

# **Pandemic Influenza:**

## **Annual Progress Update**



**Minnesota Department of Health**  
**February 2007**

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*Cover and title page photo courtesy of the Minnesota Historical Society*



# Pandemic Influenza: Annual Progress Update

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### **As requested by Minnesota Statute 3.197:**

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*Photo: National Museum of Health and Medicine*

*"That was the year of the influenza epidemic, and we worked so hard that we fell unconscious into our beds at night and had to drag ourselves out of sleep in the morning. I had to take cold baths when I got up because if I got into warm water I fell asleep. Most of the nurses were keen and zealous over the work. We were all so busy we did not have time to suffer over the human misery we saw, although it was heart-breaking to see young people dying all around us of the flu. Often we had to prepare for the morgue as many as eight corpses a day."*

**-- Dorothy Day**, who served in a New York City hospital during the 1918 pandemic



# Executive Summary

Minnesota has endured three influenza pandemics in the past 100 years, and the emergence overseas of a highly pathogenic avian influenza virus (H5N1) suggests that another may be on the way. The Minnesota Department of Health (MDH) is a lead technical agency in the state's pandemic influenza response. The agency completed the *MDH Pandemic Influenza Plan* in 2006 to ensure that the agency is ready to work within the state response structure to reduce illness and mortality in Minnesota.

The consequences of a worst-case pandemic could be dire: one-third of the population could become ill and 32,900 could die in Minnesota. The state's public health resources must be deployed effectively, hence the focus on pandemic influenza planning. The MDH is trained in the incident management system that governs emergencies. Moreover, MDH's well-developed infrastructure and abundant expertise in responding to disease outbreaks are being adapted to respond to a pandemic influenza. The *MDH Pandemic Influenza Plan* highlights areas in which the agency plays key roles:

- Communication,
- Epidemiology surveillance,
- Community disease containment,
- Infection control,
- Clinical issues,
- Healthcare planning,
- Antivirals and vaccines,
- Laboratory analysis,
- Poultry worker health,
- Care of the deceased and
- Environmental public health.



Photo: Minnesota Historical Society

This report outlines significant progress made by MDH in 2006 in each of these areas. A summary of major achievements is included on the following pages. The Minnesota Legislature authorized \$5 million in response to the Governor's request for funding for FY2007 to stockpile antivirals and other supplies and to increase preparedness. MDH focused on six areas for pandemic planning and improvement in FY2007: exercising plans, education and training, regional and local public health consultation, operationalizing the plan, a statewide emergency preparedness public information campaign and communication planning.

To continue these and other efforts, Governor Tim Pawlenty has proposed a 2008-2009 Biennial Budget requesting \$12.4 million in FY2008 and \$7.4 million in FY2009. This state funding, in tandem with federal funding received for pandemic influenza preparedness, will allow the MDH to continue progress toward a Minnesota that can sustain itself during the worst-case outbreak and renew itself after a worldwide wave of influenza has passed.



The following tables describe the top three landmarks achieved in each area of the *MDH Pandemic Influenza Plan*, as well as the six MDH pandemic influenza planning focus areas.

Major Landmarks in MDH Pandemic Influenza Plan Implementation	
Communication	Developing channels (such as the Minnesota Emergency Communication and Health Outreach Collaborative or ECHO) for providing avian and pandemic influenza information to populations with limited English proficiency.
	Maintaining and exercising the Health Alert Network (HAN), a communication system that enables public health, tribal, healthcare and emergency officials to exchange information during a pandemic influenza outbreak.
	Maintaining and developing multiple internal and external communication channels, including a state avian and pandemic influenza portal site ( <a href="http://www.birdflu.state.mn.us">www.birdflu.state.mn.us</a> ), Intranet pandemic influenza planning Web page, MDH daily news clips (from national and local news media), <i>Ready to Respond</i> quarterly newsletter, <i>Weekly Briefing</i> online message to MDH staff, State Fair pandemic influenza exhibit and more.
Epidemiology Surveillance	Expanding the influenza sentinel provider network of facilities that conduct surveillance of influenza-like illness in collaboration with MDH and the U.S. Centers for Disease Control and Prevention (CDC).
	Adding fields to report hospital influenza cases to the Minnesota Immunization Information Connection (MIIC), a confidential computerized registry that contains a complete and up-to-date record of an individual's immunizations, and pilot testing its use in Metro hospitals.
	Establishing reporting requirements for outbreaks in schools and long-term care facilities, critical case reporting, unusual case incidence and mortality data assessment.
Community Disease Containment	Developing statewide guidance on disease containment measures.
	Distributing a series of four videos to public safety and law enforcement personnel on laws governing isolation and quarantine, modes of disease transmission, infection control and personal protection.
	Consulting with the CDC and the Metropolitan Airports Commission on protocols for the airport quarantine station to respond if ill passengers arriving on international flights meet the clinical criteria for a novel influenza virus.
Infection Control	Developing a clinical infection control team (C-ICT) qualified in interviewing people with suspect cases, reviewing clinical data, and recommending infection control strategies.
	Working in partnership with the Minnesota Chapter of the Association of Professionals in Infection Control and Epidemiology (MN-APIC) on a tool kit to assist organizations in increased fit-testing among staff.
	Stockpiling personal protective equipment, including 290,000 N95 masks, and developing guidance for those with diverse exposure risks.
Clinical Issues	Developing a clinical algorithm for healthcare providers to assist them in evaluating patients with a possible novel influenza virus.
	Setting up a Pandemic Influenza Database to track patient risk factors, test results and case status during a pandemic.
	Assessing the likelihood of a novel influenza virus, based on the patient's clinical status, travel, employment, contact with birds or other factors.
Healthcare Planning	Increasing the number of ventilators in Minnesota that can be used to support respiratory function.
	Issuing statewide guidance for Emergency Medical Services (EMS) directors on how to protect patients, the public and themselves from a pandemic influenza virus.
	Defining special populations from a functional perspective as people with communication barriers (limited English proficiency, hearing or speech impairment), medical issues, limited independence, need for supervision and absence of transportation. Established a special populations planner position to work with these groups.

Major Landmarks in MDH Pandemic Influenza Plan Implementation (cont.)	
Antivirals and Vaccines	Hiring a contractor to draw together a panel of experts in healthcare ethics to create an ethical framework for allocation of scarce medical resources during a pandemic and recommend a process to obtain public feedback.
	Stockpiling antiviral medications (343,000 ten-day courses) for use during a pandemic.
	Exercising antiviral mass dispensing plans in several areas of the state.
Laboratory Analysis	Receiving accreditation for the only high-containment Biosafety Level 3-ag laboratory in the region, allowing Minnesota to test novel avian and novel influenza strains.
	Improving routine influenza diagnostic testing, assays for detecting respiratory viruses and capability to sequence genetic material in virus types.
	Relaying up-to-date influenza information through the Minnesota Laboratory Systems (MLS) Lab Alert System to increase awareness and encourage additional case reports.
Poultry Worker Health	Participating in the Minnesota Cooperative Avian Influenza Control Program, a public-private partnership to rapidly detect and eradicate avian influenza, and monitoring turkeys, chicken and backyard flocks.
	Presenting information on worker health to stakeholders throughout Minnesota.
	Promoting an ECHO broadcast on Backyard Biosecurity (in seven languages) and distributing a DVD of the program to local public health partners.
Care of the Deceased	Introducing a Disaster Portable Morgue Unit (DPMU) capable of bringing mortuary services to locations where local capacities are overwhelmed.
	Recruiting a pandemic influenza/DPMU coordinator, who provided an overview of the DPMU in at least 20 different meetings of morticians, funeral directors, medical examiners and public safety officials statewide.
	Planning a stockpile of body bags and other supplies in bulk to prepare for an emergency with large numbers of fatalities.
Environmental Public Health	Updating and testing a satellite-based call system to contact 13,000 food establishments and 700 public water suppliers in the event of a pandemic influenza outbreak.
	Outlining state and local environmental public health roles and responsibilities in a pandemic influenza outbreak.
	Ensuring that mass feeding operations have safe food and water by providing guidance to local agencies.
Major Landmarks in MDH Pandemic Influenza Improvement Planning	
Operationalizing the Plan	Introducing and rolling out the <i>MDH Pandemic Influenza Plan</i> in May 2006.
	Developing a state plan for antiviral and vaccine distribution.
	Developing state plan for disease containment.
Exercises	Completing four federally required pandemic influenza school closing exercises.
	Offering a course for regional and local partners on designing tabletop exercises.
	Undertaking an executive-level pandemic influenza tabletop exercise with the Governor and state agency heads.
Education and Training	Developing MN.TRAIN, an online learning management system that will allow staff and partners to find learning opportunities and track current competencies and training needs.
	Implementing a MDH Speakers' Bureau that allows the agency to document and track their hundreds of presentations, workshops and training events and ensure that speaking requests are promptly filled and adequately supported with standard messages.
	Working with the Minnesota Department of Employee Relations (DOER) on a pandemic influenza education plan for all state employees.

