porous surfaces using an EPA-registered disinfectant labeled for activity against influenza viruses. Carefully follow all label directions and safety precautions including mixing, use and contact time..

If an EPA-registered disinfectant is not available, use a dilute solution (1:100 volume/volume-600 parts per quart) and apply solution to a cleaned surface, preferably with a cloth moistened with the bleach solution, and allow the surface to remain wet for 5 minutes.

Hand-Washing Technique

Proper hand washing is probably the single most effective barrier to infection. Hands must be thoroughly and properly washed at the beginning and end of each shift.

Remove all debris from hands and arms.

Rinse hands under cool running water and apply antimicrobial soap, lather well.

Wash hands and fingers for a minimum of 15 seconds.

Work soap around fingers and nails. Do not use a scrub brush, because it may cause abrasions.

Rinse thoroughly with cool running water (hot water opens pores and dilates capillaries).

Dry hands with paper towels and use the towel to turn off the faucet.

Cover cuts and abrasions with Band-Aids or finger cot until fully healed.

If hands are not visibly soiled or sticky, they may be sanitized with an alcohol-based hand rub.

Restricted Entry into PSAP Policy

Objective:

To see that the PSAP remain as virus free as possible

Rationale:

Limiting entrance to non-essential personnel will limit exposure to essential personnel within the PSAP.

Procedure:

Prior to entry, the person seeking entrance:

Will have his or her oral temperature taken. It must register 99 degrees F or lower.

Oral electronic thermometers should be available for self use outside the entry to the PSAP including directions for decontamination between users.

Employees will be trained on their use

Persons seeking entrance must answer the following questions with a negative:

Have you had a fever since your last shift?

Does anyone in your household have a fever?

Do you now feel sick in any way?

If in doubt, personnel should be denied entrance.

Those seeking entrance should be directed to a hand-washing station prior to being admitted.

Questions and/or disputes regarding entry should be directed to the County Public Health Medical Doctor (MD) or their designee.

Note: In settings where County Sheriff personnel and/or jail personnel share close quarters with PSAP operations, it may be necessary to move these non-PSAP employees, such as Sheriff administrative staff, deputies and prisoners, to different quarters.

PANDEMIC INFLUENZA

WHO Global Pandemic Phases and the Stages for Federal Government Response

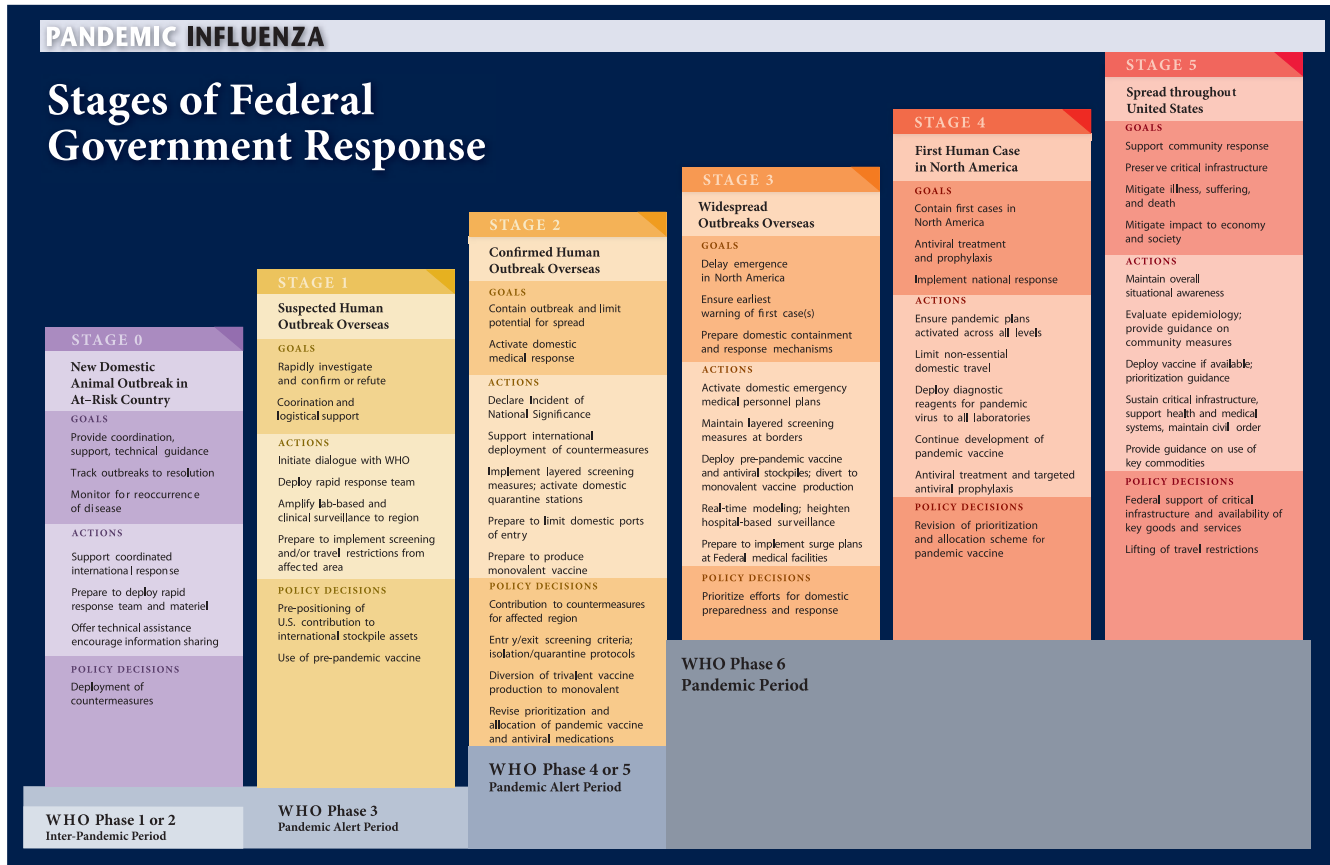
WHO Phases		Federal Government Response Stages	
INTER-PANDEMIC PERIOD			
1	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human disease is considered to be low.	0	New 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

Appendix E 1a: WHO Influenza Stages and Strategies

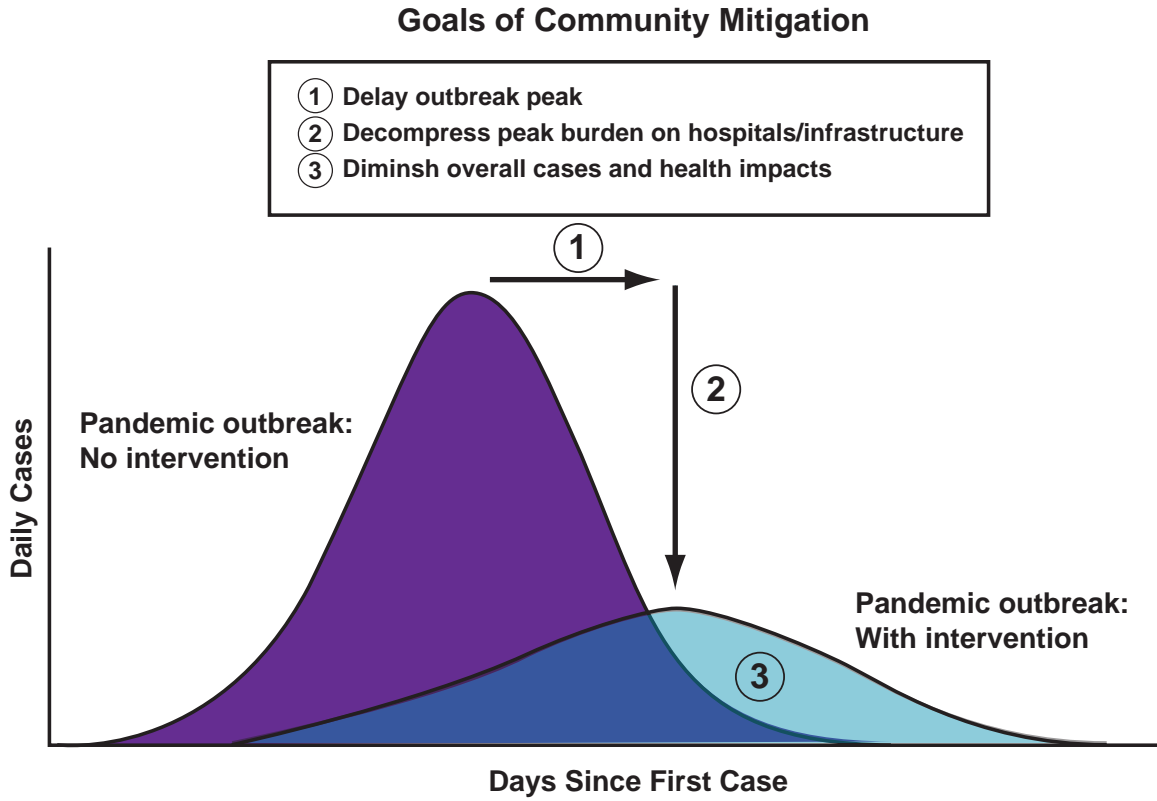
Influenza Pandemic – Phases and Strategic Actions

	Phase	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)	<p>Minimize the risk of transmission to humans</p> <p>Detect and report rapidly, if it occurs</p>	<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)	<p>Ensure rapid characterization of new virus</p> <p>Detect, notify, and respond to additional cases</p>	<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

