Virginia Department of Health

Emergency Operations Plan

Attachment
Pandemic Influenza

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VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment
www.vdh.virginia.gov

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Executive Summary

Influenza A viruses periodically cause worldwide epidemics, or pandemics, with high rates of morbidity and mortality. Unlike other public health emergencies, an influenza pandemic will affect multiple communities across Virginia, and the entire nation, simultaneously. It is estimated that during eight weeks of pandemic activity in Virginia, as many as 1,137,850 outpatient visits, 24,090 hospitalizations, and 5,380 deaths could occur across the state. The Centers for Disease Control and Prevention estimates that pandemic activity could continue for as long as 18 months, which would greatly increase the number of individuals affected.

Preparedness planning is a shared responsibility that is needed at all levels of government, including state, regional and local levels, as well as in all communities. Local jurisdictions must also be prepared to respond in the context of uncertain availability of external resources and support. Further, because government will not be able to provide all preparedness, response and recovery needs, individual citizens, businesses, non-profit groups, and others should integrate pandemic influenza planning activities into their efforts.

The Virginia Department of Health (VDH) Pandemic Influenza Plan consists of preparedness and response components that are consistent with the Health and Human Services (HHS) Pandemic Influenza Plan. The background section outlines pandemic influenza assumptions, delineates relevant sections of Virginia Code, addresses coordination and decision making, provides background information about influenza, and provides morbidity and mortality projections.

There are eleven supplements to the plan, which mirror the supplements to the federal plan. The surveillance supplement (Supplement 1) provides recommendations for disease surveillance throughout the phases of a pandemic. The laboratory diagnostics supplement (Supplement 2) addresses the role of the Virginia state public health laboratory, the Division of Consolidated Laboratory Services, in influenza surveillance for season flu as well as a novel influenza strain. It also provides recommendations for clinical, local public health and other laboratories. The healthcare planning supplement (Supplement 3) provides healthcare partners with recommendations for developing plans to respond to an influenza pandemic, and the infection control supplement (Supplement 4) outlines strategies for limiting the spread of influenza. For the clinical guidelines supplement, VDH endorses the recommendations in supplement 5 of the HHS Pandemic Influenza Plan. The vaccine distribution and use supplement (Supplement 6) addresses vaccination of priority groups, vaccine procurement and distribution, second-dose planning, vaccine storage and shipment options, and vaccine monitoring, data collection and safety. The antiviral drug distribution and use supplement (Supplement 7) addresses preparedness planning issues such as antiviral procurement, distribution to priority groups, legal preparedness, and data collection. It also includes recommendations for the use of antiviral drugs during the pandemic period. The community disease control and prevention supplement (Supplement 8) addresses disease containment strategies to prevent and decrease transmission during different pandemic phases, and the travel-related risks of disease supplement (Supplement 9) specifically addresses travel-containment strategies, such as health alert notices, interaction with federal quarantine stations, and management of travelers at points of entry into the Commonwealth. Supplement 10, the public health communications section, outlines key influenza pandemic risk communications concepts. The psychosocial support supplement (Supplement 11) outlines services that will help in managing emotional stress during the response to an influenza pandemic.

The Virginia plan is meant to be dynamic, and components will be revised and updated as new information is obtained.

I. Background and Purpose

The Virginia Department of Health (VDH) first developed a Pandemic Influenza Plan in 2002, with revisions made on a regular basis, incorporating updated information about vaccines, antiviral agents, surveillance and investigation, and public information. The current revision of the plan incorporates guidance released from the federal government in the November 2005 U.S. Department of Health and Human Services Pandemic Influenza Plan. The purpose of the VDH plan is to define the public health role in response to pandemic influenza, as well as provide planning guidance for local health departments as well as healthcare and private sector partners. The plan contains eleven supplements that provide guidance on specific planning and response elements.

The plan is an attachment to the VDH Emergency Response Plan, which provides for state, regional and district-level emergency operations in response to a disaster or large scale emergency affecting Virginia and requiring health and medical services, terrorism response, environmental health, mortuary services, and other responses. Information outlined in this Pandemic Influenza Plan addresses issues that are unique to pandemic influenza.

The VDH Office of Epidemiology and the Emergency Preparedness and Response Programs are responsible for periodically reviewing and updating this plan to ensure that information contained within the document is consistent with current knowledge and changing infrastructure.

II. Guiding Principles

VDH will be guided by the following principles in responding to pandemic influenza:

A. Pandemic planning will be built on all-hazard planning, already underway at local, regional and state levels within Virginia.
B. In advance of a pandemic, VDH will work with public and private partners to coordinate preparedness activities. Advance preparations can reduce the number of people who become ill or die and can minimize the economic and community impact.
C. Federal, state and local governments will not be able to address all pandemic influenza needs or meet all resource requests. Responsibility for preparing for and responding to a pandemic spans all levels and sectors. In addition to government entities, healthcare, business, faith-based organizations, schools and universities, volunteer and other groups, and individuals have critical roles to play in pandemic preparedness. VDH encourages all Virginians to be active partners in preparing for a pandemic. An informed and responsive public is essential to minimizing the health effects of a pandemic and the resulting consequences to society.
D. Sustained human-to-human transmission anywhere in the world will be a triggering event to initiate a pandemic response by federal and state responders.

III. Situation and Assumptions

The following assumptions are made:

A. Susceptibility to the pandemic influenza subtype will be universal.
B. The typical incubation period for influenza is one to three days. It is assumed that this would be the same for a novel strain that is transmitted between people by respiratory secretions. Persons who become ill may shed virus and can transmit infection for up to one day before the onset of illness. Viral shedding and risk for transmission will be the greatest during the first two days of illness.
C. Although pandemic influenza strains have emerged mostly from areas of Eastern Asia, variants with pandemic potential could emerge in Virginia or elsewhere in the U.S.
D. In an affected community, a pandemic outbreak will last about six to eight weeks. At least two pandemic disease waves are likely. Many geographic areas within Virginia and its neighboring jurisdictions may be affected simultaneously. Localities should be prepared to rely on their own resources to respond.
E. The seasonality of a pandemic cannot be predicted with certainty. The largest waves in the U.S. during 20th century pandemics occurred in the fall and winter. Experience from the 1957 pandemic may be instructive in that the first U.S. cases occurred in June, but no community outbreaks occurred until August and the first wave of illness peaked in October.
F. An influenza pandemic will present a massive test of the emergency preparedness system. Advance planning for Virginia's emergency response could save lives and prevent substantial economic loss.
G. There may be critical shortages of health care resources such as staffed hospital beds, mechanical ventilators, morgue capacity, temporary holding sites with refrigeration for storage of bodies, and other resources.
H. Healthcare workers and other first responders may be at higher risk of exposure and illness than the general population, further straining the healthcare system.
I. Widespread illness in the community could increase the likelihood of sudden and potentially significant shortages of personnel in other sectors who provide critical public safety services.
J. Effective preventive and therapeutic measures (e.g., vaccines and antiviral medications) will be delayed and in short supply.
K. Assuming that prior influenza vaccination(s) may offer some protection, even against a novel influenza variant, the annual influenza vaccination program, supplemented by pneumococcal vaccination when indicated, will remain a cornerstone of prevention.
L. Surveillance of influenza disease and virus will provide information critical to an effective response.
M. It is likely that public health will take the lead in distributing influenza vaccine. Health departments will work in partnership with health care providers to facilitate distribution.
N. An effective response to pandemic influenza will require coordinated efforts of a wide variety of organizations, both public and private, and health as well as non-health related.

IV. Authority

Several sections within the Code of Virginia give the Board of Health and the State Health Commissioner the authority to perform certain acts to protect the health of citizens. Authorities that may be exercised during pandemic influenza are listed in Table 1.

Table 1. Code of Virginia Statute and Corresponding Authority

Statute	Authority
Reporting of Disease §32.1-35; §32.1-36; §32.1-37	• Requires reporting of selected diseases to the Board of Health by physicians practicing in Virginia and others, such as laboratory directors, or persons in charge of any medical care facility, school or summer camp.
Investigation of Disease §32.1-39	• Authorizes the Board of Health to provide for surveillance and investigation of preventable diseases and epidemics, including contact tracing.
Authority to Examine Records §32.1-40; § 32.1-48.015	• Authorizes the Commissioner or his designee to examine medical records in the course of investigation, research, or studies, including individuals subject to an order of isolation or quarantine.
Emergency Orders and Regulations §32.1-13; §32.1-42; §32.1-20	• Authorizes the Board of Health to make orders and regulations to meet any emergency for the purpose of suppressing nuisances dangerous to the public health and communicable, contagious, and infectious diseases and other dangers to public life and health. • Authorizes the Commissioner to act with full authority of the Board of Health when it is not in session.
Disease Control Measures §32.1-43; §32.1-47; §32.1-48	• Authorizes the Commissioner to require quarantine, isolation, immunization, decontamination, and/or treatment of any individual or group of individuals when the Commissioner determines these measures are necessary to control the spread of any disease of public health importance. • Permits the Commissioner to require immediate immunization of all persons in the event of an epidemic; permits the exclusion from public or private schools of children not immunized for a vaccine-preventable disease in the event of an epidemic.
Isolated or Quarantined Persons § 32.1-44	• Permits any isolated or quarantined person to choose their own treatment, whenever practicable and in the best interest of the health and safety of the isolated or quarantined person and the public. • However, conditions of any order of isolation or quarantine remain in effect until the person or persons subject to an order of quarantine or order of isolation shall no longer constitute a threat to other persons.
Isolation or Quarantine of Persons with Communicable Disease of Public Health Threat § 32.1-48.05 through §32.1-48.017	• Defines a communicable disease of public health threat as a communicable disease of public health significance coinciding with exceptional circumstances. • Authorizes the Commissioner to issue orders of isolation or quarantine for individuals or groups of individuals infected with or exposed to a communicable disease of public health threat. • Outlines conditions necessary for invoking orders, process for seeking *ex parte* court review in the circuit court of residence, and appeal process. • Authorizes the Commissioner, during a state of emergency, to define an affected area(s) wherein individuals are subject to an order of isolation and/or quarantine. • Authorizes the Commissioner, in concert with the Governor, during a state of emergency to require the use of any public or private property to implement any order of quarantine or order of isolation. Outlines accommodations for occupants of property not subject to the order(s) and compensation.

V. Coordination and Decision Making

The federal government is responsible for nationwide coordination of the pandemic influenza response. Specific areas of responsibility include the following:

- Conducting outbreak investigations, as requested;
- Conducting special epidemiologic and laboratory-based studies;
- Providing ongoing information from the national influenza surveillance system on the pandemic's impact on health and the healthcare system;
- Expanding the supply of antiviral drugs by stimulating increased U.S.-based production capacity;
- Expanding U.S.-based production capacity for pandemic vaccine and working with manufacturers to ensure that pandemic vaccine is produced at full capacity;
- Distributing public stocks of antiviral drugs and other medical supplies from the Strategic National Stockpile to the states;
- Distributing public stocks of vaccines, when they become available;
- Providing guidance on community containment strategies, including travel restrictions, school closings, and quarantine;
- Communicating with the public via the news media; and
- Monitoring the response.

Specific areas of responsibility for VDH will include:

- Identification of public and private sector partners needed for effective planning and response;
- Development of key components of pandemic preparedness, including surveillance, distribution of vaccine and antivirals, and communications;
- Integration of pandemic influenza planning with other planning activities conducted under the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration (HRSA) bioterrorism preparedness cooperative agreements;
- Providing assistance to local areas in developing and exercising plans; and
- Coordinating with adjoining jurisdictions.

The VDH Commissioner of Health will be responsible for directing implementation of activities outlined in this plan. While the plan serves as a guide for specific influenza intervention activities, during a pandemic, the judgment of public health leadership, based on knowledge of the specific virus, may alter the strategies and recommendations that have been outlined. VDH will also consider input and suggestions from the VDH Pandemic Influenza Advisory Committee, a diverse group of professionals representing various interest groups, as well as public and private agencies across the state. Some issues that are currently being debated and addressed by the VDH Pandemic Influenza Advisory Committee are noted in Appendix A. Organizations represented on the advisory committee can be found in Appendix B**.**

VI. Background Information about Seasonal and Pandemic Influenza

Influenza, or flu, is a viral infection of the lungs. There are two main types of flu virus, A and B. Each type includes many different strains, and new strains emerge periodically. Influenza

outbreaks occur most often in late fall and winter. Seasonal outbreaks of influenza are caused by strains of flu virus similar to those of past years. Some people may have built up immunity, and there is also a vaccine for each year's flu season.

Pandemic influenza is a global outbreak of disease that occurs when a new influenza A virus appears in humans, causes serious illness and then spreads easily from person-to-person worldwide. Because the virus is new, people have never been exposed to it and are susceptible to illness. Pandemic strains also often cause more serious disease. Because of this, past influenza pandemics have led to high levels of illness, death, social disruption and economic loss.

Three pandemics occurred in the 20th century, all of which spread around the world within one year of being detected. Of these, the pandemic of 1918-1919 was the most severe, with 50 million or more deaths worldwide.

No one can predict when a pandemic might occur, but many scientists believe it is only a matter of time before the next one arises. Experts from around the world are watching the H5N1 Avian (bird) Flu situation in the Middle East, Europe and Asia very closely and are preparing for the possibility that the virus may begin to spread more easily and widely from person-to-person.

VII. Phases of Pandemic Influenza

The World Health Organization (WHO), in its Global Influenza Response plan, has defined phases of pandemic influenza, which are outlined in Table 2.[1] The phases place an emphasis on pre-pandemic phases when pandemic threats may exist in animals or when new influenza virus subtypes infect people but do not spread efficiently. Identification and declaration of the stages will be done at the national or international levels.

Table 2. Summary of WHO Pandemic Influenza Phases

Phase		Definition
Inter-pandemic period	1	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection is considered to be low.
	2	No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk[a] of human disease
Pandemic alert period	3	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.[b]
	4	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.[b]
	5	Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).
Pandemic period	6	Pandemic: increased and sustained transmission in general population.[b]
Post-pandemic period		Return to the Interpandemic period (Phase 1)

See footnotes on the next page.

[a] The distinction between Phase 1 and Phase 2 is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localized or widespread, and/or other scientific parameters.
[b] The distinction between Phase 3, Phase 4 and Phase 5 is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered (e.g., rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains [if derived from an animal strain], and/or other scientific parameters).

VIII. Virginia Morbidity and Mortality Projections

The CDC has developed a model for predicting estimates of the impact of deaths, hospitalizations, and outpatient visits due to pandemic influenza.[2] The model was used to develop Virginia-specific estimates of morbidity and mortality from pandemic influenza. Calculations were based on Virginia population estimates from 2000 U.S. Census Bureau data (population total: 7,078,515). *Eight weeks of pandemic influenza activity were assumed, with attack rates of 20%, 25% and 30%*. Eight weeks is the estimated activity period for pandemic influenza in a particular community. The actual duration of the pandemic in the United States could continue for as long as 18 months. While attack rates of a pandemic cannot be predicted with certainty, the range used in the calculations includes the range of attack rates from past pandemics. Gross attack rates reflect the percentages of the population with a case of influenza causing some measurable impact (e.g., work time was lost, patient visited the doctor).

Projected outpatient visits are shown in Table 3 for age group categories across attack rates. The chart shows, for example, that with a 20% attack rate, individuals in the 0-18 year age group would require a total of 229,134 outpatient visits for influenza. The largest number of outpatient visits, 671,137, would occur in the 19-64 year age group, under a 30% attack rate. Outpatient visits were calculated by applying national outpatient visit rates, modeled from past epidemics, to Virginia population data. Outpatient visit rates used in the projections can be found in Appendix E.

Table 3. Outpatient Visits by Attack Rate

	Number of Outpatient Visits		
Age Groups (years)	20% Attack Rate	25% Attack Rate	30% Attack Rate
0 –18	229,134	286,417	343,701
19 – 64	447,426	559,283	671,139
65+	82,006	102,508	123,010
Total	**758,566**	**948,208**	**1,137,850**

Projected hospitalizations were calculated using national estimates of predicted hospitalizations during a pandemic, applied to Virginia population data. Groups at high-risk for complications of influenza infection were considered as a factor in the projections.[3 5] Table 4 outlines the number of projected hospitalizations by age group and attack rate. Hospitalization rates assumed for

each of the age groups and the percentages of the Virginia population assumed to be at high-risk for influenza complications can be found in Appendix E. It is important to note that during an actual pandemic, both hospitalization rates and the percentage of the population at high-risk for influenza complications could vary significantly from the rates and percentages used to develop these projections.

Table 4. Projected Hospitalizations by Attack Rate

Age Groups (years)	Number of Hospitalizations		
	20% Attack Rate	25% Attack Rate	30% Attack Rate
0 –18	723	904	1,085
19 – 64	10,718	13,398	16,077
65+	4,618	5,773	6,928
Total	**16,059**	**20,075**	**24,090**

Death projections, shown in Table 5, were calculated using national estimates of influenza mortality from past epidemics, applied to Virginia population data. [4 4] As shown in Table 5, under a 30% attack rate, up to 5,380 Virginians could lose their lives from pandemic influenza in an eight-week activity period. Death rates assumed for each of the age groups can be found in Appendix E. The number of high-risk individuals in Virginia, based on the current ACIP definition of groups at high-risk for complications of influenza infection, was included as a factor in the projections. During an actual pandemic, both influenza death rates and the high-risk populations could vary significantly from the rates and percentages assumed in the projections.

Table 5. Projected Deaths by Attack Rate

Age Groups (years)	Number of Deaths		
	20% Attack Rate	25% Attack Rate	30% Attack Rate
0 –18	40	51	61
19 – 64	1,814	2,268	2,721
65+	1,732	2,165	2,598
Total	**3,586**	**4,484**	**5,380**

During a pandemic, public health will play an important role in the administration of influenza vaccine. Public health administers approximately 20% of the total vaccine for the Virginia population during a normal influenza season.[5] During a pandemic, public health could administer a similar percentage of the vaccine, or it could be responsible for administering *all* vaccine doses in the state. Projections of vaccine doses needed and demand on public health are shown in Table 6. For example, if public health administered 100% of doses to all high-risk individuals in the state, then 1,067,175 doses would be administered, requiring an estimated 177,862 hours of public health provider time. If public health administered 20% of doses to all high-risk individuals in the state, then 35,572 hours of public health provider time would be needed. Projections were made based on the assumption that ten minutes, including time for paperwork, would be needed to administer one dose of influenza vaccine. Provider time needed to administer vaccine during a pandemic could differ significantly, especially if the vaccine is

administered under an Investigational New Drug protocol. Additionally, two doses will likely be required for immunity, doubling all estimates shown in the table.

Table 6. Vaccine Doses Needed and Demand on Public Health

Group Receiving Vaccine	Total Vaccine Doses	Public Health Provider Time Needed (hours)	
		20% of doses provided	100% of doses provided
High-risk individuals	1,067,175	35,572	177,862
Hospital workers (estimated 1.7% of population)	120,335	4,011	20,056
All healthcare workers (estimated 3.7% of population)	261,905	8,730	43,651

Note: The total Virginia population assumed in these calculations was 7,078,515 persons, taken from 2000 U.S. Census Bureau estimates.

Appendix A. Pandemic Influenza Issues

Several features set pandemic influenza apart from other emergencies or community disasters:

- Outbreaks can be expected to occur simultaneously throughout much of the U.S., preventing shifts in human and material resources that usually occur in response to other disasters;
- Effects on individual communities will be relatively prolonged (weeks to months) in comparison to other disasters;
- Healthcare workers and other first responders may be at higher risk of exposure and illness than the general population, further straining the healthcare system;
- Preventive and therapeutic medicines (e.g., vaccine and antiviral agents) will be delayed and in short supply; and
- Widespread illness in the community could increase the likelihood of sudden and potentially significant shortages of personnel in other sectors who provide critical public safety services.

Additional planning is needed on the local, state and national levels to address some of the unique issues surrounding pandemic influenza. Examples of issues that require further discussion and planning include:

- **Vaccine Delivery**
  Because a shortage of vaccine is anticipated early in the pandemic, prioritization of persons receiving the initial doses of vaccine will be necessary. Issues will arise, such as: What populations should receive the vaccine in the event of a shortage? How will decisions be made about sub-groups in each of the priority populations (e.g., how to define a 'healthcare worker')? How will vaccine be distributed to priority groups? How will vaccination of priority groups be enforced and will people have to 'prove' that they fit into a priority group (for example, by providing documentation of their diabetes)? How will security of the vaccine be maintained?

- **Antiviral Medications**
  Because vaccine will likely not be available when the virus first affects communities, antiviral medications may play an important role for the prevention and control of influenza, especially during the period before vaccine is available. Some issues that will arise include: What populations should receive antivirals in the event of a shortage? Should antiviral use be recommended for either prophylaxis or treatment or both? Should antiviral medication required by persons with certain diseases (e.g., Parkinson's disease) be reserved for this indication?

- **Healthcare Facilities**
  Healthcare facilities will encounter many issues regarding both the treatment of patients and the protection of their workers. Some issues that may arise include: Will public health provide any guidance to healthcare facilities regarding patient prioritization or triage of patients (e.g., cancellation of elective admissions and surgeries)? How will facilities make decisions about prioritization of scarce resources (e.g., ventilators)? What steps will be taken to address staffing shortages at hospitals? What steps will be recommended to protect healthcare workers when personal protective equipment is in short supply?

- **Community Transmission**
  Widespread occurrence of influenza in the community will create many concerns, including: What are the essential services that cannot be stopped in any event (e.g., water, electricity, nuclear power plants)? What steps will be taken to ensure that essential service workers are prioritized to receive vaccine and/or antiviral medications? At what stages in the pandemic will recommendations to minimize community transmission be made (e.g., through cancellation of sports events, school closures)? Will the recommendations be enforced? At what stages in the pandemic will isolation and quarantine be used as tools to reduce transmission?

Appendix B. Organizations Represented on the VDH Pandemic Influenza Advisory Committee

Alexandria Health Department
American Academy of Pediatrics, Virginia Chapter
Bon Secours Richmond Health System
Department of Corrections
Emergency Preparedness and Response, VDH
Federal Reserve Bank
Flennan Center for Geriatrics, Eastern Virginia Medical School
Inova Fairfax Hospital
Lord Fairfax Health Department
Norfolk State University
Office of the Attorney General
Office of the Chief Medical Examiner, VDH
Office of Commonwealth Preparedness
Office of Emergency Medical Services, VDH
Office of Epidemiology, VDH
Office of Minority Health, VDH
Office of the Governor
Peninsula Emergency Medical Services
Richmond City Health Department
The Bolling Group
Troutman Sanders LLP
University of Virginia, Institute for Practical Ethics
University of Richmond, Student Health Center
Virginia Association for Home Care
Virginia Association of Non-Profit Homes for the Aging
Virginia Association of School Superintendents
Virginia Chamber of Commerce
Virginia Commonwealth University Health System
Virginia Department of Agriculture and Consumer Services
Virginia Department of Education
Virginia Department of Emergency Management
Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services
Virginia Division of Consolidated Laboratory Services
Virginia Dominion Power
Virginia Health Quality Center
Virginia Health Care Association
Virginia Hospital and Healthcare Association
Virginia House of Delegates
Virginia Medical Society
Virginia Municipal League
Virginia Pharmacy Association
Virginia Poverty Law Center
Virginia Primary Care Association
Virginia State Police
West Piedmont Health District

Appendix C. State Health Department Activities

Interpandemic Period: During this period, no new influenza virus subtypes have been detected in humans.

- Develop electronic and telecommunications capability within VDH, with neighboring jurisdictions and with the Centers for Disease Control and Prevention (CDC).
- Division of Immunization should finalize memoranda of agreement with storage and shipment facilities.
- Assess ways to improve immunization rates for influenza and pneumococcal vaccines.
- Develop risk communications messages targeted for pandemic influenza.
- Develop and test pandemic influenza surveillance, investigation, and control procedures.
- Division of Surveillance and Investigation (DSI) will develop guidance for local health departments, schools, hospitals, and clinics in preparing for pandemic influenza.
- DSI will coordinate VDH and CDC sentinel provider surveillance during the regular influenza season (October-April), ensuring participation of at least one provider per 250,000 population. The sentinel providers will continue to be encouraged to send specimens collected from patients with influenza-like-illness at the beginning, middle, and end of the season to DCLS for testing.
- The VDH Office of Epidemiology will review and revise the Pandemic Influenza Response Plan as needed.
- Partner with DCLS to enhance lab surveillance to detect new influenza variants. DCLS will continue to isolate and subtype influenza viruses received during the influenza season and year-round.
- Investigate and respond to influenza outbreaks. Partner with DCLS for laboratory testing of outbreak strains.
- Maintain ongoing communication with the Virginia Department of Agriculture and Consumer Services (VDACS) regarding epizootic and zoonotic disease that may affect human health.
- Emergency Preparedness and Response (EP&R), in partnership with DSI, will convene regular meetings of a Pandemic Influenza Advisory Committee, to discuss and provide recommendations about important issues, such as prioritization of the vaccine and antiviral supplies.
- Provide outreach and information to public health officials, politicians, and the media about issues related to pandemic influenza.
- VDH will partner with the Department of Mental Health, Mental Retardation and Substance Abuse Services (DMHMRSAS) to develop template messages that address fear and other psychological reactions to an influenza pandemic.

