

IT'S COMING - ARE YOU AND YOUR EMS AGENCY READY FOR THE NEXT PANDEMIC?



Raphael M. Barishansky

*Developed for
the 2013 Virginia
EMS Symposium*

Questions



YOU LITTLE BASTARD.

YOU'VE KILLED US ALL.

Reality

- In relation to pandemics,
“Clearly there are no reliable predictions about when we might expect new pandemic outbreaks but....there will be more.”
- Dr Margaret Chan, World Health Organization (WHO)
Director-General
May 2010

Objectives

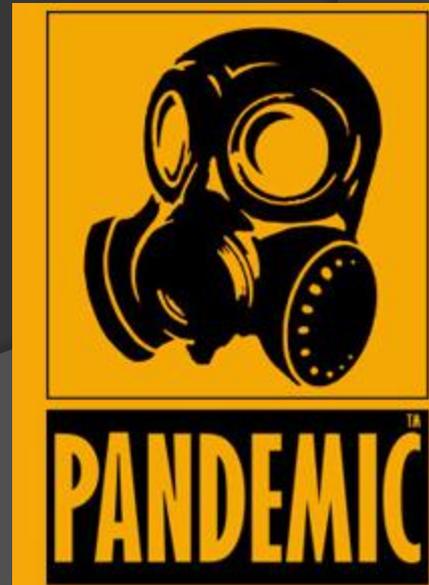
- Relevant definitions and measuring tools
- Review of past pandemics and lessons learned
- EMS planning assumptions
- Current pandemic realities/SARS and H1N1/what they taught us
- Phases (or Rays rules of pandemics)
- The next pandemic(s)
- Conclusions

Relevant Definitions

- Definitions:
 - Endemic - an infection is said to be endemic in a population when that infection is maintained in the population without the need for external inputs
 - Epidemic - The occurrence of cases of an illness in a community or region which is in excess of the number of cases normally expected for that disease in that area at that time.
 - Pandemic - An epidemic that strikes a very wide area, usually hemisphere-wide or world-wide.

CDC Definition of Pandemic

- ⦿ Global outbreak with:
 - Novel virus, most humans susceptible
 - Person to person transmission
 - Wide geographic spread



Declaration of a Pandemic Emergency

Responsible for declaring when an outbreak of a novel virus has reached the pandemic stage:

- Globally: World Health Organization (WHO)
- United States: U.S. Centers for Disease Control and Prevention (CDC)

WHO Pandemic Phases

WHO Pandemic Influenza Phases (2009)	
Phase	Description
Phase 1	No animal influenza virus circulating among animals have been reported to cause infection in humans.
Phase 2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
Phase 3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
Phase 4	Human to human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.
Phase 5	The same identified virus has caused sustained community level outbreaks in two or more countries in one WHO region.
Phase 6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.
Post Peak Period	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
Post Pandemic Period	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.

New WHO Pandemic tool

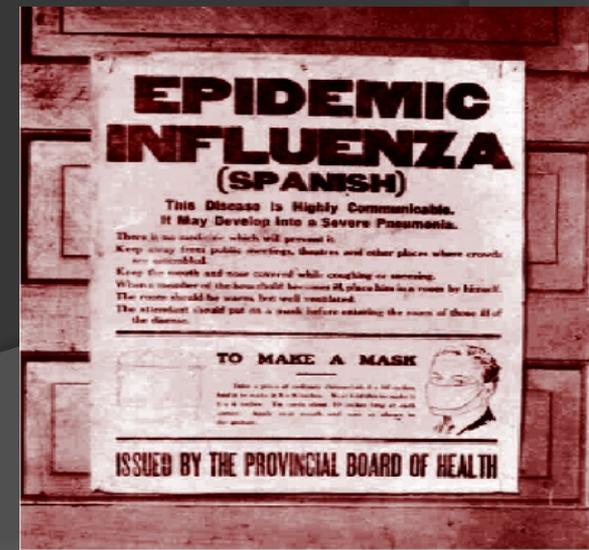
- **Interpandemic**, the period between pandemics
- **Alert**, when a new subtype has been identified and increased vigilance and risk assessment are warranted
- **Pandemic**, a period of global spread of a new subtype as indicated by global risk assessment based on virologic, epidemiologic, and clinical data
- **Transition**, global risk drops, prompting stepdowns in global actions and response activities