<b>Major Landmarks in MDH Pandemic Influenza Improvement Planning (cont.)</b>	
<b>Regional and Local Public Health Consultation</b>	Providing statewide technical assistance and consultation through public health preparedness consultants (PHPCs), public health nursing consultants (PHNCs) and field epidemiologists in each of eight health regions.
	Conducting meetings in each of the eight health regions on how the MDH could better assist regional and local jurisdictions on pandemic influenza planning.
	Populating and improving information on the WorkSpace, a secure, interactive Web site and messaging vehicle.
<b>Public Information Campaign</b>	Developing a statewide, joint MDH-DPS/HSEM emergency preparedness public information campaign with a wide range of stakeholders.
	Commissioning statewide public opinion research on Minnesotans' awareness and implementation of personal and family emergency preparedness.
	Contracting with a marketing and public relations firm to develop a statewide brand for emergency preparedness in Minnesota.
<b>Communication Planning</b>	Developing <i>Pandemic Influenza</i> , an e-bulletin with new information and resources for external partners.
	Relaying information via a weekly pandemic influenza update to MDH staff with responsibilities for pandemic influenza planning.
	Compiling "good ideas" from regional and local partners that may be transferable to other jurisdictions.

# Introduction

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The mission of the Minnesota Department of Health (MDH) is protecting, maintaining and improving the health of all Minnesotans. MDH is the state agency responsible for:

- Detecting and investigating disease outbreaks.
- Providing laboratory services to detect health problems using techniques not available privately or from other government agencies.
- Responding to and preparing for public health emergencies.
- Monitoring emerging health threats.
- Promoting immunizations through public awareness and supplying vaccines.
- Educating health professionals and consumers about how to prevent chronic and infectious diseases.
- Coordinating patient care resources when healthcare systems are overwhelmed.

The MDH's knowledge of infectious diseases will be of critical importance if an influenza virus emerges that is highly pathogenic, easily transmissible, and novel enough in its genetic structure that human populations have little natural resistance to its effects.

*The (year) 1918 has gone... unfortunately a year in which developed a most fatal infectious disease causing the death of hundreds of thousands of human beings. Medical science for four and one-half years devoted itself to putting men on the firing line and keeping them there. Now it must turn with its whole might to combating the greatest enemy of all--infectious disease."*

**Journal of the American Medical Association,**  
December 28, 1918

This concurrence of events, the "perfect storm" of a pandemic (worldwide) influenza, has occurred three times in the 20<sup>th</sup> Century: the 1918 "Spanish flu" that killed more than 20 million; the 1957 A/Asia influenza; and the 1968 A/Hong Kong influenza. The emergence in Asia of highly pathogenic avian influenza strains has increased the likelihood that a minor genetic change in these viruses may set off the next devastating pandemic.

Public health and emergency management agencies at local, regional, state, federal and international levels are planning for a potential pandemic. In April 2004, Governor Tim Pawlenty issued Executive Order 04-04, "Assigning Emergency Responsibilities to State Agencies." This order assigned the Department of Public Safety Division of Homeland Security and Emergency Management (HSEM) with coordination responsibilities and the MDH with leading technical responsibilities in health-related emergencies.

In May 2006, the agency released the *MDH Pandemic Influenza Plan*, providing a road map to negotiate the agency's pandemic influenza planning. Planning for an event that will affect every aspect of life in Minnesota – and will arrive on its own timetable – is an ongoing challenge.

This report provides an update on how the MDH is planning for a pandemic. It is intended for decision-makers, partners in preparedness, and citizens to inform them about steps taken to protect public health in Minnesota and the next steps to take to ensure that the state is ready when pandemic influenza arrives.

# Background

Influenza is a disease associated with rapid onset of fever, chills, sore throat, runny nose, headache, nonproductive cough and body aches. It is highly contagious and can be spread easily from one person to another, primarily through contact with small droplets from the nose and throat of an infected person during coughing or sneezing.

Two types of influenza viruses cause disease in humans: type A and type B. A major change can occur in a type A virus when a piece of genetic material is exchanged for another, creating a novel virus that has never before infected humans. Many of these viruses alter within other host animals, such as birds (“bird flu”). The 1918, 1957 and 1968 pandemics were the result of a type A virus change.

Viruses are named according to two structures essential to vaccines and immunity: hemagglutinin (H) and neuraminidase (N). Viruses are often named for where they originate, but also by the H and N components. For example, the 1957 pandemic was caused by the A/Asia (H2N2) virus.

Concerns about pandemic influenza have arisen with the emergence of a highly pathogenic form of virus, A/H5N1, spreading from Asia westward. It is transmissible among birds, and also between birds and people who come into very close proximity with birds.

According to the World Health Organization’s (WHO’s) most recent figures, 271 people have been infected with avian influenza A/H5N1, and of those, 165 have died, making this a highly pathogenic strain. Most of these cases have occurred in the Far East and Middle East. If a change in A/H5N1 allowed for human-to-human transmission, it could lead to a pandemic.

## Going through a Phase: Trigger Points for Response

Anticipating when, where and how an influenza pandemic might begin involves close monitoring of worldwide avian and human cases. The World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC), and other nations are paying close attention to the emergence of H5N1 viruses and the outbreaks they produce.

*MDH’s Pandemic Influenza Plan* was developed using a series of phases developed by WHO. Since that time, the U.S. has established its own stages, and HSEM has developed Minnesota Response Phases. None of these are the same, a challenge to planning for a disease in which intergovernmental cooperation is crucial.

However, the logic of establishing stages or phases is clear-cut. A high-pathogenicity avian flu outbreak in Indonesia may not jump-start preparations for an inevitable pandemic in Minnesota. A high-path avian outbreak in a domestic poultry plant in southwestern Minnesota would spur activity on many fronts.

For the purposes of this report, Minnesota is in the following phases or stages:

- WHO Phase 3: No or very limited human-to-human transmission.
- U.S. Stage 0: New domestic animal outbreak in at-risk country.
- Minnesota Response Phase A0: High-path avian influenza outbreak nonexistent or overseas.

The *MDH Pandemic Influenza Plan* defines the agency’s roles at each phase/stage of the emergence and transmission of H5N1. An update of the plan that will be completed this year will incorporate the Minnesota Response Phases.

On February 1, 2007, the CDC issued guidance on community disease containment, which included another way to look at pandemic flu: a color-coded Pandemic Severity Index, comparable to the hurricane index used by the federal government.

# Planning Assumptions

In November 2005, the U.S. Department of Health and Human Services (HHS) released impact projections for a pandemic influenza comparable to the 1918 outbreak. Using this formula and figures from the Minnesota State Demographic Center, the MDH developed estimates of how many Minnesotans might be affected by a severe pandemic.

The results show the scope of the problem:

- One-third of Minnesotans, or 1,544,000 people, would become ill.
- Outpatient medical care would be needed for 772,000 people.
- Hospital care would be needed for 172,000 people.
- Hospital intensive care units would be needed for 25,700 people.
- Mechanical ventilators would be needed for 12,900 people.
- An estimated 32,900 would die.



*Photo: Department of the Navy, Naval Historical Center*

These figures don't begin to describe the societal disruption that would accompany such a disaster.

- A pandemic is worldwide, and every city, county or state in the U.S. would have to manage the illnesses within its jurisdiction, with limited help from the federal government.
- A surge of patients would seek healthcare assistance from hospitals and clinics with insufficient space, staff or supplies.
- Business absenteeism would skyrocket, as an estimated 40 percent of employees become ill or stay home to care for ill family members.
- Limited resources, such as vaccines or antivirals, would have to be provided on a priority basis.
- Places where people congregate, from churches to schools to public transportation, would put people at risk of infection.
- Supplies of food, water or prescription drugs would be difficult to muster with many businesses closed or without sufficient inventory.

See additional planning assumptions in the *MDH Pandemic Influenza Plan*, <http://www.health.state.mn.us/divs/idepc/diseases/flu/pandemic/plan/plan.html>.



# The State Response Structure

All emergencies are local. The first people on the scene of an emergency are city firefighters, county sheriffs, local emergency medical technicians, and others familiar with the resources, challenges and dangers of the situation. A highly pathogenic influenza virus easily transmitted person-to-person could rapidly become a state or national emergency. Therefore, planning activities at the state and local levels are crucial and must work seamlessly with federal plans.

The State Coordinating Officer and Governor's authorized representative for an avian or pandemic influenza is the Director of HSEM. As the **State Coordinating Agency**, HSEM is responsible for activating the State Emergency Operations Center (SEOC), where all agencies are present, making decisions, monitoring the situation, allocating resources, and providing support.



*Photo: Rhode Island Roads Magazine*

The MDH is one of the **Lead Technical Agencies** for a pandemic influenza response, and works closely with HSEM. The MDH has experience with infectious disease outbreaks, including norovirus, E. coli, cryptosporidium, seasonal influenza, and meningitis. The MDH has a laboratory for detecting infectious diseases; offices and consultants in all eight districts of the state; experts in infection control, community disease containment, immunization, healthcare planning, and mortuary science. All of these capacities would come into play during a pandemic.