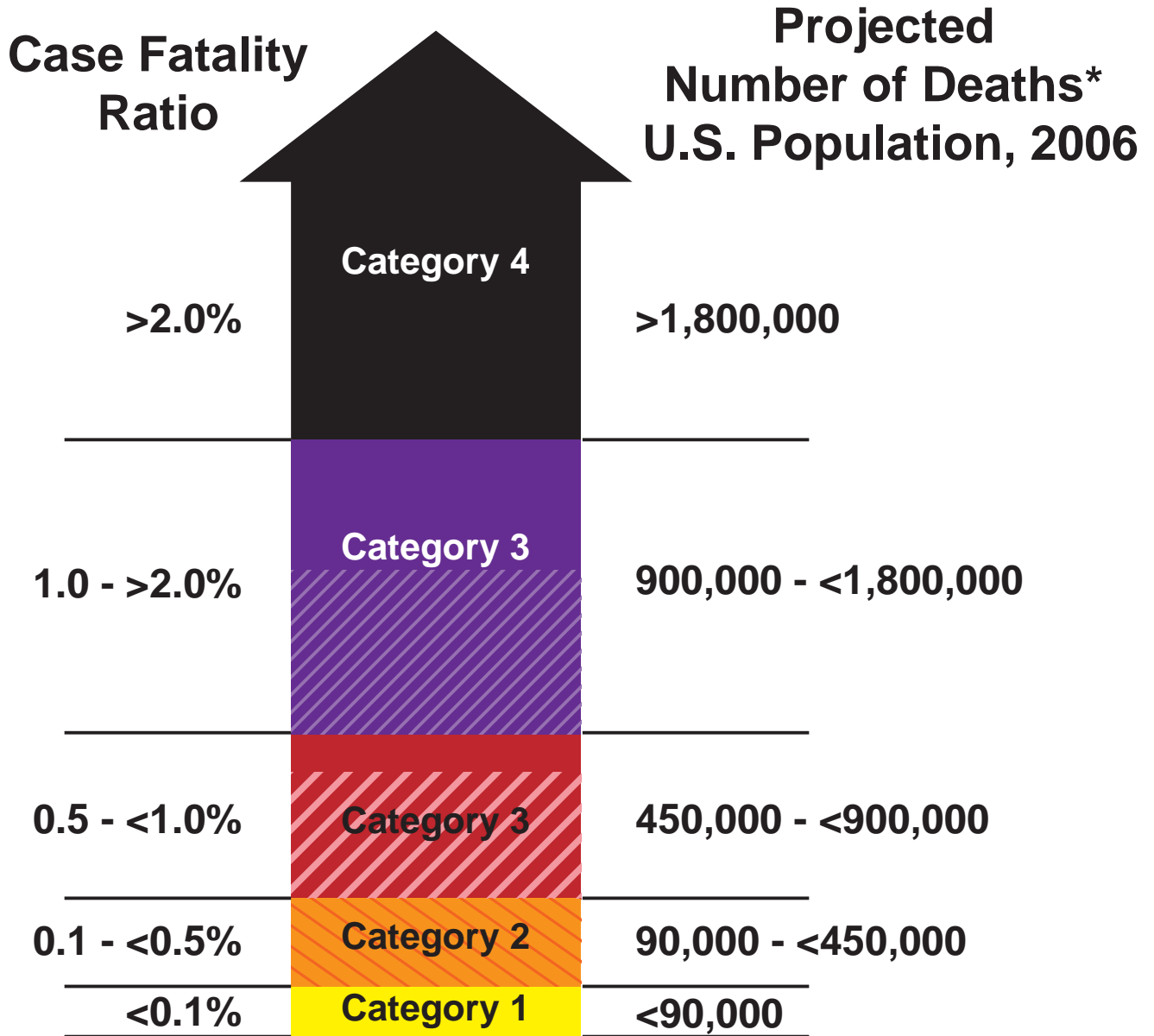
Appendix E1b: Stages of Federal Government Response



Appendix E1c: Goals of Community Mitigation



Appendix F: CDC Pandemic Severity Index



*assumes 30% illness rate and unmitigated pandemic without interventions

Appendix G 1a: Elements of an Emergency Medical Dispatch System

Annual Book of ASTM Standards, 1994
American Society for Testing and Materials (ASTM)

Standard Practice for Emergency Medical Dispatch Management ⁽¹⁾

Introduction

The emergency medical dispatcher (EMD) is the principle link between the public caller requesting emergency medical assistance and the emergency medical service (EMS) resource delivery system. As such, the EMD plays a fundamental role in the ability of the EMS system to respond to a perceived medical emergency. With proper training, program administration, supervision, and medical direction, the EMD can accurately query the caller, select an appropriate method of response, provide pertinent information to responders and give appropriate aid and direction for patients through the caller. Through careful application and reference to a written, medically approved, emergency medical dispatch protocol, sound decisions concerning EMS responses can be made in a safe, reproducible, and non-arbitrary manner. These benefits are realized by EMS systems when appropriate implementation, sound medical management and quality assurance/quality improvement (QA/QI) at dispatch are provided within the EMD/EMS system. This practice assists in establishing these management and administrative standards.

1. Scope

1. This practice covers the function of the emergency medical dispatch (EMD). This function is the prompt and accurate processing of calls for emergency medical assistance. The training and practice through the use of a written or automated medical dispatch protocol is not sufficient in itself to ensure continued medically correct functioning of the EMD. Their dispatch-specific medical training and focal role in EMS has developed to such a complexity that only through a correctly structured and appropriately managed quality assurance environment can the benefits of their practice be fully realized. The philosophies of emergency medical dispatch have established new duties to which the emergency medical dispatch agency must respond. It is important that their quality assurance/quality improvement (QA/QI) activities, including initial hiring, orientation, training and certification, continuing dispatch education, recertification, and performance evaluation be given appropriate managerial attention to help ensure the ongoing safety in their performance of the EMD. This practice establishes functional guidelines for these managerial, administrative and supervisory functions.
2. The scope of this practice includes:
 1. The entry level selection criteria for hiring emergency medical dispatchers;

2. The orientation of new emergency medical dispatchers;
3. Development of QA/QI mechanisms, management strategies and organizational structures for use within a comprehensive emergency medical dispatch system;
4. Performance evaluation as a component of a comprehensive and ongoing quality assurance and risk management program for an emergency medical dispatch system;
5. Development and provision of continuing dispatch education activities for the emergency medical dispatcher;
6. Requirements for initial certification and recertification of the emergency medical dispatcher;
7. Provision for comparative analysis between different EMD program approaches available to the EMS community that conform to established EMD practice standards prior to implementation of an emergency medical dispatch program; and
8. Guidelines for implementation of an emergency medical dispatch program.

1. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability or regulatory limitations prior to use.*

2. Referenced Documents

1. ASTM Standards:

F 1258 Practice for Emergency Medical Dispatch (2)

F 1552 Practice for Training, Instructor Qualification, and Certification Eligibility of Emergency Medical Dispatchers (2)

3. Terminology

1. *Descriptions of Terms Specific to This Standard:*
 1. *case review template*-a structured performance evaluation document containing all necessary input and output actions required of dispatchers that parallels the EMDs' on-line protocols, policies, and procedures related to call-taking and processing. It contains check-off lists and compliance scoring mechanisms that objectively rate the EMDs' performance on a single call.
 2. *dispatch life support*-the knowledge, procedures, and skills used by trained EMDs in providing care through pre-arrival instructions to callers. It consists of those BLS and ALS principles that are appropriate to application by medical dispatchers.
 3. *emergency medical dispatch agency*-any organization or a combination of organizations working cooperatively, that routinely accepts calls for emergency medical assistance and facilitates the dispatch of prehospital emergency medical resources/personnel and provides medically oriented pre-arrival instructions pursuant to such requests.
 4. *performance evaluation*-the documented, objective, quantitative measure of an individual emergency medical dispatcher's performance based upon compliance to departmental protocols, policies and procedures.

5. *pre-arrival instructions*-telephone-rendered, medically approved written instructions provided by trained EMDs through callers which help to provide aid to the victim and control of the situation prior to arrival of prehospital personnel.
6. *quality assurance/quality improvement (QA/QI)*-the comprehensive program of prospectively setting standards; concurrently monitoring the performance of clinical, operational and personnel components; and, retrospectively improving these components in the emergency medical dispatch agency when compared with these standards.
7. *risk management*-a sub-component of the quality assurance program designed to identify problematic situations and to assist EMS medical directors, dispatch supervisors, and EMDs in modifying practice behaviors found to be deficient by quality assessment procedures; to protect the public against incompetent practitioners; and to modify structural, resource, and protocol deficiencies that may exist in the emergency medical dispatch system.

4. **Summary of Practice**

1. A comprehensive plan for managing the quality of care in an emergency medical dispatch system must include careful planning, EMD program selection, proper system implementation, employee selection, training, certification, QA/QI, performance evaluation, continuing dispatch education, recertification, and risk management activities. These functions must be designed and implemented to assist the medical director, dispatch supervisor, and emergency medical dispatcher in monitoring and modifying EMD performance found deficient by QA/QI to protect the public against incompetent practitioners, as well as modify organizational structure, resource, or protocol deficiencies that exist in the emergency medical dispatch system.
1. *Entry level selection*-The selection and evaluation of new dispatchers must include clearly written objective standards to be adopted for qualifying candidates, interviewing applicants, pre-employment aptitude and skill testing pursuant to the hiring of dispatchers.
2. *Orientation*-A pre-planned process of events focusing on the development and acclimation of an employee who will function within the organization's standards, practices, policies, and procedures.
3. *Quality Assurance/Quality Improvement*-Within a physician medically directed emergency medical dispatch system, the development and implementation of employee performance thresholds, concurrent evaluation of compliance to these thresholds through on-line supervision, retrospective evaluation of non-edited logged recordings of requests for emergency service measuring compliance with policy, practice, and procedure to validate that they are appropriate, and to correct them if found to be deficient.
4. *Performance Evaluation*-Each EMD in an emergency medical dispatch agency must regularly and routinely be evaluated with respect to their adherence to policy, protocol, and procedure through the QA/QI process. This determines their conformance to these elements and measures how this performance affects the efficiency and effectiveness of the emergency medical dispatch agency. The evaluation must be quantitative and qualitative.