Past pandemics – Spanish Flu of 1918

- In 1918, the “Spanish flu” killed tens of millions of people worldwide and about 675,000 died in the United States
- It was unusually severe (estimated 10 to 20% case fatality rate) and deadly pandemic that spread across the world.
- Historical and epidemiological data are inadequate to identify the geographic origin.
- Most victims were healthy young adults

Past pandemics – Spanish Flu of 1918

- A large factor in the worldwide occurrence of this flu was increased travel.
- The advent of modern transportation systems made it easier for soldiers, sailors, and civilian travelers to spread the disease.



Past pandemics – Asian Flu of 1957

- In 1957, the “Asian flu” killed about 2 million people worldwide and about 70,000 in the United States.

Past pandemics – Asian Flu of 1957

- During the 1957-1958 pandemic, a WHO expert panel found that spread within some countries followed public gatherings, such as conferences and festivals.
- This panel also observed that in many countries the pandemic broke out first in camps, army units and schools; suggesting that the avoidance of crowding (through social distancing, quarantine and/or isolation) may be important in reducing the peak incidence of an epidemic.

Past pandemics – Asian Flu of 1957

- During early 1958, there was another wave of illness among the elderly. This is an example of the potential "second wave" of infections that can develop during a pandemic.
- The disease infects one group of people first, infections appear to decrease and then infections increase in a different part of the population.



Past pandemics – the Hong-Kong Flu of 1968

- In 1968, the “Hong Kong” flu killed about 700,000 people worldwide and about 34,000 in the United States

Past pandemics – the Hong-Kong Flu of 1968

- Fewer people died during this pandemic than the two previous pandemics for various reasons:
 - some immunity against the flu virus may have been retained in populations struck by the previous flu's
 - the pandemic did not gain momentum until near the winter school holidays, thus limiting the infection spreading (de facto social distancing)
 - improved medical care gave vital support to the very ill
 - the availability of antibiotics that were more effective against secondary bacterial infections.

Past pandemics fatality rates

- 1918 (H1N1)
 - 500,000 deaths in U.S.
- 1957 (H2N2)
 - 70,000 deaths in U.S.
- 1968 (H3N2)
 - 34,000 deaths in U.S.
- 2009 (H1N1)
 - ? deaths in U.S.

Current realities – SARS

- Sudden Acute Respiratory Syndrome (SARS) - in early 2003, SARS spread from Hong Kong to rapidly infect individuals in some 37 countries around the world.



Current realities – SARS

- Countries reacted differently and utilized a range of public health strategies, including:
 - Promptly isolating infected individuals once they began to show signs and symptoms.
 - Quarantining those that may have been exposed to infected or potentially infected individuals.
 - Conducting heightened monitoring and active surveillance of asymptomatic contacts, through contact tracing.

Current realities – SARS

- Implementing community control measures, such as closing schools and voluntary limitation of public gatherings.
- Disseminating education and information, which included travel alerts, press releases, and interagency partner notification.
- Implementing mandatory limitations of public interactions, curfews, and cancellation of public events.

What SARS taught us

- Develop more robust public health risk communications training and messaging (e.g., need for messaging to be standardized, current, and culturally sensitive)
- To better understand the legal and political impacts regarding isolation, quarantine, and social distancing measures and how they would be implemented if needed.

What SARS taught us

- Coordinate across agency/departments to include ensuring that public health was at the planning table alongside Police, EMS, Fire, Emergency Management, hospitals, etc.