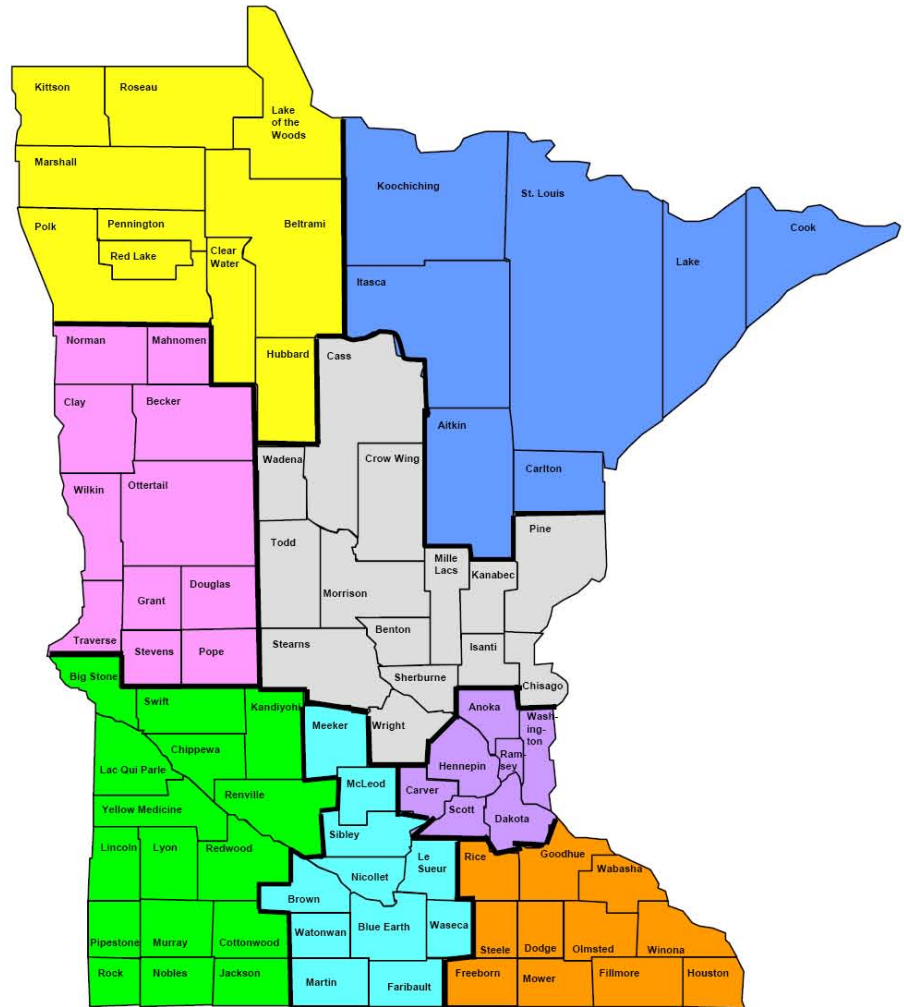
**Support Agencies** would be involved with some aspects of pandemic planning, prevention, response or recovery. These include almost all other state agencies.

**Interagency coordination** will be essential if a pandemic arrives in Minnesota. Communication between the MDH and HSEM pandemic influenza planning teams is an almost daily occurrence. **Intra-agency coordination**, drawing MDH staff from many divisions and all regions, is achieved through management leadership, weekly updates on pandemic influenza planning, quarterly meetings of technical experts, an Intranet pandemic influenza planning page, and more.

# Regional and Local Preparedness

The MDH has committed resources to ensure that regional and local partners have essential technical assistance from the state. Eight District Offices serve regional/local needs and provide:

- **Field Service Epidemiologists** who coordinate efforts with local public health agencies on infectious disease epidemiology, prevention and control, including action to prevent or contain outbreaks.
- **Public Health Nurse Consultants** offer consultation and technical assistance in promoting and maintaining a strong public health infrastructure through supportive relationships with local public health, communication, problem solving, training, program development and advocacy.
- **Public Health Preparedness Consultants** who assist local public health departments, tribal governments, hospitals and other partners to prepare for and respond to all-hazard community disasters and coordinate regional health responses.
- **Regional Hospital Resource Center Coordinators** see the Healthcare Planning Section on page 15.



The MDH also enters into grant project agreements with local public health agencies to support public health emergency preparedness. These agreements, funded by the U.S. Centers for Disease Control and Prevention (CDC), assist regional and local assessment, planning, surveillance and monitoring, response and recovery, workforce readiness, and communication. Local public health agencies received \$1.1 million in 2005-2006 and \$2.6 million in 2006-2007 for these efforts.



# MDH Pandemic Influenza Plan

One common framework applies to all federal, state, regional and local emergency planning efforts – the **incident management system (IMS)**.

The National Incident Management System (NIMS) provides a consistent nationwide template to ensure that all responders, public and private, work together effectively to prepare for, prevent, respond to and recover from domestic incidents, regardless of cause, size or complexity.

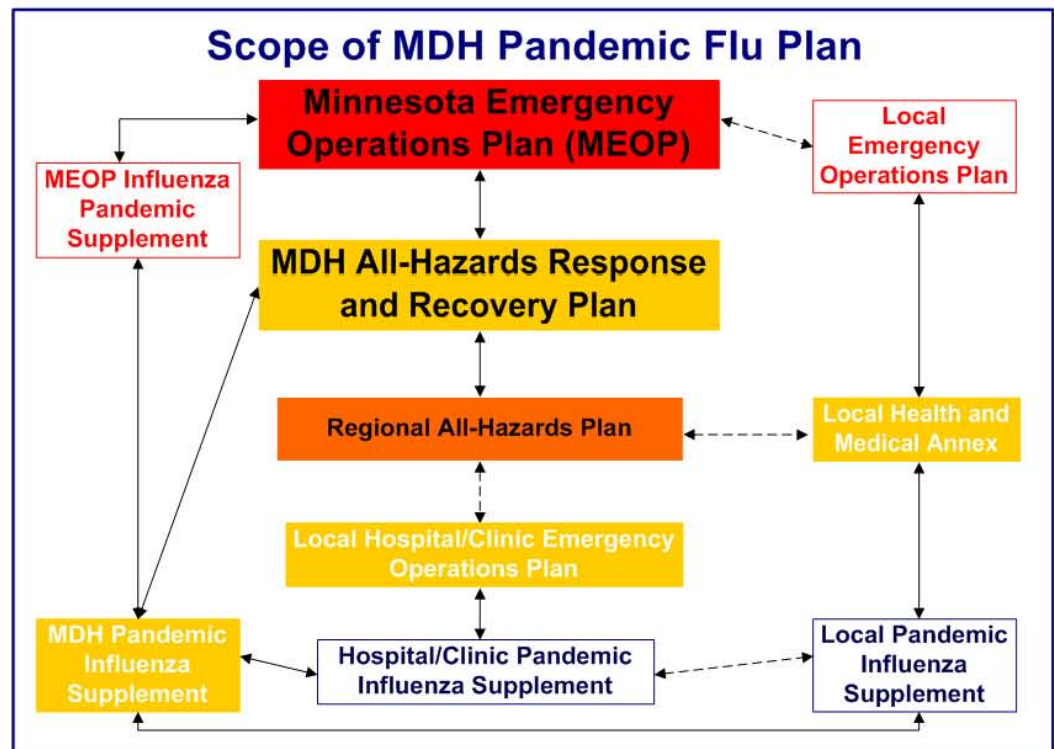
NIMS benefits include a unified approach to incident management; standard command structures; and emphasis on preparedness, mutual aid and resource management. Minnesota has used a similar model since 1991, so when the Federal Emergency Management Agency (FEMA) issued executive orders to implement the system in 2005, the Minnesota Incident Management System (MnIMS) was quickly adapted. IMS is the “common language” of all emergency management.

Because many emergencies have common features, the state has an **all-hazards plan** that applies to any emergency, the *Minnesota Emergency Operations Plan (MEOP)*. But because specific types of emergencies require various resources, the base plan has **supplements or annexes**. MDH has a health-emergency-specific all-hazards plan and pandemic influenza supplement consistent with the MEOP.

The agency released a draft *MDH Pandemic Influenza Plan* in May 2006. It contains planning considerations for 11 key areas in which MDH has responsibilities during a pandemic influenza outbreak.

In 2007, the MDH will update the plan, by:

- Clearly defining MDH’s roles and responsibilities (what we will do) in the key areas;
- Recommending regional and local roles and responsibilities (what we recommend that our partners do based on what MDH does) in key areas; and
- Providing guidance for the identified roles and responsibilities.



This progress report is based on the *MDH Pandemic Influenza Plan* structure. It specifies those areas in which MDH would have roles, and progress made in 2006 fulfilling these roles.