5. *Continuing Education*-Each emergency medical dispatch agency must provide for the development and implementation of a continuing dispatch education program for the benefit of their EMD personnel. This program must provide the EMD with applicable educational topics designed to enhance their general knowledge and skill in the philosophy and application of the EMD program used within the emergency medical dispatch agency.
6. *Risk Management*-A written practice and procedure shall be established for each agency that provides guidelines for physician medical directors, EMS system administrators, agency supervisors, and/or QA/QI personnel to follow when an EMD is identified through concurrent or retrospective review. This practice and procedure shall provide guidelines for proper investigative criteria relative to the medical or administrative nature of the perceived infraction, and the proper progressive disciplinary procedure to be followed in order to provide the EMD due process.
7. *Certification, Recertification*-All EMDs working in a medical dispatch agency shall be certified as competent in the use of the medically approved EMDPRS used within the medical dispatch center. Initial certification and recertification standards shall be established by each certifying entity associated with their EMDPRS protocols in accordance with ASTM-EMD standards that validate the individual EMD-s knowledge and competency in their use.
8. *Reciprocal Certification*-Reciprocal certification shall be established between certifying agencies and organizations having programs that meet the standards contained in this practice.
9. *Registration and Maintenance of Certification Records*-All certifying entities, agencies, or organizations shall maintain records for all certified individuals and shall provide documents and reports regarding testing and certification status as required by using agencies, states, or governmental units. All records shall be maintained for a minimum period of ten years from initial certification, recertification or testing of the individual.
10. *Revocation of Certification*-This guide shall set forth guidelines for assessing grounds for a possible suspension or termination of certification when questionable situations arise in EMD conduct or performance.
11. *Program Selection and Implementation*-Provision for comparative analysis between different EMD program approaches available to the EMS community that conform to established EMD practice standards. This is intended to assist the EMS administrator in the selection of the program that best suits the dispatch agency's needs from a medical, legal, and operational perspective.
12. *Physician Medical Director*-Each emergency medical dispatch agency shall have a physician medical director, who shall assist in evaluation and review of the EMD program under consideration. The physician medical director shall approve the selected EMD program written protocol. The physician shall be responsible for all medical aspects of the EMD program. Additional responsibilities include the medical oversight of the EMD training and certification program, continuing education requirements, recertification eligibility, QA/QI and risk management functions. These responsibilities include recommendations regarding the certification and employment eligibility of individuals found to be unsafe practitioners through employee evaluation and disciplinary due process.

5. Significance and Use

1. The emergency medical dispatcher should be a specially trained telecommunicator with specific emergency medical knowledge. Many of these personnel still perform in this role without the benefits of dispatch specific medical training and medically sound protocols. The majority perform their duties without appropriate medical management provided through a structured quality assurance/improvement environment. Training only prepares a new EMD for correct use of the EMDPRS. It cannot ensure that it is accessed and complied with as intended. Since the EMD is now clearly defined as a pre-hospital medical professional, it is necessary to establish sound medical management processes through a multi-component QA/QI program administered by the EMD's agency in conjunction with the physician medical director. Prompt, correct, and appropriate patient care can be enhanced through the use of a standardized approach to quality assurance, especially the component of EMD performance assessment. This practice is intended for use by agencies, organizations, and jurisdictions having the responsibility for providing such services and assurances to the public through the correct management of the nation's emergency medical dispatchers.

6. EMD Entry Level Selection Criteria

1. Each emergency medical dispatch agency shall adopt a formal written policy delineating the selection procedures for individuals to be employed as emergency medical dispatchers. It must address the ability to:
 1. Read and write at a high school graduate or GED level;
 2. Perform those clerical skills as delineated by the employing agency;
 3. Perform verbal skills in a clear and understandable manner, in the required language or languages established as necessary to that emergency medical dispatch agency;
 4. Perform alphanumeric transcription skills necessary to correctly record addresses, locations, and telephone numbers; and
 5. Demonstrate competency in basic telecommunications skills as required by the employing or training agency.
1. Selection criteria should also include the following:
 1. A clear attribute of helpfulness and compassion toward the sick or injured patient and caller advocate;
 2. The ability to clearly guide callers in crisis through application of necessary interrogation procedures and the provision of telephone pre-arrival instructions;
 3. The ability to learn and master the skills, philosophy and knowledge required to successfully complete the training process;
 4. The ability to efficiently and effectively organize multiple tasks and complicated situations and activities;
 5. The ability to handle the levels of emotional stress present in caller/patient crisis intervention, death and dying situations, call prioritization and triage, and multiple tasking;
 6. The ability to function within the team framework of public safety and EMS systems; and

7. The ability to elicit and assimilate caller information and then to prioritize and appropriately consolidate and summarize this information in a format used to inform and direct public safety responders.

7. Orientation Guidelines for Emergency Medical Dispatchers

1. When an individual has successfully completed the initial EMD training and is employed by an emergency medical dispatch agency, a comprehensive orientation program must be in place to initiate this individual to the intense and demanding conditions that exist in dispatch centers. It must include:
 1. An orientation manual for the new EMD;
 2. A formal orientation for the new EMD in the communications and dispatch operation as well as the employing agency as a whole including all relevant policies, practices, and procedures.
 3. Orientation should continue with a one-on-one preceptor concurrent with the employee's probationary period;
 4. Written evaluation of compliance should be performed through the agency's quality assessment practice as defined in this practice; and
 5. Written evaluation of performance during orientation and frequent feedback and critique from those individuals responsible for training and evaluation of the new emergency medical dispatcher.

8. Performance Evaluation

1. The EMD must function using a medically approved EMDPRS to establish the template for performance and protocol compliance evaluation. The ongoing performance appraisal must evaluate the EMD's ability to follow and comply with the established agency policies and procedures.
2. Established performance criteria should be shared with new employees and measured on a regular basis. These should include evaluation of performance in:
 1. Conformance to established policies of the employing agency, and
 2. Compliance with the EMDPRS of the employing agency.
1. Performance appraisal of the EMD through case review:
 1. Multiple cases that an individual manages must be reviewed on a regular basis.
 2. The selection of cases to be reviewed should provide a perspective of the individual's performance over the entire spectrum of call-types received. The review process should, as a minimum, review 7 to 10% of calls received by the emergency medical dispatch agency.
 3. Individuals performing dispatch case reviews must have an emergency medical background (preferably experienced at an ALS level) and be specially trained in the process of EMD case review.
 4. This reviewer shall use a standardized *case review template* form that objectively outlines and quantifies all parameters of EMDPRS compliance by which the EMD will be evaluated.
 5. Records must be kept showing at a minimum the following areas of compliance:

1. Compliance to asking the systematized interrogation questions. These should be subdivided to show different areas of interrogation in the EMDPRS.
 2. Compliance to providing the systematized pre-arrival instructions (when possible and appropriate to do so) should show separate compliance for each type of pre-arrival instructions found within the EMDPRS.
 3. Compliance to correctly selecting the dispatch response classification code.
-
1. Records should be kept showing cumulative compliance scores in the listed areas for the following groups:
 1. Individual compliance averages;
 2. Shift compliance averages, and
 3. Emergency medical dispatch agency compliance averages.
 1. Group compliance averages should be periodically purged of older records allowing the EMD to reasonably improve scores over time, however, all records should be maintained and archived.
-
1. The process of individual case review and their findings and recommendation should be managed by a specially trained diversified group of EMS and dispatch agency personnel. Participants in the management of the case review process should represent a cross-section of those individuals within the system affected by the emergency medical dispatch program. These should include, but not be limited to, line dispatchers, managers, administrators, medical control physicians or their representatives, or both, field personnel, and ancillary public safety groups such as 9-1-1, primary and secondary public safety answering points (PSAPs), that operate within the structure of an organized medical dispatch case review committee.
 2. The specific policies and procedures to be utilized for performance appraisal activity must be carefully explained to the EMDs whose performance will be measured and must be objectively and impartially administered.
 3. Regular feedback must be provided to the EMD based on the findings of their performance appraisal.
 4. The goal of the case review process is to enhance the performance of the EMD. This feedback should include both recognition of exemplary performance as well as behavior requiring remediation. This feedback must be provided in written form and maintained in the employee's records.
 5. EMDs who consistently provide quality care should be recognized. Commendations, awards, advancements, media exposure, and other forms of positive reinforcement are important elements of performance appraisal.
 6. The emphasis of any remedial activity should focus on re-training and modification of unacceptable practice patterns rather than on sanctions.
-
1. Field-to-dispatch feedback mechanisms should be established to monitor, inquire about and document issues relative to the application of medical dispatch practices witnessed in the total system.

1. Standardized forms should be used to collect, record, and report this information.
2. All reports generated should be carefully tracked through the system, investigated and evaluated, and written "feedback" provided to the initiator. These reports shall be maintained.
3. All reports should be written as a request for clarification and should avoid any and all accusatory "noncolleagual" tones.

9. EMD Certification

1. To become certified an EMD shall successfully complete an EMD course that meets the requirements of this practice and the curriculum standard guidelines contained in Practice F 1552; and
2. Successfully pass a written or automated examination that evaluates the knowledge, comprehension and application of information required to function as an EMD as enumerated by Practice F 1258; and Practice F 1552.
3. The official sanctioning agency must evaluate the curriculum, testing, and EMDPRS of any emergency medical dispatch program to be approved through direct evaluation and approval by the physician medical director.
4. The initial certification period for a new emergency medical dispatcher shall be two years.
5. Certification of EMDs shall be documented and directly traceable to a nationally established organization with a recognized program sanctioned by the governmental body with jurisdiction for EMS systems in the state.
6. All certifying entities or organizations shall maintain records for all certified individuals and shall provide documents and reports regarding testing and certification status as required by using agencies, states, or governmental units. All records shall be maintained for a minimum period of ten years from initial certification, recertification or testing of the individual.

