

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

### **Guideline 2.1 – EMS Role in Surveillance**

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

#### **Rationale**

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

#### **Considerations**

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

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

## Background

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

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

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

When considering mechanisms to obtain and share EMS data from CAD systems and patient care reports, EMS planners should coordinate with local and State public health agencies to identify data elements that will be most useful in tracking influenza-like symptoms. The National EMS Information System<sup>21</sup> (NEMSIS) data elements may provide an additional mechanism for uniformity of data collection.

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

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<sup>21</sup> The National EMS Information System (NEMSIS) information and NHTSA Dataset is available at [www.nemsis.org](http://www.nemsis.org)

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

The CDC notes that the symptoms<sup>22</sup> typically associated with influenza (“pandemic influenza symptom set”) are:

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

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

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

## Guideline 2.2 – Statewide Tracking System

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

### Rationale

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

### Considerations

- Compatible communications equipment and communications radio frequency plans should be in place for common hospital diversion and bed capacity situational awareness at the local, State and regional levels.
- A statewide interoperable patient tracking system should be in place that allows patient tracking from the first response site to a healthcare facility and allows data to be accessible among statewide users.
- The ability to track healthcare facility availability in real-time allows EMS providers to make timely patient destination decisions in the field.
- Information that allows public health officials to make links between original patient location and patient disposition can strengthen the ability for public health officials to track disease spread.
- Although not identical, this guideline is generally consistent with the current version of the Department of Homeland Security's Target Capability List<sup>23</sup> for "Triage and Pre-hospital Treatment."
- The plan should address patient confidentiality issues in establishing the statewide tracking system.

### Background

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

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

### ***Patient Identification/Location Tracking***

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

### ***Hospital Resource Availability***

The National Hospital Available Beds for Emergencies and Disasters (HAvBED) System<sup>24</sup>, funded by the Agency for Healthcare Research and Quality (AHRQ), explores the feasibility of a national real-time hospital-bed tracking system to address a surge of patients during a mass casualty event.

The Health Emergency Response Data System<sup>25</sup> (HERDS) is a statewide electronic web based data collection system linked to health care facilities (all New York State hospitals) through a secure internet site that allows hospitals to relay resources or needs to the New York State Department of Health during emergencies, or respond immediately to rapid request surveys in preparedness planning efforts. HERDS combines Geographic Information Systems and a comprehensive, interactive database to provide health officials with online, real time data describing available hospital beds, medical supplies, personnel, numbers, status and immediate care needs of ill or injured persons, along with other urgent information to facilitate a rapid and effective emergency response.

Operational features of HERDS:

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

FRED is the Facility Resource Emergency Database<sup>26</sup>, a secure Internet-based system that provides rapid, efficient, alert-driven emergency event or disaster vetted notification with reporting of resources available to mitigate mass casualty incidents or similar situations that produce a surge of patients. It was originally developed by the Maryland Institute for EMS Systems (MIEMSS) and has since

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

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

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

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

### ***Public Health/Epidemiologic Issues***

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

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

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

## Guideline 2.3 – EMS and Community Mitigation

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

### Rationale

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

### Considerations

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

## Background

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

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

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

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

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

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

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



## ***Community Mitigation***

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

Researchers using computer models<sup>31</sup> have investigated the effectiveness of containment strategies in limiting an emerging influenza strain at the source. Simulations showed that a prepared response with targeted strategies would have a high probability of limiting the spread of a pandemic. Preliminary analysis of historical data and mathematical modeling suggest that the early, coordinated application of multiple interventions may be more effective in reducing transmission than the use of a single intervention.

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

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

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

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

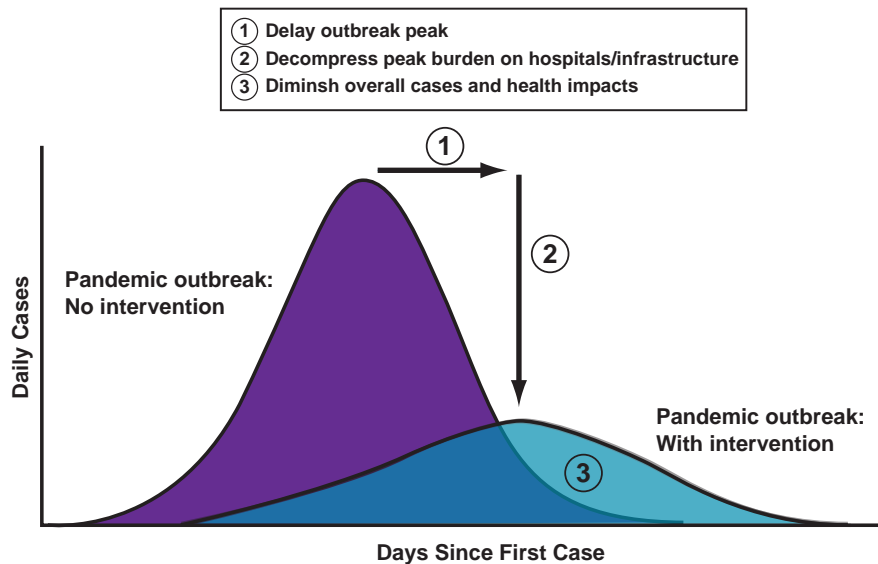
to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the non-pharmaceutical interventions (NPIs).

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

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

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

**Figure 9: Goals of Community Mitigation**



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

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

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

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

The Federal strategy<sup>34</sup> for community mitigation is evolving and will be updated when new information emerges. Planners should check [www.pandemicflu.gov](http://www.pandemicflu.gov) for the most current information and strategies to assist in their planning efforts.

## **Section 2 - Surveillance and Mitigation**

### **SEE RELATED APPENDICES**

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

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<sup>33</sup> Centers for Disease Control and Prevention. ONLINE. 2007. *Ethical Guidelines in Pandemic Influenza*. CDC. Available: [www.cdc.gov/od/science/phcc/panFlu\\_Ethic\\_Guidelines.pdf](http://www.cdc.gov/od/science/phcc/panFlu_Ethic_Guidelines.pdf) [2 April 2007].

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