# MDH Roles in a Pandemic Influenza

- **Communication:** ensuring that Minnesotans receive prompt, accurate health information about what to do at different stages of a pandemic; partners get the information they need to plan; and systems are in place for responding to a pandemic.
- **Epidemiological surveillance:** monitoring both the disease and the virus.
- **Community disease containment:** developing strategies to prevent the disease from spreading or slow down its course by directing or influencing the movement of people.
- **Infection control:** recommending ways to prevent the disease from spreading by using personal protective equipment, isolation units in facilities, and disinfection of equipment.
- **Clinical issues:** helping health care providers facing new types of influenza and assessing whether these have serious potential to cause a pandemic.
- **Healthcare planning:** preparing for a surge of patients, developing alternative care sites, training staff in personal protection, and much more.
- **Antivirals and vaccines:** developing a system to distribute antiviral medications and vaccines if they are available during a pandemic.
- **Laboratory:** implementing methods to ensure that emerging infections are identified and influenza cases confirmed by analysis.
- **Poultry worker health:** developing strategies to ensure the safety and health of employees working with poultry and deal with those with avian influenza.
- **Care of the deceased:** preparing the mortuary system for an increase in deaths that would accompany a pandemic.
- **Environmental public health:** developing strategies to ensure the continued safety of food and water supplies during a pandemic.

*“Public Notice: In view of the severity of the present Epidemic of Influenza and in order that all efforts may be concentrated on the stamping out of the disease, the local Board of Health... has enacted that after Oct. 16<sup>th</sup> and until further notice,*

- 1. Theatres and Moving Picture Houses shall be closed and remain closed.*
- 2. Churches and Chapels of all denominations shall be closed and remain closed on Sundays.*
- 3. All Schools, Public or Private, including Sunday Schools, shall close and remain closed.”*

# Communication

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**Goal: To develop fast, effective communication channels for pandemic influenza information to the news media, public, partners and MDH staff.**

The MDH has extensive experience in communicating with the news media, local public health partners and the public regarding disease outbreaks. Among the established systems:

- Professional communication staff with expertise and credibility in news media relations, risk communication, and communication planning. The Communication Office is part of the Commissioner's staff, with access to emerging information and the ability to move fast to accommodate media deadlines.
- The Minnesota Emergency Communication and Health Outreach (ECHO) Collaborative, a unique community partnership established to provide emergency health information to limited-English-speaking populations. Among other activities, ECHO produces a monthly television program on health related-topics which airs on Twin Cities Public Television (tpt13) in Spanish, Hmong, Khmer, Lao, Vietnamese and Somali.
- ECHO has produced separate programs dealing with avian influenza (focusing on backyard flocks and biosecurity) and pandemic influenza. Information about pandemic influenza was also included in a third program dealing primarily with seasonal influenza.
- The Health Alert Network (HAN) enables public health staff, tribal governments, health care providers and emergency workers to exchange information during a disease outbreak, environmental threat, natural disaster, or act of terrorism.
- The State of Minnesota Pandemic Influenza portal site ([www.birdflu.state.mn.us](http://www.birdflu.state.mn.us)), a joint project of DPS, MDH, the Department of Natural Resources (DNR), and the Board of Animal Health (BAH) includes links to information about avian and pandemic influenza on sites maintained by the participating agencies, as well as a "newsroom" section with current information about avian/pandemic influenza.
- Pandemic influenza information can also be accessed at [www.panflu.state.mn.us](http://www.panflu.state.mn.us) – and the public would be directed to use that URL in the event of an actual pandemic.
- The MDH external pandemic influenza Web site ([www.health.state.mn.us/divs/idepc/diseases/flu/pandemic/index.html](http://www.health.state.mn.us/divs/idepc/diseases/flu/pandemic/index.html)) is comprehensive and updated frequently. In a 2006 informal survey of local public health partners, the MDH site was the top choice of respondents for information about pandemic influenza.
- State-of-the-art videoconferencing facilities allow meetings and training events to be broadcast to local public health partners.
- The WorkSpace, a secure, interactive Web site and messaging vehicle to communicate with local public health and other external partners provides a location for talking points, fact sheets and other informational resources. The WorkSpace messaging function distributes these items to external partners in response to emerging public health issues and events.

- *Ready to Respond*, a quarterly newsletter about emergency preparedness, is provided to partners via an automated subscription service.
- *The Weekly Briefing* is an online message to MDH employees from the Commissioner about important recent news.

These multiple channels to staff, partners and the public make up a network that covers the communication needs of key audience groups. These channels were enhanced by continued efforts in 2006, including:

- Providing accurate, timely information about avian and pandemic influenza to the public and the news media throughout the year, resulting in several major media broadcasts on the topic.
- Developing a CD-ROM of existing seasonal, avian and pandemic influenza information available online, packaging the information in a more “user friendly” way.
- Creating a monthly online e-bulletin, *Pandemic Influenza*, to relay fast-changing information, events and up-to-date research findings to partners.
- Beginning a redesign of the MDH WorkSpace to make materials easier to find.
- Revamping the pandemic influenza planning pages on the MDH Intranet to facilitate communication among staff working with pandemic influenza issues.
- Cooperating with the Minnesota Department of Human Services on regional pandemic influenza training for organizations working with limited English proficiency (LEP) populations.
- Developing brown-bag employee education sessions that include pandemic influenza information.
- Featuring general emergency preparedness and pandemic influenza as elements at the MDH Minnesota State Fair exhibit, attended by 1.6 million people in 2006.
- Providing speakers and materials for hundreds of speaking engagements, conferences, training sessions, exercises and events relating to pandemic influenza. (See Maintaining Proficiency and Capacity, page 23.)



Photo: Wikipedia

**Goal: To identify issues or concerns likely to arise during a pandemic and to develop messages and materials ready for use when the public needs accurate information about these issues.**

**Goal: To monitor and respond to news media reports that raise public interest or concern about pandemic influenza.**

MDH staff has developed basic materials on pandemic preparedness. More work is needed, but systems to monitor and respond to public concerns have been in place prior to 2006, including:

- Providing a daily summary of news media coverage relating to pandemic influenza and other health-related issues, available to MDH staff and interested persons outside the agency through the GovDelivery subscription service.

- Working with the Department of Employee Relations (DOER) to provide pandemic influenza information to all state employees.
- Sharing pandemic influenza communication issues and coordinating education efforts with (1) Metro information officers from state agencies, local public health and hospitals, and (2) risk communicators from state agencies and the University of Minnesota.

During 2006, MDH continued developing messages for staff, partners and the public:

- Posting a basic package of consumer information on pandemic influenza and emergency preparedness on the MDH WorkSpace and external Web site.
- Posting talking points, presentation templates and other communication resources on pandemic influenza for use by local public partners on the WorkSpace.
- Developing speeches and talking points on pandemic influenza for the Commissioner and MDH division directors used in a variety of venues, including the Governor's Pandemic Influenza Summit for Businesses (October 2006), streamed live on Minnesota Public Radio.
- Participating in a major briefing for the news media on pandemic influenza issues (April 2006).

**Goal: To develop methods of ensuring the accuracy and consistency of messages provided to the public.**

Many stakeholders have roles to play in pandemic influenza response and preparedness, as well as different perspectives on audience needs. The MDH had a number of systems prior to 2006 to ensure accuracy and consistency in communication:

- The MDH Communications Office has policies in place for ensuring the consistency and quality of news media communication, including the approval of messages and selection of appropriate spokespersons.
- Policies have also been established on format, appearance and content of MDH print publications.
- Informal procedures exist for coordinating pandemic influenza messages and information disseminated by MDH and HSEM.

## **Epidemiology Surveillance**

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**Goal: To conduct disease surveillance to detect the introduction of a novel disease into the state and monitor disease activity and severity (looking at factors such as geographic and demographic factors over time).**

The MDH has experienced staff and infrastructure to recognize new or novel diseases that arise in Minnesota. The clues can be subtle for a novel virus – an influenza that occurs outside of the usual influenza season and lasts longer, hits harder, has symptoms unlike previous cases, invades only one area of the state, or affects one group of persons more than another. However, MDH's experience with many other types of outbreaks gives it a foundation to build upon.

Among those systems established before 2006 to conduct disease surveillance are:



- A designated staff group, the Clinical-Infection Control Team (C-ICT), with clinical background and expertise to conduct monitoring and case-based surveillance on suspect cases through early stages of an avian or novel influenza pandemic. Suspected avian or novel influenza cases will be triaged to the C-ICT, which will collect detailed case information and determine whether isolation or quarantine are required.
- A network of field services epidemiologists in each health region of the state to consult with local public health and health professionals on unusual or novel disease circumstances.
- A voluntary influenza sentinel provider network of 27 providers in 21 counties that conducts surveillance for influenza-like illness (ILI) in collaboration with MDH and the CDC. Data reported by sentinel providers, in combination with other influenza surveillance data, provide a national picture of influenza virus and ILI activity.
- Reporting requirements for outbreaks in schools and long-term care facilities, critical case reporting (triggering monitoring and case-based surveillance), unusual case incidence and mortality data assessment.

In 2006, the MDH developed increased capacity to track influenza or ILI activity by:

- Adding fields for influenza reporting of hospitalized cases by infection control professionals to the Minnesota Immunization Information Connection (MIIC), a confidential computerized registry that contains a complete and up-to-date record of an individual's immunizations. Currently, pilot testing is underway at a few metro area hospitals.
- Recruiting additional sentinel providers to ensure that every area of the state is under adequate surveillance.