10. Recertification

1. To become recertified as an EMD a candidate shall provide evidence of successful completion of a minimum of 12 hours of approved continuing medical dispatch education per year during the required recertification period. This shall equate to 24 hours of continuing medical dispatch education for the initial certification or recertification period.
2. The content of the continuing medical dispatch education required shall be defined and approved by the certifying agency and consistent with the requirements of this practice; and
3. Successfully pass a written or automated examination that evaluates the knowledge, comprehension and application of information required to function as an EMD as enumerated by Practice F 1258; and the minimum curriculum guideline of Practice F 1552.
4. After the initial two year certification, the subsequent recertification period of the emergency medical dispatcher shall be not less than two years and not more than four years.
5. If an EMD recertification expires, the EMD shall have twelve months to recertify or the EMD shall be required to perform all requirements of initial certification.

11. Reciprocal Certification

1. Reciprocal certification shall be established between certifying agencies and organizations having programs that meet the requirements contained in this practice and Practice F 1552.
2. The diversified EMDPRS protocols require specific training and knowledge in their proper use, therefore, the emergency medical dispatcher wishing reciprocal certification must receive formal training on the specific EMDPRS that is used for the certification being sought and as used within the employing emergency medical dispatch agency.

12. Revocation of Certification

1. The goal of quality assurance is to correct deficiencies and encourage excellence, not just adhere to minimum standards. Demonstrated inabilities and failure to perform appropriate patient care through approved pre-arrival instructions and demonstrated inabilities and failure to perform according to the predetermined medically approved protocols are significant failures and cannot be tolerated within a comprehensive EMD program.
2. EMD certification or recertification may be suspended or revoked by the certifying entity for any of the following causes:
 1. Habitual or excessive use or addiction to narcotics or dangerous drugs, or conviction of any offense relating to the use, sale, possession, or transportation of narcotics, dangerous drugs, or controlled substances.
 2. Habitual or excessive use of alcoholic beverages or being under the influence of alcoholic beverages or controlled substances while on call or on duty as an EMD or conviction of driving under the influence of alcohol or controlled substances while driving a vehicle.
 3. Fraud or deceit in applying for or obtaining any certification, or fraud, deceit, incompetence, patient abuse, theft, or dishonesty in the performance of duties and practice as an EMD or other EMS professional.
 4. Involvement in the unauthorized use or removal of narcotics, drugs, supplies or equipment from any emergency vehicle, agency, or health care facility.
 5. Performing procedures or skills beyond the level of certification or not allowed by rules, or violation of laws pertaining to medical practice and drugs.
 6. Conviction of a felony or a crime involving moral turpitude, or the entering of a plea of guilty or the finding of guilt by a jury or court, of commission of a felony, or a crime involving moral turpitude.
 7. Mental incompetence as determined by a court of competent jurisdiction.
 8. For good cause, including conduct that is unethical, immoral, or dishonorable.
 9. In addition, recommendation for decertification or termination should also be based on the following:
 1. Demonstrated inabilities and failure to perform appropriate patient care through approved pre-arrival instructions, and
 2. Demonstrated inabilities and failure to perform according to the predetermined medically approved EMDPRS protocols.

13. Continuing Dispatcher Education (CDE)

1. A sound, ongoing program of continuing dispatcher education is essential. Without regular educational experience specifically direct to their practice, the EMD will become less proficient in the understanding of and compliance to the EMDPRS. The agency's continuing dispatcher education (CDE) program should be coordinated and organized for the EMDs through the emergency medical dispatch QA/QI personnel, who through the evaluation of on-line case review, identify the specific and individual needs of the EMD. The training should meet as a minimum the following objectives:
 1. Develop an understanding of telecommunications and the EMDs' roles and responsibilities;
 2. Enhance the on-line skills in pre-arrival instructions and in all emergency telephone procedures within the practice of EMD;
 3. Improve skills in the use and application of all component parts of the EMDPRS, including interrogation, prioritization, and appropriate provision of pre-arrival instructions;
 4. Seek opportunities for discussion, skill practice, and critique of skill performance;
 5. Maintain a current understanding of the evolving science of emergency medical dispatching methods, procedures, techniques, and standards.
1. *Elements of Continuing Dispatcher Education*---CDE at a minimum must include a review of the elements of the curriculum, with special emphasis on operational functions, protocol and policy compliance, new procedures, medical advancements, problematic situations, and greater in depth understanding of the medical conditions that are represented within the EMDPRS. CDE learning can be obtained through various educational methods and may include but is not limited to the following suggested CDE categories:
 1. *Scenario Drills/Role Playing*-Workshops and seminars related to EMS, preferably related to the skills of an EMD; that is, airway management, review of essential telecommunication skills, telephone scenarios, medical legal issues, computer aided dispatch, stress management, refresher courses, etc. (maximum of eight hours per year);
 2. Local planning or management meetings, including general organization for disaster mass casualty, and HAZ-MAT related incidences (maximum of four instructional hours per year).
 3. *Case Review Activities*-Quality assurance/quality improvement case review, planning and analysis of issues or findings identified by dispatch QA/QI, theoretically or in practice (maximum of four instructional hours per year).
 4. Audio-visuals (films, video tapes, etc.), that illustrate and review proper emergency care and EMD procedures. Titles should be restricted to those specific to EMS, preferably EMD related (maximum of two instructional hours per year).
 5. *Didactic Lectures*-Teaching the general public any topic within the scope of basic EMD/EMS relations. Synopsis of the subject taught should be included in the CDE documentation (maximum of two instructional hours per year),

6. *EMS Field Experience*-Miscellaneous categories may include on-duty work experience as an EMT or EMD (maximum of two instructional hours per year), and
7. *Attendance at Remote Professional Conferences and Seminars*-Workshop and seminars related to EMS, preferably related to skills of an EMD.

14. Risk Management

1. The following attitudinal philosophy of risk management within a quality assurance program is derived from the *Guidelines for Quality Assurance (3)* from the Council on Medical Service of the American Medical Association and deals mainly with risk management-type issues. These ten guidelines should be utilized in any medical dispatch system, whether private or governmental operated and whether conducted by medical directors, administrators, supervisors, peers, or governmental agencies.
 1. The specific policies and procedures to be utilized for performance evaluation activity must be carefully explained to the EMDs whose performance will be measured. All procedures must be objectively and impartially administered.
 2. Any formal corrective activity related to an individual EMD should be triggered by concern for that individual's overall practice, rather than by deviation from specified criteria in single cases. Judgment as to the competence of specific dispatchers should be based on an assessment of their performance with a number of patients and not on the examination of single, isolated cases, except in extraordinary circumstances.
 3. The institution of any corrective action or activity should be preceded by discussion with the EMD involved. There should be ample opportunity for the EMD to explain observed deviations from accepted practice patterns to supervisors, professional reviewers, or the medical director, or all three, before any remedial or corrective action is decided on.
 4. Emphasis should be place on retraining and modification of unacceptable practice patterns rather than on sanctions. The initial thrust of any remedial activity should be toward helping the EMD correct deficiencies in knowledge, skills, or techniques, with practice restrictions or disciplinary action considered only for those not responsive to such remedial activities.
 5. The employing agency must provide the appropriate educational resources needed to affect the desired practice modifications whether they be peer consultation, continuing education, retraining or self-learning and self-assessment programs.
 6. Feedback mechanisms should be established to monitor and document needed changes in practice patterns and allow for assessment of the effectiveness of any remedial activities instituted by or for an EMD.
 7. Restrictions, sanctions or disciplinary actions should be imposed on those dispatchers not responsive to remedial activities, whenever the employing agency or medical director, or both, deem such action necessary to protect the public. Depending on the severity of the deficiency such restrictions may include loss of certification.
 8. The imposition of restrictions, sanctions or disciplinary actions must be timely and consistent with due process. Before a restriction or

disciplinary action is imposed, the EMD affected should be provided an explanation of the basis for such actions, ample opportunity to request reconsideration and to submit any documentation relevant to the request, and the right to meet with those considering its imposition. However, in cases where those considering the imposition of restrictions, sanctions or disciplinary action deem the dispatcher to pose an imminent hazard to the health of patients, personnel or the public at large, such restrictions or disciplinary actions may be imposed immediately.

9. Quality assurance systems for medical dispatch should be structured and operated so as to ensure immunity for those conducting or applying such systems who are acting in good faith. To ensure the active unfettered participation of all parties in the review process, all case reviews, and the documents and opinions generated by them, should be structured, if possible, for protection from subpoena and legal discovery.
10. To the fullest degree possible, quality assurance systems should be structured to recognize care of high quality as well as correcting instances of deficient practice. The vast majority of practicing, professionally trained EMDs provide care of high quality. Quality assurance systems should explore methods to identify and recognize those treatment methodologies, procedures, and protocols that consistently contribute to improved patient outcomes, system efficiency, and safety. Information on such results should be communicated to the medical control community and dispatch agency administrations. EMDs providing high and consistent quality care should be rewarded. Commendations, awards, advancements and other forms of positive reinforcements are important facets of quality assurance.

15. Sequence of Implementation

1. This section is intended to serve as a sequential step guideline of activities that must be completed to implement an emergency medical dispatch program. All administrative and oversight functions must be established and in place prior to training the EMDs or any "on-line" use of the EMDPRS.
1. Selection and orientation of the medical director (who also serves on the QA/QI and oversight committees noted below),
 1. EMD project director;
 2. Communications center manager;
 3. Emergency medical service system(s) administrator(s);
 4. EMD program QA/QI personnel;
 5. Active on-line dispatcher (s);
 6. Prehospital care provider representative (EMT or paramedic, or both);
 7. EMD labor organization representative; and
 8. Continuing dispatch education personnel;
1. The committee must identify the goals and objectives of their proposed EMD program.