Pandemic Alert Period, Phase 3: This stage of planning is active when there have been human infections with a new subtype, but no human-to-human spread is evident (or at most rare instances of spread to a close contact).

- Notify Local Health Departments (LHD) and other stakeholders of a novel virus alert.
- Partner with LHDs to increase case detection among persons who recently traveled to outbreak area(s) and present with clinical illness possibly caused by influenza including pneumonia, acute respiratory distress syndrome, or other severe respiratory illness.
- Notify the Virginia Department of Emergency Management (VDEM) and the Office of Emergency Medical Services (OEMS) of novel virus alert.

- Monitor bulletins from CDC or World Health Organization (WHO) regarding clinical, epidemiological, and virologic characteristics of novel variant and disseminate to LHD, stakeholders and partners.
- Partner with DCLS to enhance lab surveillance to detect the appearance of new influenza variants in Virginia.
- If a novel virus is identified in a Virginia resident, work with the local health department to conduct an epidemiologic investigation and determine possible exposure source(s), risk factors, and symptoms. Identify contacts, place under surveillance for illness, and work with the laboratory to determine whether testing of contacts is appropriate.

Pandemic Alert Period, Phase 4: This stage of planning is active when small clusters with limited human-to-human transmission are identified, but spread is highly localized.

- Work with CDC to determine which groups are at high-risk for morbidity and mortality.
- Work with LHD and private sector providers to ensure that identified high-risk groups and others receive vaccine and antiviral medications, as appropriate.
- Activate procedures to procure public sector vaccine. Store vaccine in pre-selected areas.
- Work with providers and the DCLS to increase testing for influenza viruses, including pandemic strain(s), in specimens referred by LHD from travelers to pandemic areas.
- Send representative and unusual virus isolates to CDC for appropriate testing (to include antiviral resistance studies).
- Activate special surveillance for influenza, including increased surveillance in travelers returning from areas with human-to-human transmission.
- Continue to monitor bulletins from CDC or WHO regarding clinical, epidemiological, and virologic characteristics of novel variant, and update LHD, stakeholders, and partners, as appropriate.
- Review and revise drafts of public information documents (fact sheets and guidelines).
- Review vaccine distribution plans with stakeholders and partners, and modify as needed.
- Monitor availability and coordinate distribution and delivery of public-sector vaccines.
- Prepare translated versions of major public information documents for non-English speaking persons.

Pandemic Alert Period, Phase 5: This phase is active when there are larger clusters of illness, with localized spread of disease, suggesting that the virus is becoming increasingly better adapted to humans.

- Notify state agencies and other partners of the potential for an influenza pandemic.
- Continue to monitor bulletins from CDC or WHO regarding clinical, epidemiological, and virologic characteristics of novel variant. Update LHD, stakeholders, and partners.
- Implement surveillance and data collection for adverse events following use of antivirals and drug-resistant strains of influenza.
- Coordinate surveillance activities and findings with other states and federal agencies.
- Participate in special studies as requested by CDC.
- Maintain current listings of public-sector vaccine distribution sites within Virginia.
- Request that OCME provide DCLS with selected autopsy specimens for influenza testing.

Pandemic Period: During this phase, there is increased and sustained transmission in the general population.

- Institute control measures in accordance with CDC and other federal recommendations.

- Ensure that the Emergency Operations Center (EOC) and key health officials are kept informed of all health and medical developments and decisions during pandemic.
- Monitor availability and coordinate distribution and delivery of public-sector vaccines.
- Monitor health impacts, including deaths and hospitalizations, in sentinel hospitals.
- Coordinate activities with other states and federal health agencies.
- Continue to monitor bulletins from CDC and WHO regarding clinical, epidemiological, and virologic characteristics of novel variant. Update LHD, stakeholders, and partners.
- Coordinate release of health information with VDEM and Public Information Officers.
- VDH will partner with DMHMRSAS to provide information and counseling support services to emergency responders, medical personnel and others who may be affected by pandemic influenza.
- Monitor antiviral adverse events weekly and transmit information to CDC so that unexpected adverse events can be detected early and antiviral recommendations altered according to federal recommendations.
- Work with DCLS to send selected influenza A isolates to CDC for antiviral resistance testing so that resistance prevalence can be estimated and appropriate antiviral use recommendations made.
- Participate in special studies as requested by CDC and others in order to: describe unusual clinical syndromes, describe unusual pathologic features associated with fatal cases, conduct efficacy studies of vaccination or chemoprophylaxis, and to assess the effectiveness of control measures.

Second Wave: During this phase, a recurrence of epidemic activity within several months following the initial wave of infection occurs.

- Continue all activities listed under Pandemic phase.
- Review, evaluate and modify as needed, the VDH pandemic response. Update VDEM.
- Review and update communication messages for providers and the public.
- Continue to procure vaccine.
- Monitor resources and staffing needs.

Pandemic Over: This phase marks the cessation of successive pandemic "waves" accompanied by the return of a more typical wintertime epidemic (in the United States).

- Summarize findings and report to Secretary of Heath and Human Services on the epidemiological characteristics of the pandemic in Virginia and on the lessons learned.
- Assess state capacity to resume normal public health function and health care delivery.
- Report results of assessment to Secretary of Health and Human Services.

Appendix D. Checklist for Local Health Departments

Interpandemic Period: During this period, no new influenza virus subtypes have been detected in humans.

- Provide outreach and information to public health officials, politicians, and the media about issues related to pandemic influenza.
- Identify the most effective communication channels for reaching different communities within the jurisdiction.

Emergency Planner:

- Review current emergency plans for inclusion of provisions for mass vaccination campaigns. Include security aspects in partnership with local law enforcement authorities.
- Conduct a county-wide space and site resource inventory. Determine the availability of shelters, firehouses, schools, gymnasiums, nursing homes, day care centers, and other potential sites for aggregate care. Work with hospitals in your jurisdiction to identify appropriate sites to serve as triage centers, treatment centers, mass vaccination sites or as holding areas for acutely ill patients not able to be admitted to an acute care hospital. Make arrangements with owners of each facility to use the site, if necessary, to care for ill persons during a pandemic.
- Identify facilities/resources with sufficient refrigerated storage to serve as temporary morgues, if necessary. Develop a plan for management of bodies when morgue capacity has been exceeded.
- In coordination with the state office, devise a plan for local distribution and administration of public-sector vaccine.
- Work with local private and volunteer organizations to develop and synchronize local response to a pandemic of influenza.
- Coordinate planning with other public health disaster planning at the local level.

District Epidemiologist and/or other communicable disease staff:

- Review policies and procedures to find and remove any barriers to the annual influenza or pneumococcal vaccination programs. Work with local health care facilities to assess and improve health care worker immunization levels.
- Educate staff about the nature and significance of pandemic influenza and the local response.
- Establish a means of rapid, two-way communication between local health department and hospitals (infection control practitioners and emergency department directors).
- Contact physicians in your community to see if they would be interested in participating in the Sentinel Physician Surveillance System.
- Review emergency department capacity, number of hospital beds, number of intensive care unit beds, quantity of ventilators, morgue capacity, and number of health care providers available to see patients. Use FluAid and FluSurge, software programs developed by the Centers for Disease Control and Prevention, to project the impact of pandemic influenza on localities and hospitals within the health district.
- Investigate opportunities to work with hospitals, health systems and/or physicians to analyze daily reports of influenza-like illness in patients. Analysis could be conducted as a part of syndromic surveillance activities. Discuss mechanisms for the local health department to obtain data related to the number of emergency department visits,

hospitalizations, intensive care unit admissions and hospital deaths due to influenza during a pandemic.

Pandemic Alert Period, Phase 3: This stage of planning is active when there have been human infections with a new subtype, but no human-to-human spread is evident (or at most rare instances of spread to a close contact).

- Notify hospitals and local private and public partners of novel virus alert.
- Notify local emergency management director of novel virus alert.
- Disseminate bulletins received from the CDC or state office regarding clinical, epidemiological, and virologic characteristics of variant strain.
- Work with Sentinel Providers and others to collect specimens for submission to DCLS in order to detect the presence of variant strains in Virginia, particularly individuals who present with influenza-like-illness and have a recent travel history to a region where the novel strain of influenza has been identified.
- If a novel virus is identified in a resident, conduct an epidemiologic investigation and determine possible exposure source(s), risk factors, and symptoms. Identify contacts, place under surveillance for illness, and work with the laboratory to determine whether testing of contacts is appropriate.

Pandemic Alert Period, Phase 4: This stage of planning is active when small clusters with limited human-to-human transmission are identified, but spread is highly localized.

- Review pandemic influenza response plans.
- In coordination with the state office, update hospitals, emergency medical services (EMS), local law enforcement, and local, private and public partners.
- Ensure that high-risk groups and others receive vaccine and antiviral medications, as appropriate.

Pandemic Alert Period, Phase 5: This phase is active when there are larger clusters of illness, with localized spread of disease, suggesting that the virus is becoming increasingly better adapted to humans.

- Review plan for distribution of public sector vaccine.
- Provide state office with lists of public vaccine distribution sites.
- Enhance collection of clinical specimens and transport to the state laboratory.
- Contact private partners to review their plans for distribution and administration of private-sector vaccine.
- Finalize surveillance plans with area hospitals outlining mechanisms to obtain data on: number of emergency department visits, number of hospitalizations, number of intensive care unit admissions and number of hospital deaths related to influenza.

Pandemic Period: During this phase, there is increased and sustained transmission in the general population.

- Coordinate use of available local resources during pandemic, including private, public, and volunteer resources.
- Report pandemic-related information, including influenza data obtained from hospitals, regularly to the VDH Division of Surveillance and Investigation (DSI).
- Assess effectiveness of local response and available local capacity.
- Administer vaccine once it becomes available.

- Work with hospitals to monitor emergency departments for influenza activity, including a review of emergency department visits, hospital admissions, and hospital deaths.

Second Wave: During this phase, a recurrence of epidemic activity within several months following the initial wave of infection occurs.

- Continue all activities listed under Pandemic phase.
- Review, evaluate, and modify as needed, the local pandemic response.
- Report pandemic-related information regularly to DSI.
- Continue to vaccinate.
- Monitor resources and staffing needs.

Pandemic Over: This phase marks the cessation of successive pandemic "waves" accompanied by the return of a more typical wintertime epidemic (in the United States).

- Assess local capacity to resume normal public health functions.
- Assess local capacity to resume normal health care delivery.
- Assess fiscal impact of pandemic response.
- Report results of assessment to local government authorities.
- Report results of assessment to state office.
- Modify the local Pandemic Influenza Response Plan based on lessons learned.

Appendix E. Outpatient Visit Rates, Hospitalization Rates, Death Rates and High-Risk Percentages Used for Pandemic Influenza Morbidity and Mortality Projections

Outpatient Visit, Hospitalization and Death Rates Per 1,000 Population By Age Group

Age Group	Outpatient Visit Rate	Hospitalization Rate	Death Rate
High-Risk			
0 –18	346.00	2.90	0.22
19 – 64	109.50	2.99	2.91
65+	104.50	8.50	4.20
Non High-Risk			
0 –18	197.50	0.50	0.02
19 – 64	62.50	1.47	0.04
65+	59.50	2.25	0.42

Percentages of the Virginia Population Assumed to be at High-Risk for Complications from Pandemic Influenza*

Age Group	Percentage of Population
0 –18	6.4%
19 – 64	14.4%
65+	40.0%

*High-risk percentages are based on the Advisory Committee on Immunization Practices definition of groups at high-risk for complication of influenza infection.

Outpatient visit rates, hospitalization rates, death rates and percentages of high-risk individuals were taken from: Meltzer MI, Cox NJ, Fukuda K. Modeling the Economic Impact of Pandemic Influenza in the United States: Implications for Setting Priorities for Intervention. Background Paper, April 30, 1999.

Appendix F. References

[1] World Health Organization Global Influenza Preparedness Plan, Department of Communicable Disease, Surveillance and Response, Global Influenza Programme, 2005.
[2] Meltzer MI, Shoemake HA, Kownaski M, Crosby R, 2000. FluAid 2.0: A manual to aid state and local-level public health officials plan, prepare and practice for the next influenza pandemic (Beta test version). Centers for Disease Control and Prevention, U.S. Department of Health and Human Services.
[3] Meltzer MI, Cox NJ, Fukuda K. The Economic Impact of Pandemic Influenza in the United States: Priorities for Intervention. Emerging Infectious Diseases. Vol 5, No 5, September-October 1999.
[4] Meltzer MI, Cox NJ, Fukuda K. Modeling the Economic Impact of Pandemic Influenza in the United States: Implications for Setting Priorities for Intervention. Background Paper, April 30, 1999.

RATIONALE

Pandemic influenza surveillance includes surveillance for influenza viruses (virologic surveillance) and surveillance for influenza-associated illness and deaths (disease surveillance). Virologic surveillance is addressed in Supplement 2. This supplement will focus primarily on disease surveillance.

The goals of disease surveillance are to:

- Serve as an early warning system to detect increases in influenza-like illness (ILI) in the community;
- Monitor the pandemic's impact on health (e.g., by tracking outpatient visits, hospitalizations, and deaths); and
- Track trends in influenza disease activity and identify populations that are severely affected.

Surveillance data—supplemented by data from outbreak investigations and special studies—can help decision-makers identify effective control strategies and re-evaluate recommended priority groups for vaccination and antiviral therapy. They can also facilitate efforts to mathematically model disease spread during a pandemic. The national influenza surveillance system, which monitors seasonal influenza, will provide the virologic and disease surveillance data needed to guide response efforts during a pandemic (www.cdc.gov/flu/weekly/fluactivity.htm; Table 1). When a pandemic begins, some enhancements might be instituted to improve geographic and demographic coverage and increase the amount of detail captured by particular components of the national influenza surveillance system.

OVERVIEW

Supplement 1 of the Virginia plan provides expectations of state and local partners regarding surveillance for influenza viruses and on disease surveillance to monitor the health impact of influenza. The recommendations for the Interpandemic and Pandemic Alert Periods focus on disease surveillance during interpandemic influenza seasons, as well as on surveillance for human cases of infection with avian influenza A (H5N1) or other novel strains of influenza. They also address preparedness planning for enhanced disease surveillance during a pandemic. The recommendations for the Pandemic Period focus on surveillance activities that will be undertaken if a pandemic virus is reported outside the United States or if a pandemic virus emerges in or enters the United States. Outbreak investigations and special studies (e.g., to address questions about viral transmission or the clinical course of disease) are described in Part 1. Efforts to monitor the effectiveness and safety of vaccines and antiviral drugs are addressed in **Supplement 6** and **Supplement 7**.

I. Activities for the Interpandemic and Pandemic Alert Periods

Disease surveillance during interpandemic influenza seasons

A. National Influenza Surveillance System

Public health and healthcare partners should continue to participate in the components of the national influenza surveillance system, which address the following types of disease surveillance:

1. Outpatient surveillance (CDC system)

Virginia currently operates two Sentinel Provider Network (SPN) systems. One is known as the CDC system because providers are recruited to enter the number of ILI cases by age group and the number of total patients seen into a CDC web based system. The other system is Virginia's traditional sentinel provider system, in which reporters tally ILI cases weekly and report those to VDH. It is more difficult to get providers to enroll in the more labor intensive CDC system. However between the two systems, VDH has approximately 90 healthcare providers statewide reporting the number of weekly outpatient visits for ILI and submitting specimens from a small subset of patients to state public health laboratories for influenza virus testing. Currently these systems operate between October and May every year.

2. Mortality surveillance

- 22 Cities Mortality Reporting System- Vital statistics offices in 122 U.S. cities, Richmond and Norfolk, VA, report pneumonia and influenza (P&I) - related deaths on a weekly basis.
- National Notifiable Disease Surveillance System (NNDSS) pediatric deaths- VDH reports influenza-associated pediatric deaths to CDC.

3. State-level assessments

- State and territorial epidemiologists' reports- VDH provides weekly reports on the overall level of influenza activity in the state based on the earlier described sentinel provider system. It is not possible to provide an absolute case count for influenza or to determine population-based rates of infection or illness on a state level because many infected persons are asymptomatic or experience only mild illness and do not seek medical care. Also, laboratory testing is rare in less severe cases, and testing late in the course of illness (e.g., in cases with severe complications) can yield false-negative results because the patient is no longer shedding virus. Nevertheless, weekly data on outpatient visits for ILI, and deaths allow CDC to monitor regional disease trends and to compare the timing and intensity of the current season to that of previous seasons. Influenza surveillance has traditionally been conducted from October through May. In recent years, however, Virginia has been evaluating asking healthcare providers, laboratories, and health departments to conduct influenza

surveillance year-round. This enhancement is still under advisement but may be an important part of surveillance for novel strains of influenza.

4. **Influenza surveillance coordinators**
   Currently, VDH does not have a dedicated influenza surveillance coordinator who works at least part-time on influenza surveillance. The roles of the coordinator, which have been delegated across other positions, include:
   • Maintain the current influenza Sentinel Provider Network;
   • Oversee the surveillance enhancements described below;
   • Promote year-round influenza surveillance;
   • Remain in close contact with the CDC Influenza Branch; and
   • Maintain working relationships with the state public health laboratory.

Disease surveillance for novel strains of influenza during the Pandemic Alert Period

A. Monitoring for novel strains of influenza

During the Pandemic Alert Period, CDC will issue recommendations for enhanced surveillance to identify patients at increased risk for infection with a novel virus. Novel influenza strains might include avian influenza viruses that can infect humans, other animal influenza viruses (such as swine influenza viruses) that can infect humans, or new or re-emergent human influenza strains that cause cases or clusters of human disease. The specific recommendations will depend on the epidemiology of the virus and the clinical characteristics of the human cases as they are known at the time, and will most likely focus on severely ill, hospitalized, or ambulatory patients who meet certain epidemiologic and clinical criteria. For example, since February 2004, CDC has recommended enhanced surveillance to identify patients potentially infected with avian influenza A (H5N1). The current recommendations are summarized in Appendix 2 of the federal plan. State and local health departments will be notified of current recommendations via the Health Alert Network (HAN) and Epi-X. VDH will distribute the recommendations to healthcare providers and will be responsible for receiving initial reports of potential cases in their jurisdictions. Once a novel strain detected abroad exhibits sustained human-to-human transmission (WHO Phase 6), recommendations for further intensified virologic and disease surveillance will be issued and might include recommendations for stepped-up disease surveillance at U.S. ports of entry (see **Supplement 8**).

B. Reporting novel strains of influenza

Clinicians should immediately contact the health department when they suspect a human case of infection with an avian or animal strain of influenza or with any other novel human influenza strain.

VDH, in partnership with Virginia DCLS, will in turn immediately report to CDC any influenza cases that:

- Test positive for a novel influenza subtype, *or*
- Meet the enhanced surveillance case definition in effect at that time, *and*

- Cannot be subtyped in the state public health laboratory because appropriate reagents or biocontainment equipment is not available. (See **Supplement 2)**.

VDH will call the CDC Emergency Response Hotline (770-488-7100) to report a suspected case of infection with avian influenza A (H5N1) or any other novel influenza virus. This number is available 24 hours a day, 7 days a week.. Hotline staff will notify a member of the Influenza Branch who will contact VDH to answer questions and provide guidance.

Following the initial telephone report, VDH officials will complete a CDC case screening and report form (obtained from the Hotline or from Epi-X) that includes the CDC case ID number provided during the phone consultation. CDC staff will assist VDH, as needed, in completing the form, which should be faxed to CDC at 888-232-1322 with a cover sheet that says: "ATTN: Influenza case reporting." The case screening and report form used to report suspected cases of human infection with influenza A (H5N1) is provided in Appendix 3 of the federal plan.

If infection with a novel influenza virus is confirmed, VDH can request CDC assistance with a case investigation to identify the source of infection and determine the course of illness. CDC will assist VDH in monitoring the close contacts of the ill person.

C. Veterinary surveillance

In the United States, surveillance for avian influenza is conducted by states, the poultry industry, and the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) (Appendix 4 of the federal plan). Diagnostic testing is performed by state and industry laboratories, with confirmatory testing by USDA/APHIS Veterinary Services at the National Veterinary Services Laboratories in Ames, Iowa. CDC and VDH will continue to assist USDA and state veterinary diagnostic laboratories, as requested, in monitoring influenza strains among poultry and swine. Recent instances of human infection with avian influenza viruses are described in Supplement 2, Box 2 of the federal plan.

Specifically in Virginia, the Virginia Poultry Disease Task Force, consisting of members from both government and industry, devised an emergency plan to help respond to the occurrence of H5 or H7 avian influenza in 2002. This plan, entitled "Prevention and Rapid Response for Low Path Avian Influenza (H5 and H7) in Virginia", outlines the steps taken to monitor for avian influenza. The exact frequency of testing varies by species and purpose, but no matter the specific protocol, the basic rule is that birds are tested prior to any movement off of the farm. The typical rate of sampling is 20 birds per house.

Our standard screening test is the Agar Gel Immuno diffusion test, performed on serum samples. This test detects antibodies to any avian influenza virus, not just H5 or H7 strains. For sick birds, or if we were to have a suspected positive flock (for any strain)

tracheal or cloacal swabs are tested using an antigen detection method. This is now typically a reverse transcriptase polymerase chain reaction (RT-PCR) test. The RT-PCR is a two stage test, confirming first the presence of avian influenza, and then testing specifically for the H5 and H7 strains.

All testing is performed in our Harrisonburg Regional Animal Health Laboratory, except for the typing of viruses and virus isolation, both of which are completed at the National Veterinary Service Laboratories in Ames, IA, which is the official veterinary reference laboratory for the United States.

Currently the Virginia Department of Agriculture and Consumer Services (VDACS) readily shares information concerning avian influenza testing which may impact human health with VDH. In addition, both agencies are developing a formal memorandum of understanding (MOU) in regard to avian influenza response and investigation.

The Virginia Department of Game and Inland Fisheries (DGIF) has initiated surveillance among wild bird populations for avian influenza. Surveillance and investigation is initiated when wild bird die offs are reported to this department with laboratory support via VDACS, the University of Georgia's Southeastern Cooperative Wildlife Disease Study and/or the National Wildlife Health Center in Madison, WS. DGIF has formed a working group which consists of a wildlife veterinarian, a waterfowl biologist and the deputy director of DGIF's Wildlife Division. This group is developing a plan in regard to wild bird reservoirs of avian influenza in Virginia. This plan is being developed in conjunction with the USDA's Wildlife Services Division which is set to reveal a national plan in the near future. Currently, from what is known of wild bird migratory patterns, Virginia is considered a low risk for avian influenza in wildlife.

An interagency working group consisting of representatives from VDH, VDACS, DGIF and Virginia's state public health laboratory has been formed. This group was formed in response to concerns regarding avian influenza as well as other zoonotic diseases and is meant to encourage increased communication among those state agencies that monitor, investigate or diagnose zoonotic pathogens. In addition, this group may also develop MOUs in regard to cooperation and communication in the event of a zoonotic disease outbreak or unusual occurrence.

***NOTE**: VDH would most likely not have any sort of direct communication/coordination of efforts with federal agencies other than the CDC. We would work with the USDA (veterinary services, laboratory support and wildlife service branches) via VDACS and DGIF. If there was some type FDA involvement we would work through either VDACS who could direct us to local FDA reps or work through the CDC's FDA liaison.*

D. Preparedness planning for disease surveillance during a pandemic

Surveillance enhancements that will be needed during a pandemic should be developed during the Interpandemic and Pandemic Alert Periods so that baseline data for

interpreting information gathered during the pandemic will be available and staff will have experience and familiarity with new methodologies.

1. Outpatient surveillance

Surveillance for outpatient visits for ILI is conducted via the SPN, a collaborative effort among VDH, healthcare providers, and CDC. VDH recruits and maintains a local network of healthcare providers who report weekly the total number of patient visits and number of patients with ILI. SPN members may also send specimens from a subset of patients with ILI to DCLS for diagnostic testing at no cost. CDC develops and maintains reporting materials and systems, serves as a data repository, and provides feedback to the states. VDH is evaluating recruiting at least one sentinel provider per 250,000 persons (or a minimum of 10 providers in states with smaller populations) that reports year-round. CDC is exploring options for enhancing or supplementing ILI outpatient surveillance at the national, regional, and state levels, given that healthcare providers might not be able to report ILI in a timely manner when overwhelmed with patients during an emergency. Existing electronic data sources that might increase the geographic completeness, frequency of reporting, and sustainability of ILI data include:

- BioSense system, which includes ICD-9-coded outpatient visits at DOD ambulatory-care centers and Department of Veterans Affairs outpatient clinics. Studies are underway to determine if BioSense data can be combined with SPN data in a useful way and if they can be reported and analyzed daily.
- Existing emergency department "chief complaint" monitoring system known as ESSENCE used by VDH. Studies are underway to determine if these data can be added to SPN data and if they can be reported and analyzed daily. Options for improving the analysis of ILI data include the use of outbreak detection algorithms that might identify aberrant increases in ILI activity at the individual provider/site level.