*Photo: Canadian Broadcasting Corporation*

**Goal: To confirm the arrival and spread of the influenza pandemic virus, monitor changes in the virus over time, and confirm the disease in symptomatic people.**

The MDH virologic surveillance is coordinated with the Public Health Lab, which routinely forwards randomly selected and any unusual influenza isolates to CDC to inform annual vaccine formulas and track viruses with pandemic potential. Suspect cases will have to be prioritized for testing, with suspected novel or avian influenza viruses of primary importance during early stages.

In 2006, the Public Health Lab developed substantially increased capacity for virologic surveillance. See the update on the Lab on page 18 for details.

## Community Disease Containment

**Goal: To define the individual and community-level disease containment measures that may be used to limit or slow an influenza pandemic in Minnesota.**

In the context of pandemic influenza, disease containment refers to measures that decrease contact among people to limit or slow virus transmission. These measures are non-pharmaceutical and involve behavior rather than medication. They may be particularly important in the absence of an effective

vaccine and may become less important if a vaccine becomes widely available. These measures may include:

- Isolation of individuals who meet the case definition for a novel influenza virus.
- Identification and health monitoring of close contacts of individuals with a novel influenza virus.
- Quarantine of specific groups of people with a common exposure to a novel influenza virus. If quarantine is implemented, it would be limited to the early stages of a pandemic – before there is sustained transmission of the virus in the community.
- Social distancing, or recommending measures to increase the space between people and decrease the frequency of contact among people (e.g., work from home, cancel large gatherings).
- Infection control measures, such as good hand hygiene and covering one's cough.
- Closure of schools, office buildings, shopping malls, public transportation and other large facilities where many people gather.
- “Snow days,” a term used to describe asking people to stay at home rather than going to work or school.



*Photo: Department of the Navy, Naval Historical*

**Goal: Describe the steps necessary for MDH and local public health to implement community disease containment.**

As part of CDC Public Health Preparedness local public health project agreements, local public health agencies are required to develop and maintain a local plan for providing essential services and monitoring capabilities to support people in isolation and quarantine. In Minnesota's 2005-2006 final report, 96 percent of local public health departments reported that such a plan had been developed or maintained and plans were coordinated with community partners. During 2006-2007, there will be emphasis on exercising and refining plans.

In 2006, the MDH distributed a series of four videos for public safety and law enforcement personnel on the laws governing isolation and quarantine, modes of disease transmission, and infection control and personal protection for public safety personnel. MDH provided the series to every police chief, county sheriff and community health services board. The MDH also is working with Ramsey County District Court and the Office of State Court Administration to develop protocols for implementing legal orders of isolation and quarantine.

The MDH is working with CDC and the Metropolitan Airports Commission on protocols for the airport quarantine station in regard to ill passengers arriving on international flights to the Minneapolis-St. Paul International Airport who meet clinical and epidemiologic criteria for a novel influenza virus.

MDH staff also consulted with the Minnesota Department of Employee Relations (DOER) on how to integrate social distancing measures into the state's continuity of operations planning process.

**Goal: Set forth general criteria for when community disease containment measures might be implemented, keeping in mind that the epidemiology of the virus will guide implementation during a pandemic.**

Federal interim guidance for states on developing community disease containment plans was issued on February 1, 2007. Minnesota's community disease containment guidance for local public health must be developed within the federal framework, so is not completed.

However, the MDH has established a Community Disease Containment Workgroup, has been discussing the key issues with stakeholders, and has been shaping aspects of Minnesota's plan in anticipation of receiving federal guidance, which was released February 1, 2007.

The MDH expects to be focusing maximum attention on the interim Community Disease Containment Plan for Minnesota in Spring 2007.

## Infection Control

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**Goal: To control infection and reduce influenza transmission by vaccination, if available.**

**Goal: To control infection and reduce influenza transmission by antiviral treatment and prophylaxis, if available.**

The MDH has developed infrastructure to monitor the occurrence of infectious diseases, strategies for preventing and controlling disease, and steps to implement them. Ensuring widespread vaccination against seasonal influenza is a major role of the agency, and methods to ensure vaccine supplies, ensure safe storage, analyze different virus strains, maintain quality control in administration, track immunizations, and promote vaccination are well-established.

This infrastructure is ready and tested, and will be available if a pandemic occurs. However, the vaccine for a pandemic influenza may not be available until months after a strain is identified and then only in limited amounts. Antiviral medications, which are currently being purchased and stockpiled, may also be in limited supply. Therefore, how vaccines and antivirals are distributed is part of a larger ethical discussion.

In 2006, the MDH selected a contractor to facilitate this discussion in a Pandemic Influenza Ethics Workgroup, which will involve stakeholders in a discussion about how to prioritize and distribute scarce resources. In addition, vaccine distribution systems are being developed in concert with those for antiviral medications. See the Antivirals and Vaccines section, page 17, for progress on this front.

**Goal: Reduce influenza transmission by early detection and isolation of cases.**

The previous section on Epidemiology Surveillance (page 10) covers the processes in place to monitor the population for new influenza strains – sentinel provider networks, referrals from healthcare partners, referrals from schools, laboratory analysis of samples. The lynchpin of the early detection system is the MDH Clinical Infection Control Team (C-ICT), a team of professionals qualified in interviewing people with suspect cases, reviewing clinical data and recommending infection control strategies based upon their findings. The C-ICT works closely with the Community Disease Containment planning process (page 11).



**Goal: To use infection control precautions to limit influenza transmission in healthcare facilities and the community.**

The C-ICT also develops, disseminates and revises infection control guidelines for patients, healthcare workers, other caregivers, volunteers and the public. The C-ICT provides guidelines for:

- Appropriate infection control precautions;
- Use of personal protective equipment;
- Airborne infection isolation room requirements; and
- Cleaning and disinfection of equipment, linen and the patient care environment.

In 2006, the C-ICT joined staff working on Community Disease Containment to provide videos on infection control to public safety officials (see page 12). Other efforts include developing a booklet on how to care for patients at home, as part of an initiative to define infection control practices for individuals who routinely care for family members – or may have to do so during a pandemic.

In the 2006 Minnesota Statewide Survey, respondents were asked “How often do you care for someone in your home who has a medical or mental health condition, such as an elderly parent, a disabled spouse, or an injured child?” Of the 803 respondents, 18 percent answered “almost always” and 14 percent answered “sometimes,” which illustrates the need for recommendations.

The MDH widely disseminates public information on hand hygiene and respiratory etiquette (“Cover your cough” posters, for example, at <http://www.health.state.mn.us/divs/idepc/dtopics/infectioncontrol/cover/index.html>.) The MDH also has advised the Minnesota Department of Employee Relations (DOER) on infectious disease strategies for its continuity of operations planning process. Working in collaboration with DOER, the MDH also is developing presentation materials for use within all state agencies as an assist to statewide training on pandemic influenza planning and preparation.

The C-ICT also is developing fact sheets recommending infection control measures for audiences with varying needs and exposure risks. Others efforts include a “Wise and Ready” tool kit to assist organizations increasing the number of staff who are fit tested and increasing their capacity to fit test (see MDH Web site at <http://www.health.state.mn.us/divs/idepc/dtopics/infectioncontrol/rpp/template/index.html>.)

This work is being conducted in conjunction with the Minnesota Chapter of the Association of Professionals in Infection Control and Epidemiology (MN-APIC), an international organization with a mission of reducing infections and adverse outcomes through education, practice guidance, research and credentialing.

## **Clinical Issues**

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**Goal: Provide consultation to clinicians on individual suspect cases of novel influenza.**

**Goal: Advise clinicians on infection control issues that will arise when these patients are evaluated and treated.**

## **Goal: Assist clinicians in accessing MDH laboratory services for novel influenza diagnosis.**

The MDH C-ICT can assist clinicians who are evaluating patients with a suspected novel influenza virus. Among the clinical support the C-ICT and other staff can offer:

- Educating clinicians to recognize a situation that may involve a novel influenza virus.
- Assessing the likelihood of a novel influenza virus, based on the patient's clinical status, as well as travel, employment, contact with birds or other factors.
- Advising clinicians with suspect cases how to examine the patient without exposing clinic staff or other patients to a potential highly pathogenic virus.
- Assisting clinicians in testing the patient, getting the test to the MDH Lab and determining if a novel or pandemic influenza virus is present.
- Recommending infection control precautions during and after the patient's visit, or isolation precautions upon transfer to another healthcare facility.
- Seeking close contacts of the patient for purposes of investigation and disease containment.

An advisory group of physician-experts on influenza, Minnesota infection control physician-leaders and infection control practitioners helped the MDH develop an algorithm for evaluation of a patient with a possible novel influenza virus. In cooperation with the Council of Health Plans and other partners, the algorithm has been distributed to all Minnesota hospitals and infectious disease specialists, executive directors, physicians, infection control practitioners, local public health directors and Metro area clinics. (Find the algorithm at <http://www.health.state.mn.us/divs/idepc/diseases/flu/avian/hcp/clinicaleval.html>.)

The C-ICT also has set up a Pandemic Influenza Database used to track patient risk factors, test results and case status. It was based on a previous model used during the Severe Acute Respiratory Syndrome (SARS) outbreak.