1. Selection of an EMDPRS by the oversight committee, with the written approval of the program medical director, conforming to the goals and objectives identified above.
 2. Acquire the selected EMDPRS.
-
1. Orientation about the EMD program for all relevant governmental or municipal personnel, EMS personnel (field responders, supervisory, administrative) and communications managers, administrators, and oversight committee members.
-
1. Develop QA/QI program for employee evaluation as indicated in the section on performance evaluation.
 2. Ensure that all oversight committee functions, QA/QI mechanisms, continuing education programs and other above outlined administrative functions are established prior to commencement of EMD training.
 3. Arrange, schedule and conduct all prerequisite or pre-EMD training programs such as CPR or emergency medical orientation (first responder) classes for communications personnel.
 4. Arrange, schedule and conduct EMD training program for all communication personnel, all oversight committee members, and medical direction personnel.
 5. Implement the EMDPRS in the communications center
 6. Begin performance evaluation of EMD cases according to the QA/QI program.
 7. Initiate the continuing dispatch education program (CDE).
 8. Begin dispatch feedback mechanisms and performance remediation process.
 9. Conduct orientation of ancillary public safety communications centers in the geographic area.
 10. Provide for a public education component to orient the serviced population to the new EMD program.
 11. Continue to gather and record data relative to the effectiveness of the EMDPRS and evaluate the impact of the EMD program on the delivery of emergency medical services.

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

References

1. This practice is under the jurisdiction of ASTM Committee F-30 on Emergency Medical Services and is the direct responsibility of Subcommittee F30.04 on Communications.
2. Annual Book of ASTM Standards, Vol. 13.01

Guidelines for Quality Assurance, Council on Medical Service of the American Medical Association.

Appendix G 2a: Elements of an Emergency Medical Dispatch System

(The information below is included as an illustrative resource regarding EMD dispatch.)

(National Institutes of Health; NIH Publications. 1994. No 94-3287)

terms: Emergency medical dispatching; acute myocardial infarction (AMI); coronary heart disease (CHD); sudden cardiac death; cardiac arrest; "chain of survival" for victims of cardiac arrest; emergency medical system (EMS); cardiopulmonary resuscitation (CPR); emergency medical dispatcher (EMD); caller-interrogation questions; prearrival instructions; vehicle response mode; medical dispatch protocols; dispatch life support; medical dispatcher training; medical dispatcher certification; emergency medical dispatch quality control and improvement; advanced life support (ALS); basic life support (BLS); lights-and-siren response; standard response classification codes; "dispatcher abandonment"; telephone aid; "ad libbed" instructions;

EMERGENCY MEDICAL DISPATCHING: RAPID IDENTIFICATION AND TREATMENT OF ACUTE MYOCARDIAL INFARCTION

FOREWORD Coronary heart disease (CHD) continues to be the leading cause of death in the United States despite a remarkable decline in CHD mortality over the last 30 years. The National Heart, Lung, and Blood Institute estimates that as many as 1.25 million people will experience an acute myocardial infarction (AMI) in 1993, and nearly 500,000 will die.

The importance of early treatment has been underscored in the last decade with the results from clinical trials of thrombolytic therapy demonstrating mortality reductions with earlier treatment. Out-of-hospital sudden cardiac death is an ever-present threat, further highlighting the importance of early recognition and treatment.

However, a fundamental barrier to timely treatment is delay -- at the level of the patient, the emergency medical services (EMS) system, and the emergency department. In June 1991, the National Heart, Lung, and Blood Institute launched the National Heart Attack Alert Program (NHAAP) with the goal of reducing AMI morbidity and mortality, including sudden cardiac death. The NHAAP Coordinating Committee was formed to help develop, implement, and evaluate the program. This committee is composed of representatives of 39 national scientific, professional, governmental, and voluntary organizations interested in lowering AMI morbidity and mortality through professional, patient, and public education.

The importance of the EMS system for cardiac care has been highlighted in the American Heart Association's recent guidelines for cardiopulmonary resuscitation and emergency cardiac care where early access to EMS is identified as the first link in the chain of survival for cardiac arrest. The chain of survival concept has been expanded to include patients with symptoms and signs of AMI.

Emergency medical dispatching has been recognized as a vital part of the early access link in the chain of survival for cardiac arrest. The potential important role for

emergency medical dispatchers (EMD's) in the prehospital care of patients with symptoms and signs of an AMI, as well as patients with cardiac arrest, is the underlying assumption of this paper.

Thus, while emergency medical dispatching is a broader topic than AMI and cardiac arrest, this paper represents a consensus of its potential contribution to the seamless prehospital identification and treatment of patients with AMI, including cardiac arrest, as well as a consensus of the critical issues and recommendations for medical dispatch protocols, processes, training and certification, and quality control and improvement.

Nevertheless, it should be noted that there is a paucity of research related to outcomes associated with emergency medical dispatching. Only through evaluation research can the optimal EMD processes and protocols, associated with specified outcomes, be elucidated.

Claude Lenfant,
M.D. Director National Heart, Lung, and Blood Institute

INTRODUCTION TO EMERGENCY MEDICAL DISPATCHING

The American Heart Association (AHA) has proposed the concept of a "chain of survival" for victims of cardiac arrest. The chain of survival includes four links, each of which must be robust to ensure maximum survival rates. The components of the chain are:

1. Early access to the emergency medical services (EMS) system
2. Early cardiopulmonary resuscitation (CPR), either by bystanders or first-responder rescuers
3. Early defibrillation by first responders, emergency medical technicians, or paramedics
4. Early advanced life support.

Although the chain of survival was initially conceptualized for cardiac arrest victims, patients with an acute myocardial infarction (AMI) also benefit from the chain-of-survival approach to emergency cardiac care in the community.

The first link of the chain of survival (early access) encompasses several major actions that must occur rapidly. Among these are recognition of the symptoms and signs of the AMI by the patient and bystanders, notification of the EMS system (often by use of the 9-1-1 emergency telephone number), recognition of a cardiac emergency by the medical dispatcher, and activation of available EMS responders. Each action is a part of the early access link.

During the past 15 years, the public has been educated to use the 9-1-1 emergency telephone number to summon help for a range of emergencies, from minor problems to life-threatening conditions. The value of the 9-1-1 system is probably increased if there is a qualified professional -- the emergency medical dispatcher (EMD) -- to process emergency medical calls.

An EMD is a trained public safety telecommunicator with the additional training and specific emergency medical knowledge essential for the efficient management of processing 9-1-1 calls and other emergency medical communications. EMD's can perform some important functions that may enhance the efficiency and effectiveness

of prehospital care for AMI patients. They can elicit symptoms from callers to determine if a heart attack is possibly occurring and activate appropriate EMS responders to deal with the AMI patient. Dispatchers can also provide 9-1-1 callers with instructions for how to care for the possible AMI patient until help arrives -- including CPR, if necessary. Effective emergency medical dispatching has the goal of sending the right EMS resources to the right person, at the right time, in the right way, and providing the right instructions for the care of the patient until help arrives.

This goal can be ideally accomplished through the trained EMD's careful use of a protocol that contains the following elements:

1. Systematized caller-interrogation questions that are chief-complaint specific
2. Systematized prearrival instructions
3. Protocols that determine vehicle response mode and configuration based on the EMD's evaluation of injury or illness severity
4. Referenced information for dispatcher use.

The impact of well-trained, medically managed EMD's on the early care of potential heart attack victims is believed to be potentially beneficial. Five elements seem to be key to an effective emergency medical dispatch program:

- Use of medical dispatch protocols
- Provision of dispatch life support (see definition below)
- EMD training
- EMD certification
- Emergency medical dispatch quality control and improvement processes.

This paper discusses each of these elements and makes some recommendations for improving emergency medical dispatching in the United States. Local, county, and State governments have a responsibility to ensure that 9-1-1 and emergency medical dispatch centers are staffed by qualified EMD's. This involves including emergency medical dispatching as part of a community's assessment of the EMS needs, and designating resources that are indicated, to serve the welfare of its citizens.

ISSUES AND RECOMMENDATIONS FOR EMERGENCY MEDICAL DISPATCHING

Two documents on emergency medical dispatching that have been developed by nationally authoritative agencies are:

- The ASTM's "Standard Practice for Emergency Medical Dispatch"
- The National Association of EMS Physicians' (NAEMSP) positions paper, "Emergency Medical Dispatching."

The recommendations set forth in these documents are believed to be appropriate, and all EMS systems are encouraged to implement them as much as possible. Rather than repeating or superceding the points made in those documents, this paper addresses emergency medical dispatching issues with an emphasis on care of the AMI patient and reiterates the recommendations that are relevant for an emergency medical dispatching system to effectively handle the AMI patient.

The ASTM is also currently developing two additional documents on emergency medical dispatching. It is anticipated that these standards will parallel many of the recommendations contained in this paper. These documents are:

- The ASTM F-1552 "Standard Practice for Training, Instructor Qualification and Certification Eligibility of Emergency Medical Dispatchers"
- The ASTM F-1560 "Standard Practice for Emergency Medical Dispatch Management."

It should be noted that few well-constructed, objective, published studies exist that address the components or the effectiveness of components of emergency medical dispatching. This is in large part due to the difficulty in defining, as well as determining, those patient outcomes or improvements in patient conditions that are a result of emergency medical dispatching. The patient's condition can deteriorate during the time it takes a prehospital provider to arrive at the scene. Outcome parameters based on the EMS personnel's initial patient findings are not well defined for most prehospital problems other than cardiac arrest and critical trauma. To guarantee that outcomes actually result from the use of a given protocol, a study must demonstrate high compliance to that protocol by the dispatchers. Studies must clearly identify the exact protocol or specific part of the protocol that is undergoing evaluation. The need for further studies regarding the training and retraining, quality control and improvement of EMD's, and the benefit and optimum configuration of prehospital EMD protocols is a general recommendation of this paper.