2. Hospitalization surveillance

During a pandemic, hospitalization data will be needed on a frequent basis in all parts of the country to monitor disease severity and determine the most severely affected age groups. At present, however, surveillance for hospitalizations associated with influenza is not occurring in Virginia. This sort of surveillance will likely be key in helping to define and support positions for vaccine and drug remedy prioritization. CDC is exploring options for expanding hospitalization surveillance to obtain data from all age groups in all parts of the country and obtaining more detailed information from a small number of sites. Some options under review include:

- Continuing to work with the Council of State and Territorial Epidemiologists (CSTE) to make laboratory-confirmed influenza-associated hospitalizations nationally notifiable. A position statement to add influenza infection requiring hospitalization to the list of nationally notifiable diseases was rejected by CSTE members in June 2005 but will be resubmitted in June 2006.

- Obtaining timely hospital discharge data to estimate the number of influenza-associated hospitalizations- Virginia is evaluating utilizing the ESSENCE emergency department surveillance as a way to capture information on some hospital-level activity associated with influenza.
- Adding a hospitalization surveillance component to the national BioSense system
- Developing protocols for active population-based hospitalization surveillance, including specimen collection and virologic testing from a subset of hospitalized patients in all age groups in a limited number of sites.
- Developing protocols for reporting the number of influenza-associated hospitalizations.

3. Mortality surveillance

The collection of mortality data can also help health departments monitor the severity of a pandemic and determine which age groups and areas are most affected. Although pediatric deaths due to laboratory-confirmed influenza are nationally notifiable (as of October 2004), timely data on influenza deaths in other age groups are limited to information provided by the 122 Cities Mortality Reporting System (of which Richmond and Norfolk are 2), which provides weekly reports of the total number of death certificates that list P&I as a cause of death and the total number of death certificates filed (Table 1 of the federal plan). Although the National Center for Health Statistics (NCHS) also collects mortality data, these data are not available until 2-3 years after each influenza season. During a pandemic, state and local policy-makers and public health officials will likely ask health departments to provide mortality data to guide decision-making on control and response measures.

In addition, CDC will request mortality data from each state to help guide national response measures. To help ensure uniform data collection across jurisdictions, CDC will provide case definitions and reporting procedures via HAN and Epi-X. CDC is also investigating the feasibility of obtaining mortality data through the Electronic Death Registration (EDR) Project (http://www.naphsis.org/projects/index.asp?bid=374) and the validity of estimating national mortality based on data from the 122 Cities Mortality Reporting System. State-specific mortality cannot be estimated from data provided by the 122 Cities system.

4. State influenza activity assessments

During the Interpandemic Period, VDH will provide weekly assessments of the overall level of influenza activity (i.e., none, sporadic, local, regional, widespread) in the state. These assessments are used to compare the extent of influenza activity from state to state, and are the only state-level influenza surveillance data that CDC makes publicly available during interpandemic

influenza seasons. The state influenza activity assessments are used to generate the influenza activity map, which is the most frequently referenced component of national influenza surveillance (see www.cdc.gov/flu/weekly/usmap.htm). During a pandemic, CDC will likely recommend that these assessments be made year-round, rather than only October through May.

II. Recommendations for the Pandemic Period

During a pandemic, more detailed information on age-specific, population-based rates of severe disease and patient outcomes will be needed than can be provided through routine national surveillance. This information will be obtained through enhanced national surveillance and carefully designed studies in a limited number of sites. These data will provide information to guide response and policy development during a pandemic.

A. Enhanced surveillance

During an influenza pandemic, CDC will use data from the U.S. collaborating laboratories of the WHO Global Influenza Surveillance Network and the NREVSS to detect the introduction and early cases of a pandemic influenza virus in the United States, track the virus' introduction into local areas, and monitor changes in the pandemic virus, including development of antiviral resistance.

VDH will conduct the following activities:

- Distribute to healthcare providers the current CDC recommendations for enhanced surveillance for the detection of the first cases of the pandemic virus in their jurisdictions. Communicate to all partners the heightened need for timely and complete surveillance data.
- Facilitate the collection and testing of appropriate specimens as recommended for early detection of pandemic virus at the local level.
- Partner with DCLS to increase testing and the frequency of reporting of virologic data. The most intense testing will be necessary during the early stages of a pandemic, when detecting the introduction of the virus into a state or community is the primary goal. Once the virus has been identified throughout the state, the level of testing can be decreased to a level more like that of a non-pandemic influenza season. (See **Supplement 2** for details).
- Ensure that all sentinel provider surveillance sites are reporting weekly, regardless of the time of year.
- Report state influenza activity level in a timely manner.
- Facilitate timely reporting of 122 Cities Mortality Reports and pediatric deaths.
- Implement state and local collection of influenza-associated mortality data and reporting of statewide mortality data to CDC, following CDC guidelines for uniform data collection and reporting.

B. Scaled-back surveillance

Enhanced surveillance will be conducted during the introduction, initial spread, and first waves of a pandemic. Over time, as more persons are exposed, the pandemic strain is

likely to become a routinely circulating influenza A subtype. When that happens, the activities of the national influenza surveillance system will revert to the frequency and intensity typically seen during interpandemic influenza seasons. The return to interpandemic surveillance will occur as soon as feasible, and the change will be communicated to all surveillance partners.

Role of the Virginia State Public Health Laboratory, the Division of Consolidated Laboratory Services (DCLS)

I. Role of DCLS during the Interpandemic and Pandemic Alert Period

A. Laboratory support for seasonal influenza surveillance

DCLS provides laboratory support for seasonal influenza surveillance in Virginia. The goals of seasonal virologic surveillance are (1) to provide laboratory confirmation of the first cases of influenza in regional areas to track influenza activity each season, (2) to identify and characterize circulating strains to inform annual vaccine formulation, and (3) to routinely subtype influenza A virus isolates to monitor for appearance of novel subtypes.

To support seasonal influenza surveillance, DCLS provides virologic testing for respiratory specimens submitted by physicians in the Sentinel Provider Network, by local health departments for outbreak investigations, and by the Office of the Chief Medical Examiner for infectious disease and childhood death investigations. DCLS provides influenza and respiratory virus testing throughout the year. Nasopharyngeal swab specimens are routinely tested by three methods: (1) antigen detection of influenza virus types A or B by fluorescent antibody staining of direct specimens enhanced by cytocentrifugation ("DFA"), (2) nucleic acid amplification detection of influenza virus types A or B, with influenza A subtyping for H1 or H3, by real time reverse transcriptase polymerase chain reaction ("RT-PCR"), and (3) virus culture for common viral respiratory pathogens including influenza virus. The DFA and RT-PCR test results can be completed on the same day the specimen is received; influenza virus culture results usually require up to 14 days of incubation.

When an influenza virus grows in cell culture, the virus isolate is identified by staining with fluorescent antibody ("IFA") as influenza virus type A or B with subtyping of each influenza A virus as H1 or H3 (the two subtypes currently circulating among humans). Selected isolates from the beginning, middle, and end of the season are sent by DCLS to CDC for strain characterization for annual vaccination planning.

Final DCLS laboratory results of influenza testing are reported by mail to the specimen submitter (e.g. epidemiologist, local public health department, or physician) and to Virginia Department of Health Division of Surveillance and Investigation (VDH DSI). For outbreak investigations, positive DFA or RT-PCR results are telephoned to the submitter, usually on the same day the specimen is received at DCLS. During influenza season, DCLS provides weekly result summaries to the influenza surveillance coordinator at VDH DSI. DCLS also reports influenza test results to CDC electronically via the Public Health Laboratory Information System (PHLIS) year round. As DCLS implements its laboratory information system (STARLIMS), DCLS will work with VDH DSI to implement electronic reporting to state and local public health departments.

B. Laboratory Testing for Novel Influenza Subtypes

During the pandemic alert period, if a patient meets the current CDC and VDH DSI clinical and epidemiological criteria for possible infection by a novel influenza subtype, clinical specimens may be submitted to DCLS for testing. It is essential that the health care provider contact the local or state epidemiologist and DCLS to assure appropriate specimen collection, transport, and testing. Specimens must be identified as "test for novel influenza" to ensure that the necessary level of biosafety is used and that appropriate testing is performed.

At the present time, DCLS performs real time reverse transcription polymerase chain reaction (RT-PCR) to detect and subtype influenza virus in direct specimens but does not have the biocontainment level (BSL-3 with enhancements) needed to culture novel influenza subtypes. Therefore, a clinical specimen from a patient suspected of infection with a novel influenza subtype would be screened by real time RT-PCR for influenza viruses A and B, and for influenza A subtypes H1 and H3 (the currently circulating subtypes of human influenza virus) and subtype H5 (the avian subtype involved in the current epizootic among poultry in Asia). This method can provide results on the same day the specimen is received at DCLS. Testing at DCLS for other influenza A subtypes such as H7 or H9 will be added as positive control material is made available to the state public health laboratories by CDC or other federal partners.

If a clinical specimen were to test positive at DCLS by real time RT-PCR for a novel influenza subtype, the results would immediately be reported to VDH DSI and to CDC via the Emergency Response Hotline (770-488-7100) (HHS national pandemic influenza plan, page S2-5). The specimen would then be forwarded to CDC for viral culture and confirmatory testing (HHS national pandemic influenza plan, pages S2-5 and Appendix 3, page S2-18). If the specimen tested positive for one of the currently circulating seasonal influenza viruses, then VDH DSI will be notified and routine testing of the specimen, including viral culture, will proceed at DCLS. If the specimen tests negative for influenza viruses A and B by RT-PCR, then the need for additional testing will be determined in consultation with VDH, based upon the strength of clinical and epidemiologic suspicion for novel influenza virus infection (e.g. HHS national pandemic influenza plan, Supplement 5 (Clinical Guidelines), page 8 and page 17, footnote 12).

C. Laboratory planning to support the response to an influenza pandemic

1. Detection and characterization of novel influenza strains

As of November 2005, DCLS has incorporated real time RT-PCR testing into its standard influenza laboratory testing activities, using methods posted on the Association of Public Health Laboratories (APHL) website. Current DCLS methods detect influenza A or influenza B, and identify influenza A subtypes H1, H3 or H5 directly from clinical specimens (such as nasopharyngeal swabs submitted in viral transport medium). Testing for other novel influenza A subtypes such as H7 or H9 will be made available at DCLS when procedures and positive control materials are released by federal partners and test performance is validated at DCLS. DCLS will continue to evaluate and develop new laboratory methods to detect and characterize influenza

virus as opportunities present. At this time, a positive RT-PCR result for a novel influenza A subtype such as H5 would be considered presumptive, pending culture and confirmation at CDC.

DCLS will work with VDH DSI to provide healthcare providers, hospitals, and clinical laboratories within Virginia the information on how to contact DCLS when a novel influenza subtype is suspected; how to handle, label, and ship clinical specimens for diagnostic evaluation from these cases; and how to notify the state health department.

DCLS will work with VDH to help to identify and contact other laboratories in Virginia which may conduct influenza testing or culture influenza viruses (e.g. research, veterinary, agricultural, or private industry laboratories) to provide information about the guidelines in the national and state pandemic influenza plans, especially the need for biocontainment, medical surveillance of laboratory personnel, and how and when to report situations to VDH and to DCLS.

2. Laboratory reporting

DCLS would report cases of novel influenza immediately to VDH DSI and to CDC via the Emergency Response Hotline at 770-488-7100. Cases of novel influenza would also be reported to CDC electronically via PHLIS.

DCLS planning for pandemic influenza will include electronic reporting of influenza results to state and local public health departments as DCLS implements its laboratory information system (STARLIMS).

3. Distribution of diagnostic reagents and test information

DCLS and other state public health laboratories remain dependent on federal partners such as CDC to address any regulatory barriers to emergency distribution and use of diagnostic tests and reagents during a pandemic. The responsibility of DCLS is to stay updated about upcoming test information and to position DCLS laboratory resources so that as soon as a new procedure or critical reagent is released by CDC, DCLS can begin test performance verification and rapid implementation of diagnostic testing at the state level.

4. Laboratory surge capacity planning

DCLS will assess the projected statewide needs for scaled-up diagnostic activity during the early stages of a pandemic and develop strategies to meet those needs as effectively as possible. DCLS will work with VDH DSI to estimate testing needs for Virginia, and to establish proposed goals for testing priorities, so that limited resources will be targeted toward testing the specimens most important for public health planning (e.g. to identify the first cases, or to verify regional spread of the pandemic strain within the state). DCLS will also plan with VDH DSI to create proposed trigger points for making changes in the testing algorithm (e.g. the point at which risk of pandemic strain is so high that no specimen should be put into viral culture until RT-PCR is completed, or the point at which the pandemic strain is circulating so widely that influenza testing at the state public health lab should be cut back to more routine surveillance

support activities). DCLS will estimate the surge capacity needed for staff and training, supplies/equipment, and specimen management, develop strategies to address these needs, and track progress toward implementation of this surge capacity plan.

5. Partnerships with healthcare providers and clinical laboratories

DCLS, VDH, and local health departments will continue to build partnerships with healthcare providers within Virginia, including the physicians who participate in the Sentinel Provider Network during the regular influenza season.

DCLS will continue to build partnerships with clinical laboratories within Virginia and provide laboratories with updated information as it becomes available. The DCLS training coordinator and training office provide a formal liaison from DCLS to the clinical and local public health laboratories. DCLS maintains a contact list for clinical laboratories throughout Virginia, and when necessary can distribute updated information by BLAST FAX, email, letter, and/or posting on the DCLS website.

II. Role of DCLS during the Pandemic Period

A. Laboratory support for disease surveillance

During a pandemic the goals of virologic surveillance, summarized in the HHS national pandemic influenza plan (S2-3), are to:

- Rapidly detect the introduction and early cases of a pandemic influenza in the United States.
- Track the introduction of the virus into local areas.
- Monitor changes in the pandemic virus, including development of antiviral resistance.

DCLS will provide laboratory support for pandemic influenza surveillance through the same mechanisms that support laboratory-based surveillance for seasonal influenza except that the testing algorithms may be modified due to biosafety considerations or the need to target limited resources toward testing required for public health decisions. RT-PCR methods currently performed at DCLS can detect influenza A or influenza B virus and identify the influenza A subtypes H1, H3, and H5. According to the HHS national pandemic influenza plan, as soon as a pandemic strain of influenza virus has been identified, CDC's Influenza Laboratory will develop, produce, and disseminate the necessary RT-PCR and IFA reagents to state public health laboratories such as DCLS. If necessary, CDC and APHL will also update the RT-PCR protocol currently available to public health laboratories through the APHL website. When the diagnostic procedures and reagents are made available by CDC to the state public health laboratories, DCLS will validate and implement RT-PCR testing specifically for the pandemic strain. During the time period before CDC would be able to provide pandemic strain specific reagents to the state public health laboratories, DCLS would continue to test for the influenza A virus subtypes for which reagents are already available. Such testing would provide rapid test results to VDH DSI to identify infections with an influenza A virus other than one of the subtypes in the current testing battery, and would thus alert surveillance to the probable presence of a novel influenza

subtype. The exact subtype would not be identified until further testing could be performed at CDC.

When a pandemic first begins, laboratory testing to confirm the new subtype will be required. The most intense testing will be during the early stages of the pandemic when the primary goal is to verify whether the new virus has been introduced into the state or community. Once the virus has been identified throughout the state, the level of laboratory testing can be decreased to a level more like that of a non-pandemic influenza season (HHS national pandemic influenza plan, page S1-9). CDC will provide guidelines on when confirmatory testing (i.e. subtyping of influenza A virus) is required. VDH will work with DCLS to determine the level of testing needed within Virginia, and to help prioritize laboratory testing needs. At the beginning of a pandemic, it will be critical that public health needs are met by appropriately prioritizing specimen submissions and testing at DCLS; otherwise, the surge of specimens might rapidly deplete limited and valuable reagents. Prioritization decisions will require input from VDH DSI about data needed for public health decisions and from DCLS about the supply inventory, consumption of supplies, and availability of laboratory personnel.

As the pandemic continues, DCLS will follow CDC guidance to the states on the percentage of isolates/specimens per week or month that the state public health laboratories should send to CDC to help monitor changes in the antigenicity and antiviral susceptibility of the pandemic virus. Throughout the pandemic, CDC will provide updated instructions on the collection of clinical and epidemiologic data that should accompany isolates/specimens. VDH will work with DCLS to create a mechanism by which these data collected by VDH will accompany isolates submitted by DCLS to CDC. DCLS is currently positioned to be able to provide RT-PCR screening before sending specimens to CDC, if reagents and procedures are made available for the pandemic strain.

As needed during a pandemic, DCLS would partner with CDC and VDH to conduct special studies to address questions critical to evaluating the effectiveness of public health response to the pandemic.

B. Laboratory support for clinicians

When a pandemic begins, public health and clinical laboratories will need to manage increased numbers of requests for influenza testing. CDC will work with state public health laboratories and the LRN to provide clinical laboratories with guidelines for safe handling, processing, and rapid diagnostic testing of clinical specimens from patients who meet the case definition of pandemic influenza. DCLS will provide clinical and local public health laboratories within Virginia with these CDC guidelines using the mechanisms created by Emergency Preparedness and Response (EP&R) planning such as BLAST FAX, email, letter, or website posting by the DCLS Training Office. VDH will provide clinicians with guidance about the case definition of pandemic influenza and which subset of patients should have specimens sent to DCLS for pandemic influenza testing.

DCLS and VDH will work with local health departments to provide local healthcare providers with specimen submission forms that specify the clinical and epidemiologic data that

should accompany specimens sent to DCLS for pandemic influenza testing. (For example, during the early stages of a pandemic, clinicians should include information on patients' symptoms and risk factors, if known.)

Rapid communication of influenza results is currently provided by DCLS telephone call, only for positive DFA or RT-PCR results and only to the specimen submitter. For pandemic influenza, DCLS will have to plan, implement, and test methods for rapid communication of both positive and negative results to the submitter, to VDH DSI, and to the local health department. Result reports will include the reminder that a negative test result may not rule out influenza and should not affect patient management or infection control decisions.

VDH and DCLS will provide information for clinicians on the use and interpretation of commercially available rapid diagnostic tests for the detection of influenza during a pandemic, including the CDC guidance provided in the HHS national pandemic influenza plan (Appendix 6, pages S2-24 to S2-27).

As the pandemic continues, VDH will provide local healthcare providers with updated guidance on which clinical specimens should be sent to DCLS for testing as the needs for public health testing evolve.

C. Biocontainment procedures

Biosafety conditions for safely testing specimens which may contain a novel or pandemic influenza virus are more stringent than those needed for routine testing of specimens which may contain the currently circulating seasonal influenza strains. Biosafety guidelines for handling or processing specimens or isolates of novel influenza strains are provided in the HHS national pandemic influenza plan (Appendix 4, page S2-19). Briefly, testing for influenza using either commercial antigen detection assays such as EIA or nucleic acid amplification by RT-PCR can be conducted under BSL-2 containment conditions if a Class II Biological safety cabinet is used. Virus culture should not be performed except within a BSL-3 laboratory with enhancements. In addition, culture of any novel influenza virus should be kept separate from laboratory areas where seasonal influenza A viruses (i.e. H1 and H3) are cultured. Therefore, respiratory virus cultures from specimens which may contain a novel influenza virus should not be performed in most clinical laboratories. Moreover, highly pathogenic avian influenza A (H5) and A (H7) viruses are classified as select agents and any laboratory working with these agents must be certified by the USDA.

DCLS currently has BSL-2 and BSL-3 laboratories, and is establishing a BSL-3 laboratory with enhancements. DCLS is registered with the CDC and USDA to handle select agents. At the present time, DCLS testing for novel influenza subtypes is by real time RT-PCR, but not by virus culture. At DCLS, storage of these specimens and processing to prepare nucleic acid extracts is performed in the BSL-3 laboratory. Until the BSL-3 laboratory with enhancements is completed, DCLS testing for novel influenza will be by RT-PCR with confirmatory testing and virus culture done at CDC.

DCLS and VDH will work with clinical and other laboratories in Virginia to assure that they are aware of the national biocontainment guidelines for specimens from any patient who may be infected with a novel influenza virus and of the need to review their laboratory protocols to assure laboratory safety during the current novel virus alert phase and during a possible pandemic.

D. Occupational health issues for laboratory workers

At all times (i.e. during the Interpandemic, Pandemic Alert, and Pandemic Periods), laboratories handling specimens that possibly contain a novel influenza virus need to maintain safety practices to protect the health of laboratory workers. These safety practices include: (1) conducting laboratory procedures under appropriate biocontainment conditions, as described in the national pandemic influenza plan (Appendix 4, page S2-19), and as periodically updated by national authorities such as CDC; (2) encouraging routine influenza vaccination of all eligible laboratory personnel who are exposed to specimens from patients with respiratory infections; and (3) providing medical surveillance and follow-up for laboratory personnel who work with novel strains of influenza virus, following the national guidelines provided in the national pandemic influenza plan (Appendix 7, pages S2-28 to S2-30). Medical surveillance of laboratory personnel at risk for occupational exposure to novel influenza viruses is important for the benefit of the individual worker and is essential to prevent transmission to other individuals within the community in the event of a laboratory-acquired infection.

Within DCLS, the Biosafety Officer will work with DCLS administration and the laboratory managers of the virology and molecular laboratory areas to perform risk assessment for novel influenza virus testing and to ensure compliance with national biosafety guidelines in the current national plan and as updated by CDC.

It is important to note that the guidelines for biocontainment and for medical surveillance of laboratory personnel apply to any laboratory which may handle or culture specimens containing novel or avian influenza viruses. Such laboratories would include not only the clinical and public health laboratories traditionally included within the Laboratory Response Network (LRN), but also research, university, veterinary, agricultural, or private industry laboratories that may not be easily reached via routine public health communications. Therefore, VDH and DCLS will work together to identify such laboratories within Virginia, to set up a means for the laboratory to receive public health communications, and to provide those laboratories with information about the national guidelines, how to contact VDH if possible exposure has occurred, and how to contact DCLS for influenza subtype testing when indicated for evaluation of novel influenza illness in an exposed employee.

Recommendations for Clinical, Local Public Health and Other Laboratories

I. During Interpandemic and Pandemic Alert Periods

A. Biosafety recommendations for all laboratories which handle influenza virus or specimens (human or animal) which may contain influenza virus (e.g. research, university, veterinary, agricultural, industry, military, hospital/other clinical, and public health laboratories)

1. Review the laboratory biosafety portions of the HHS National Pandemic Influenza Plan (www.pandemicflu.gov) within the Laboratory Diagnostics section (Supplement 2): (1) Biocontainment procedures, page S2-8 and Appendix 4, page S2-19; (2) Occupational health issues for laboratory workers, page S2-8 and Appendix 7, pages S2-28 through S2-30.

2. Perform a risk assessment for influenza biosafety within the laboratory. Create a laboratory specific plan to meet the pertinent HHS guidelines for biosafety and occupational health.

3. If the laboratory handles human or animal specimens which may contain any influenza virus not currently circulating in humans, ensure that the biosafety plan also includes the following:
   - CDC and VDH website addresses to obtain updated influenza information
   - Contact numbers for the local and state health departments to obtain or report information about novel influenza virus
   - Contact numbers for the state public health laboratory, DCLS, to obtain laboratory specific information.

4. Review any federal or state regulations or guidelines which apply to influenza agents or nucleic acids used within or shipped by the laboratory. Examples may include: transport of infectious materials (http://www.cdc.gov/od/ohs; http://www.dot.gov.rules.html; http://www.iata.org); HHS select agents (http://www.cdc.gov/od/sap); USDA select agents (http://www/aphis.usda.gov); federal recombinant DNA guidelines (http://www4.od.nih.gov/oba/rac/guidelines/guidelines.html); CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL) 4th Edition (http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm); Virginia Regulations for Disease Reporting (http://www.vdh.state.va.us/epi/regs.asp).

B. Diagnostic testing recommendations for clinical and public health laboratories which process human specimens for influenza testing.

1. Review the HHS national pandemic influenza plan (www.pandemicflu.gov), especially the Laboratory Diagnostics section (Supplement 2). Review the Laboratory Diagnostics section of the Virginia pandemic influenza plan (http://www.vdh.state.va.us).