## **Healthcare Planning**

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**Goal: Establish healthcare systems that, at a minimum, can provide triage, treatment, and initial stabilization above the current daily-staffed bed capacity of 2,500 cases per million people within a three-hour period for persons with symptoms of acute infectious disease.**

A pandemic influenza would require hospitals, healthcare systems and health professionals to deal with an avalanche of new patients, many of whom are contagious and some in respiratory distress. The sudden influx of patients is termed a "surge," and the MDH is working collaboratively with healthcare organizations statewide to ensure that Minnesota will have "surge capacity" when we need it most.

The state has approximately 140 hospitals within its eight health regions. In each region, a Regional Hospital Resource Center (RHRC) and RHRC coordinator works with the other hospitals, clinics, Emergency Medical Services (EMS), behavioral health providers, local public health and the MDH to arrange among them how to handle a surge. Hospitals need to consider many aspects of a pandemic influenza surge (or other large-scale emergency) – total number of beds, ICU bed availability in

isolation units, number of mechanical ventilators, supply of protective gear for staff, available staff to work, transportation to the hospital, supplies of medications, infection control, waste disposal, and more.

The MDH Office of Emergency Preparedness administers and coordinates the Healthcare System Preparedness Program, funded by a grant from the Health Resources and Services Administration (HRSA). This grant funds hospital and health system preparedness planning efforts at the state level and in eight regions. Partners include Minnesota's hospitals, clinics, EMS, behavioral health and other representatives of the state's healthcare system.

The MDH has worked closely with regional Public Health Preparedness Consultants (PHPCs) located in each of the eight health regions. The PHPC's will coordinate the region's Multi-Agency Coordination (MAC) entity. The MAC will coordinate large-scale healthcare emergency response and recovery for the region, while MDH coordinates healthcare issues statewide.

In 2006, the MDH created and distributed a template for regional partners that will assist them in creating an incident-specific pandemic influenza annex to their regional emergency plans. The template was developed to assist regional healthcare coordination and planning, as well as to ensure consistency in pandemic influenza planning statewide.

The MDH has developed and distributed statewide guidance for EMS medical directors and providers regarding pandemic influenza planning and response. EMS personnel are critical to any large-scale health emergency, and providing them with assistance on protecting patients, the public and themselves from a pandemic influenza virus is a key strategy in keeping the healthcare system operational.



*Photo: National Museum of Health and Medicine*

**Goal: Manage outpatient influenza cases in non-hospital settings to reduce progression to severe disease and reduce demand for inpatient care.**

Hospitals, clinics, EMS and behavioral health providers are making progress in preparing for a pandemic or other serious emergency, focusing on continuity of operations plans that will keep health services available during a pandemic. The strategies used for these healthcare organizations can serve as models for pandemic influenza planning in non-hospital healthcare facilities.

Non-hospital healthcare providers, such as long-term care facilities, home healthcare providers, correctional facility healthcare providers, group homes, daycares, private schools and others can be a more significant challenge. These organizations are not funded to plan for a pandemic influenza, even as locations housing vulnerable children and adults. More work must be done to bring these providers into the planning process.

Planning is taking into account the needs of special populations. Special populations include people who have communication barriers (either limited English proficiency or hearing or speech impairment); medical issues; limited independence; need for supervision and no transportation, all of which could prevent them from preparing or responding during an emergency. The definition encompasses elders in

long-term or home care, people with disabilities, people with mental illness, children in group homes, and immigrant or refugee populations with limited English proficiency.

In 2006, the MDH determined a statewide approach to defining special populations from a functional perspective. The agency has committed planning resources to special populations, which comprise a large part of Minnesota's urban population and require culturally competent and comprehensible information to prepare for a pandemic.

**Goal: Guide selection of alternative care sites with the necessary requirements for infection control and patient care, to supplement hospitals and non-hospital care.**

Local public health agencies are working in conjunction with hospital and healthcare systems to address medical surge, including planning/exercising to identify the location, set-up, staffing and operation of off-site or alternate care sites during public health emergencies (including pandemic influenza). According to the 2005-2006 CDC Public Health Preparedness Final Report, many local public health agencies have done preliminary work on identifying alternative care sites and see this as a "work in progress." The MDH has established basic criteria for alternative care facilities to ensure that they can meet the needs of the community during a pandemic.

## **Antivirals and Vaccines**

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**Goal: Use antiviral medications to limit mortality and morbidity, minimize societal disruption and reduce economic impacts of a pandemic.**

Antiviral medications are not a panacea for a pandemic, but they can be a significant weapon in the war against a highly pathogenic influenza virus. Antivirals administered to those who are ill, especially in the first 48 hours, will decrease the onset of pneumonia, reduce the number of people requiring hospital care, and prevent deaths. Two antivirals, oseltamivir and zanamivir, have been shown to be effective against the H5N1 virus.

Antivirals also may save lives through preventing infection among the caregivers so necessary to a widespread pandemic – first responders, public safety officials, health professionals, operators of critical infrastructure and other priority groups.

Minnesota is participating in the Strategic National Stockpile (SNS) program. During a pandemic, antivirals will be distributed from federal, state and local stockpiles. In 2006, the U.S. allocated 343,000 10-day courses for Minnesota, and in 2007 plans to allocate the state another 411,600 courses. The state also may purchase up to 531,700 courses at a 25 percent subsidy, and has indicated that it will purchase all of them if funding is available. The federal government sets standards for antiviral use and distribution, including prioritization of who should receive antivirals if only a limited supply is available.

MDH is completing a state plan for antiviral distribution and use, identifying locations for regional stockpiles. Mass dispensing of antivirals will fall to local public health in coordination with healthcare providers, and the 2005-2006 Final Report on the Local Public Health Grant Agreements found that 99 percent had a mass dispensing plan and 84 percent had completed an exercise testing some part of the plan.

In 2006, seasonal influenza clinic exercises also tested the ability of the state and local government to provide antivirals rapidly. An MDH exercise involving seven counties was completed in 2006, the

Northeast District co-lead and participated in an Itasca County exercise in May 2006, the City of Bloomington used CDC guidance issued in mid-November to exercise its plan in January 2007, and the Mayo Clinic health system completed an exercise demonstrating that it could distribute medication to 90,000 people, including 30,000 employees and their families.

**Goal: Use vaccines during an influenza pandemic to limit mortality and morbidity, minimize societal disruption and reduce economic impacts.**

Vaccination is the cornerstone of influenza prevention and control, and in a pandemic, the MDH would potentially administer three different types of vaccine:

- The current seasonal influenza vaccine, which may not target the pandemic influenza virus but continues to protect against a seasonal influenza virus that might occur at the same time – and complicate the course of influenza patients;
- The pre-pandemic influenza vaccine, a vaccine effective against some types of H5N1 viruses, which is being stockpiled by the federal government; and
- The specific pandemic influenza vaccine, which cannot be produced until a virus emerges that would be easily transmissible human-to-human.

The MDH has well-developed systems that manage the distribution, storage, administration and tracking of seasonal influenza vaccines. These systems are being adapted to include processes for the pre-pandemic and pandemic influenza vaccines.

## L a b o r a t o r y

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**Goal: Providing laboratory support for MDH influenza sentinel surveillance programs.**

**Goal: Provide diagnostic and reference testing, as well as information and guidance, for the Minnesota Laboratory System (MLS) laboratories.**

The Minnesota Department of Health Public Health Laboratory (MN-PHL) continues to make progress in support of the above goals. Laboratory testing for highly pathogenic microorganisms must be done utilizing protocols and precautions that provide safety, security and accurate results. This is especially true for a highly pathogenic, potentially pandemic virus such as avian influenza, where a false positive or negative test result can have a major societal impact. The following are the some primary efforts at the MDH:

- Safety, security and biosafety level 3-ag facility (BSL3-ag)
- Routine diagnostic testing, Polymerase Chain Reaction (PCR) assays and sequencing capabilities
- Minnesota Laboratory Systems (MLS) activities

### **Safety, security and BSL3-ag facility:**

In 2006, the Minnesota Department of Agriculture in conjunction with the MDH Public Health Laboratory constructed a high containment Biosafety Level 3-ag laboratory, the only such facility in the region. MDH developed safety, security and operational protocols required by the CDC and U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). This laboratory



permits culture of highly pathogenic or potentially pandemic strains of influenza, which significantly enhances the state's ability to detect and respond to a highly pathogenic avian or pandemic influenza.

#### **Routine diagnostic testing, PCR assays and sequencing capabilities:**

- The MN-PHL provides testing for the monitoring of seasonal influenza at 30 sentinel influenza surveillance sites, one mechanism by which the emergence of a pandemic strain would be detected.
- The MN-PHL conducts World Health Organization (WHO) seasonal influenza serotype surveillance, allowing the agency to determine if currently circulating strains are in the vaccine.
- The MN-PHL is in the process of validating CDC protocols for influenza A/B, H1, and H3, a process required by federal law for any such tests used for patient management.
- The MN-PHL has trained staff to perform research-only assays for H5, H7 and H9, and the validated Laboratory Response Network H5 assay, on a 24/7 basis.
- The MN-PHL developed protocols for full sequencing of the neuraminidase (N) and hemagglutinin (H) genes to allow for improved characterization of influenza A strains. A more rapid PCR-based method for characterization of the neuraminidase type is under development.
- The MN-PHL has implemented advanced methods for detection of pathogens which cause influenza-like illnesses and is currently evaluating a bead-array based assay for the detection of respiratory viruses and for typing of influenza A viruses.
- The MN-PHL purchased an automated nucleic acid extractor to enable high volume molecular-based testing and is in the process of validating methods based on this equipment.