MEDICAL DISPATCH PROTOCOLS

Effective EMD practice is based on the consistent use of medically approved dispatch protocols. These protocols are a written system of procedures for the evaluation of, response to, and provision of care to emergency patients. A written dispatch protocol system directs the EMD to complete a chief-complaint-specific, preplanned interrogation of the 9-1-1 caller to accurately assess and act on the medical emergency. A dispatch protocol requires the EMD to interrogate the caller to identify the demographics, characteristics, and general medical problem of the patient and to determine the status of consciousness and breathing. This is followed, when appropriate, by a more specific systematized interrogation related to the reported general medical problem, selected by the EMD from among protocol choices that cover all possible presenting medical emergencies. Systematized interrogation is an essential component of a comprehensive medical dispatch protocol, even for those systems not prioritizing between advanced life support (ALS) and basic life support (BLS) calls.

The dispatcher interrogation process has four important purposes:

1. Provide the EMD with the information needed to make a correct decision regarding initial unit response, including type of EMS personnel required and use of lights and siren
2. Enable the EMD to determine the presence of conditions or situations requiring prearrival instructions
3. Enable the EMD to provide responders with prearrival information for planning of, and preparation for, on-scene patient care activities
4. Assist in ensuring the safety of the patient, the responders, the caller, and other bystanders.

Use of a medical dispatch protocol helps the EMD to avoid making a faulty "diagnosis" of the medical emergency and incorrect dispatching decisions. When EMD's fail to use medical dispatch protocols, they may be prone to make an assessment of the situation based on inadequate information. The EMD may fail to identify the patient's chief complaint and, therefore, may provide inadequate response or advice. EMS literature provides many examples of the adverse outcomes and legal problems arising from such faulty dispatch practices.

The issue of patient and bystander denial of or inability to recognize heart attack symptoms is commonly encountered at dispatch.

Medical dispatch protocols should include standardized response classifications based on the EMD's structured assessment of the medical urgency of the incident and indicate the level of EMS response needed. These response classifications should be based on recognized medical symptoms and the type of incident. In systems that vary levels of response, dispatch protocols should specify which situations require an ALS versus a BLS response. This is important in those EMS systems that are "tiered" and allow rapid response by a level of EMS personnel appropriate for the seriousness of the emergency as determined by the EMD (e.g., ALS personnel are dispatched for life-threatening emergencies.) Medical dispatch protocols may also specify which situations require a lights-and-siren response to the scene and which do not. With EMS vehicle-related accidents in the United States reported to have been 2,400 for

ambulances in 1990, it is medically unsound and managerially unsafe to require lights-and-siren response on all accidents.

Response classifications will vary from one EMS system to another based on the type of system resources, response limitations, traffic patterns, and geography of their service areas. Response configurations often become more complex for larger or more sophisticated systems. It must be stressed that decisions regarding response assignments are a responsibility of medical management and should be subject to the approval of the medical director of an EMS system.

Ideally, standardized response classifications should be based on a uniform coding system. This should assist in consistency of use, statistical comparison, and scientific research across EMS systems that use the same medical dispatch protocols.

The non-English speaking caller poses an ever-increasing challenge for many dispatch centers, especially those in large urban centers. This issue has three basic solutions: 1) sufficient staffing of EMD's with multilingual capability where a center's constituency has demonstrated frequent use of a particular language or languages other than English; 2) secure access to a language-interpreting service such as that provided by one of the major long distance carriers; and 3) provision of medical dispatch protocols in commonly encountered languages. At the time of publication of this paper, alternate language versions of protocols used in the United States are available in Spanish, French, and German.

It is recommended that emergency medical dispatch protocols:

- Be medically approved
- Be uniform throughout each EMS jurisdiction
- Use standard response classification codes to facilitate scientific comparison and study among systems using the same protocols
- Be followed consistently and nonarbitrarily by all EMD's, except when additional clarification is needed
- Delineate the types of cases requiring an ALS versus a BLS response (especially in tiered systems) and the types of cases requiring use of lights and siren from those that do not.

DISPATCH LIFE SUPPORT

Dispatch life support encompasses the knowledge, procedures, and skills used by trained EMD's to provide care through prearrival instructions to callers. It consists of those BLS and ALS principles that are appropriate for application by EMD's. Dispatch life support forms the basis for establishing the content and application methodology for prearrival instructions used by medical dispatcher. The NAEMSP has also defined dispatch life support (see the definitions that follow).

Prearrival instructions differ from the less well-specified telephone aid, and the differences between them form the basis of recommendations for standardization of EMD training and practice (including dispatch life support):

Prearrival Instructions. Prearrival instructions are medically approved, written instructions given by trained EMD's to callers that help provide necessary assistance to the victim and control of the situation prior to the arrival of EMS personnel. Prearrival instructions are read word for word by the EMD to the fullest extent possible.

The necessity to routinely provide prearrival instructions has been addressed by the NAEMSP: "Pre-arrival instructions are a mandatory function of each EMD in a medical dispatch center. Standard medically approved telephone instructions by trained EMD's are safe to give and in many instances are a moral necessity." The failure to provide prearrival instructions, when possible and appropriate, is currently being litigated in the Nation's courts as a form of dispatcher negligence. It is interesting to note that one of the most significant obstacles to the establishment of prearrival instructions, and medical dispatch protocol systems in general, has been the notion that agencies can be successfully sued for engaging in such activities. It appears that there has never been a dispatcher negligence lawsuit filed for the provision of medically sound prearrival instructions. There are a significant number of lawsuits recently completed or in progress for which the omission of prearrival instructions (or "dispatcher abandonment", as the legal terminology describes it) has been alleged.

The nature of prearrival instructions is such that they must be provided in a timely manner, over the telephone, and without the benefit of practice or visual verifications. Thus, it is important that EMD's carefully adhere to protocols for the provision of telephone-instructed treatment in a standard, nonarbitrary, and reproducible way.

Box 1.

Application of Emergency Medical Dispatching Principles to the Patient with Suspected AMI and Cardiac Arrest

Emergency medical dispatching principles, as operationalized in medical dispatch protocols and prearrival instructions, can be readily applied to the potential AMI and cardiac arrest patient. For all patients, key questions are asked as to whether the patient is reported to be unconscious and not breathing to ascertain if a cardiac arrest has occurred. For example, the answer "I'm not sure" regarding breathing status given by a second-party caller (someone who can see or easily access the patient) is assumed to mean "no"; therefore, a maximal response, preferably ALS/paramedics, would be sent immediately. The key questions, then, also determine the most appropriate level of response. If a cardiac arrest has been verified, first responders can be given the chief complaint, approximate age, the

status of consciousness and breathing, and the dispatch response code, facilitating preparation for possible use of an automated external defibrillator. Prearrival instructions in the case of a cardiac arrest would entail dispatcher-assisted CPR.

For a patient with chest pain, additional dispatcher interactions with the caller are recommended to overcome caller or patient denial or to validate that the caller's descriptions of symptoms and signs may represent the presentation of a heart attack. Specifically, the dispatcher may ask the caller if the patient has severe indigestion; tightness; heavy pressure; constricting band and crushing discomfort in the chest with the spread of these feelings to the arms, jaw, neck, or back; as well as the presence of nausea or sweating. Verification of these symptoms directs the dispatcher to advise the responders so that their functions at the scene can be expedited.

Prearrival instructions in these cases would include correct positioning of the patient, instructions for vomiting, and instructions to monitor very closely and call back if the patient's condition worsens.

Telephone aid. Telephone aid, as defined herein, consists of "ad libbed" instructions provided by either trained or untrained EMD's. Telephone aid differs from dispatch life support in that the instructions provided to the caller are based on the dispatcher's previous training in a procedure or treatment but are provided without following a scripted prearrival instruction protocol. This method exists because either no protocols are used in the medical dispatch center or protocol adherence is not required by policy and procedure (e.g., the dispatcher is "trained" in CPR and thus describes to the caller, to the best of his or her verbal ability, how to do CPR).

As noted in the section (above) on prearrival instructions, dispatchers must carefully adhere to written protocols.

Unfortunately, coupled with a growing interest and effort within public safety agencies to provide some type of telephone instructions to callers, many agencies are "allowing" dispatchers to ad lib instructions. There appears to be a significant difference between dispatch life support-based prearrival instructions and telephone aid. Telephone aid, as defined, may only ensure that the dispatcher has attempted to provide some sort of care to the patient through the caller but does not ensure that such care is correct, standard, and medically effective or even necessary in the first place.

Telephone aid often causes the following predictable errors:

1. Failure to correctly identify conditions requiring telephone intervention and therefore prearrival instructions in the first place (e.g., "saving" an infant having a febrile seizure who was incorrectly identified as needing CPR due to failure to follow protocols that are medically designed to verify need -- verify breathing, pulse, etc., before potentially dangerous dispatcher-invasive treatments such as compressions are initiated).
2. Failure to accurately identify the presence of interim symptoms and signs (or the lack of them) during the in-progress provision of telephone intervention (e.g., dispatchers who ad lib CPR sequences often miss important patient verifiers that cannot be seen by the dispatcher, such as watching for the chest to rise).

3. Failure to perform (describe or teach) multistep procedures, such as CPR care, in a consistent and reproducible fashion regardless of which dispatcher in a center provides such help (e.g., quality assurance review of these types of cases often reveals that dispatchers in the same center [or even the same dispatcher] perform care differently each time if they are not following scripted prearrival instruction protocols closely).