EMS Lessons from SARS

- From Toronto EMS SARS AAR
 - EMS must be at the decision-making table
 - EMS needs to hear about outbreaks as soon as Public Health and hospitals
 - Paramedics have a role in reporting outbreaks from the frontline

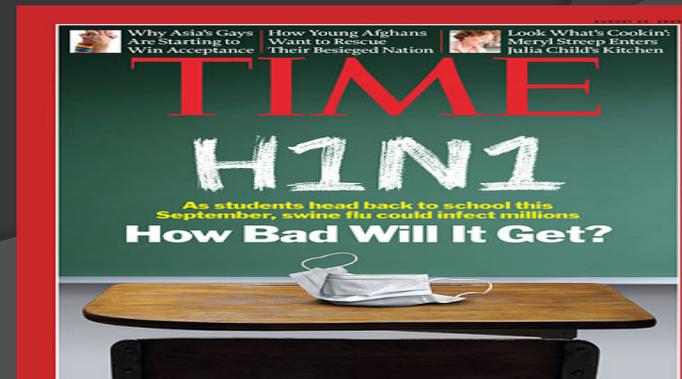


EMS Lessons from SARS

- Personal Protective Equipment specifics:
 - Paramedics got sick before mandatory use of PPE
 - After full PPE, no new SARS cases diagnosed in EMS personnel
 - PPE is not designed for EMS environment
 - Implications for overall amount, training and need

Current realities – H1N1

- In 2009-2010, H1N1 “Swine Flu” outbreak of Influenza-like illness (ILI) occurred in Mexico and the USA - the CDC reported seven cases of novel A/H1N1 influenza
- By March, 2010 213 countries and overseas territories/communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, including at least 16,931 deaths (as per the WHO).



Current realities – H1N1

- Some of the initial public health control strategies utilized during the H1N1 pandemic of 2009-2010 included the use of antiviral drugs and school closures.
- This pandemic also saw a push-out of antiviral medications from the Centers of Disease Control and Prevention's (CDC) Strategic National Stockpile (SNS) to various state health departments

Current realities – H1N1

- Additionally, several countries with confirmed H1N1 infection - such as Australia and Hong Kong - utilized isolation, home quarantine, antiviral medication, and enhanced infection control practices to reduce the spread of disease.

EMS Lessons from H1N1

- Some State EMS offices allowed providers to function as vaccinators under “emergency orders” or “executive orders”
- This was seen in Maryland, New York State, Ohio and others.

EMS Lessons from H1N1

- Minnesota Statutes authorizes ambulance services to operate during declared disasters in ways not authorized under normal operations. This could include “*variations in crew configurations, tiered response, or other requirements that might facilitate operations during a major pandemic type event*”
- During this time of extensive disaster preparedness planning, “*the EMSRB would allow for suspension of certain ambulance requirements during legally declared disasters*”

EMS Lessons from H1N1

- “All Disasters are Local”
- Having active, robust relationships with local people and organizations is invaluable.
- In an emergency, there’s no substitute for being able to pick up the phone and speak with the emergency management director or local health officials you already know and exercise with.

EMS realities

EMS

I get to expose myself
to rare, exotic, and
exciting new diseases
every day!



EMS planning assumptions

- During a pandemic, EMS providers will be required to continue to respond to day-to-day emergency calls while also responding to the increased volume, or surge, of medical calls due to influenza-like illness.
- The increase in call volume will be exacerbated by hospital overload/diversion and absenteeism
- EMS agencies should develop plans and protocols to modify practices to maximize resources and maintain an adequate level of EMS services.

EMS planning assumptions

- Rates of severe illness, hospitalizations, and deaths will depend on the disease
- Rates of absenteeism will depend on the severity of the pandemic
- Certain public safety health measures are likely to increase rates of absenteeism
- A pandemic has the potential to come in waves (6-8 weeks)

EMS planning assumptions

EMS goals for pandemic planning include:

- Reducing transmission among staff and protecting the workforce;
- Protecting people (patients) who are at increased risk of influenza related complications from getting infected with influenza;
- Maintaining EMS operations

EMS planning assumptions

- A baseline assessment of your organization's absenteeism, call volume, wait time, etc., is crucial in determining triggers for altering operations.
- Planning for surge management and alteration of EMS practices must address implementation triggers, guidance for decision-making, communication strategies, and just-in-time training and education for personnel.
- One solution or protocol may not be applicable for all EMS Providers.