#### **Minnesota Laboratory Systems (MLS) activities:**

- The MLS has ongoing communications with the MLS labs through the MLS Lab Alert System, relaying up-to-date influenza information to all of the laboratories in the state. This increases awareness and solicits additional case reports.
- The MLS developed and administered a survey to all MLS laboratories to assess influenza testing capabilities. Specific procedural and diagnostic kit use information is being gathered to analyze diagnostic testing trends. This information will ultimately improve patient diagnosis and the quality of statewide surveillance data.

- The MLS has initiated a weekly influenza and RSV laboratory testing surveillance system. This will inform laboratories of the current trends in influenza testing and the potential positive predictive values of rapid testing kit results.
- The MLS is planning a day long workshop for the virology laboratories in the state. This will allow the labs to have a better understanding of the capabilities of the MN-PHL and to share best practices.

Dedicated funding and the activities of the MLS, a statewide clinical laboratory network administered by the Lab, have increased both surveillance capacity and scope. All of these advances in laboratory facilities and procedures position Minnesota uniquely among states in the ability to get results rapidly to healthcare facilities.

## Poultry Worker Health

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**Goal: Protect the health of poultry workers and others in contact with infected birds.**

**Goal: Minimize the likelihood of emergence of a new avian influenza strain with the potential for human-to-human transmission.**

Surveillance for avian influenza (AI) is a priority for the Minnesota poultry industry for both economic and geographic reasons. Poultry production is one the state's largest industries. Minnesota ranks first in the nation in turkey production, an industry that brings in more than \$600 million annually. The state is also located along one of the major U.S. wild bird migratory routes. The Minnesota Cooperative AI Control Program was established in 1984 by the Minnesota Turkey Grower's Association, the University of Minnesota and the Minnesota Board of Animal Health (BAH). In addition to turkey flocks, the Cooperative Control program recently added chicken and backyard bird surveillance to the program. Rapid detection and eradication of AI is the best means of protecting poultry workers.

The MDH partners with other state agencies in providing poultry health and avian influenza prevention presentations to industry and other stakeholders. In 2006, MDH, along with partner state agencies, worked with Minnesota Emergency Communication and Health Outreach (ECHO) in the collaborative production of a television broadcast, DVD production and several brochures on backyard flock biosecurity. These materials were translated into the six languages most commonly spoken by immigrant and refugee populations in Minnesota. These educational materials were distributed to stakeholders through local public health agencies and the agricultural extension service.

## Care of the Deceased

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**Goal: Coordinate an effective response to a surge in deaths that overwhelms local mortuary services.**

Each year, approximately 38,000 people die in Minnesota, and mortuary services statewide take care of the remains, the funerals and the families. In a "worst case" pandemic influenza outbreak, an additional 32,900 people could die *within eight weeks*. The MDH coordinates the Disaster Mortuary Emergency Response Team (D-MERT) to help in situations where local mortuary services are overwhelmed.

In 2006, the MDH received the Disaster Portable Morgue Unit (DPMU), a mobile method of bringing morgue services directly to the site of a disaster or community where many deaths have overwhelmed

local mortuary resources. The MDH also recruited a Pandemic Influenza/DPMU coordinator, who conducted 20 DPMU trainings statewide throughout 2006 with funeral directors, medical examiners, morticians, emergency managers, fire departments, law enforcement, and others involved in care of the deceased. In addition, the MDH is seeking funding to purchase body bags and other supplies in bulk in preparation for an emergency involving large numbers of fatalities.

## Environmental Public Health

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**Goal: Develop procedures for ensuring safe food preparation and handling, security for public water supply systems, and maintenance of a potable water supply.**

**Goal: Assist local officials to ensure the safety of food and water for human consumption during and following a pandemic outbreak.**

Clean food, clean drinking water and breathable air are life essentials that most Minnesotans take for granted. But in a worst-case pandemic influenza outbreak, the people who operate drinking water supply systems and food distribution systems also will get sick or stay home with sick family members.

If systems to protect food and water safety are overwhelmed, caring for influenza patients and maintaining caregivers' health will be complicated by food-borne illnesses and insufficient clean water for drinking, cooking and hygiene. Mass feeding operations implemented under disaster conditions also must ensure that food and water are safe.

In 2006, the MDH updated and tested its notification system to include 13,000 food establishments across the state. These establishments, plus 700 public water suppliers, can now be contacted rapidly during public health emergencies, including pandemic influenza. The MDH will provide technical assistance to local public health agencies regarding drinking water and food supply safety and security. The MDH identified state and local environmental public health pandemic influenza outbreak roles in 2006 and encouraged regulated partners to undertake more continuity of operations planning.



# Future Goals and Challenges

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If a pandemic influenza occurred tomorrow, the MDH and local public health partners would be able to detect the virus, slow its spread, assist the ailing and prevent some of the inevitable morbidity and mortality. On a continuum from “unprepared” to “fully prepared,” the MDH has made progress in being better prepared as a result of the many activities of this past year.

However, to move significantly closer to the goal of “fully prepared,” the MDH must face all of the challenges that come with a complex, potentially deadly statewide emergency. These challenges face all of those individuals and organizations with roles to play in pandemic influenza management in Minnesota.

## Updating and Implementing the MDH Plan

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The *MDH Pandemic Influenza Plan* is always dynamic and “under construction” because planning information changes quickly. New scientific research, updated federal guidance, funding variations, newly identified gaps and other analyses are taken into account during plan updates, one of which is due in 2007.

MDH also intends to direct extra planning attention and effort in **six focus areas for agency planning and improvement** during the July 1, 2007 – June 30, 2008 state fiscal year. The first, **operationalizing the plan**, involves developing work plans that succinctly capture the tasks needed to achieve implementation and bring the *MDH Pandemic Influenza Plan* to life.

## Exercising Plans

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**Exercising** is another one of the focus areas for agency planning and improvement. Plans must be tested, through exercises designed to promote optimum learning and teamwork. Local public health partners have reported that meeting their counterparts in healthcare, public safety and emergency management face-to-face in an exercise setting helps form strong bonds and reveal strengths and weaknesses in their plans.

Efforts to improve exercising include:

- Completing a tabletop exercise involving the Governor and state agencies in a pandemic influenza scenario.
- Planning and implementing a federally required pandemic influenza school closing exercise with four scenarios: a Cities Readiness Initiative, urban, rural and suburban locations.
- Conducting internal notification exercises and employee drills.
- Establishing an exercise workgroup to develop a three-year exercise plan that will improve state and local response while fulfilling federal requirements.
- Offering a course for partners on designing tabletop exercises.

## Maintaining Proficiency and Capacity

Continuous improvement in the state's ability to respond to a pandemic influenza depends upon maintaining the proficiency of responders through education and training. Staff change roles; time passes without further updates, exercises or actual events; and other work responsibilities crowd out the important messages. Staff involved in responding must maintain their interest and skill, no easy task among increasing demands for other initiatives.

**Education and training** is the MDH's next focus area for pandemic influenza planning improvement. Among those efforts undertaken by the MDH:

- Presenting information to audiences statewide on pandemic influenza planning. By a very conservative estimate, MDH staff completed 85 presentations for 4,957 people in 3<sup>rd</sup> quarter 2006. Local public health partners reported 695 training or technical assistance events contacting 46,955 people through October 2006. MDH staff only recently began to report these presentations and the MDH pandemic influenza planners are summarizing where requests are coming from, what topics are of current interest, and who is being requested most often.
- Requiring MDH employees to receive training on the Incident Management System, so that the agency would have a common language and context for dealing with emergencies of all types.
- Hosting and sponsoring a course on designing tabletop exercises, providing partners with skills to put together effective tests.
- Developing MN.TRAIN, an online learning management system that will allow staff and partners to find learning opportunities and track current competencies and training needs.
- Designing an internal, online Speakers' Bureau to ensure that partners can find the correct MDH staff person for a conference or training event. The Speakers' Bureau also helps document conference presentations, meetings, and workshops provided by MDH staff.
- Working with the Minnesota Department of Employee Relations (DOER) on a pandemic influenza education plan for all state employees.



*Photo: Minnesota Historical Society*

## Federal Guidance and Timeframes

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The MDH has been working under a cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC) on pandemic influenza planning. Public health agencies receive local government grants passed through state agencies to work on pandemic influenza planning locally. To comply with timeframes established in grant requirements, the MDH and local partners seek federal guidance documents. Guidance documents have been delayed, forcing MDH staff into racing to meet unrealistic timeframes. The MDH will continue to discuss these issues with federal partners and seek process improvements.

## Regional and Local Public Health Needs

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The MDH's next focus area for pandemic influenza planning improvement is **regional and local public health consultation**. Minnesota's local public health agencies have become proficient at multi-tasking. Adding pandemic influenza planning to their duties can be a struggle.