2. Use the national and state guidelines to create a laboratory-specific pandemic influenza plan, including plans for the current pandemic alert period. Key actions include the following:
   - If a novel influenza virus infection is suspected, the laboratory should contact the public health department and DCLS to arrange for novel influenza virus testing. The hospital laboratory should NOT attempt virus isolation.
   - It is essential that the laboratory be informed if clinical specimens are submitted from a patient suspected of novel influenza virus infection, to assure safe biocontainment and appropriate testing. Establish clear lines of communication with medical staff and infection control to be implemented if a novel influenza virus is suspected.
   - Review procedures for communication, specimen collection, and transport to DCLS for novel influenza virus testing. Laboratories should use the DCLS emergency pager to communicate with DCLS when a novel virus is suspected.
   - Plan for laboratory surge capacity in the event of an influenza pandemic, including issues of staffing/training, laboratory supplies/equipment, and specimen management, including an increase in specimens sent to DCLS at the beginning of the pandemic. Be aware that during a pandemic, many individuals may not be able to report to work and the quantity of many supplies may become quite limited. Develop plans in concert with the state and local health departments.

3. Implement and exercise the laboratory pandemic influenza plan.

II. During the Pandemic Period

A. Review and update biosafety precautions based on CDC and VDH recommendations and risk assessment within each individual laboratory.

B. Deploy resources to manage increased numbers of requests for influenza testing and for laboratory support for an increased number of patient visits related to respiratory disease.

C. Communicate freely with local health departments and stay updated about current recommendations related to pandemic influenza.

D. Follow public health guidelines to submit selected specimens to DCLS for pandemic influenza testing. During the early phase of an influenza pandemic, any private laboratory which performs RT-PCR testing for the pandemic influenza strain should consult with DCLS to arrange to have their results confirmed by DCLS and/or CDC.

E. Provide guidance to physicians about interpretation and limitations of influenza laboratory tests, particularly the commercially available rapid diagnostic tests (as described in the HHS national pandemic influenza plan, Appendix 6, pages S2-24 to S2-27).

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RATIONALE

An influenza pandemic will place a huge burden on the U.S. healthcare system. Published estimates based on extrapolation of the 1957 and 1968 pandemics suggest that there could be 839,000 to 9,625,000 hospitalizations, 18–42 million outpatient visits, and 20–47 million additional illnesses, depending on the attack rate of infection during the pandemic. Estimates based on extrapolation from the more severe 1918 pandemic suggest that substantially more hospitalizations and deaths could occur. The demand for inpatient and intensive-care unit (ICU) beds and assisted ventilation services could increase by more than 25% under the less severe scenario. Pre-pandemic planning by healthcare facilities is therefore essential to provide quality, uninterrupted care to ill persons and to prevent further spread of infection. Effective planning and implementation will depend on close collaboration among state and local health departments, community partners, and neighboring and regional healthcare facilities. Despite planning and preparedness, however, in a severe pandemic it is possible that shortages, for example of mechanical ventilators, will occur and medical care standards may need to be adjusted to most effectively provide care and save as many lives as possible.

OVERVIEW

Supplement 3 provides healthcare partners with recommendations for developing plans to respond to an influenza pandemic. The focus is on planning during the Interpandemic Period for: pandemic influenza surveillance, decision-making structures for responding to a pandemic, hospital communications, education and training, patient triage, clinical evaluation and admission, facility access, occupational health, distribution of vaccines and antiviral drugs, surge capacity, and mortuary issues. Planning for the provision of care in non-hospital settings—including residential care facilities, physicians' offices, private home healthcare services, emergency medical services, federally qualified health centers (FQHCs), rural health clinics, and alternative care sites—is also addressed.

The recommendations for the Pandemic Period focus on activation of institutional pandemic influenza response plans. The ability to provide detailed guidance on this aspect of the pandemic is limited because of uncertainty about how the pandemic will evolve and variation and uncertainty of local factors that will influence decisions at various stages.

The activities suggested in **Supplement 3** are intended to be synergistic with those of other pandemic influenza planning efforts, including state preparedness plans. Links to additional resources that provide the most up-to-date guidance on particular topics are included. A checklist to help facilities assess their current level of readiness to deal locally with an influenza pandemic is provided in Appendix 3B.

I. Recommendations for the Interpandemic and Pandemic Alert Periods

A. Planning for provision of care in hospitals

U.S. healthcare facilities must be prepared for the rapid pace and dynamic characteristics of pandemic influenza. All hospitals should be equipped and ready to care for: 1) a limited number of patients infected with a pandemic influenza virus, or other novel

strains of influenza, as part of normal operations; and 2) a large number of patients in the event of escalating transmission of pandemic influenza.

Hospital response plans for pandemic influenza should:

- Outline administrative measures for detecting the introduction of pandemic influenza, preventing its spread, and managing its impact on the facility and the staff.
- Build on existing preparedness and response plans for bioterrorism events, SARS, and other infectious disease emergencies.
- Incorporate planning suggestions from state and local health departments and other local and regional healthcare facilities and response partners.
- Identify criteria and methods for measuring compliance with response measures (e.g., infection control practices, case reporting, patient placement, healthcare worker illness surveillance).
- Review and update inventories of supplies that will be in high demand during an influenza pandemic.
- Review procedures for the receipt, storage, and distribution of assets received from federal stockpiles.
- Include mechanisms for periodic reviews and updates.

Hospitals that intend to use an "all-hazards" incident command structure for responding to pandemic influenza will need to incorporate the relevant aspects of communicable disease control that are included in this supplement and in **Supplement 4**. Hospitals should consider using "table top" simulations or other exercises to test response capabilities (see Appendix 3A).

1. Planning process

Groups and individuals involved in the hospital planning process should include:

- An internal, multidisciplinary planning committee with responsibility for pandemic influenza preparedness and response. The committee should include technical experts, persons with decision-making authority, and representatives from a range of response partners (see Box 1). A pre-existing all-hazards preparedness team (e.g., established for bioterrorism or SARS response) might assume this role.
- A response coordinator/incident commander to direct the facility's planning and response efforts.
- A core group from the multidisciplinary planning committee to work with the response coordinator and assist with decision-making during the pandemic.
- The pandemic influenza response team should plan to remain active throughout the pandemic period, which could be several weeks or months.
- Hospital planning for pandemic influenza should consider concurrent public health, community, and healthcare planning efforts at the local, state, and regional levels. Some possible mechanisms for collaboration and coordination are to:
    - Include a state or local health department representative as an ex officio member on the hospital planning committee.

- Obtain copies of draft pandemic influenza plans from other local or regional hospitals to use as models.
- Work with other local hospitals, community organizations (e.g., social service groups), and the state or local health department to coordinate healthcare activities in the community and define responsibilities for each entity during a pandemic.
- Collaborate with HRSA hospital preparedness programs in the state or region.
- Include a hospital representative in local or regional planning efforts.
- Include representatives from safety-net providers4 in the local community (e.g., FQHCs and rural health clinics).

2. Planning elements

The elements of a hospital influenza pandemic preparedness plan discussed below are listed in the Hospital Preparedness Checklist provided in Appendix 3B.

Hospital Surveillance

During the Interpandemic and Pandemic Alert Periods, healthcare providers and healthcare facilities play an essential role in surveillance for suspected cases of infection with novel strains of influenza and should be on the alert for such cases. Novel strains may include avian or animal influenza strains that can infect humans (like avian influenza A H5N1]) and new or re-emergent human viruses that cause cases or clusters of human disease. For detection of cases during the Interpandemic and Pandemic Alert Periods, hospitals should have:

- Procedures in place to facilitate laboratory testing on-site using proper biosafety levels and reporting of unusual influenza isolates through local and state health department channels (see **Supplement 1**). If appropriate methods or biosafety levels do not exist at the hospital, specimens should be shipped to the state health department.
- Predetermined thresholds for activating pandemic influenza surveillance plans (see S3-III.A of the federal plan).

During the Pandemic Period, healthcare providers and healthcare facilities will play an essential role in pandemic influenza surveillance. For detection of cases during the Pandemic Period, hospitals should have:

- Mechanisms for conducting surveillance in emergency departments to detect any increases in influenza-like illness during the early stages of the pandemic
- Mechanisms for monitoring employee absenteeism for increases that might indicate early cases of pandemic influenza
- Mechanisms for tracking emergency department visits and hospital admissions and discharge of suspected or laboratory-confirmed pandemic influenza patients. This information will be needed to: 1) support local public health personnel in monitoring the progress and impact of the pandemic, 2)

assess bed capacity and staffing needs, and 3)detect a resurgence in pandemic influenza that might follow the first wave of cases.

- Updated information on the types of data that should be reported to state or local health departments (e.g.,admissions; discharges/deaths; patient characteristics such as age, underlying disease, and secondary complications; illnesses in healthcare personnel) and plans for how these data will be collected during a pandemic. State and local health departments will provide guidance on the scope and mechanism of reporting (see **Supplement 1**).
- Criteria for distinguishing pandemic influenza from other respiratory diseases.

Hospital Communications

Each hospital should work with public health officials, other government officials, neighboring healthcare facilities, the lay public, and the press to ensure rapid and ongoing information-sharing during an influenza pandemic.

External communications

- Assign responsibility for external communication about pandemic influenza; identify a person responsible for updating public health reporting (e.g., infection control), a clinical spokesperson (e.g., medical director), and a media spokesperson (e.g., public information officer).
- Identify points of contact among local media (e.g., newspaper, radio, television) representatives and public officials and community leaders.
- With guidance from state or local health departments, determine the methods, frequency, and scope of external communications.
- Determine how communications between local and regional healthcare facilities will be handled.
- Consult with state or local health departments on plans for coordinating or facilitating communication among healthcare facilities. In the absence of such a plan, consider organizing a meeting of local health facilities to determine an optimal communications strategy.
- Identify key topics for ongoing communication (e.g., staffing needs, bed capacity, durable and consumable medical equipment and device needs, supplies of influenza vaccine and antiviral drugs).
- Assign responsibility within the hospital for communications with other healthcare facilities.
- Consult with local or state public health officials regarding the hospital's role in communicating with the media and the public.
- Determine the type of hospital-specific communications (e.g., press releases, community bulletin board) that might be needed, and develop templates for these materials.
- Consult with local or state health departments on plans for a pandemic influenza hotline and/or website for public inquiries.
- Determine how public inquiries will be handled (e.g., refer callers to the health department; provide technical support for handling calls).

- Identify the types of information that will be provided by the hospital and the types of inquiries that will be referred to state or local health departments.

Internal communications

- Determine how to keep administrators, personnel (including infection control staff and intake and triage staff), patients, and visitors informed of the ongoing impact of pandemic influenza on the facility and on the community.

Education and training

Each hospital should develop an education and training plan that addresses the needs of staff, patients, family members, and visitors. Hospitals should assign responsibility for coordination of the pandemic influenza education and training program and identify training materials—in different languages and at different reading levels, as needed—from HHS agencies, state and local health departments, and professional associations (see Appendix 3A).

Staff Education

- Identify educational resources for clinicians, including federally sponsored teleconferences, state and local health department programs, web-based training materials, and locally prepared presentations.
- General topics for staff education should include: prevention and control of influenza; implications of pandemic influenza; benefits of annual influenza vaccination; role of antiviral drugs in preventing disease and reducing rates of severe influenza and its complications; infection control strategies for the control of influenza, including respiratory hygiene/cough etiquette, hand hygiene, standard precautions, droplet precautions, and, as appropriate, airborne precautions (see **Supplement 4**).
- Hospital-specific topics for staff education should include: policies and procedures for the care of pandemic influenza patients, including how and where pandemic influenza patients will be cohorted; pandemic staffing contingency plans, including how the facility will deal with illness in personnel; policies for restricting visitors and mechanisms for enforcing these policies; reporting to the health department suspected cases of infection caused by novel influenza strains during the Interpandemic and Pandemic Alert Periods; and measures to protect family and other close contacts from secondary occupational exposure.
- Establish a schedule for training/education of clinical staff and a mechanism for documenting participation. Consider using annual infection control updates/meetings, medical Grand Rounds, and other educational venues as opportunities for training on pandemic influenza.
- Cross-train clinical personnel, including outpatient healthcare providers, who can provide support for essential patient-care areas (e.g., emergency department, ICU, medical units).
- Train intake and triage staff to detect patients with influenza symptoms and to implement immediate containment measures to prevent transmission.

- Supply social workers, psychologists, psychiatrists, and nurses with guidance for providing psychological support to patients and hospital personnel during an influenza pandemic (see **Supplement 11**). (HHS agencies will identify or develop educational materials on: signs of distress, traumatic grief, stress management and effective coping strategies, building and sustaining personal resilience, and behavioral and psychological support resources.) If feasible, hospitals should also provide psychological-support training to appropriate individuals who are not mental health professionals (e.g., primary-care clinicians, leaders of community and faith-based organizations).
- Develop a strategy for "just-in-time" training of non-clinical staff who might be asked to assist clinical personnel (e.g., help with triage, distribute food trays, transport patients), students, retired health professionals, and volunteers who might be asked to provide basic nursing care (e.g., bathing, monitoring of vital signs); and other potential in hospital caregivers (e.g., family members of patients).

Education of patients, family members, and visitors

Patients and others should know what they can do to prevent disease transmission in the hospital, as well as at home and in community settings.

- Identify language-specific and reading-level appropriate materials for educating patients, family members, and hospital visitors during an influenza pandemic. If language-specific materials are not available for the population(s) being served, arrange for translations.
- Develop a plan for distributing information to all persons who enter the hospital. Identify staff to answer questions about procedures for preventing influenza transmission.

Triage, clinical evaluation, and admission procedures

During the peak of a pandemic, hospital emergency departments and outpatient offices might be overwhelmed with patients seeking care. Therefore, triage should be conducted to identify persons who might have pandemic influenza, separate them from others to reduce the risk of disease transmission, and identify the type of care they require (i.e., home care or hospitalization).

- Develop a strategy for triage, diagnosis, and isolation of possible pandemic influenza patients. Consider the following triage mechanisms:
    - Using phone triage to identify patients who need emergency care and those who can be referred to a medical office or other non-urgent facility
    - Assigning separate waiting areas for persons with respiratory symptoms
    - Assigning a separate triage evaluation area for persons with respiratory symptoms
    - Assigning a "triage coordinator" to manage patient flow, including deferring or referring patients who do not require emergency care.

- Review procedures for the clinical evaluation of patients in the emergency department and in outpatient medical offices to facilitate efficient and appropriate disposition of patients.
- Review admission procedures and streamline them as needed to limit the number of patient encounters in the hospital (e.g., direct admission to an inpatient bed).
- Identify a "trigger" point at which screening for signs and symptoms of pandemic influenza in all persons entering the hospital will escalate from passive (e.g., signs at the entrance) to active (e.g., direct questioning). In addition to visual alerts, potential screening measures might include priority triage of persons with respiratory symptoms and telephone screening of patients with appointments.

Facility access

Hospitals should determine in advance the criteria and procedures they will use to limit access to the facility if pandemic influenza spreads through the community.

- Define "essential" and "non-essential" visitors with regard to the hospital and the population served. Develop protocols for limiting non-essential visitors.
- Develop criteria or "triggers" for temporary closing of the hospital to new admissions and transfers. The criteria should consider staffing ratios, isolation capacity, and risks to non-influenza patients. As part of this effort, hospital administrators should: 1) determine who will make decisions about temporary closings and how and to whom these decisions will be communicated, and 2) consult with state and local health departments on their roles in determining policies for hospital admissions and transfers.
- Determine how to involve hospital security services in enforcing access controls. Consider meeting with local law enforcement officials in advance to determine what assistance, if any, they can provide. Note that local law enforcement might be overburdened during a pandemic and have limited ability to assist healthcare facilities with security services.

Occupational health

The ability to deliver quality health care is dependent on adequate staffing and optimum health and welfare of staff. During a pandemic, the healthcare workforce will be stressed physically and psychologically. Like others in the community, many healthcare workers will become ill. Healthcare facilities must be prepared to: protect healthy workers from exposures in the healthcare setting through the use of recommended infection control measures; evaluate and manage symptomatic and ill healthcare personnel; distribute and administer antiviral drugs and/or vaccines to healthcare personnel, as recommended by HHS and state health departments; and provide psychosocial services to health care workers and their families to help sustain the workforce.

Managing ill workers

- Establish a plan for detecting signs and symptoms of influenza in healthcare personnel before they report for duty.
- Develop policies for managing healthcare workers with respiratory symptoms that take into account HHS recommendations for healthcare workers with influenza (see www.cdc.gov/ncidod/hip/GUIDE/infectcont98.htm
- Consider assigning staff who are recovering from influenza to care for influenza patients.
- During the Pandemic Alert Period, healthcare personnel exposed to avian influenza A (H5N1) or other novel strains of influenza should be managed on a case-by-case basis.

- **Time-off policies**

Ensure that time-off policies and procedures consider staffing needs during periods of clinical crisis.

- **Reassignment of high-risk personnel**

Establish a plan to protect personnel at high risk for complications of influenza (e.g., pregnant women, immunocompromised persons) by reassigning them to low-risk duties (e.g., non-influenza patient care, administrative duties that do not involve patient care) or placing them on furlough.

- **Psychosocial health services** (see also **Supplement 11**)
- Identify mental health and faith-based resources for counseling of healthcare personnel during a pandemic. Counseling should include measures to maximize professional performance and personal resilience by addressing management of grief, exhaustion, anger, and fear; physical and mental health care for oneself and one's loved ones; and resolution of ethical dilemmas.
- Determine a strategy for supporting healthcare workers' needs for rest and recuperation.
- Develop a strategy for housing and feeding healthcare personnel who might be needed on-site for prolonged periods
- Develop a strategy for accommodating and supporting staff who have child- or elder-care responsibilities.

Influenza vaccination and use of antiviral drugs

- Promote annual influenza vaccination among hospital employees. Increased vaccination coverage during the Interpandemic Period might help increase vaccine acceptance during a pandemic and will limit the spread of seasonal influenza.
- Ensure that a system is in place for documenting influenza vaccination of healthcare personnel. The hospital might decide to enroll in the National Healthcare Safety Network (NHSN; www.cdc.gov/ncidod/hip/NNIS/members/nhsn.htm) to help track employee vaccination and health status.
- Establish a strategy for rapidly vaccinating or providing antiviral prophylaxis or treatment to healthcare personnel as recommended by HHS and state health departments. Preliminary recommendations on the use of antiviral drugs and

vaccination have been established but will need to be tailored to fit the epidemiology of the pandemic.

Use and administration of vaccines and antiviral drugs

- Pandemic influenza vaccine and "pre-pandemic" influenza vaccine: Once the characteristics of a new pandemic influenza virus are identified, the development of a pandemic vaccine will begin. Recognizing that there may be benefits to immunization with a vaccine prepared before the pandemic against an influenza virus of the same subtype, efforts are underway to stockpile vaccines for subtypes with pandemic potential. As supplies of these vaccines become available, it is possible that some healthcare personnel and others critical to a pandemic response will be recommended for vaccination to provide partial protection or immunological priming for a pandemic strain. Policies for the use of pre-pandemic vaccine have not been finalized.
- Interim recommendations on priority groups for vaccination and strategies for vaccine distribution are discussed in Supplement 6. During a pandemic, these recommendations will be updated, taking into account populations which are most at risk. In the interim, healthcare facilities should:
  - Monitor updated HHS information and recommendations on the development, distribution, and use of a pandemic influenza vaccine (http://www.pandemicflu.gov)
  - Work with local and state health departments on plans for distributing pandemic influenza vaccine.
  - Provide estimates of the quantities of vaccine needed for hospital staff and patients, as requested by the state health department.
  - Develop a stratification scheme for prioritizing vaccination of healthcare personnel who are most critical for patient care and essential personnel to maintain the day-to-day operation of the healthcare facility.
  - Develop a pandemic influenza vaccination plan in the hospital.

Antiviral drugs

Antiviral drugs effective against the circulating pandemic strain can be used for treatment and possibly prophylaxis during an influenza pandemic. Because of the effectiveness of treatment with antiviral drugs such as oseltamivir and zanamivir, and the greater efficiency of treatment in a setting of limited supply, the use of prophylaxis will be restricted to maximize health benefits. Interim recommendations for the use of antiviral drugs are discussed in **Supplement 7**.

- Healthcare facilities should consider how antiviral drugs might be used in their patient and healthcare worker populations, taking into account state and national guidelines, and determine if a reserve supply should be stockpiled. (See also HRSA cooperative agreements www.hrsa.gov/grants/preview/guidancespecial/hrsa05001.htm)

Surge capacity

- Healthcare facilities should plan ahead to address emergency staffing needs and increased demand for isolation wards, ICUs, assisted ventilation services, and consumable and durable medical supplies
- Hospital planners can use FluSurge software (http://www.cdc.gov/flu/flusurge.htm) to estimate the potential impact of a pandemic on resources such as staffed beds (both overall and ICU) and ventilators (see also HRSA and AHRQ planning and surge capacity resources listed in Appendix 3A.)

Staffing

- Assign responsibility for the assessment and coordination of staffing during an emergency.
- Estimate the minimum number and categories of personnel needed to care for a single patient or a small group of patients with influenza complications on a given day.
- Determine how the hospital will meet staffing needs as the number of patients with pandemic influenza increases and/or healthcare and support personnel become ill or remain at home to care for ill family members. Consider the following options:
  - Assigning patient-care responsibilities to clinical administrators
  - Recruiting retired healthcare personnel
  - Using trainees (e.g., medical and nursing students)
  - Using patients' family members in an ancillary healthcare capacity
  - Collaborate with local and regional healthcare-planning groups in an attempt to achieve adequate staffing of the hospital during an influenza pandemic (e.g., decide whether and how staff will be shared with other healthcare facilities, determine how salary issues will be addressed for employees shared between facilities, and consider ways to increase the number of home healthcare staff to reduce hospital admissions during the emergency). State and local health departments can help assess the feasibility of recruiting staff from different hospitals and/or regions, working in coordination with federal facilities, including Veterans Administration and Department of Defense hospitals. Healthcare facilities may implement these arrangements through Mutual Aid Agreements

  (MAAs) or Memoranda of Understanding/Agreement (MOU/As).
  - Increase cross-training of personnel to provide support for essential patient-care areas at times of severe staffing shortages (e.g., in emergency departments, ICUs, or medical units) (see also S3-III.A.2.c).
  - Create a list of essential-support personnel titles (e.g., environmental and engineering services, nutrition and food services, administrative, clerical, medical records, information technology, laboratory) that are needed to maintain hospital operations.
  - Create a list of non-essential positions that can be re-assigned to support critical hospital services or placed on administrative leave to limit the number of persons in the hospital.
  - Consult with the state health department on plans for rapidly credentialing healthcare professionals during a pandemic. This might include defining when an "emergency staffing crisis" can be declared and identifying emergency laws that allow employment of healthcare personnel with out-of-state licenses.

- Identify insurance and liability issues related to the use of non-facility staff.
- Explore opportunities for recruiting healthcare personnel from other healthcare settings, (e.g., medical offices and day-surgery centers). Consult public health partners about existing state or local plans for recruitment and deployment of local personnel.

Bed capacity

- Review and revise admissions criteria for times when bed capacity is limited (see also S3-III.A.2.e).
- Develop policies and procedures for expediting the discharge of patients who do not require ongoing inpatient care (e.g., develop plans and policies for transporting discharged patients home or to other facilities; create a patient discharge holding area or discharge lounge to free up bed space).
- Work with home healthcare agencies to arrange at-home follow-up care for patients who have been discharged early and for those whose admission was deferred because of limited bed space.
- Develop criteria or "triggers" for temporarily canceling elective surgical procedures and determining what and where emergency procedures will be performed during a pandemic. Determine which elective procedures will be temporarily postponed.
- Determine whether patients who require emergency procedures will be transferred to another hospital.
- Discuss with local and state health departments how bed availability, including available ICU beds and ventilators, will be tracked during a pandemic.
- Consult with hospital licensing agencies on plans and processes to expand bed capacity during times of crisis. These efforts should take into account the need to provide staff and medical equipment and supplies to care for the occupant of each additional hospital bed.
- Discuss with healthcare regulators whether, how, and when an "Altered Standards of Care in Mass Casualty Events will be invoked and applied to pandemic influenza (See http://www.ahrq.gov/research/altstand/).
- Develop policies and procedures for shifting patients between nursing units to free up bed space in critical-care areas and/or to cohort pandemic influenza patients.
- Develop Mutual Aid Agreements (MAAs) or Memoranda of Understanding/Agreement (MOU/As) with other local facilities who can accept non-influenza patients who do not need critical care.
- Identify areas of the facility that could be vacated for use in cohorting influenza patients. Consider developing criteria for shifting use of available space based on ability to support patient-care needs (e.g., access to bathroom and shower facilities). Consider developing cohorting protocols based on a patient's stage of recovery and infectivity.

