

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

Guideline 3.1 – Maintaining the Day-to-Day Response

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

Rationale

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

Considerations

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

Background

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

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

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

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

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

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

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

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

Guideline 3.2 – Continuity of Operations Plan

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

Rationale

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

Considerations

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

Background

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

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

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

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

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

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

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

Guideline 3.3 – Workforce Augmentation

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

Rationale

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

Considerations

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

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

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

Background

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

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

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

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

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

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

Guideline 3.4 – Disruption of Equipment, Supplies and Services

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

Rationale

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

Considerations^{42,43,44}

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

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

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

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

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

Background

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

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

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

Guideline 3.5 - Interoperable Communications

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

Rationale

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

Considerations

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

Background

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

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

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

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

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

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

Guideline 3.6 – Compatible Communications Equipment and Communications Frequencies

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

Rationale

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

Considerations

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

Background

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

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

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

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

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

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

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

Section 3 - The Role of EMS in Pandemic Influenza Response

SEE RELATED APPENDICES

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