Telephone aid, as defined, often provides only the illusion of correct help via telephone without predictably ensuring consistent and accurate instructions to all callers. Telephone aid, therefore, is usually considered an inappropriate and unreliable form of dispatcher-provided medical care.

Medical dispatch practice must be safe, competent, and effective. The systematic use of medically preapproved protocols will help to ensure that the dispatcher performance is structured and reproducible and can be objectively measured.

In light of the important differences between prearrival instructions and telephone aid, and to improve standardization of EMD training and practice, it is recommended that:

- Dispatch life support be adopted nationwide as an essential concept of emergency medical dispatch
- Dispatch life support be standardized
- Prearrival instructions be provided from written protocol scripts for all medical emergencies.

MEDICAL DISPATCHER TRAINING

Formal EMD training contributes to the safe and effective performance of the medical dispatcher's role in EMS.

Guidelines for the core content of EMD courses are currently being standardized by the ASTM. These guidelines will provide direction for the training (and certification) of EMD's regarding appropriate decisions about EMS responses in a safe, consistent, and nonarbitrary manner. Within the context of this broad goal, current EMD training is generally at least 24 hours in length (e.g., three 8-hour days). A typical course consists of an overview of dispatching objectives and basic dispatch techniques, concentrating on known problem areas. The role of the EMD is defined, and the concepts of medical dispatching are discussed in detail. The medical dispatch protocol in use by the sponsoring EMS agency is learned, with emphasis on interrogation skills, protocol compliance, and the provision of prearrival instructions. Common medical problems are reviewed, with an emphasis on interrogation specifics for each type of problem, and the relevance and relationship of listed prearrival instructions. Throughout the training, the importance of identifying the presence or absence of symptoms (such as "chest pain") during interrogation is emphasized, rather than making a judgmental diagnosis of "heart attack." The medical significance of the various levels of urgency for each chief complaint and its resultant response is clarified to give the student the ability to prioritize quickly the various types of incidents confronting EMD's daily. Often, courses use mock case drills to give the dispatcher a hands-on feel of protocol performance.

A formal examination to test student understanding and assimilation of the curriculum should be administered at the completion of an EMD course. This enables formal certification in jurisdictions requiring or allowing it.

It is recommended that EMD training:

- Be required for all medical dispatchers
- Be consistent in core curriculum content nationally
- Be based on the medical dispatch protocol selected and approved by the sponsoring agency's physician medical director, allowing for practice use of the protocol by the EMD trainee.

MEDICAL DISPATCHER CERTIFICATION

Given the very important role of the dispatcher in the chain of survival, certification should become governmentally mandated throughout the United States.

Certification should include requirements for continuing education and recertification. Continuing education programs should incorporate formal written and practical tests. Continuing education and recertification allow EMS agencies to formally promote and ensure the ongoing quality of EMD performance. Certification also establishes processes for decertifying individuals who cannot meet minimum standards. There have been no studies to determine the optimal frequency or process of recertification; therefore, expert panels have recommended that EMD's should be recertified every 2 to 4 years. At least 12 hours per year of continuing education should be required for EMD recertification.

It is recommended that EMD certification:

- Be required of all EMD's through either State government processes or professional medical dispatch standard-setting organizations
- Require continuing education and recertification as components of a continuing certification process.

MEDICAL DISPATCH QUALITY CONTROL AND IMPROVEMENT

Each EMS system should have in place a comprehensive quality improvement program. Four goals in the quality control and improvement of medical dispatch activities are that:

1. Dispatchers understand medical dispatch policy, protocol, and practice
2. Dispatchers comply with medical dispatch policy, protocol, and practice
3. Deficiencies in understanding and compliance with medical dispatch policy, protocol, and practice among dispatchers be corrected
4. Medical dispatch policy, protocols, and practice be updated on a continuous basis to ensure that they are appropriate and effective.

A comprehensive quality control and improvement system for emergency medical dispatching has several components. Among these are selection of personnel; orientation; initial training; certification and recertification; continuing dispatch education; physician medical direction; data generation; case review and performance evaluation; correction of performance problems (risk management); and decertification, suspension, or termination. These components of medical dispatcher quality improvement are essential for maintaining the type of employment environment necessary to ensure safe and effective patient evaluation and care.

One of the most important areas of quality control/improvement is that of case review and performance evaluation. Between 7 and 10 percent of each EMD's cases should be randomly reviewed. The review of random cases ensures that each dispatcher's current practice (especially compliance with protocol) is determined. In addition, the review of out-of-the-ordinary cases (both excellent and problematic) is important. These cases are often identified by sources external to the dispatch center. The involvement of EMS field personnel in reporting incidents that appear to

represent dispatch-related problems can be very helpful in strengthening the performance and policy evaluation process.

These case reviews should serve as the basis for periodic dispatcher performance evaluation. The cumulative level of compliance to protocol of each medical dispatcher should be evaluated and compared with preset levels of acceptable practice. This provides an objective method of establishing thresholds of performance for these essential members of the EMS team. Corrective steps may include continuing education or disciplinary action.

In the absence of adequate case review and performance evaluation, it has been shown that dispatcher compliance to protocol deteriorates and is generally under 50 percent.

Medical direction is an essential element in the overall assurance of quality performance of EMD's. Just as medical direction is uniformly recommended for emergency medical technicians and paramedics, the EMD requires careful attention and guidance. According to the NAEMSP, "The medical aspects of emergency medical dispatching and communications are an integral part of the responsibilities of the Medical Director of an EMS system. Quality Improvement, Risk Management, and Medical Control and Direction are essential elements to the management of medical dispatch operations within the EMS system."

It is recommended that ongoing medical dispatch quality control and improvement processes:

- Be in place for all medical dispatch centers
- Allow for random review of cases
- Require high-level compliance to protocol as a major factor in dispatcher performance evaluation
- Be the basis of dispatcher reeducation, feedback, discipline, and medical management
- Be carried out under the medical direction of a qualified physician.

SUMMARY

The EMD is a key member of the EMS team. EMD's may have a profound effect on the early care of potential heart attack victims. To ensure optimal emergency medical dispatching, this paper has made a number of recommendations, which are highlighted below:

- Each EMS system should utilize a set of written, medically approved dispatching protocols for the evaluation of, response to, and provision of care to the AMI patient. These protocols should be followed consistently and nonarbitrarily by all EMD's.
- Dispatch life support should be provided by each EMS system. EMD's should be required to use medically approved, written prearrival instructions to help callers provide aid to the AMI patient and control the situation prior to the arrival of EMS personnel.
- Every EMD should be formally trained, based on a nationally consistent core curriculum, with an emphasis on mastery of the dispatching protocol used by the sponsoring EMS agency.
- Certification should be required of all EMD's, either through State governments or professional medical dispatch standard-setting organizations. This process should also mandate continuing education and recertification.
- Every EMS system should have in place a system of continuous quality improvement for medical dispatching. This should include a random review of each EMD's cases. Periodic performance evaluations should be conducted with each EMD, with emphasis on the EMD's adherence to dispatching protocol.
- All aspects of emergency medical dispatching should be the ultimate responsibility of the EMS physician who provides medical direction for a given EMS system. That is, an EMS physician should be in an authoritative position to manage the medical care components of an EMD program, including overseeing training, selecting and approving dispatch protocols and prearrival instructions, and evaluating the EMD system.

These recommendations, if implemented, may result in improvement of emergency medical dispatching in general -- and potentially better identification and treatment of patients with symptoms and signs of AMI, in particular.

Appendix H: Transitioning of Emergency Communications into the Next Generation

The following is an excerpt from the report "Transitioning of Emergency Communications into the Next Generation" published in March 2006 by the National Emergency Number Association's Next Generation Partner Program (pages 4-6). For a full copy of the report and additional information about NG9-1-1, go to www.nena.org/2006ng/report.

OVERALL EMERGENCY COMMUNICATIONS NEEDS

A critical weakness in existing emergency communications systems is that emergency response agencies are generally isolated from each other. Presently, the "emergency response community" includes public and private organizations that need to share emergency information, including: law enforcement, fire services, EMS, 9-1-1, emergency operations centers, hospitals, clinics, public health agencies, transportation agencies, public works departments, utilities and others.

The National Reliability and Interoperability Council (NRIC) Focus Group 1D, an advisory group of the Federal Communications Commission (FCC), identified one solution within two complementary areas: technological and institutional. In December 2005, NRIC published a final report that defined an effective future emergency communications system as an "internetwork"ⁱ—a set of policies, tools, interfaces and standards that connect securely the multiplicity of local, regional, and national wireline and wireless networks. Such an internetwork will enable modern, integrated information capabilities to support local, regional and national emergency needs. It is, in effect, a system of systems.ⁱⁱ

NENA's 9-1-1 Future Path Plan also proposed a hierarchy of interconnected local, regional and national IP networks that would enable NG 9-1-1 and many other emergency communications applications. The resulting model is a set of coordinated applications on an IP internetwork that serves multiple governmental functions and seamlessly interfaces voice and electronic data. In addition to improving response for daily emergencies, such a model would also improve home- land security by providing a nationally coordinated emergency response system.

The needs of the new system of emergency communications include:

- Improved natural disaster management, including the prevention of and response to potential terrorist actions.
- Full support of new communications and information technology for emergency services.
- Reduce the danger of viruses capable of generating automated 9-1-1 calls and overwhelming the network.
- Use and enhance increasingly available sources of information that are only readily available with a flexible, wide access, high bandwidth network.
- Improved accessibility and increased compatibility to ensure all Americans have access to the emergency response system, including those with disabilities.

Today, millions of cell phone subscribers and commercial vehicles with GPS and communications systems can provide precise locations and verbal descriptions of emergencies. In the future, more will be able to provide images or other data. New devices, such as a direct report of a heart attack from a device worn on the chest, could also have a direct link with NG 9-1-1. Increased use of text messaging must also be supported, in general and to accommodate persons with disabilities.