Consumable and durable supplies

- Evaluate the existing system for tracking available medical supplies in the hospital to determine whether it can detect rapid consumption, including items that provide personal protection (e.g., gloves, masks). Improve the system as needed to respond to growing demands for resources during an influenza pandemic (http://www.cdc.gov/ flu/flusurge.htm).
- Consider stockpiling enough consumable resources such as masks (see Box 2) for the duration of a pandemic wave (6-8 weeks).
- Assess anticipated needs for consumable and durable resources, and determine a trigger point for ordering extra resources. Estimate the need for respiratory care equipment (including mechanical ventilators), and develop a strategy for acquiring additional equipment if needed. Neighboring hospitals might consider developing inventories of equipment and determining whether and how that equipment might be shared during a pandemic.
- Anticipate needs for antibiotics to treat bacterial complications of influenza, and determine how supplies can be maintained during a pandemic (see **Supplement 5**).
- Establish contingency plans for situations in which primary sources of medical supplies become limited. Consult with the local and state health departments about access to the national stockpile during an emergency.

Continuation of essential medical services

- Address how essential medical services will be maintained for persons with chronic medical problems served by the hospital (e.g., hemodialysis patients).
- Develop a strategy for ensuring uninterrupted provision of medicines to patients who might not be able to (or should not) travel to hospital pharmacies.

Security

Healthcare facilities should plan for additional security. This may be required given the increased demand for services and possibility of long wait times for care, and because triage or treatment decisions may lead to people not receiving the care they think they require.

Mortuary issues

To prepare for the possibility of mass fatalities during an influenza pandemic, hospitals should do the following:

- Assess current capacity for refrigeration of deceased persons.
- Discuss mass fatality plans with local and state health officials and medical examiners.
- Work with local health officials and medical examiners to identify temporary morgue sites.
- Determine the scope and volume of supplies (e.g., body bags) needed to handle an increased number of deceased persons. Resources for addressing these issues are provided in Appendix 3A.

B. Planning for provision of care in non-hospital settings

Planning and effective delivery of care in outpatient settings is critical. Appropriate management of outpatient influenza cases will reduce progression to severe disease and thereby reduce demand for inpatient care. A system of effective outpatient management will have several components. To decrease the burden on providers and to lessen exposure of the "worried well" to persons with influenza, telephone hotlines should be established to provide advice on whether to stay home or to seek care. Most persons who seek care can be managed appropriately by outpatient providers. Health care networks may designate specific providers, offices, or clinics for patients with influenza-like illness. Nevertheless, some persons with influenza will likely present to all medical offices and clinics so that planning and preparedness is important at every outpatient care site. In underserved areas, health departments may establish influenza clinics to facilitate access. Hospitals should develop a strategy for triage of potential influenza patients, which may include establishing a site outside of the Emergency Department where persons can be seen initially and identified as needing emergency care or may be referred to an outpatient care site for diagnosis and management. Finally, home health care providers and organizations can provide follow-up for those managed at home, decreasing potential exposure of the public to persons who are ill and may transmit infection.

Effective management of outpatient care in communities will require that health departments, health care organizations, and providers communicate and plan together. Issues to address include:

- Plan to establish and staff telephone hotlines.
- Develop training modules, protocols and algorithms for hotline staff.
- Within health care networks, develop plans on the organization of care for influenza patients and develop materials and strategies to inform patients on care-seeking during a pandemic
- For clinics and offices, develop plans that include education, staffing, triage, infection control in waiting rooms and other areas, and communication with healthcare partners and public health authorities.

1. Non-hospital healthcare facilities

The hospital planning recommendations (see S3-III.A in the federal plan) can serve as a model for planning in other healthcare settings, including nursing homes and other residential care facilities, and primary care health centers. All healthcare facilities should do the following:

- Create a planning team and develop a written plan.
- Establish a decision-making and coordinating structure that can be tested during the Interpandemic Period and will be activated during an influenza pandemic.
- Determine how to conduct surveillance for pandemic influenza in healthcare personnel and, for residential facilities, in the population served.
- Develop policies and procedures for managing pandemic influenza in patients and staff.
- Educate and train healthcare personnel on pandemic influenza and the healthcare facility's response plan.

- Determine how the facility will communicate and coordinate with healthcare partners and public health authorities during a pandemic.
- Determine how the facility will communicate with patients and help educate the public regarding prevention and control measures.
- Develop a plan for procuring the supplies (e.g., personal protective equipment [PPE]) needed to manage influenza patients.
- Determine how the facility will participate in the community plan for distributing either vaccine or antiviral drugs, including possibly serving as a point of distribution and providing staff for alternative community points of distribution.

Emergency medical services, private homecare services, FQHCs, and rural health clinics may adapt their planning activities from this model. In some parts of the country, FQHCs and rural health clinics may need to rely on volunteers7 to provide and administer pandemic influenza vaccines.

2. Alternative care sites

If an influenza pandemic causes severe illness in large numbers of people, hospital capacity might be overwhelmed. In that case, communities will need to provide care in alternative sites (e.g., school gymnasiums, armories, convention centers). (Also see http://www.ahrq.gov/research/altsites.htm.) The selection of alternative care sites for pandemic influenza should specifically address the following infection control and patient care needs:

- Bed capacity and spatial separation of patients
- Facilities and supplies for hand hygiene
- Lavatory and shower capacity for large numbers of patients
- Food services (refrigeration, food handling, and preparation)
- Medical services
- Staffing for patient care and support services
- PPE supplies
- Cleaning/disinfection supplies
- Environmental services (linen, laundry, waste)
- Safety and Security

II. Recommendations for the Pandemic Period

A. Activating the facility's pandemic influenza response plan

Following initial detection of pandemic influenza anywhere in the world, the facility's pandemic influenza response plan should be activated in accordance with the level of pandemic activity.

1. Pandemic influenza reported outside the United States

If cases of pandemic influenza have been reported outside the United States, the main steps will be to:

- Establish contact with key public health, healthcare, and community partners.

- Implement hospital surveillance for pandemic influenza, including detection of patients admitted for other reasons who might be infected with the pandemic strain of influenza virus.
- Implement a system for early detection and antiviral treatment of healthcare workers who might be infected with the pandemic strain of influenza virus.
- Reinforce infection control measures to prevent the spread of influenza (See **Supplement 4**).
- Accelerate the training of staff, in accordance with the facility's pandemic influenza education and training plan.

2. Pandemic influenza reported in the United States

If cases of pandemic influenza have been reported in the United States, additional steps will be to:

- Identify when pandemic influenza cases begin in the community. See also **Supplement 1**.
- Identify, isolate, and treat all patients with potential pandemic influenza. See also **Supplements 4 and 8**.
- Implement activities to increase capacity, supplement staff shortages, and provide supplies and equipment.
- Maintain close communication within and among healthcare facilities and with state and local health departments.

Appendix 3A. Resources List for Healthcare Planning

Pandemic Influenza Plans
Currently available State Plans may be found on the following Council of State and Territorial Epidemiologists website:
http://www.cste.org/specialprojects/Influenzaplans/StateMap.asp.
Currently available National Plans may be found on the following WHO website:
http://www.who.int/csr/disease/influenza/nationalpandemic/en/index.html
WHO Global Influenza Preparedness Plan
(http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/index.html)
Document defines the role of WHO and recommendations for national measures before and during pandemics.
WHO Checklist for Influenza Pandemic Preparedness Planning
(http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_4/en/index.html)

Tools

FluAid
(http://www2.cdc.gov/od/fluaid/default.htm)
FluAid 2.0 provides estimates of the total deaths, hospitalizations, and outpatient visits that might occur during an
influenza pandemic.
FluSurge
(http://www.cdc.gov/flu/flusurge.htm)
This specialized spreadsheet-based software estimates the potential surge in demand for hospital-based health care during a pandemic. For each week of a pandemic, FluSurge calculates the potential demand for hospital beds, intensive care unit beds, and mechanical ventilators. Demand for resources is compared with actual capacity. FluSurge is a companion to the previously released FluAid 2.0.

AHRQ's Health Emergency Assistance Line and Triage Hub (HEALTH) Mode
The model is designed to minimize surges in patient demand on the health care delivery system during a bioterrorist event or other public health emergency.

1. Full Report—Health Emergency Assistance Line and Triage Hub (HEALTH) Model (AHRQ Publication No. 05-0040)
(http://www.ahrq.gov/research/health/health.pdf)
This report helps planners determine the requirements, specifications, and resources needed for developing an emergency contact center such as the HEALTH model.

2. Contact Center Assessment Tool Set
(http://www.ahrq.gov/research/health/health.asp)
AHRQ Bioterrorism Planning and Response Resource Page
http://www.ahrq.gov/browse/bioterbr.htm

This resource includes a listing of a variety of tools and resources on issues from community prophylaxis to surge capacity in health facilities.

Emergency Preparedness Resource Inventory (EPRI): A Tool for Local, Regional, and State Planners (http://www.ahrq.gov/research/epri/)
The Emergency Preparedness Resource Inventory (EPRI) is a tool allowing local or regional planners to assemble an inventory of critical resources that would be useful in responding to a bioterrorist attack. In addition to a Web-based software tool, EPRI includes an Implementation Report, a Technical Manual, and an Appendix.

Altered Standards of Care in Mass Casualty Events
(http://www.ahrq.gov/research/altstand/index.html)
This report discusses the potential of a mass casualty event to compromise the ability of health systems to deliver services meeting established standards of care.

Computer Staffing Model for Bioterrorism Response
(http://www.ahrq.gov/research/biomodel.htm)
This new resource is the Nation's first computerized staffing model that is downloadable as a spreadsheet or accessible as a Web-based version. It can be used to calculate the specific needs of local health care systems based on the number of staff they have and the number of patients they would need to treat quickly in a bioterrorism event.

Rocky Mountain Regional Care Model for Bioterrorist Events: Locate Alternate Care Sites During an
Emergency
(http://www.ahrq.gov/research/altsites.htm)
The alternate care site selection tool is designed to allow regional planners to locate and rank potential alternative sites—stadiums, schools, recreation centers, motels, and other venues—based on whether they have adequate ventilation, plumbing, food supply and kitchen facilities, and other factors.

HRSA Bioterrorism and Hospital Preparedness
(http://www.hrsa.gov/bioterrorism/preparationandplanning/healthcare&facilities.htm)
A comprehensive list of resources and documents

ASTHO "Preparedness Planning for State Health Officials - Nature's Terrorist Attack - Pandemic Influenza"
(http://www.astho.org/pubs/PandemicInfluenza.pdf)
Provides checklists for state health officials to assist in preparedness planning. A brief summary of major issues to consider is also included.

Educational Materials samples
(http://www.health.state.ny.us/nysdoh/flu/resources.htm)

HHS healthcare surge capacity document
(http://www.os.hhs.gov/asphep/mscc_handbook.html)

OSHA—Best Practices for the Protection of Hospital-Based First Receivers
(http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html)

ASTM Standard Guide for Hospital Preparedness and Response
The purpose of the guide is to answer questions regarding the minimal levels of preparedness needed for hospitals to deal with a large-scale terrorist attack or other serious emergency and includes guidelines regarding the process for preparedness
and mitigation; the process of organizing and planning a hospital response plan; the nature of supplies that hospitals need to make available; the application of existing regulations and guidelines; and an acceptable means to protect the facilities for
usual operation, patients, and staff while continuing to provide an effective level of response. (This document is not free to the public, a document summary is available at http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/E2413.htm?L+mystore+vybd9920)

Information on Handling Human Remains During Mass-Casualty Events

- Interim Health Recommendations for Workers who Handle Human Remains www.bt.cdc.gov/disasters/tsunamis/handleremains.asp
- Disposing of Liquid Waste from Autopsies in Tsunami-Affected Areas www.bt.cdc.gov/disasters/tsunamis/pdf/tsunami-autopsyliquidwaste.pdf
- Management of Dead Bodies in Disaster Situations www.paho.org/English/DD/PED/ManejoCadaveres.htm
- Health Concerns Associated with Disaster Victim Identification After a Tsunami—Thailand, Dec 26, 2004–Mar 31, 2005 . MMWR 15 April 2005;54(14):349-52. www.cdc.gov/mmwr/preview/mmwrhtml/mm5414a1.htm

Presentations
2004 AHRQ-sponsored series "Addressing Surge Capacity in a Mass Casualty Event"
(http://www.hsrnet.net/ahrq/surgecapacity/)
Presentations from First National Congress on Public Health Readiness
(http://www.ama-assn.org/ama/noindex/category/11053.html)
(http://www.bt.cdc.gov/training/ncphr/) -CDC Presentations only
These slideshows represent presentations from speakers at the 1st National Congress on Public Health Readiness held July 20-22, 2004.
“No Vacancy: Healthcare Surge Capacity in Disasters.“
(http://www.ama-assn.org/ama1/pub/upload/mm/415/hick.ppt)
Jonathan L. Hick, MD, Medical Director, Office of Emergency Preparedness, Hennepin County Medical Center, Minneapolis, Minnesota
Bioterrorism Preparedness: A Hospital Tabletop Exercise
SHEA 14th Annual Scientific Meeting, Philadelphia, PA
April 17, 2004
Prepared by Kelly Henning, MD

Appendix 3B. Resources List for Healthcare Planning

Preparedness Subject — Actions Needed

1. Structure for planning and decision making
   - o An internal, multidisciplinary planning committee for influenza preparedness has been created.
   - o A person has been designated as the influenza preparedness coordinator. (Insert name) _____
     - Members of the planning committee include the following hospital staff members (insert names)
       - o Administration _____
       - o Legal counsel _____
       - o Infection control _____
       - o Hospital disaster coordinator _____
       - o Risk management _____
       - o Facility engineering _____
       - o Nursing administration _____
       - o Medical staff _____
       - o Intensive care _____
       - o Emergency Department _____
       - o Laboratory services _____
       - o Respiratory therapy _____
       - o Psychiatry _____
       - o Environmental services _____
       - o Public relations _____
       - o Security _____
       - o Materials management _____
       - o Staff development _____
       - o Occupational health _____
       - o Diagnostic imaging _____
       - o Pharmacy _____
       - o Information technology _____
       - o Other members _____
       - o A state or local health department person has been identified as a committee liaison. (Insert name) _____
       - o A linkage with local or regional emergency preparedness groups has been established (Planning organization) _____

2. Development of a written pandemic influenza plan
   - o A written plan has been completed or is in progress that includes the elements listed in #3 below.
   - o The plan specifies the circumstances under which the plan will be activated.
   - o The plan describes the organization structure that will be used to operationalize the plan.
   - o Responsibilities of key personnel related to executing the plan have been described.
   - o A simulation exercise has been developed to test the effectiveness

of the plan.
- A simulation exercise has been performed. (Date performed _____)

3. Elements of an influenza pandemic plan
   - A **surveillance plan** has been developed.
   - Syndromic surveillance has been established in the emergency room.
   - Criteria for distinguishing pandemic influenza is part of the syndromic surveillance plan.
   - Responsibility has been assigned for reviewing global, national, regional, and local influenza activity trends and informing the pandemic influenza coordinator of evidence of an emerging problem. (Name_____)
   - Thresholds for heightened local surveillance for pandemic influenza have been established.
   - A system has been created for internal review of pandemic influenza activity in patients presenting to the emergency department.
   - A system for monitoring for nosocomial transmission of pandemic has been implemented and tested by monitoring for non-pandemic influenza.

- A **communication plan** has been developed.
  - Responsibility for external communication has been assigned.
    Person responsible for updating public health reporting _____
    Clinical spokesperson for the facility _____
    Media spokesperson for the facility _____
  - Key points of contact outside the facility have been identified.
    State health department contact _____
    Local health department contact _____
    Newspaper contact(s) _____
    Radio contact(s) _____
    Public official(s) _____
  - A list of other healthcare facilities with whom it will be necessary to maintain Communication has been established.
  - A meeting with local healthcare facilities has been held to discuss a communication strategy.
  - A plan for updating key facility personnel on a daily basis has been established.
    The person(s) responsible for providing these updates are: _____
    _____
  - A system to track pandemic influenza admissions and discharges has been developed and tested by monitoring non-pandemic influenza admissions and discharges in the community.
  - A strategy for regularly updating clinical, ED, and outpatient staff on the status of pandemic influenza, once detected, has been established. (Responsible person _____)
  - A plan for informing patients and visitors about the level of pandemic influenza activity has been established.

- An **education and training plan** on pandemic influenza has been developed.
  - Language and reading level-appropriate materials for educating all personnel about pandemic influenza and the facility's pandemic influenza plan, have been identified.

  - Current and potential sites for long-distance and local education of clinicians on pandemic influenza have been identified.
  - Means for accessing state and federal web-based influenza training programs have been identified.
  - A system for tracking which personnel have completed pandemic influenza training is in place.
  - A plan is in place for rapidly training non-facility staff brought in to provide patient care when the hospital reaches surge capacity.

- The following groups of healthcare personnel have received training on the facility's influenza plan:
  - Attending physicians
  - House staff
  - Nursing staff
  - Laboratory staff
  - Emergency Department personnel
  - Outpatient personnel
  - Environmental Services personnel
  - Engineering and maintenance personnel
  - Security personnel
  - Nutrition personnel

- A **triage and admission plan** has been developed.
  - A specific location has been identified for triage of patients with possible pandemic influenza.
  - The plan includes use of signage to direct and instruct patients with possible pandemic influenza on the triage process.
  - Patients with possible pandemic influenza will be physically separated from other patients seeking medical attention.
  - A system for phone triage of patients for purposes of prioritizing patients who require a medical evaluation has been developed.
  - Criteria for determining which patients need a medical evaluation are in place.
  - A method for tracking the admission and discharge of patients with pandemic influenza has been developed.
  - The tracking method has been tested with non-pandemic influenza patients. _____

- A **facility access plan** has been developed.
  - Criteria and protocols for closing the facility to new admissions are in place.
  - Criteria and protocols for limiting visitors have been established.
  - Hospital Security has had input into procedures for enforcing facility access controls.

- An **occupational health plan** has been developed.
  - A system for rapidly delivering vaccine or antiviral prophylaxis to healthcare personnel has been developed.
  - The system has been tested during a non-pandemic influenza season.

- A method for prioritizing healthcare personnel for receipt of vaccine or antiviral prophylaxis based on level of patient contact and personal risk for influenza complications has been established.
- A system for detecting symptomatic personnel before they report for duty has been developed.
- This system has been tested during a non-pandemic influenza period.
- A policy for managing healthcare personnel with symptoms of or documented pandemic influenza has been established. The policy considers:
  - When personnel may return to work after having pandemic influenza
  - When personnel who are symptomatic but well enough to work, will be permitted to continue working
- A method for furloughing or altering the work locations of personnel who are at high risk for influenza complications (e.g., pregnant women, immunocompromised healthcare workers) has been developed.
- Mental health and faith-based resources who will provide counseling to personnel during a pandemic have been identified.
- A strategy for housing healthcare personnel who may be needed on-site
- for prolonged periods of time is in place.
- A strategy for accommodating and supporting personnel who have child or elder care responsibilities has been developed.

- A **vaccine and antiviral use** plan has been developed.
  - A contact for obtaining influenza vaccine has been identified. (Name)_____
  - A contact for obtaining antiviral prophylaxis has been identified. (Name)_____
  - A priority list (based on HHS guidance for use of vaccines and antivirals in a pandemic when in short supply) and estimated number of patients and healthcare personnel who would be targeted for influenza vaccination or antiviral prophylaxis has been developed.
    1. Number of first priority personnel _____
    2. Number of second priority personnel _____
    3. Number of remaining personnel _____
    4. Number of first priority patients _____
    5. Number of second priority patients _____
  - A system for rapidly distributing vaccine and antivirals to patients has been developed.

- Issues related to **surge capacity** have been addressed.
  - A plan is in place to address **unmet staffing needs** in the hospital.
  - The minimum number and categories of personnel needed to care for a group of patients with pandemic influenza has been determined.
  - Responsibility for assessing day-to-day clinical staffing needs during an influenza pandemic has been assigned. Persons responsible are: (names and/or titles)_____
    _____
  - Legal counsel has reviewed emergency laws for using healthcare personnel with out-of-state licenses.
  - Legal counsel has made sure that any insurance and other liability concerns have been resolved.
  - Criteria for declaring a “staffing crisis” that would enable the use

of emergency staffing alternatives have been defined.
    - The plan includes linking to local and regional planning and response groups to collaborate on addressing widespread healthcare staffing shortages during a crisis.
    - A priority list for reassignment and recruitment of personnel has been developed.
    - A method for rapidly credentialing newly recruited personnel has been developed.
    - Mutual AID Agreements (MAAs) and Memoranda of Understanding/ Agreement (MOU/As) have been signed with other facilities that \ have agreed to share their staff, as needed.
- Strategies to **increase bed capacity** have been identified
    - A threshold has been established for canceling elective admissions and surgeries
    - MOAs have been signed with facilities that would accept non-influenza patients in order to free up bed space
    - Areas of the facility that could be utilized for expanded bed space have been identified
    - The estimated patient capacity for this facility is _____
    - Plans for expanded bed capacity have been discussed with local and regional planning groups
- Anticipated **durable and consumable resource** needs have been determined
    - A primary plan and contingency plan to address supply shortages has been developed
    - Plans for obtaining limited resources have been discussed with local and regional planning and response groups

- A strategy for handling increased numbers of deceased persons has been developed.
    - Plans for expanding morgue capacity have been discussed with local and regional planning groups.
    - Local morticians have been involved in planning discussions.
    - Mortality estimates have been used to estimate the number of body bags and shrouds.
    - Supply sources for postmortem materials have been identified.

Tab 1. Healthcare Facility Pandemic Influenza Planning Committee

Representatives for a hospital pandemic influenza planning committee may include:

Hospital staff

- Administration/senior management (including fiscal officer)
- Legal counsel/risk management
- Infection control/hospital epidemiology
- Hospital disaster/emergency coordinator
- Engineering/physical plant/industrial hygiene/institutional safety
- Nursing administration
- Medical staff (including outpatient areas)
- Intensive-care unit
- Emergency department
- Laboratory services
- Respiratory therapy
- Nutrition and food services
- Pharmacy
- Environmental services (housekeeping, laundry)
- Public relations
- Security
- Materials management
- Education/training/staff development
- Occupational health
- Diagnostic imaging
- Information technology

Adjunct staff members

- Infectious diseases
- Mental health (psychiatry, psychology)
- Union representatives
- Human resources
- Social work
- Director of house staff/fellowship and other training programs
- Critical care medicine
- Pathology

State and local health departments

- Communicable disease division
- Laboratory services
- Medical examiners

Community partners

- Emergency medical technicians (“first responders”)
- Local law enforcement
- Funeral service personnel
- Community service agencies

Tab 2. Examples of Consumable and Durable Supply Needs

Consumable resources

- Hand hygiene supplies (antimicrobial soap and alcohol-based, waterless hand hygiene products)
- Disposable N95, surgical and procedure masks
- Face shields (disposable or reusable)
- Gowns
- Gloves
- Facial tissues
- Central line kits
- Morgue packs

Durable resources:

- Ventilators
- Respiratory care equipment
- Beds
- IV pumps

Tab 3. Hospital Pandemic Influenza Triggers

Pandemic Influenza Level	Suggested Actions
Interpandemic Period	*****Conduct planning *Conduct education/training *Conduct hospital surveillance for influenza (Supplement 1)
Pandemic Alert Period	*****Increase preparation; refine local plan *Conduct hospital surveillance for influenza (Supplement 1)
Pandemic Period Pandemic influenza outside the United States	*Establish contact with key public health, healthcare, and community partners. *Implement hospital surveillance for pandemic influenza (Supplement 1) in incoming patients and previously admitted patients. *Implement a system for early detection and treatment of healthcare personnel who might be infected with the pandemic strain of influenza. Reinforce infection control procedures to prevent the spread of influenza (Supplement 4). *Accelerate staff training in accordance with the facility's pandemic influenza education and training plan.
Pandemic influenza in the United States	As above, plus: • Implement activities to increase capacity, supplement staff, and provide supplies and equipment. • Maintain close contact with and among healthcare facilities and with state and local health departments. • Post signs for respiratory hygiene/cough etiquette. • Maintain high index of suspicion that patients presenting with influenzalike illness could be infected with pandemic strain. If pandemic strain is detected in local patient, community transmission can be assumed and hospital would move to next level of response.

Tab 3. Hospital Pandemic Influenza Triggers continued

Pandemic Influenza Level	Suggested Actions
Pandemic Period (cont.) • Pandemic influenza in the local area	As above, plus; • Emergency department (ED) 1. Establish segregated waiting areas for persons with symptoms of influenza. 2. Implement phone triage to discourage unnecessary ED/outpatient department visits. 3. Enforce respiratory hygiene/cough etiquette. • Access controls 1. Limit number of visitors to those essential for patient support. 2. Screen all visitors at point of entry to facility for signs and symptoms of influenza. 3. Limit points of entry to facility; assign clinical staff to entry screening. • Hospital admissions 1. Defer elective admissions and procedures until local epidemic wanes. 2. Discharge patients as soon as possible. 3. Cohort patients admitted with influenza. 4. Monitor for nosocomial transmission. • Staffing practices 1. Consider furlough or reassignment of pregnant staff and other staff at high risk for complications of influenza. 2. Consider re-assigning non-essential staff to support critical hospital services or placing them on administrative leave; cohort staff caring for influenza patients.