EMS planning assumptions

- EMS response to pandemic influenza should be flexible, scalable, dynamic and timely with the ability to change rapidly based on new information about the pandemic virus
- Optimal patient outcomes will depend on an EMS system's pre-planned ability to quickly integrate emerging medical information.
- The effectiveness of patient care will require responsive medical direction, training, and coordinated system oversight.

EMS planning assumptions

- EMS providers can play an important role in pandemic influenza mitigation due to their capability to rapidly respond, assess, treat, and report patients with signs and symptoms of influenza-like illness (ILI).
- Healthcare system will be severely taxed if not overwhelmed; Mutual aid may be limited or non-existent
- Potential for attack rate of 25%-35%
- Duration of a year or more in ≥ 2 waves; each wave could potentially last 6-8 weeks

Additional planning assumptions

- Significant Impact
 - *Healthcare*
 - Hospitals
 - Medical Suppliers
 - Healthcare providers
 - *Essential Services*
 - Police, Fire, Sanitation, Mortuary Services
 - *Infrastructure*
 - Electricity, Water, Sewer, Telecommunication

EMS System Threats

- System Demand
 - Based on CDC estimates, EMS volume could increase as much as 300% during a peak in a pandemic
 - Wide spread demand could negate:
 - Mutual aid
 - County/Regional response
 - State/Federal response
 - Receiving facilities may not be able to accept or turn around EMS units

EMS System Threats

- Unit Production
 - Sickness among EMS staff decreases available units
 - Volunteer staffing, if an option, may not be available to fill the gaps

More things to worry about

- H7N9
 - A new avian influenza A virus that was first reported in China by the World Health Organization on April 1, 2013. The virus was detected in poultry in China as well. More than 130 human infections with H7N9 were reported, many of the people infected with H7N9 reported contact with poultry.
 - *“How H7N9 avian influenza spread to humans is hard to know as it is a newly emerged infectious virus”* said a researcher of the Chinese Center for Disease Control and Prevention (CDC).

More things to worry about

- MERS (Middle East Respiratory Syndrome)
 - Most people who are infected with MERS developed severe acute respiratory illness with symptoms of fever, cough, and shortness of breath. About half of them died. Some people were reported as having a mild respiratory illness.
 - MERS has been shown to spread between people who are in close contact. Transmission from infected patients to healthcare personnel has also been observed. (per the CDC)

Phases – Preparedness

- Assess supplies needed for universal precautions
- Review the differences between seasonal and pandemic influenza
- Fit test staff for N-95 masks
- Educate staff on how they can stop the spread of germs
- Post 'respiratory etiquette' posters and signs in work areas

Phases – Preparedness

- Provide boxes of facial tissues and trash receptacles
- Provide alcohol-based hand washing gel in all emergency vehicles
- Develop pandemic influenza plan
- Determine EMS provider essential functions

Phases - Enhanced Ops

- Possible impacts that may trigger the need for enhanced or altered operations include:
 - Confirmed or suspect cases in or near your response area
 - Increased staff absenteeism by x%
 - Increased call volume by x%
 - Decreased resource availability

Phases - Enhanced Ops

- Review and update internal emergency operations plans
- Plan for infrastructure disruptions
- Establish vacation and on-call procedures for peak periods
- Locate supplemental transport assets
- Evaluate triage models
- Consider placing masks on all patients transported with flu-like symptoms

Phases - Enhanced Ops

- Educate staff on the current situation
- Activate internal emergency operations plans and educate staff
- Engage mutual aid partners
- Conserve usage of BLS and ALS units
- Begin creating adjusted staffing patterns/Implement changes to vacation and on-call policies
- Educate staff on staffing and procedures changes