NG 9-1-1 will also address N11 numbers and other services, such as poison control centers using 800 services for state/regional routing. For many VoIP

customers, there is limited or no access to N11 numbers and many 800 numbers cannot be properly routed.

Work is well underway within NENA, the Internet Engineering Task Force (IETF), federal XML initiatives for data management standardization and the Alliance for Telecommunications Industry Solutions (ATIS) to provide the standards required to fully converge circuit switched (voice and text) and data networks into one NG 9-1-1 packet network, based on IP. Infrastructure requirements include transport, standards, applications and services, policies and protocols, and associated governance.

NG 9-1-1 AS A MAJOR APPLICATION OF THE EMERGENCY COMMUNICATIONS NETWORK

As with many other networks, NRIC Focus Group 1B foresees the convergence of data, voice, text and video networks, based on ubiquitous packet transports and using standard Internet Protocols. While 2010 will not mean the end of older telecommunications equipment, Focus Group 1B advocates that the nation should have IP-based E9-1-1 capability, and begin its transition whenever and wherever possible.

The future Emergency Services Network will accommodate a flexible services infrastructure where applications can be defined and introduced without requiring major overhauls to existing network service providing elements. Capabilities will include the ability for regional and national interests to monitor, impact, and participate in emergency events or emergency preparedness. Emergency management centers at all levels of government will be able to monitor data in real time, with an ability to recognize patterns at local, regional or national levels.

Implementation of NG 9-1-1 standards will have far-reaching operational impacts:

- Handling calls from new devices, which will require new processes and procedures for call takers.
- Connecting new network elements to the system will require new administration and management tasks.
- Providing new capabilities, including the ability to transfer calls with location and all associated data, will require new processes and procedures for call takers.
- Accessing additional data will require new call taker processes, procedures, and monitors.
- New databases will require new processes and procedures for call takers, database administrators and management.
- Increased information will require new decision support tools that help interpret data for call takers and dispatchers.
- Improved connectivity will create new relationships among PSAPs and other local, regional and national emergency agencies, requiring new processes and procedures for call takers and management.

Such changes to the system will position PSAPs as emergency communications hubs, but won't restrict access by others to the same data. In addition, supplemental data such as telematics or patient medical history can be accessed from other sources.

TRANSITION AND IMPLEMENTATION

After design, standards and testing is completed, NG 9-1-1 capabilities can be implemented in sub-state or state-level IP networks that are validated to have the security, authentication and management characteristics necessary for dependable NG 9-1-1 service. As shown in the diagram on pages 10-11, IP-based telecommunications services (VoIP in fixed/static and nomadic; WiFi and WiMAX) will be able to connect to the Internet via IP routers and high-level security processes into an IP-based NG 9-1-1 system.

As “local” emergency services IP networks supporting NG 9-1-1 applications become interconnected to each other as well as federal functions/networks such as homeland security, the overall benefit to emergency communications becomes a reality. An opportunity enabled by this capability is to “leapfrog” wireless and other services to full E9-1-1/NG 9-1-1 in areas where the traditional network does not exist, at lower cost. For example, IP mesh networks can supply transport where no phone and/or traditional 9-1-1 access exists (e.g., remote rural areas and Indian tribal lands).

During this process, legacy telecommunications systems for wireline, wireless, VoIP and others will likely transition to IP-based connectivity and into the local emergency services IP networks. The components highlighted in green at the lower right of the diagram on pages 10-11 can be removed in preference to more effective NG 9-1-1 components and functions.

Functions such as telematics will initially connect to the emergency services IP networks via the Internet until the internetwork of emergency services IP networks is complete. At that time, these nationally oriented services can choose to move to connection through their local emergency services IP networks. Current complications such as trunk groups and individual selective routing switches will no longer be an issue. Data access will become a combination of baseline information arriving with the “call” (whether voice, text or video), automatic delivery of additional data based on parameters defined by each emergency communications center, and call center initiated queries for supportive data. The emergency center personnel will be able to deliver an appropriate set of data on a given emergency to any other emergency group, anywhere, via the emergency communications internetwork.

It is critical that networks, systems and applications be well tested, and that service and system operational methods be developed and interactively pre-tested before use in order to minimize potential for service disruption.

i We use this unfamiliar term to make two points: (a) our strong belief that the model of the Internet should be copied for emergency communications in the future (except for its failures until recently to focus proper attention on security), and (b) that we do not favor building a new “national emergency network.” There are already many networks, and there need to be many more built at the state and local level. Our focus is on how to connect them (and applications that ride on them) into a seamless whole, rather than replace them.

ii “System of Systems.” Emergency communications devices are associated with systems and networks that range in size from small to large. Whether large or small, the systems and the networks they use work with each other to pass information and communications back and forth seamlessly. In some cases, new networks must be deployed by agencies, localities, regions, states, tribes or federal agencies. In other cases, we need to connect tools, systems and networks that are already deployed. Our overall goal is that all systems together become a system of systems.

Appendix I: OSHA Guidance

Excerpted 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 J – Participating Organizations and Representatives

Administrative Team

Elizabeth B. Armstrong, MAM, CAE (Project Director); Executive Director, National Association of State EMS Officials

Kathy S. Robinson, RN, BS, FAEN, EMT-P (Principal Investigator); Program Advisor, National Association of State EMS Officials

Fergus Laughridge, President, National Association of State EMS Officials

John Becknell (Expert Writer); Best Practices in Emergency Services

Keith Griffiths (Expert Writer); President, The RedFlash Group

Lauren Simon (Expert Writer); Best Practices in Emergency Services

National Stakeholders Group

ORGANIZATION

Air and Surface Transport Nurses Association
 American Academy of Pediatrics
 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
 National Emergency Management Association
 National Emergency Numbers Association
 National Emergency Numbers Association
 National EMS Management Association
 National Native American EMS Association
 National Registry of EMTs
 National Rural Health Association
 National Volunteer Fire Council

REPRESENTATIVE (S)

Jacqueline Stocking, RN
 Paul Sirbaugh, DO
 Joseph Wright, MD
 Ron Thackery
 J. William Jermyn, DO
 Art French, MD
 Jeffrey Hammond, MD
 Mighty Fine, MPH
 Sam Cimone
 Yucel Ors
 Rick Buell
 Jan Ogar, RN
 Dennis Sullivan
 Mary Beth Michos
 Jennie Collins
 Ron McGraw
 Jonathan Moore
 Ron Benedict
 Anthony Pellicone
 Gregory Scott
 Robert Oenning
 Angel Burba
 Robert Henderson
 Russell MacDonald, MD
 Jeffrey Lubin, MD
 Jerry Johnston
 Jennifer Frennette
 Richard Alcorta, MD
 Richard Rucker
 Trina Sheets
 Rick Jones, ENP
 Dr. Bob Cobb
 Gary Wingrove
 Charles Kmet
 William E. Brown
 Gary Wingrove
 Kenneth Knipper

Federal Partners

Agency for Healthcare Research and Quality	Jennifer Todd
Centers for Disease Control and Prevention	Deborah Levy
Department of Health and Human Services	Sandy Bogucki, MD
Department of Homeland Security	Capt. Scott Middlekauff
Department of Homeland Security	Kenny Longfritz
Department of Homeland Security	Til Jolly, MD
Department of Homeland Security	Jon Krohmer, MD
Department of Homeland Security	Bob Sauer
Department of Homeland Security	Bob Weaver
Department of Homeland Security	Harry Watkins
Department of Homeland Security	Elizabeth Crafton
Department of Homeland Security	Rob Mooney
Department of Veterans Affairs	Carter Mecher, MD
DHS/U.S. Fire Administration	Rick Ziebart
DHS/U.S. Fire Administration	Marie Martinez
Emergency Services Sector / Government Coordinating Council	Gregory Bobel, MD
Emergency Services Sector / Government Coordinating Council	Michele Miller
HRSA/ EMS-C	Dan Kavanaugh
HRSA/ EMS-C	Tina Turgel
HRSA/ EMS-C	Karen Belli
Indian Health Service	Sid Caesar
Indian Health Service	Dean Ross
NHTSA / Department of Transportation	Dee Williams
NHTSA / Department of Transportation	Ed Mays
NTIA/Department of Commerce	Thomas Hardy
NTIA/Department of Commerce	William Belote
NTIA/Department of Commerce	Chris Algieri

Special Thanks To:

Kathy Adams-House (Meeting Facilitator); PerformTech
Robert Bass, M.D.; (NASEMSO) Immediate Past President, Maryland State EMS Director
Scott Bourn; American Medical Response
Sharon Counterman; National Emergency Numbers Association
Drew Dawson (Director); Office of EMS, National Highway Traffic Safety Administration
Laura DeGrafft, (NASEMSO) Administrative Assistant
Steve Delahousey; American Medical Response
Sue Denston, (NASEMSO) Meeting Planner
Laurie Flaherty; Office of EMS, National Highway Traffic Safety Administration
Jenny Hansen; Office of EMS, National Highway Traffic Safety Administration
Christopher Kahn, MD; Office of EMS, National Highway Traffic Safety Administration
Pamela Kaufman; Association of Public-Safety Communications Officials
Sharon Kelly; (NASEMSO) Executive Assistant
Julie Krueger, MPH; (Project Coordinator) Office of EMS, National Highway Traffic Safety Administration
Kurt Krumperman; Rural Metro
Wendy Martin (Expert Writer); The RedFlash Group
Katie Moran (President); PerformTech
Amy Starchville, (NASEMSO) Contracts Manager
Karen S. Thompson; (NASEMSO) Web Site Content Manager
Barbara Tyeryar, (NASEMSO) Financial Assistant
Melissa Trumbull; (NASEMSO) Program Manager
Gamunu Wijetunge (Project Facilitator); Office of EMS, National Highway Traffic Safety Administration

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