Tab 3. Hospital Pandemic Influenza Triggers continued

Pandemic Influenza Level	Suggested Actions
Pandemic Period (cont.)	3. Consider assigning staff recovering from influenza to care for influenza patients. 4. Implement system for detecting and reporting signs and symptoms of influenza in staff reporting for duty. 5. Provide staff with antiviral prophylaxis, according to HHS recommendations. **See Supplement 7**
• Nosocomial transmission	As above, plus, if nosocomial transmission is limited to only a small number of units in the facility. • Close units where there has been nosocomial transmission. • Cohort staff and patients. • Restrict new admissions (except for other pandemic influenza patients) to affected units. • Restrict visitors to the affected units to those who are essential for patient care and support. See also **Supplement 4**.
• Widespread transmission in community and hospital; admissions at surge capacity	As above plus: • Redirect personnel resources to patient support patient care (e.g. administrative clinical staff, clinical staff working in departments that have been closed [e.g., physical/occupational therapy, cardiac catheterization]). • Recruit community volunteer (e.g., retired nurses and physicians, clinical staff working in outpatient settings). • Consider placing on administrative leave all non-essential personnel who cannot be reassigned to support critical hospital services.

INTRODUCTION

VDH endorses the infection control guidelines published by the U.S. Department of Health and Human Services in the Pandemic Influenza Plan. Specific strategies are referenced below to serve as a resource for local health departments and other agencies.

RATIONALE

Strategies to prevent the spread of pandemic influenza are the same as those for seasonal influenza. In general these include: vaccination, early detection and treatment with antiviral medication (discussed in other sections of this plan), and the use of infection control measures.

The infection control guidelines provided in this document are based on the pathogenesis of influenza and the effects of control measures in past pandemics. Additional measures may be necessary if it is determined that the pandemic strain has new or different characteristics.

TRANSMISSION

Influenza is primarily spread through close contact with respiratory secretions (i.e., exposure to large respiratory droplets, direct contact, or near-range exposure to aerosols).

- Droplet Transmission
  Transmission is thought to occur when large respiratory droplets are dispersed during coughing, sneezing or talking. Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only short distances (about 3 feet) through the air. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission.

- Contact Transmission
  Direct contact with respiratory droplets and subsequent transmission can also occur when performing skin to skin activities such as turning and bathing patients, and holding or shaking hands. Indirect transmission may be possible when the organism is transferred from the environment (via contaminated surface/equipment) to a susceptible host.

- Airborne Transmission
  The influenza virus is not thought to be transmitted via small respiratory droplets. There is no evidence that transmission of the virus can occur across long distances (through ventilation systems) or through suspension in the air. However, it is not known if transmission occurs at shorter distances through the inhalation of small-droplet particles or while performing aerosol-generating procedures such as endotracheal intubation, suctioning, nebulizer treatment or bronchoscopy.

Control of Transmission in Healthcare Facilities

Outbreaks of influenza have been prevented or controlled though a set of well-established strategies that include vaccination of patients and healthcare personnel; early detection of influenza cases; use of antivirals to treat ill persons and prophylaxis of exposed persons; isolation of infectious patients; the use of barrier precautions during patient care; and administrative measures such as restricting visitors, educating patients and staff and cohorting healthcare workers.

Control of Transmission in the Community

Outbreaks of influenza can occur wherever people are in close proximity to one another (e.g., classrooms, churches, businesses). Infection control in community settings should focus on "social distancing" and promoting respiratory hygiene/cough etiquette and hand hygiene to decrease exposure to others. Persons at high risk for complications of influenza should try to avoid public gatherings (e.g., movies, religious services, public meetings) when pandemic influenza is in the community.

Most patients with pandemic influenza can remain in the home during the course of their illness and can be cared for by family members who live in the household. However, anyone residing in the household during the incubation period and illness is at risk for developing influenza. The key objective in this setting is to limit the transmission of the virus in and outside the home. Basic infection precautions, including hand and respiratory hygiene, should be used by everyone living in the household with a person infected with pandemic influenza. (Refer to Box 2)

Recommendations For Infection Control for In-Patient Healthcare Settings

The recommendations for infection control described below are generally applicable throughout the different pandemic phases. In some cases, as indicated, recommendations may be modified as the situation progresses from limited cases to widespread community illness.

1. Limit contact between infected and non-infected persons

    a. Isolate or cohort infected persons (confine patients to a defined area as appropriate for the healthcare setting).
        - Interpandemic Phase-Standard, Contact, Droplet and Airborne Precautions
        - Pandemic Phase-Standard and Droplet Precautions
    b. Limit contact between nonessential personnel and other persons (i.e., social visitors) and patients who are ill with pandemic influenza.
    c. Promote social separation in common areas (i.e., sit or stand as far away as possible – at least 3 feet – from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.

2. Protect persons caring for influenza patients in healthcare settings from contact with the pandemic virus. Persons who must be in contact should:

a. Wear appropriate personal protective equipment in accordance with recommended precautions (see Box 1).
b. Perform hand hygiene after contact with the patient or their environment.
c. Perform environmental cleaning using EPA-registered disinfectant according to hospital policy.

3. Contain respiratory secretions

a. Instruct person who have "flu-like" symptoms to use respiratory hygiene/cough etiquette (see Box 2).
b. Promote the use and careful disposal of masks by symptomatic persons when in common areas (e.g., radiology suite or emergency rooms) or when being transported (e.g., via wheelchair in hospital or in emergency vehicles).

4. Prevent transmission of influenza in persons entering facility

a. Post visual alerts (in appropriate languages) at the entrance of hospital outpatient facilities (e.g., emergency departments, clinics, labs), instructing persons with respiratory symptoms to:
   - Inform receptionist and healthcare personnel when they register for care.
   - Practice respiratory hygiene/cough etiquette.
b. Triage patients calling for medical appointments for influenza symptoms as follows:
   - Discourage unnecessary visits to medical facilities.
   - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to medical appointments.
   - Designate a separate triage and/or waiting area for patients with respiratory symptoms.
c. Post signs in common areas (elevators, waiting areas, cafeterias, bathrooms) promoting respiratory etiquette and handwashing.
d. Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors.
   - Provide tissues and no-touch receptacles for used tissue disposal.
   - Provide conveniently located alcohol-based hand rub.
   - Provide soap and disposable towels for handwashing where sinks are available.
e. Promote the use of masks and spatial separation by persons with symptoms of influenza.
   - Offer and encourage the use of procedure or surgical masks by symptomatic patients or persons who have been exposed.
   - Encourage coughing persons to sit as far away as possible (at least 3 feet) from other persons in common waiting areas.

Recommendations for Infection Control in Special Healthcare Settings-Nursing Homes, EMS, Home Health Care, Outpatient Offices

The recommendations below are designed to address the unique needs and challenges of outpatient healthcare settings in preventing the spread of influenza. The recommendations for infection control described below are generally applicable throughout the different pandemic phases. In some cases, as indicated, recommendations may be modified as the situation progresses from limited cases to widespread community illness.

1. Nursing homes

    a. Control visitors
        - Post visual alerts at the entrance of facility restricting entry by persons who have been exposed or have symptoms.
        - Enforce visitor restrictions by assigning personnel to verbally and visually screen visitors for symptoms at the point of entry.
        - Provide a telephone number where persons can call for information.
    b. Screen personnel
        - Implement a system to screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be sent home until they are physically able to return to duty.
    c. Detect illness early and institute control measures
        - Increase surveillance for respiratory disease among residents and notify the local health department if a case is suspected.
        - If symptoms of pandemic influenza are apparent, implement droplet precautions for the resident and roommates, pending confirmation of the infection. Patients and roommates should not be separated or moved out of their rooms unless medically necessary. Once a patient has been diagnosed with pandemic influenza, roommates should be treated as exposed cohorts.
        - Cohort residents and staff on units with known or suspected cases of pandemic influenza.
        - Limit movement in the facility (e.g., temporarily close dining room and serve meals on nursing units, cancel social and recreational activities).

2. Prehospital Care (emergency medical services)

    a. Identify illness and implement appropriate control measures
        - Screen patients requiring emergency transport for symptoms of influenza.
        - Follow standard and droplet precautions for symptoms of influenza.
        - Consider routine use of surgical masks for all patient transport when pandemic influenza is in the community.
        - If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing.
        - A non-rebreather facemask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.

- Unless medically necessary to support life, aerosol-generating procedures (e.g., mechanical ventilation) should be avoided during prehospital care.
- Optimize the vehicles' ventilation to increase the volume of air exchanges during transport.
- Notify the receiving facility that a patient with possible pandemic influenza is being transported.
- Follow standard operating procedures for routine cleaning and reusable patient care equipment.

3. Home health service

   a. Contact client before the home visit to determine whether persons in the household have an influenza-like illness.
      - If the patients with pandemic influenza are in the household, consider:
        - Postponing nonessential services
        - Assigning providers who are not at increased risk of complications of pandemic influenza to care for these patients
   b. Home healthcare providers who enter homes where there is a person with an influenza-like illness should follow standard and droplet precautions.

4. Outpatient offices

   a. Detect illness early and institute triage
      - Post visual alerts at entrance of office instructing persons with respiratory illness to:
        - Inform receptionist and healthcare personnel at registration.
        - Practice respiratory hygiene and etiquette.
      - Triage patients calling for medical appointments for influenza symptoms
        - Discourage unnecessary appointments.
        - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.
   b. Institute control measures
      - Post signs to promote cough etiquette in common areas (e.g., waiting areas, elevators, cafeteria, bathrooms). See Box 2.
      - Facilitate adherence to respiratory hygiene/cough etiquette. Provide materials in waiting areas.
      - Promote the use of procedure or surgical masks.
      - Encourage coughing persons to sit at least three feet from other persons in waiting areas.
      - Perform environmental cleaning using EPA registered disinfectant according to office policy.

Care of Patients with Pandemic Influenza in the Home

Most persons with pandemic influenza can be cared for in the home by a family member. The main objective is to prevent the transmission of the virus in and outside the home. Basic infection control measures should be emphasized and used by all persons residing in the home. Infection within the household can be minimized if a primary caregiver is designated – ideally someone who doesn't have underlying risk factors that could put them at increased risk for complications of the disease.

Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit.

1. Management of influenza patients
   - Physically separate the patient with influenza from the non-ill persons living in the home as much as possible.
   - Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., 5 days after the onset of symptoms).
   - When movement outside the home is necessary (e.g., medical appointments), the patient should follow cough etiquette (i.e., cover nose and mouth when coughing and sneezing and wear a surgical mask).

2. Management of other persons in the home
   - Persons who have not been exposed to the person with pandemic influenza and who are not essential for patient care or support should not enter the home while persons are ill with pandemic influenza.
   - If unexposed persons must enter the home, they should avoid close contact with the patient.
   - Persons living in the home with the patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
   - Household members should monitor closely for the development of influenza symptoms and contact a telephone hotline or medical provider if symptoms occur.

3. Infection Control measures in the home
   - All persons in the household should carefully follow recommendations for hand hygiene after contact with an infected person or the environment.
   - Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical masks by the patient and/or their caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.
   - Soiled dishes and eating utensils should be washed in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
   - Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by patients with influenza from other household laundry. Care should be used when handling

soiled laundry (e.g., holding the laundry close to the body) to avoid contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag for disposal with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

Recommendations for Preventing the Spread of Pandemic Influenza in Schools

The guidelines below are general infection control measures aimed toward preventing the spread of infection in the school setting. Additional guidance from school administration may be necessary based on the event.

Infection control in these settings should focus on keeping sick students, faculty and workers away while they are infectious and promoting respiratory hygiene/cough etiquette and hand hygiene, as with any respiratory infection.

1. Keep ill persons separate from non-ill persons
   - Excuse student, faculty and other staff from their duties if they develop symptoms.
   - Develop a plan to allow for coverage when faculty and staff must be home.

2. Identify illness early
   - Provide training for students, faculty, parents and staff on influenza, including: routes of transmission; signs and symptoms; treatment; and infection control strategies (handwashing, respiratory/cough etiquette).

3. Prevent exposure to student/staff and the spread of disease outside the school building.
   - Consider rescheduling extracurricular activities (e.g., sports events, plays, dances, PTA meetings) during pandemic.
   - Consider rescheduling field trips.
   - If absenteeism is high in certain classes, consider combining classes to limit exposure to/from substitute staff.

4. Encourage the use of infection control measures within the building.
   - Ensure that handwashing supplies are available and an alcohol-based hand rub, if possible.
   - Have tissues and trash receptacles available in classrooms.
   - Use an EPA-registered disinfectant to clean environmental surfaces.
   - Review cleaning procedures with housekeeping staff.

5. Communicate information.
   - Notify the local health department if pandemic flu is expected or the absentee rate is higher than normal for respiratory infections during a pandemic period.
   - Notify families via letter, email, etc., of status and reinforce prevention strategies.
   - Post visual alerts on doors advising visitors to not enter a building if ill or report to the office if they exhibit symptoms of respiratory illness.

Recommendations for Preventing the Spread of Pandemic Influenza in the Workplace

The guidelines below are general infection control measures aimed toward preventing the spread of infection in the workplace. Additional guidance from management may be necessary based on the situation.

Infection control in these settings should focus on keeping workers away while they are infectious and promoting respiratory hygiene/cough etiquette and hand hygiene, as with any respiratory infection.

1. Keep ill persons separate from non-ill persons.
   - Excuse workers from their duties if they develop symptoms.

2. Determine the impact of absenteeism in the workplace and establish a plan:
   - Identify essential positions.
   - Develop a plan to allow for coverage when workers must be home.
   - Develop policies that are unique to a pandemic, including:
     - sick-leave and return to work
     - flexible worksite (telecommuting) and work hours (staggered shifts)
     - preventing spread in the workplace (hand hygiene, cough etiquette)
     - restricting travel, meetings outside the office
     - communications

3. Establish a communication system
   - Determine how information will be disseminated to employees and stakeholders:
     - written
     - designated websites
     - hotlines
   - Post visual alerts in lobby, waiting rooms.
   - Contact the local health department if pandemic influenza is expected or there is an increased number of absent employees during a pandemic period.

4. Identify illness early and institute prevention strategies at work and at home.
   - Provide training and resources for staff about pandemic influenza, including: routes of transmission; signs and symptoms; treatment; and infection control strategies (handwashing, respiratory/cough etiquette)

5. Encourage the use of infection control measures to reduce the spread of infection.
   - Provide infection control supplies (e.g., hand hygiene products, tissues and receptacles for their disposal) in all business locations.
   - Ensure availability of medical consultation and advice for emergency services.

Box 1. Summary of Infection Control Recommendations for Care of Patients with Pandemic Influenza

Component	Recommendations
Standard Precautions	See www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm
Hand hygiene	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; and between patient contacts. Hand hygiene includes both handwashing with either plain or antimicrobial soap and water or use of alcohol-based products (gels, rinses, foams) that contain an emollient and do not require use of water. If hands are visibly soiled or contaminated with respiratory secretions, they should be washed with soap (either non-antimicrobial or antimicrobial) and water. In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbicidal activity, reduced drying of the skin, and convenience.
Personal protective equipment (PPE) • Gloves • Gown • Face/eye protection (e.g., surgical or procedure mask and goggles or a face shield)	• For touching blood, body fluids, secretions, excretions, contaminated items; for touching mucous membranes and nonintact skin • During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated • During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, excretions
Safe work practices	Avoid touching eyes, nose, mouth, or exposed skin with contaminated hands (gloved or ungloved); avoid touching surfaces with contaminated gloves and other PPE that are not directly related to patient care (e.g., door knobs, keys, light switches).
Patient resuscitation	Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
Soiled patient care equipment	Handle in a manner that prevents transfer of microorganisms to oneself, others, and environmental surfaces; wear gloves if visibly contaminated; perform hand hygiene after handling equipment.
Soiled linen and laundry	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry; and perform hand hygiene.

Needles and other sharps	Use devices with safety features when available; do not recap, bend, break or hand-manipulate used needles; if recapping is necessary, use a one-handed scoop technique; place used sharps in a puncture-resistant container.
Environmental cleaning and disinfection	Use EPA-registered hospital detergent-disinfectant; follow standard facility procedures for cleaning and disinfection of environmental surfaces; emphasize cleaning/disinfection of frequently touched surfaces (e.g., bed rails, phones, lavatory surfaces).
Disposal of solid waste	Contain and dispose of solid waste (medical and non-medical) in accordance with facility procedures and/or local or state regulations; wear gloves when handling waste; wear gloves when handling waste containers; perform hand hygiene.
Respiratory hygiene/ cough etiquette Source control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g., triage/ reception areas) within a healthcare setting.	Cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 3 feet) from persons who are not ill.
Droplet Precautions	www.cdc.gov/ncidod/hip/ISOLAT/droplet_prec_excerpt.htm
Patient placement	Place patients with influenza in a private room or cohort with other patients with influenza.* Keep door closed or slightly ajar; maintain room assignments of patients in nursing homes and other residential settings; and apply droplet precautions to all persons in the room. *During the early stages of a pandemic, infection with influenza should be laboratory-confirmed, if possible. Personal protective equipment Wear a surgical or procedure mask for entry into patient room; wear other PPE as recommended for standard precautions.
Patient transport	Limit patient movement outside of room to medically necessary purposes; have patient wear a procedure or surgical mask when outside the room.
Other	Follow standard precautions and facility procedures for handling linen and laundry and dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient care equipment, disposal of solid waste, and postmortem care.
Aerosol-Generating Procedures	During procedures that may generate small particles of respiratory secretions (e.g., endotracheal intubation, bronchoscopy, nebulizer treatment, suctioning), healthcare personnel should wear gloves, gown, face/eye protection, and a fit-tested N95 respirator or other appropriate particulate respirator.

Box 2. Respiratory Hygiene/Cough Etiquette

To contain respiratory secretions, all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, should be instructed to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

Healthcare facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub.
- Provide soap and disposable towels for handwashing where sinks are available.

Masking and separation of persons with symptoms of respiratory infection
During periods of increased respiratory infection in the community, persons who are coughing should be offered either a procedure mask (i.e., with ear loops) or a surgical mask (i.e., with ties) to contain respiratory secretions. Coughing persons should be encouraged to sit as far away as possible (at least 3 feet) from others in common waiting areas. Some facilities may wish to institute this recommendation year-round.

BACKGROUND

VDH endorses the clinical guidelines published by the U.S. Department of Health and Human Services in the Pandemic Influenza Plan, Supplement 5.

OVERVIEW

The initial response to an influenza pandemic will include medical care, community containment and personal protective measures, and targeted use of antiviral drugs. Before a vaccine containing the pandemic virus strain becomes available, pre-pandemic vaccine from federal stockpiles (if available for the pandemic subtype or partially cross-protective to the circulating virus) may be considered for persons in designated priority groups. After the first reports of pandemic influenza are confirmed and before pandemic vaccine becomes available, the state and local health departments will work to complete the following tasks:

1. If stockpiled vaccine of the pandemic subtype is available, work with healthcare partners and other stakeholders to distribute, deliver, and administer pre-pandemic vaccines to designated groups.
2. Mobilize healthcare partners, and prepare to activate state-based plans for distributing and administering vaccines.
3. Keep the healthcare and public health workforce up-to-date on projected timelines for availability of vaccines against pandemic influenza.
4. Review modifications, if any, to recommendations on vaccinating priority groups.
5. Accelerate training in vaccination and vaccine monitoring for public health staff and for partners responsible for vaccinating priority groups.
6. Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

Once a vaccine against the circulating pandemic virus strain becomes available, its distribution and delivery will be a major focus of pandemic response efforts. After a vaccine becomes available, state and local health departments will work to complete the following tasks:

1. Work with healthcare partners and other stakeholders to distribute, deliver, and administer pandemic vaccines to priority groups.
2. Monitor vaccine supplies, distribution, and use.
3. Monitor and investigate adverse events.
4. Phase-in vaccination of the rest of the population after vaccination of priority groups.
5. Provide updated information to the public via the news media.
6. Work with federal partners to evaluate vaccine-related response activities when the pandemic is over.

I. Activities for the Interpandemic and Pandemic Alert Periods

A. Vaccination Against Seasonal Influenza Virus Strains

During the Interpandemic Period, the VDH Division of Immunization will work with local health departments and healthcare partners to enhance levels of 1) seasonal influenza vaccination in groups at risk for severe influenza and in healthcare workers, and 2) pneumococcal polysaccharide vaccination among those for whom it is recommended.

Higher annual vaccination rates will foster increased familiarity with and public confidence in influenza vaccines, increased manufacturing capacity for influenza vaccines and strengthened distribution channels. Increased use of pneumococcal polysaccharide vaccine may decrease rates of secondary bacterial infections during a pandemic. Because large-scale pneumococcal vaccination might not be feasible once a pandemic occurs, the Interpandemic Period and Pandemic Alert is the ideal time to deliver this preventive measure. Pneumococcal vaccine is indicated for most persons for whom influenza vaccine is recommended. For specific guidelines on the prevention of pneumococcal disease, please see the Recommendations of the Advisory Committee on Immunization Practices (ACIP) (http://www.cdc.gov/mmwr/pdf/rr/rr4608.pdf).

B. Preparedness Planning for Vaccination Against a Pandemic Influenza Virus

A limited amount of avian influenza A (H5N1) vaccine is being stockpiled by the federal government and will be considered for early use in the event of an H5N1 pandemic. A monovalent vaccine directed against the circulating pandemic virus strain of influenza should begin to be available within 4–6 months after identification of the new pandemic virus strain. The number of persons who may be protected by vaccination depends on the manufacturing capacity, the amount of antigen per dose needed for a protective immune response, and the number of doses required. Preliminary results from a recent clinical trial of an H5N1 vaccine in healthy adults suggested that two doses of 90 µg were required.

Initial pandemic vaccine stocks will be used to vaccinate designated priority groups. After vaccination of these priority groups, vaccination of all those who desire it will be phased in depending on available supplies.

In working with healthcare partners to continue planning for the distribution of vaccine, the Division of Immunization and local health departments will use existing VDH plans, including the VDH Emergency Response Plan and the VDH Smallpox Emergency Response Plan, as the basis for developing local emergency mass distribution and vaccination plans. Both plans are currently available on the VDH internal webpage at: http://vdhweb/EPR/PlanningInternal.asp.

Vaccination of Priority Groups

A list of priority groups for receiving vaccination and the rationale for prioritization is provided in Appendix D of the federal plan. As interim recommendations, VDH endorses the priority groups that are outlined in the HHS Pandemic Influenza Plan. The federal guidelines were created by the National Vaccine Advisory Committee (NVAC) and the Advisory Committee on Immunization Practices (ACIP). National guidelines for determining priority groups may help assure consistency among states and facilitate equitable vaccine distribution.

During a pandemic, changes may be made to the priority groups based on the characteristics of the causative virus (e.g., transmissibility, virulence), epidemiologic features of the outbreak (e.g., initial geographic distribution, age-specific attack rates, and complication rates), and on vaccine effectiveness. VDH may also make changes and modifications to the priority group listing as additional information becomes available.

More information is needed in order to develop specific definitions for priority groups; estimate the size of relevant priority groups; and prioritize among priority groups when vaccine supplies are insufficient.

To prepare for vaccination of priority groups, the Office of Epidemiology and the Office of the Deputy Commissioner for Emergency Preparedness and Response will work with local health departments to:

1. Identify a process for reviewing national recommendations for pandemic influenza vaccination and developing state-specific modifications or refinements in priority groups, depending on local circumstances.
2. Develop specific definitions for priority groups (e.g., public safety workers, essential service providers) identifying occupational categories and sub-categories, as needed, within each broad priority.
3. Estimate the size of relevant priority groups.
4. Develop a plan on how persons in priority groups would be identified at vaccination clinics and how vaccine would most efficiently be provided to those groups.
5. Educate professional organizations and other stakeholders about the need for priority groups and the rationale for the groups currently recommended.

Vaccine Procurement and Distribution

At the onset of an influenza pandemic, HHS, in concert with the Congress in collaboration with the States, will work with the pharmaceutical industry to acquire vaccine directed against the pandemic strain. According to existing HHS plans, distribution of pandemic vaccine to health departments and providers will occur via private-sector vaccine distributors or directly via manufacturer. (Only stockpiled pre-pandemic vaccine would be distributed by the federal government, if used.)

Local health departments with direct patient care responsibility will receive available vaccine in proportion to the size of their populations in defined priority groups. For priority groups that have been identified, VDH central office and local health departments will:

1. Determine whether vaccine will be shipped directly from the manufacturer to vaccine providers or to public health clinics for further distribution. At this time, distribution through local health departments is preferred.

2. Identify organizations that will provide vaccination to persons in priority groups (e.g., local health departments, occupational health clinics, private clinics identified by the employer or union of an occupational group). At this time vaccination by local health departments is preferred.
3. Identify contacts in and obtain written commitments from each clinic or facility responsible for vaccinating a priority group.
4. Work with these contacts to develop strategies for rapid distribution and administration of vaccines, taking into account vaccine security issues, cold chain requirements, and transport and storage issues.
5. Estimate the size of the priority groups that will be vaccinated based on extrapolation from national data or on local data, where available.
6. Identify locations for vaccination clinics that will be operated by health departments and enter into memoranda of agreement with organizations that agree to provide vaccinators or other staff.
7. Develop procedures for collecting, removing, and disposing of used syringes, needles, and other vaccination supplies.
8. Develop a plan for training vaccinators and other staff responsible for mass vaccination.
9. Develop strategies for vaccinating hard-to-reach populations.