Phases – Pandemic response

- Possible impacts that may trigger the need for enhanced or altered operations include:
 - Confirmed or suspect cases in or near your response area
 - Increased staff absenteeism by x%
 - Increased call volume by x%
 - Decreased resource availability

Phases – Pandemic response

- Implement internal emergency operations plans
- Implement adjusted staffing patterns
- Implement essential staffing and services only
- Limit the number of responders to the minimum necessary
- Maintain 6 foot separation of all staff in sleeping quarters
- Monitor the health of staff

Phases – Pandemic response

- Implement plan to evaluate symptomatic staff before report for duty
- Reassess staffing and consider redistribution of resources
- Decontaminate ambulances using standard operating procedures
- Follow Medical Control guidelines for patient transport, as available
- Follow Public Health guidelines for vaccine and/or antivirals, as available

Phases – Pandemic recovery

- Prepare for a possible next wave:
- Conduct staff debriefings on what went well and what needs improvement
- Implement appropriate changes based on debriefing and other analysis
- Replenish supplies
- Continue to monitor the health of staff

Why we are LESS at risk in 2013

- Some antiviral medicines
- Emergency care includes IV fluids, oxygen and ventilators
- Greater ability to perform surveillance and confirm diagnosis of flu
- Rapid means of communications - internet, TV, radio, email and social media
- More effective personal protective equipment.



Why we are at GREATER risk in 2013

- A lot more international travel
- Very little surge capacity in health care today
- Greater reliance on health professionals
- More elderly and immune-compromised people in population
- Far more manufactured goods and raw materials come from distant areas, especially Asia

Pandemic Preparedness

- So, how prepared are we really and how prepared should we be?
- The answer is going to depend on your EMS agency; how much EMS preparedness is supported by the jurisdiction's leadership and partners; how much time and effort is being put on actually looking at new and innovative ways to make money and resources last longer; and how much more your EMS agency is willing to invest in preparedness efforts (with or without money).

Pandemic Preparedness

We need to change EMS agency culture to include pandemic preparedness to include the:

- writing and maintaining plans;
- training staff to these plans (all staff)
- exercising the plans (with partners, not just internally);
- determining where the gaps and lessons learned are
- actually implementing those improvement/corrective action plans so that they do not show up over and over again with each exercise or real event.



Pandemic Flu Today

Despite . . .

- Expanded global and national surveillance
- Better healthcare, medicines, diagnostics
- Greater vaccine manufacturing capacity

New risks:

- Increased global travel and commerce
- Greater population density
- More elderly and immunosuppressed
- More daycare and nursing homes

Pandemic resources

- Resources:
 - World Health Organization:
 - www.who.org
 - Center for Disease Control and Prevention:
 - www.cdc.gov
 - www.flu.gov
 - National Institute of Allergy and Infectious Diseases:
 - www3.niaid.nih.gov

More resources

EMS Pandemic Influenza Guidelines for Statewide Adoption

U.S. Department of Transportation
May 3, 2007

Task 6.1.13.6
National Strategy for Pandemic Influenza:
Implementation Plan



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

U.S. Department of Transportation
May 3, 2007

Task 6.1.4.2
National Strategy for Pandemic Influenza:
Implementation Plan



Take home message

- Even if there isn't another pandemic for years, we need to continue to stay vigilant and think of ways to “do more with less” to ensure rapid response to and recovery from whatever the next event may be.
- The worst scenario for EMS is *when* a world-wide pandemic or major public health emergency hits us is that we didn't continue to update preparedness plans, train staff, and exercise with partners because we didn't think we were going to get hit with another large pandemic.

Closing thought

- *"Every day a pandemic doesn't happen is another day we have to prepare"*



-Michael Osterholm

Questions ?

Raphael M. Barishansky
rbarishansky@gmail.com

Twitter: @rbarishansky