In 2006, Public Health Preparedness Consultants (PHPCs) in each of the eight health regions invited local partners to meet with the Pandemic Influenza Planning Team and discuss obstacles to better planning. One theme that emerged repeatedly is that jurisdictions with small populations have the same list of duties to perform as larger jurisdictions, with less funding.

The MDH has developed a number of strategies in 2006 to provide technical assistance and information to local public health. Among those efforts:

- Providing information on the plan, LPH roles, and other technical assistance on the WorkSpace, a password-protected area of the MDH Web site where nonpublic information may be distributed and exchanged.
- Providing guidance on the technical sections of the *MDH Pandemic Influenza Plan* to assist LPH in developing regional and local plans.
- Developing templates that help LPH craft regional and local plans that contain all of the necessary elements and are consistent in format.
- Creating a CD-ROM compilation of seasonal, avian and pandemic influenza information from MDH and other lead technical agencies and distributing statewide.
- Sharing "good ideas" from other jurisdictions in the *Pandemic Influenza* e-bulletin, a monthly online publication that also reports on breaking news and developments at the federal and state level.
- Convening an MDH-LPH Workgroup to evaluate roles and responsibilities to better define expectations and capacities across the range of local public health agencies, and including the unique challenges of pandemic influenza.

### Who Lived, Who Died in 1918

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The flu was a great leveler of people; it recognized neither social order nor economic status

Among its more well known victims:  
General John Pershing, President  
Franklin Delano Roosevelt, President  
Woodrow Wilson, and actress Mary  
Pickford, all of whom survived. Not so  
lucky were silent screen star Harold  
Lockwood, swimmer Harry Elionsky,  
and Irmy Cody Garlow, Buffalo Bill  
Cody's daughter, all of whom died.

## Hospital and Healthcare Planning Gaps

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Hospitals, clinics, EMS and behavioral health providers have been planning for years for a patient surge associated with a serious emergency or disaster. A surge related to a pandemic influenza outbreak would make additional demands on hospitals and healthcare – need for ventilators, personal protective equipment, isolation units, and more. While local public health agencies have received funding for pandemic influenza planning in 2006, hospitals and healthcare organizations have not.

No funding for emergency preparedness is available for a great many organizations that provide care for special populations, including child-care centers, adult daycare, residential programs (group homes, detox facilities, private schools and colleges, for example), long-term care facilities and home care. The MDH is identifying these emergency preparedness gaps and considering solutions.

## Adjusted Standards of Care

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In regional meetings with local public health and hospital representatives, concerns arose about whether standards of patient care will be adjusted to fit the emergency circumstances (surge, staff shortages, resource depletion) inherent in a pandemic. In addition, standards of care may differ among states and between the U.S. and Canada. In 2006 (and ongoing), the MDH established a Science Advisory Team of physicians from emergency departments, infectious disease and critical care to look at adjusted standards of care during a serious emergency or pandemic.

## Ethical Considerations

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When people are sick or their loved ones threatened with illness, the natural impulse is “take care of us first.” In a pandemic, when as many as a third of people have influenza and resources are scarce, the survival of many may depend on how such resources are prioritized. Ethical dilemmas facing decision-makers in a pandemic, when many resources may be in short supply, will be intense and difficult.

If antivirals are in limited supply, to whom should they be administered? If an effective vaccine is available, but limited in supply, how should distribution be prioritized? Among those resources that may be in short supply are health professionals, respirators, and personal protective equipment (masks, face shields).

In 2007, the MDH will hire a contractor to facilitate a work group on ethical matters associated with pandemic influenza. The contractor will draw together a panel representing experts in healthcare ethics to create ethical frameworks for allocation of scarce medical resources in a pandemic. The contractor will also recommend a process to obtain public feedback. The guidelines or prioritization systems will help state decision-makers decide on ethical issues that arise during a pandemic.

## Demographic Changes

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Two major shifts in the demographic makeup of Minnesota have broad implications for pandemic influenza planning. The immigrant/refugee movement into the state has changed the make-up of the population, especially in urban areas.

These recent arrivals have limited English proficiency (LEP), and communicating health and emergency information to LEP populations can be challenging. The MDH is working with the Minnesota Emergency Communication and Health Outreach (ECHO) Collaborative, which produces public television broadcasts on emergency and health topics in six languages and English. In 2007, ECHO will

produce segments on emergency preparedness for these populations. In addition, the MDH assisted BAH in distributing a DVD of an ECHO broadcast on preventing avian influenza among backyard flocks. The MDH also collaborated with the Minnesota Department of Human Services on statewide workshops for LEP providers on pandemic influenza.

The second shift involves a pending dramatic change in the age composition of Minnesota. As Baby Boomers hit retirement age, many more people are likely to live in senior housing, nursing homes, or the homes of their adult children. MDH pandemic influenza planning must take the elder population into account when providing guidance and technical assistance. The MDH has presented information on pandemic influenza planning to state organizations of home care, senior housing and long-term care providers.

The MDH hired a special population planner to ensure that issues involving preparedness among groups with barriers or limitations are considered and strategies proposed and implemented.

### Personal and Family Preparedness



*Photo: Minnesota Historical Society*

Results from the 2006 Statewide Survey suggest that Minnesotans (veterans of floods, tornados, forest fires, grass fires, blizzards and ice storms) are “slightly above average” in personal and family preparedness. A pandemic influenza differs from other types of emergencies, however, in ways that could make even hearty Minnesotans feel fear. A pandemic influenza outbreak may go on for weeks or months; eradicate resources rapidly; cause enormous grief, stress and exhaustion; and potentially trigger infrastructure and societal breakdown.

Another of the MDH’s focus areas for pandemic influenza planning is a joint, statewide MDH/HSEM **Public Information Campaign**. In 2006, the Minnesota Legislature provided MDH with funding to develop and implement the first stage of a campaign to get citizens to take action to prepare for emergencies. The campaign will be launched in May 2007 and will include a recognizable brand, radio and print advertising, special events, Web development and more. Communication channels involving business, educational institutions, faith-based communities and special populations will be specifically targeted for emergency preparedness information.

The MDH and HSEM have developed a campaign advisory group to assist with ideas and implementation. The group consists of representatives from state agencies, the Governor’s Office, hospitals, health plans, voluntary and community organizations, faith-based communities, local and regional government, and disabled Minnesotans.

The behavior change central to the success of personal and family preparedness happens gradually. The MDH and HSEM will get off to a good start when the campaign is introduced in early May and outcomes will be measured to determine its effectiveness. However, the “take action” message must be repeated and reinforced over a sufficient timeframe through multiple channels. Funding for the campaign ends June 30, 2007, and no continued funding options have been identified. To maintain continued momentum and achieve the optimum outcome – every adult Minnesotan with a plan, a kit, a communication channel and a stake in the community’s preparedness efforts – continuation funding for the public information campaign should be appropriated in the next biennium.



## Communication

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With so many diverse agencies and interests in pandemic influenza planning and response, ensuring clear and consistent communication among partners can be a challenge. The final focus area for pandemic influenza planning is **Communication Planning**, among MDH staff and among partners involved in planning and responding to emergencies.

The MDH has well-established channels to communicate with staff, partners and the public (see page 8). Because pandemic influenza planning guidance, initiatives, funding and visibility frequently shift – and groups with interests in pandemic influenza planning are proliferating – the MDH is developing additional tools to help partners (especially in local public health) receive timely, accurate and helpful information. Partners develop concepts or projects that could easily be transferred to other jurisdictions, and these should be relayed on.

The MDH *Pandemic Influenza* e-bulletin, internal (Intranet) Web page updates, external Web page maintenance and development, internal Weekly Pandemic Influenza Updates, regular pandemic influenza planning meetings with HSEM, and frequent discussions among state agency management keep information flowing throughout the network of responders, innovations moving into the mainstream, and planning taking place within the context of all ongoing efforts. Further development of communication methods will continue in 2007.

# Conclusions and Recommendations

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The MDH is making progress in preparing Minnesota for a potentially deadly pandemic influenza, using existing infrastructure, expertise in infectious disease and public health, and practical planning. The MDH plans to stay on course, continuing to work with partners to weave a safety net that will prevent a pandemic, minimize its spread, reduce the morbidity and mortality of an outbreak, and recover after it ends.

Governor Tim Pawlenty has proposed a 2008-2009 Biennial Budget requesting \$12.4 million in FY2008 and \$7.4 million in FY2009 for pandemic influenza preparedness. The funding would:

- Build healthcare supply stockpiles of personal protective equipment, ventilators, medical supplies, and medications.
- Purchase antivirals reserved by the federal government for treatment of up to 25 percent of the state's population.
- Maintain MDH laboratory testing, epidemiology investigations of potential cases, planning, exercising plans, developing workforce and volunteer readiness.
- Fund local public health preparedness efforts.

This state funding, in tandem with federal funding received for pandemic influenza preparedness, will allow the MDH to continue progress toward a Minnesota that can sustain itself during the worst case outbreak and renew itself after a worldwide wave of influenza has passed.

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