Local health departments' plans should also specifically address the delivery of pandemic vaccine to medically underserved and migrant populations to improve equity in access within priority groups and, later, the general population.

If vaccinations are provided by private-sector organizations or providers at offices, clinics, or other sites, VDH central office and local health departments will:

1. Develop mechanisms to allocate vaccine based on projected need.
2. Develop mechanisms to collect unused vaccine (if any) from healthcare providers who have met their priority vaccination goals and distribute the vaccine to those who have not.
3. Provide vaccination information to healthcare providers. This may best be accomplished by developing a communications plan for private-sector vaccine use.
4. Monitor that vaccine administration follows existing plans on priority groups.

Second-Dose Vaccination

A vaccine against pandemic influenza will likely require two doses, administered at least a month apart, to provide a level of immunity comparable to that obtained with seasonal influenza vaccines. Recommendations on the number of required doses and the timing of the second dose will be issued once immunogenicity trials have been completed.

If two doses are required to achieve immunity, it will be necessary to ensure that vaccinated persons return for the second dose. Local health departments in collaboration with the Division of Immunization will do the following:

1. Arrange for information about the need for a second dose to be provided at the time of vaccination.
2. Ensure that planning for vaccine procurement and distribution to clinics and other facilities accounts for the need to use portions of future shipments for second doses, thus reducing the number of available first doses.

At this time the CDC-developed Countermeasure and Response Administration application will be used to identify vaccinees in need of a second dose.

Contingency Planning for Investigational New Drug Use

The distribution of unlicensed vaccines under FDA's Investigational New Drug (IND) provisions may be necessary if pandemic spread is rapid and standard vaccine efficacy and safety tests are not completed in time to play a role in the response.

IND provisions require strict inventory control and record-keeping, completion of a signed consent form from each vaccinee, and mandatory reporting of specified types of adverse events. IND provisions also require approval from Institutional Review Boards (IRBs) in hospitals, health departments, and other vaccine-distribution venues. FDA regulations permit the use of a national or "central" IRB. A treatment IND is one IND mechanism that the FDA has available for use and is especially suited for large scale use of investigational products (http://www.access.gpo.gov/nara/cfr/waisidx_99/21cfr_99.html).

As an alternative to IND use of an unapproved antiviral drug, HHS may utilize the drug product under Emergency Use Authorization procedures as described in the FDA draft Guidance "Emergency Use Authorization of Medical Products" (http://www.fda.gov/cber/gdlns/emeruse.pdf). The Division of Immunization will provide guidance to local health departments and vaccination partners as needed, should IND vaccine be used.

Storage Options

The Virginia Department of Health, Division of Immunization, has six storage options in the event pandemic influenza necessitates mass vaccination. These options range from use of a private vaccine distribution contractor located in Virginia to multiple refrigerated warehouse locations and are outlined below.

The Division currently contracts with a distributor for Vaccines For Children (VFC) vaccine distribution. An amendment to the current contract has been completed outlining storage and shipping guidelines in the event of a pandemic.

The private distributor will maintain minimum reserve capacity to store and ship up to 2 million doses. They have the ability to ship the vaccine to private providers, public providers, local health departments, and community health centers.

The Virginia Department of General Services (DGS) operates a warehouse/distribution center near Richmond. This facility will serve as the secondary location for influenza vaccine storage and distribution. The DGS facility consists of approximately 128,000 square feet of combined office and warehouse space. The warehouse has 28 bays with loading docks and a secure access refrigerated storage area. About 25,000 square feet of open space is available for unloading and repackaging. Multiple security features are in place and patch panels for telephone and fiber optic hubs are available. Division of Immunization staff trained in vaccine storage and handling, would be primarily responsible for the breakdown and repackaging of vaccine. Vaccine will be shipped by a contracted vendor and can be sent via overnight delivery if necessary. For more information concerning this facility, please refer to the VDH Central Region Strategic National Stockpile Plan.

The Bureau of Pharmacy Services provides biologics and vaccines to all local health departments. The facility has limited storage capabilities (approximately 300,000 doses of influenza vaccine) but does have staff with expertise and ability to handle vaccine distribution to the local health departments.

Tractor-trailers capable of refrigerated storage can be rented from a company in Chesterfield, Virginia. Tractor-trailers are dropped off at designated locations with a full tank of diesel gasoline. The truck runs continuously to maintain the appropriate storage temperature. Depending on the weather and the desired storage temperatures, the truck can use up to ½ gallon of fuel per hour. The trucks hold 35-100 gallons of fuel, so in the worst-case scenario, for a truck with a small tank, refueling would be necessary every 3 days. The health department would be responsible for any refueling that may be necessary. Rental fees are as follows: $85/day, $325/week, and $950/month. An extra fee of $75 for delivery and $75 for pick up is charged for sites in the Richmond area. Delivery fees are higher for locations further away. Trailer sizes range from 45-48 feet long, and are 8 feet high and 8 feet wide. Trailers are usually available with minimum notice (often same day notice), but that is not guaranteed.

Refrigerated warehouse space can be rented from a company based in Richmond. Storage is rented by palate size; a palate measures 40 by 48 inches and can be stacked up to five feet high with vaccine. The cost for palate storage is $50 to $60 dollars per month. If the storage area needs to be accessed on a frequent basis (rather than just drop off and pick up), the cost may be slightly more. Many clients share the warehouse space, so the vaccine would not have its own separate "room" and may be placed next to a palate of food. Separate rooms are available, but four to five tractor-trailer loads full of merchandise would have to be filled for

it to be designated as health department space only. Minimum advanced notice is required; 24 hours should be sufficient.

Drop shipments from the vaccine manufacturer to the local health departments, if available, will serve as a final choice for vaccine storage/distribution. The storage capability of each health department varies; however, each department has some storage available now.

Guidelines for Storage and Shipment

To ensure vaccine viability, influenza vaccine should be shipped and stored according to the following guidelines:

- *Shipping Requirements:* Influenza vaccine should be delivered in the shortest possible time. It should not be exposed to excessive temperatures. Vaccine is generally shipped in insulated containers with coolant packs.
- *Condition on Arrival:* Vaccine should not have been frozen. Refrigerate immediately upon arrival.
- *Storage Requirements:* Influenza vaccine should be refrigerated at 2° to 8°C (35° to 46°F). **Do not freeze.**
- *Shelf Life:* Vaccine is formulated for use within the current influenza season.
- *Instructions for Reconstitution or Use:* Shake vial vigorously before withdrawing each dose.
- *Shelf Life after Opening:* Vaccine is viable until outdated if not contaminated.
- *Special Instructions:* Rotate stock so that the shortest dated vaccine is used first. Influenza vaccine must not be frozen.

Primary Vaccine Distribution Plan

Assuming that 60% of the population of Virginia needs to be vaccinated with one dose of vaccine, 4,283,484 doses of influenza vaccine will be needed to protect the Commonwealth (See Table 6). If the state receives all of the vaccine for the Virginia population, the vaccine distributor currently contracting with the Division of Immunization will serve as the primary shipper, sending 75% of the vaccine, or 3,212,613 doses to health districts or other partners across the state. The distributor has reserve capacity for 2 million doses, and could ship that amount within two weeks. It will take them three weeks to ship the entire amount of vaccine at a cost of $0.14 per dose.

The Division of Immunization will be responsible for 25% of the shipment or 1,070,871 doses. The DGS warehouse and distribution center would be able to store this amount at one time. An experienced person can pick 125 doses of vaccine per minute and pack 100 doses per minute. For our purposes, we will assume that novice vaccine shippers will require three minutes to pick and pack 100 doses of vaccine, requiring a total of 535 hours to ship the vaccine.

Assuming a 40-hour workweek, thirteen people would be needed to ship the vaccine in one week.

Secondary Vaccine Distribution Plan

In the event that the primary distribution plan cannot be activated, refrigerated tractor-trailer option could be used to ship vaccine to pick-up locations across the state. During pre-pandemic planning, the Division of Immunization will work with the company to establish pick-up locations. The local Immunization Action Program Coordinators will be responsible for arranging pick-up of vaccine for their district.

Vaccine Monitoring and Data Collection

To ensure optimal use of a new pandemic influenza vaccine, the Office of Epidemiology and local health departments should be prepared to collect data on vaccine effectiveness, vaccine supply and distribution, vaccine coverage, and vaccine safety.

Vaccine Effectiveness

Vaccine effectiveness will be assessed by comparing rates of influenza-related illness, hospitalization, and/or death among vaccinated and unvaccinated persons. These studies will be implemented by CDC in collaboration with healthcare and university partners and with state and local health departments.

Vaccine Supply and Distribution

Mechanisms for tracking vaccine supply and distribution will depend on how vaccine is purchased and distributed. Tracking will be implemented by the Division of Immunization and local health authorities working in association with CDC and vaccine producers. Data also will be obtained from vaccine producers and commercial distributors.

1. Vaccine tracking and coverage information may be used by federal, state, and local decision-makers to estimate adverse event rates based on the number of doses administered and to determine if vaccine is being administered according to established priority groups for pandemic vaccine (especially in the early phases of vaccination). Data will be collected from individual providers, collated at the local and state levels, and reported to federal authorities on a scheduled routine basis.

2. VDH will use the CDC-developed Countermeasure and Response Administration application to track coverage with pandemic influenza. At a minimum, tracking will include:

- Number of doses administered, by date and age, priority group, and state or county (or zip code)
- Number of doses that represent second doses, as applicable

Vaccine Coverage

CDC will work with states to develop a system for monitoring vaccination rates at regular intervals, using a pre-existing population-based survey tool (e.g., Behavioral Risk Factor Surveillance System) that provides national and state-level estimates and complements the vaccine tracking systems described above.

Vaccine Safety

State and local health departments will report and investigate adverse events following immunization (AEFI) with a pandemic influenza vaccine. Implementation steps may include:

1. Designating a state-level coordinator within the Division of Immunization to plan for and implement adverse-events reporting and outreach to and education of providers (e.g., adapting and distributing federally developed Dear Doctor letters and materials for vaccine recipients) and who will serve as the state's contact with federal government staff overseeing the Vaccine Adverse Event and Reporting System (VAERS) (www.vaers.hhs.gov).
2. Reviewing existing policies for AEFI reporting and follow-up to ensure timeliness of reporting.
3. Developing a plan to ensure timely reporting of and communication about large numbers of AEFI reports.
4. Reviewing procedures for and familiarizing program staff with the strengths, limitations, and objectives of VAERS. VAERS typically involves direct reporting by individual healthcare providers, with periodic feedback to the states. During a pandemic, VDH will want to receive direct reports of AEFI to conduct investigations of adverse events and minimize duplicate reporting of adverse events to VAERS. State-level AEFI reporting can build on the infrastructure and experience developed during the 2003 smallpox vaccination program.

Adverse events related to use of IND vaccines may be reported through other mechanisms in addition to or in place of VAERS, in accordance with specific regulatory or policy requirements. Adverse events will also be monitored through the Vaccine Safety Datalink (www.cdc.gov/nip/vacsafe/default.htm#VSD), a network of seven geographically diverse health maintenance organizations through which active surveillance vaccine safety studies are conducted. Another potential resource for vaccine safety research is CDC's Clinical Immunization Safety Assessment (CISA) network (www.vaccinesafety.org/CISA/index.htm).

Coordination with Bordering Jurisdictions

The Division of Immunization should review and coordinate vaccine distribution plans with health authorities in bordering jurisdictions, including neighboring states, tribal governments and other unique populations.

Legal Preparedness

VDH should ensure that appropriate legal authorities are in place to facilitate implementation of plans for distributing pandemic influenza vaccines. Appropriate legal preparedness steps include:

1. Ensure that plans for distribution of vaccines are reviewed by appropriate legal authorities.
2. Determine whether state and local laws allow non-licensed volunteers or healthcare workers from other jurisdictions to administer influenza vaccines.
3. Work with professional organizations and unions to consider options for emergency performance of tasks outside of standard job descriptions.
4. Determine whether state and local laws allow mandatory vaccination to the protect public health, if needed.

II. Recommendations for the Pandemic Period

Before a Vaccine is Available

Before a vaccine becomes available VDH central office and local health departments should do the following:

1. Meet with partners and stakeholders to review the major elements of the vaccine distribution plan.
2. Modify the plan to account for possible updated interim recommendations on priority groups, projected vaccine supplies and timelines for availability, and staffing estimates for mass vaccination.
3. Notify the medical community about the status of the plan and the expected availability of vaccines.
4. If stockpiled vaccine of the pandemic subtype is available, work with healthcare partners and other stakeholders to distribute, deliver, and administer vaccines to designated groups.
5. Update and disseminate public information on the production, distribution, and use of pandemic influenza vaccine before it becomes available.
6. Conduct training for public health staff and partners involved in distributing and administering vaccines.

When a Vaccine Becomes Available

1. Once a vaccine is ready for distribution, VDH central office and local health departments should work with healthcare and community partners to activate plans to:
   - Vaccinate persons in priority groups, in accordance with existing recommendations.
   - Provide a second dose, if required for immunity.
   - Monitor vaccine supply, distribution, and use.
   - Monitor and investigate adverse events.
   - Continue communication with partners and the public.
2. After priority groups have been vaccinated and additional vaccine stocks become available, public health authorities should phase-in vaccination of the rest of the population, based on age or other criteria that will ensure fair, equitable, and orderly distribution. HHS will issue national recommendations to aid in this process.

Mass Vaccination and Treatment

In planning for pandemic influenza, local health departments should address mass vaccination and treatment issues such as:

- Defining procedures to assure the biological safety and physical security of the vaccine within the health department.
- Identifying community partners who will work with the health department to administer vaccine to targeted populations. During the pre-pandemic stage, when possible, establish written agreements with partners or contractors regarding administration of vaccine during a pandemic.
- Identifying backup locations and their capacity for immunization clinics (e.g., schools, community centers, churches, county/state buildings). During the pre-pandemic stage, when possible, establish written agreements with backup locations for use of the facilities.
- Identifying contract staff (including nurses, administrative staff, etc) available for immunization clinics.
- Identifying extra refrigerated storage space available for influenza vaccine.

Elements of local mass vaccination and treatment plans should include: staffing and training, clinic layout and flow, documentation and paperwork, security, clinic supplies and equipment, transportation, vaccine storage and handling, vaccine security and tracking, disposal of needles and medical supplies, communications systems, and post clinic activities. Additional guidance can be found under *Vaccine Clinic Guidelines* in the Smallpox section of the VDH Emergency Response Plan. Technical support and consultation on mass vaccination and treatment are available from the state office.

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RATIONALE

Drugs with activity against influenza viruses ("antivirals") include the adamantanes *amantadine* and *rimantadine* and the neuraminidase inhibitors *oseltamivir* and *zanamivir* (see **Table 1**). Appropriate use of these agents during an influenza pandemic may reduce morbidity and mortality and diminish the overwhelming demands that will be placed on the healthcare system. Antivirals might also be used during the Pandemic Alert Period, or in the early Pandemic Period before vaccine becomes widely available, in limited attempts to contain small disease clusters and potentially slow the spread of novel influenza viruses. A huge and uncoordinated demand for antivirals early in a pandemic could rapidly deplete national and local supplies. In addition, widespread inappropriate use of antivirals could lead to the emergence of drug resistance. Preparedness planning for optimal use of antiviral stocks is therefore essential.

OVERVIEW

Supplement 7 outlines Virginia Department of Health (VDH) plans for the distribution and use of antiviral drugs for treatment and prophylaxis during an influenza pandemic. The Interpandemic and Pandemic Alert Period recommendations focus on preparedness planning for the rapid distribution and use of antiviral drugs (e.g., procurement, distribution to priority groups, legal preparedness, training, and data collection on use, effectiveness, safety, and the development of drug resistance). These recommendations also cover the use of antiviral drugs in the management and containment of cases and clusters of infection with novel strains of influenza, including avian influenza A (H5N1) and human strains with pandemic potential.

The Pandemic Period recommendations focus on the local use of antiviral drugs in three situations: 1) when pandemic influenza is sporadically reported in the United States (without evidence of spread in the United States), 2) when there is limited transmission of pandemic influenza in the United States, and 3) when there is widespread transmission in the United States. National recommendations for optimal use of limited stocks of antivirals will be updated throughout the course of an influenza pandemic to reflect new epidemiologic and laboratory data. Interim recommendations will also be updated as an effective influenza vaccine becomes available.

I. Recommendations for the Interpandemic and Pandemic Alert Periods

A. Use of antivirals in management of cases of novel influenza

Influenza infections may be due to:

1) Interpandemic (i.e., 'normal') seasonal strains of influenza;
2) Novel strains of influenza that do not appear to be easily transmissible but could be precursors to human pandemic strains (e.g., avian influenza A [H5N1] viruses);
3) Novel strains of influenza that demonstrate person-to-person transmission and therefore have pandemic potential (e.g., a new human pandemic strain).

The term "novel strains of influenza" is used to refer to avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or re-emergent human influenza viruses that cause cases or clusters of human disease.

1. Use of antivirals for treatment

A patient with a suspected case of avian influenza A (H5N1) or another novel strain of influenza should be isolated as described in **Supplement 4** and treated in accordance with the clinical algorithm provided in Supplement 5 HHS Pandemic Influenza Plan. As of fall 2005, the recommendation for treatment includes the use of oseltamivir or zanamivir, administered as early as possible and ideally within 48 hours after onset of symptoms. These neuraminidase inhibitors are preferred because the majority of avian influenza A (H5N1) viruses currently affecting humans are resistant to amantadine and rimantadine, and resistance to these drugs typically develops rapidly when they are used for treatment of influenza. Current U.S. recommended doses for antiviral treatment and prophylaxis are provided in **Tables 2 and 3**.

2. Use of antivirals for prophylaxis of contacts

Virginia's state and local health departments, in consultation with CDC, will consider whether it is necessary and feasible to trace a patient's close contacts and provide them with post-exposure antiviral prophylaxis. Close contacts may include family, schoolmates, workmates, healthcare providers, and fellow passengers if the patient has been traveling. If deemed necessary by public health authorities, these persons may receive post-exposure prophylaxis with oseltamivir, as zanamivir is not currently indicated for prophylaxis. If the exposure to the novel influenza virus strain occurs during the regular influenza season, the patient's healthcare contacts (who may also care for persons with seasonal influenza) should be vaccinated against seasonal influenza to reduce the possible risk of co-infection and reassortment of seasonal and novel strains.

3. Use of antivirals for containment of disease clusters

In special circumstances, state and local health departments could consider "targeted antiviral prophylaxis" as a community-based measure for containing small clusters of infection with novel strains of influenza (see **Supplement 8**). This measure could be implemented in small, well-defined settings such as the initial introduction of a virus with pandemic potential into a small community or a military base. However, once a pandemic is underway, such a strategy would not represent an efficient use of limited antiviral supplies.

Because targeted antiviral prophylaxis would require rapid delivery and administration of substantial stocks of antiviral drugs, its feasibility should be evaluated in light of antiviral drug supply. Targeted antiviral prophylaxis would involve investigation of disease clusters, administration of antiviral treatment to

persons with confirmed or suspected cases of pandemic influenza, and provision of drug prophylaxis to all persons in the affected community. Targeted antiviral prophylaxis would also require intensive case-finding in the affected area as well as effective communication with the affected community.

B. Preparedness planning for use of antivirals during a pandemic

1. National recommendations on use of antivirals during a pandemic

HHS is working with private-sector partners to increase production of antivirals and to procure additional stocks of antivirals for the Strategic National Stockpile (SNS). More detailed information on the SNS antiviral inventory is listed in Appendix 7B. Despite these efforts, demand for antivirals during an influenza pandemic is likely to far outstrip supplies available in stockpiles or through usual channels of distribution. A list of priority groups for receiving antiviral treatment or prophylaxis and the rationale for prioritization are provided in Tab 1 of this supplement. During an actual pandemic, these recommendations could be modified, based on the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

2. State-level planning

VDH, in collaboration with healthcare partners throughout the state, has developed a Pandemic Influenza Advisory Committee to help guide the planning process. This committee, comprised of broad representation from the healthcare community, has begun to establish state-based strategies for antiviral drug use during pandemics. These strategies will include the following elements:

- Procurement of antiviral drugs from national, state and local stockpiles;
- Establishment of priority groups for the receipt of antiviral drugs;
- Distribution and dispensing of antivirals to the established priority groups;
- Data collection on drug use, drug-related adverse events, and drug resistance;
- Coordination with bordering jurisdictions;
- Legal preparedness;
- Training;
- Dissemination of public health information; and
- Contingency planning for Investigational New Drug (IND) use.

a) Procurement

Planning steps taken or anticipated for state-level procurement of antivirals within Virginia include:

- Estimates of the quantities of antiviral drugs that will be needed for treatment and prophylaxis of priority groups are given in **Table 4**. These numbers assume that the population of Virginia is 2.5% of the total population of the U.S.

- VDH will identify sources of antiviral drugs such as state stockpiles, private sector, hospital stockpiles, Metropolitan Medical Response System (MMRS), regional and local stockpiles, and federal supplies from the Strategic National Stockpile (SNS).
- VDH will develop stockpiles of antivirals for VDH staff that fall into the target group categories.
- VDH will collaborate with the Virginia Hospital and Healthcare Association (VHHA) in determining the feasibility of healthcare facilities and organizations creating their own institutional stockpiles of antivirals;
- VDH will make arrangements with Cardinal Health and Roche Pharmaceutical for emergency procurement of antiviral drugs, if available.

The establishment of state, local, or institutional stockpiles should take into account the expiration dates of the purchased material. All drugs are marked with an expiration date, based on review of stability data, at the time of manufacture. However, when purchased, the drugs might have been stored for some time in warehouses so that the time to expiration might be shorter than the time from initial manufacture to expiration date. Moreover, one shipment might consist of several batches with different expiration dates. Antivirals maintained in the national stockpile may be tested for potency and dating extended under the FDA shelf life extension program. Currently, state stockpiles are not included in this program.

b) Establishing priority groups

VDH endorses the NVAC interim recommendations on priority groups for antiviral treatment and prophylaxis as summarized in **Table 4** (for more complete details of these recommendations, see **Tab 1** of this supplement). As stated above, these recommendations could be modified during a pandemic, based on the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, and age-specific morbidity and mortality rates) and the effectiveness of implemented strategies. State and local health authorities will determine how certain priority groups (e.g., public safety workers, essential service providers, key decision makers) will be defined within their respective jurisdictions.

c) Distributing and dispensing antivirals to priority groups

The decision to deploy federal assets from the SNS during an influenza pandemic will be made by HHS officials, as it would be during any public health emergency. VDH's designated representative, the State SNS Coordinator, is responsible for overall coordination of SNS program elements in the Commonwealth. The request, receipt and dissemination of

antivirals will be coordinated with CDC's SNS representatives, in collaboration with the Virginia Department of Emergency Management (VDEM), as described in the Virginia SNS Plan. This document contains detailed plans for the transport, receipt, storage, security, tracking, and delivery of these and other federal assets through the SNS program.

Federal supplies of antivirals will be delivered to a site or sites designated by VDH (e.g., state health department or a designated SNS Receipt, Store and Stage site) in collaboration with CDC and VDEM.. The State SNS coordinator will provide logistical guidance on the receipt and distribution of federal assets to priority groups.

According to the current HHS strategy and priority group recommendations (see **Tab 1** of this supplement), it is anticipated that most of the antiviral supplies will be distributed to healthcare facilities or providers for the treatment of influenza patients. Prompt distribution to these point-of-care locations is crucial because clinical efficacy for these agents is highly dependent on initiating treatment within 48 hours of the onset of symptoms. In the event that a decision is made to provide prophylaxis to certain groups, a portion of the antiviral supplies may be distributed to points-of-dispensing locations, as determined by VDH. Officials involved with dispensing and administering of antivirals should consider the use of standing orders for certain groups, e.g., hospitalized patients and healthcare workers.

Table 4 summarizes the size and nature of priority groups to receive antiviral treatment and prophylaxis. A communication plan explaining the rationale for establishing these target groups should be an important element of the state-wide plan (this is addressed in **Supplement 10**).

d) Monitoring and data collection

To ensure optimal use of antiviral drugs during an influenza pandemic, VDH and its healthcare partners within the Commonwealth will work with federal officials to collect data on (1) distribution of federal, state, and local supplies of antiviral drugs; (2) effectiveness of treatment and prophylaxis; (3) occurrence of adverse events following administration of antiviral drugs; and (4) development of drug resistance.

(1) Distribution. During an influenza pandemic, it will be essential that officials ensure the proper allocation and distribution of antiviral drugs from stockpiles to point-of-care and/or point-of-dispensing sites. VDH and local health departments will develop strategies to monitor drug distribution and use in order to assess whether drugs are being effectively targeted to priority groups and whether distribution is equitable within those groups.

(2) Antiviral effectiveness. Studies to evaluate the effectiveness of antiviral drug use during a pandemic will be conducted by federal agencies in collaboration with state and local health departments and other healthcare and academic partners. The effectiveness of antiviral therapy and prophylaxis will be assessed by comparing rates of severe influenza-related illness and death among treated and untreated persons and among persons who did and did not receive prophylaxis. Analyses of antiviral drug effectiveness should take into account characteristics that will vary among individuals and those that may vary over time, such as diagnostic practices, length of time to initiate therapy, and changes in the pandemic virus.

(3) Adverse events. Serious adverse events associated with the use of antiviral drugs for prophylaxis and treatment of influenza should be reported to FDA, using the MedWatch monitoring program. During an influenza pandemic, VDH and local health departments will assist in this effort by providing protocols and information to healthcare providers and encouraging hospitals to download MedWatch forms (available at http://www.fda.gov/medwatch/) for distribution to patients. Adverse events reported to MedWatch are collated and analyzed by FDA's Adverse Events Reporting System (AERS). Use of antivirals will be much greater during a pandemic than during a regular influenza season. To help improve the detection of serious adverse effects, additional efforts to encourage recognition and reporting of adverse events will be needed and may include:

- Active monitoring for adverse events observed at emergency rooms, through the National Electronic Injury Surveillance System Cooperative Adverse Drug Event project (NEISS-CADE);
- Local campaigns to educate healthcare workers about the recognition and reporting of adverse events;
- Distribution of MedWatch forms and descriptions of known adverse events to each end-user who receives antiviral drugs.

(4) Antiviral drug resistance.[1] CDC will work with state and local partners to monitor the development of resistance to antivirals. CDC will test the drug susceptibilities of viruses isolated from different age groups and geographic groups over the course of the pandemic. VDH and local health departments will encourage clinicians to obtain specimens from patients who develop severe disease while receiving treatment or prophylaxis and to ship those specimens to DCLS for testing. DCLS will provide these specimens on a periodic basis to CDC, after testing them by RT-PCR, viral culture, or rapid diagnostic testing to confirm the presence of strains of influenza A (see **Supplement 2**).

[1] Information about resistance to M2 inhibitors and neuraminidase inhibitors can be found in the July 2005 recommendations of the ACIP http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf .

e) Coordination with bordering jurisdictions

VDH and local health departments will review and coordinate antiviral drug distribution plans with health authorities in bordering jurisdictions, to include bordering Cities, Counties, States, Tribal governments and other unique populations. During an influenza pandemic, Virginia will share with bordering jurisdictions details regarding distribution of antivirals in order to optimize targeting of antiviral use and clarify, in advance, any apparent inconsistencies in proposed policies.

f) Legal preparedness

VDH will continue to review applicable state laws to ensure that appropriate legal authorities are in place to facilitate implementation of plans for distributing antivirals. VDH will ensure that its Pandemic Influenza plans and protocols are consistent with state prescription laws. In addition, VDH will review legal issues such as worker's compensation laws to determine how they apply to healthcare workers and other essential workers who take antivirals for prophylaxis.

g) Training

VDH and local health departments will enhance training and education efforts related to use of antiviral drugs during a pandemic. Target audiences will include healthcare providers involved with the distribution or administering of antivirals to individual patients or target groups. Types of training might include disseminating educational documents, sponsoring of seminars or courses, and conducting exercises at the state, regional and local level. This training is essential to ensure that distribution systems are in place and that roles and responsibilities are well understood.

h) Public health information

VDH and local health departments will develop and implement plans to educate the public, the medical community, and other stakeholders about:

- Role of antivirals in responding to pandemic influenza
- Need to prioritize use of limited antiviral supplies for treatment and prophylaxis
- Rationale for the priority groups identified in the interim recommendations
- Importance of appropriate use (i.e., using the drugs as prescribed and for the full number of days recommended) to minimize the development of drug resistance.

Detailed plans related to Public Health information are discussed in **Supplement 10**.

i) Contingency planning for Investigational New Drug (IND) use

VDH and local health departments will be prepared to distribute unlicensed antiviral drugs (if needed) under FDA's IND provisions. IND provisions require strict inventory control and recordkeeping, completion of a signed consent form from each person who receives the medication, and mandatory reporting of specified types of adverse events. IND provisions also require approval of the protocol and consent form by an Institutional Review Board (IRB). The FDA regulations permit the use of a national or "central" IRB. A treatment IND is one IND mechanism that FDA has available for use and is especially suited for large scale use of investigational products.[2] As an alternative to IND use of an unapproved antiviral drug, HHS may utilize the drug product under Emergency Use Authorization procedures as described in the FDA draft Guidance "Emergency Use Authorization of Medical Products."[3]

II. Activities for the Pandemic Period

Interim recommendations for use of antivirals may be updated throughout the course of an influenza pandemic to reflect current epidemiologic and laboratory data. Interim recommendations may also be updated as an effective influenza vaccine becomes available.

A. When pandemic influenza is reported abroad, or sporadic pandemic influenza cases are reported in the United States, without evidence of spread

If an influenza pandemic has begun in other countries, state and local health departments should:

- Use antiviral drugs in the management of persons infected with novel strains of influenza and their contacts, as described in S7-III.A or its updates.
- Work with healthcare partners to consider providing antiviral prophylaxis to persons at highest risk for pandemic influenza. Examples of such persons include:
    - Public health workers who investigate suspected cases of pandemic influenza.
- Meet with local partners and stakeholders to review the state-based antiviral drug distribution plan (see S7-III.B). As part of this effort, state and local partners could:
    - Modify the distribution plan to take into account possible updated recommendations on target groups and updated information on projected supplies of antiviral drugs.

[2] <http://www.access.gpo.gov/nara/cfr/waisidx_99/21cfr_99.html>

[3] <http://www.fda.gov/cber/gdlns/emeruse.pdf>

- Notify the medical community about the status of the plan and the availability of antiviral drugs.
- Disseminate public health guidelines that encourage drug-use practices that help minimize the development of drug resistance.
- Provide the public with information on interim recommendations and their rationale for the use of antiviral drugs during an influenza pandemic.

- Work with federal partners to monitor the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.

B. When there is limited transmission of pandemic influenza in the United States

When there is limited transmission of pandemic influenza in the United States, state and local health departments should:

- Activate state-based plans for targeting antiviral drugs to priority groups for prophylaxis and treatment (see Appendix 7C, Section B).
- Request antiviral drugs, as needed, from previously identified sources (see Appendix 7C, Section B), including the SNS.
- Continue to work with healthcare partners to ensure appropriate use of antivirals in the medical management of early cases and contacts (see Appendix 7D).
- Assist hospitals in implementing procedures for early detection and treatment of influenza in healthcare workers (see **Supplement 3**).
- Work with federal partners to begin monitoring the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.

C. When there is widespread transmission of pandemic influenza in the United States

When transmission of pandemic influenza has become widespread, the paramount goals of antiviral use will be to treat those at highest risk of severe illness and death and to preserve the delivery of healthcare and other essential critical services through early treatment and limited prophylaxis.

After a vaccine becomes available, antiviral drugs may be used to protect persons who have an inadequate vaccine response (e.g., the elderly and those with underlying immunosuppressive disease) as well as persons with contraindications to vaccination, such as anaphylactic hypersensitivity to eggs or other vaccine components.

Until the pandemic has waned, state and local health departments should continue to work with healthcare and federal partners to monitor the safety and effectiveness of antivirals and to encourage appropriate drug use practices that help minimize the development of drug resistance.

TABLE 1. Characteristics of Anti-Influenza Antiviral Drugs

Drug	Inhibits	Acts on	Administration	Side Effects
Amantadine	M2 ion channel	Influenza A	Oral	CNS, GI
Rimantadine	M2 ion channel	Influenza A	Oral	CNS, GI (less often than Amantadine
Oseltamivir	Neuraminidase	Influenza A and B	Oral	GI
Zanamivir	Neuraminidase	Influenza A and B	Inhaler	Bronchospasm

These agents differ in mechanisms of action, pharmokinetics, FDA-approved indications, dosages, cost, and potential for emergence of drug resistance (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).

The neuraminidase inhibitors and rimantadine are superior to amantadine with regard to the frequency of serious side effects.

The use of M2 inhibitors, particularly for treatment, is likely to lead to the emergence and spread of drug-resistant influenza viruses.

TABLE 2. Recommended Daily Dosage of Antivirals for the Treatment and Prophylaxis of Influenza Infection in Adults and Children

[From *Prevention and Control of Influenza Recommendations of the Advisory Committee on Immunization Practices (ACIP)*, July 2005]

Antiviral Agent	Age Group (years)				
	1–6	7–9	10–12	13–64	≥65
Amantadine[a]					
Treatment, influenza A	5mg/kg/day, up to 150mg in two divided doses[b]	5mg/kg/day, up to 150mg in two divided doses[b]	100mg twice daily[c]	100mg twice daily[c]	≤100mg/day
Prophylaxis, influenza A	5mg/kg/day, up to 150mg in two divided doses[b]	5mg/kg/day, up to 150mg in two divided doses[b]	100mg twice daily[c]	100mg twice daily[c]	≤100mg/day
Rimantadine[d]					
Treatment,[e] influenza A	NA[f]	NA	NA	100mg twice daily[c,g]	100mg/day
Prophylaxis, influenza A	5mg/kg/day, up to 150mg in two divided doses[b]	5mg/kg/day, up to 150mg in two divided doses[b]	100mg twice daily[c]	100mg twice daily[c]	100mg/day[h]
Zanamivir[i,j]					
Treatment, influenza A and B	NA	10mg twice daily	10mg twice daily	10mg twice daily	10mg twice daily
Oseltamivir					
Treatment,[k] influenza A and B	dose varies by child's weight[l]	dose varies by child's weight[l]	dose varies by child's weight[l]	75mg twice daily	75mg twice daily
Prophylaxis, influenza A and B	dose varies by child's weight[m]	dose varies by child's weight[m]	dose varies by child's weight[m]	75 mg/day	75 mg/day

[a] The drug package insert should be consulted for dosage recommendations for administering amantadine to persons with creatinine clearance ≤50 ml/min/1.73m^2 .

[b] 5 mg/kg body weight of amantadine or rimantadine syrup = 1 tsp/2.2 lbs.

[c] Children aged ≥10 years who weigh <40 kg should be administered amantadine or rimantadine at a dosage of 5 mg/kg/day.

[d] A reduction in dosage to 100 mg/day of rimantadine is recommended for persons who have severe hepatic dysfunction or those with creatinine clearance ≤10 mL/min. Other persons with less severe hepatic or renal dysfunction taking 100 mg/day of rimantadine should be observed closely, and the dosage should be reduced or the drug discontinued, if necessary.

[e] Approved by FDA only for treatment among adults.

[f] Not applicable.

[g] Rimantadine is approved by FDA for treatment among adults. However, certain experts in the management of influenza consider it appropriate for treatment among children. (See American Academy of Pediatrics, 2003 Red Book.)

[h] Older nursing-home residents should be administered only 100 mg/day of rimantadine. A reduction in dosage to 100 mg/day should be considered for all persons aged ≥65 years if they experience possible side effects when taking 200 mg/day.

[i] Zanamivir is administered via inhalation using a plastic device included in the medication package. Patients will benefit from instruction and demonstration of the correct use of the device.

[j] Zanamivir is not approved for prophylaxis.

[k] A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance <30 ml/min.

[l] See Table 3 for recommended dosage of oseltamivir for the treatment of influenza A and B in children 1 to 12 years of age.

[m] See Table 3 for recommended dosage of oseltamivir for the post-exposure prophylaxis of influenza A and B in children 1 to 12 years of age. This indication for the use of Tamiflu was approved by the FDA on December 21, 2005

TABLE 3. Recommended Dosage of Tamiflu® (Oseltamivir Phosphate) for the Treatment and Prophylaxis of Influenza in Pediatric Patients[a]

Body Weight (kg)	Body Weight (lbs)	Recommended Dose for Treatment (5 days)	Recommended Dose for PEP[b] (10 days)	Number of Bottles Required for Single Course
≤ 15 kg	≤ 33 lbs	30 mg twice daily	30 mg once daily	1
>15 to 23 kg	> 33 to 51 lbs	45 mg twice daily	45 mg once daily	2
>23 to 40 kg	> 51 to 88 lbs	60 mg twice daily	60 mg once daily	2
>40 kg	> 88 lbs	75 mg twice daily	75 mg once daily	3

[a] [Insert reference here once officially published]
[b] PEP = Post-Exposure Prophylaxis

Table 4. Antiviral Drug Priority Group Recommendations*

No.	Group	Virginia Est. Pop.‡	Strategy¶	# Courses	Rationale
1	Patients admitted to hospital**	250,000	T 80% treated	200,000	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die.
2	Health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers.	230,000	T 35% ill 75% treated	60,000	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.
3	Highest risk outpatients — immunocompromised persons and pregnant women.	62,500	T 35% ill 75% treated	16,400	Groups at greatest risk of hospitalization and death; immunocompromised cannot be protected by vaccination.
4	Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers.	82,500	T 35% ill 75% treated	21,700	Groups are critical for an effective public health response to a pandemic.
5	Increased risk outpatients-young children 12-23 months old, persons ≥65 yrs old, and persons with underlying medical conditions.	2,137,500	T 35% ill 75% treated	561,000	Groups are at high risk for hospitalization and death.
6	Outbreak response in nursing homes and other residential settings.	NA	PEP	50,000	Treatment of patients and prophylaxis of contacts is effective in stopping outbreaks; vaccination priorities do not include nursing home residents.
7	HCWs in emergency departments, intensive care units, dialysis centers, and EMS providers.	30,000	P 4 courses	120,000	These groups are most critical to an effective healthcare response and have limited surge capacity. Prophylaxis will best prevent absenteeism.
8	Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and HCW without direct patient. contact	255,000	T 35% ill 75% treated	67,000	Infrastructure groups that have impact on maintaining health, implementing a pandemic response, and maintaining societal functions.
9	Other outpatients.	4,500,000	T 35% ill 75% treated	1,200,000	Includes others who develop influenza and do not fall within the above groups.
10	Highest risk outpatients.	62,500	P 4 courses	250,000	Prevents illness in the highest risk groups for hospitalization and death.
11	Other HCWs with direct patient. contact	200,000	P 4 courses	800,000	Prevention would best reduce absenteeism and preserve optimal function.
	Total	7,810,000		3,346,000	

*The NVAC committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DoD) needs should be highly prioritized. A separate DoD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

‡ Virginia population assumed to be 2.5% of U.S. (2004) population; factor of 2.5% applied to National Pandemic Flu Plan population figures (method overestimates Virginia's population by about 300,000). Source: U.S. Census Bureau: State and County QuickFacts.

¶ Strategy: Treatment (T) requires a total of 10 capsules, which is defined here as 1 course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) is assumed to require 40 capsules (4 courses) though more may be needed if community outbreaks last for a longer period.

** There are no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.

Appendix 7A. Checklist for Pandemic Influenza Antiviral Planning

A. INTERPANDEMIC PERIOD

- ❒ VDH will review the most current CDC guidance defining priority populations to receive antivirals for therapy and prophylaxis during a pandemic before antivirals and/or vaccine are widely available to all citizens.
- ❒ VDH will determine and maintain estimates of the number of persons within each priority population, revising the estimates on an annual basis.
- ❒ VDH will coordinate among area hospitals to ensure that plans are in place to provide antiviral therapy.
- ❒ VDH will collaborate with other agencies to coordinate plans for the provision of antiviral therapy.

B. PANDEMIC ALERT PERIOD

- ❒ VDH will review and modify its plan for the provision of antivirals as needed to account for updates received regarding the novel virus. Such updates may include recommended target groups and projected antiviral supply
- ❒ VDH will notify the medical community of the status of antiviral availability and plans to disseminate it to the established priority groups
- ❒ VDH will disseminate antiviral use guidelines to the medical community
- ❒ VDH will assess its human resources and logistics capabilities to ensure that appropriate staff and supplies are available to support activities associated with the provision of antiviral therapy at treatment centers, if necessary

C. PANDEMIC PERIOD

- ❒ Health Districts will provide VDH Central Office with an estimated number of persons within each priority population as well as the district population as a whole.
- ❒ VDH will coordinate the delivery of antivirals through the Strategic National Stockpile (if available).
- ❒ VDH will coordinate with treatment centers and dispensing sites to ensure that antivirals are appropriately allocated according to the latest priority group recommendations, and that treatment and/or prophylaxis is being administered according to the latest recommendations.
- ❒ VDH will evaluate antiviral delivery and administration procedures and modify plans as necessary

D. POST-PANDEMIC PERIOD

- ❒ VDH will discontinue and demobilize antiviral administration, ensuring that supplies are inventoried and returned as appropriate
- ❒ VDH will evaluate antiviral delivery and administration procedures and modify plans as necessary

Appendix 7B. Federal Supplies of Antiviral Drugs in the Strategic National Stockpile

A. During an influenza pandemic, a decision to deploy federal assets from the Strategic National Stockpile (SNS) will be made by HHS. As of October 2005, the SNS[1] contained 2.26 million treatment courses of oseltamivir/ Tamiflu® (capsules and suspension), 5 million treatment regimens of rimantadine (tablets and syrup), and 84,000 treatment regimens of zanamivir/Relenza®. The SNS is expecting delivery on an additional 2 million courses of Tamiflu® by the end of 2005. HHS is committed to acquiring additional courses of these drugs and increasing U.S.-based antiviral production.

B. State and local health departments should consider the use of standing orders for the prescription of antivirals, particularly for use in healthcare workers.

C. Physical packaging and shipping configuration of SNS antivirals (as provided by CDC):

1. **Tamiflu®:**

   SNS Tamiflu® preparations will come 10 capsules to a card and in unit-of-use bottles (10 capsules per bottle). The blister packs/cards have the following shipping configuration:

   - 88 cards (blister packs) per case.
   - 11 cases per pallet layer and 4 layers per pallet.
   - A pallet weighs 237 lbs.
   - Pallet height is 39”
   - Pallet size is standard 40” X 48”

   Treatment: 1 capsule twice a day for 5 days
   Prophylaxis: 1 capsule per day for 10 days (may need to be repeated for duration of risk).
   The cost for one card (or one course of treatment) is approximately $77.

2. **Relenza®:**

   Relenza® is packaged in individual boxed kits. Each kit includes the inhaler/pill crusher called a "Rota-haler" and 5 cartridge disks. Each disk has 4 blisters per disk. For additional information, see <http://www.gsk.com/products/relenza_us.htm>.

[1] For information on the SNS, visit the website <http://www.bt.cdc.gov/stockpile/>

Appendix 7C. Strategies for Antiviral Use in Pandemic Influenza Treatment and Prophylaxis

The goals of vaccine and antiviral use during an influenza pandemic are to limit mortality and morbidity, minimize social disruption, and reduce economic impact. Because a pandemic vaccine is unlikely to be available during the first 4 to 6 months of the pandemic, appropriate use of antivirals may play an important role in achieving these goals.

A. Treatment

1. Planning considerations

- The effectiveness of antivirals against a new pandemic influenza virus cannot be predicted.
- Pooled analyses of clinical trials of neuraminidase inhibitors administered to outpatients with seasonal influenza suggest that early treatment may reduce the risk of hospitalization by ~50%. There are no data on the effectiveness of neuraminidase inhibitors in preventing either serious morbidity (e.g., requirement for intensive care) or mortality (see July 2005 recommendations of the ACIP (http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf).
- Antiviral agents used against seasonal influenza have demonstrated efficacy in clinical trials when treatment is initiated within 48 hours of the onset of symptoms. Assuming that they have a similar level of effectiveness against pandemic influenza, rapid diagnosis, distribution and administration of antivirals during a pandemic will be essential.
- Early treatment is a more efficient use of antivirals than widespread prophylaxis. Because prophylaxis for approximately 6 weeks would require at least four times the number of doses as a 5-day treatment course per individual, huge antiviral stockpiles would be required to permit prophylaxis of more than a small proportion of the U.S. population.
- Most influenza A(H5N1) viruses currently in circulation in southeast Asia are resistant to the M2 ion channel inhibitors (amantadine and rimantadine), and strains that may evolve from these viruses may become resistant to this class of antivirals.

The emergence of drug resistant strains is less likely during treatment with neuraminidase inhibitors (oseltamivir and zanamivir) than with M2 inhibitors (amantadine and rimantadine). Neuraminidase inhibitors may also have a lower incidence of severe side effects (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>). Oseltamivir and zanamivir should therefore be reserved for treatment whenever possible. Because supplies of oseltamivir and zanamivir are currently depleted, early depletion of oseltamivir and widespread use of M2 inhibitors could lead to increased rates of side effects and drug resistance.

2. Strategies for treatment

Treatment strategies for optimizing the use of limited stocks of antiviral drugs will vary depending on the phase of the pandemic. The following interim guidance will be updated as more information becomes available. Strategies for consideration include:

At all stages of a pandemic:

- Targeting therapy to influenza patients admitted to a hospital who present within 48 hours of symptom onset.
- Implementing mechanisms to detect the emergence of drug-resistant variants of a pandemic influenza strain (e.g., obtaining specimens from persons who develop influenza while on prophylaxis or who progress to severe disease despite treatment).

During the earliest stages of a pandemic in the United States:

- Basing treatment decisions on laboratory-confirmed subtype identification of the pandemic strain by viral isolation, RT-PCR, or other means recommended by CDC. A positive rapid antigen test for influenza A would be sufficient grounds for initiating treatment, with a confirmatory, definitive laboratory test required for continuation of treatment.
- Interpreting negative results of influenza testing as permitting termination of treatment, given the overall low rate of infection in a particular community.
- Considering targeted use of antivirals to contain small, well-defined disease clusters, to possibly delay or reduce spread to other communities (see also Part C [below] and Supplement 8).

When there is increasing disease activity in the United States:

- Basing treatment decisions on:
  - laboratory-confirmed identification of the pandemic subtype by viral isolation and subtyping, RT-PCR, or other means recommended by CDC, *or*
  - detection of influenza A by rapid antigen test, *or*
  - epidemiologic and clinical characteristics.
- Permitting initiation of antiviral treatment before results from viral isolation, IFA, RT-PCR assays, or rapid antigen tests become available, since early treatment is more likely to be effective.

Once infection becomes more common, negative rapid antigen test results are more likely to represent false negatives; therefore, treatment should continue while awaiting results from confirmatory testing.

When the pandemic is widespread in the United States:

- Basing treatment decisions on clinical features and epidemiologic risk factors, taking into account updated knowledge of the epidemiology of the pandemic virus.

As the pandemic progresses, strategies for antiviral treatment may be revised as new information is obtained about the pandemic strain.

B. Prophylaxis

1. Planning considerations for prophylaxis

- Primary constraints on the use of antivirals for prophylaxis will be:
  - limited supplies;
  - increasing risk of side effects with prolonged use; and
  - potential emergence of drug-resistant variants of the pandemic strain, particularly with long-term use of M2 inhibitors
- The need for antiviral prophylaxis may decrease once an effective pandemic influenza vaccine becomes available for use among healthcare workers and other groups receiving prophylactic antivirals.
- Post-exposure prophylaxis might be useful in attempts to control small, well-defined disease clusters (e.g., outbreaks in long-term care facilities [see section C below]). A study of post-exposure prophylaxis using amantadine—conducted during the 1968 pandemic—demonstrated little effectiveness, possibly due to rapid development of resistance (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).
- Oseltamivir has demonstrated >70% efficacy as prophylaxis against laboratory-confirmed febrile influenza illness during interpandemic periods in unimmunized adults (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).
- Prophylaxis with amantadine or rimandatine decreased the risk of influenza illness during the 1968 pandemic and the 1977 reappearance of H1N1 viruses (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).
- The number of persons who receive prophylaxis with oseltamivir should be minimized, primarily to extend supplies available to treat persons at highest risk of serious morbidity and mortality. If sufficient antiviral supplies are available, prophylaxis should be used only during peak periods of viral circulation to protect small groups of frontline healthcare workers and other providers of essential community services prior to availability of vaccine.
- If a pandemic virus is susceptible to M2 ion channel inhibitors, amantadine and rimantadine should be reserved for prophylaxis, although drug resistance may emerge quickly.
- Rimantadine is preferred over amantadine, because it is associated with a lower incidence of serious side effects (see July 2005 recommendations of the ACIP <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>). Strains that are resistant to one M2-class antiviral are likely resistant to the other.

2. Strategies for prophylaxis

Strategies for effective use of antiviral prophylaxis during a pandemic include:

- Targeting prophylaxis to priority groups (see **Part 1, Appendix D** for interim recommendations) throughout the first wave of the pandemic. Data from 20th century

influenza pandemics suggest that the first wave of these pandemics lasted approximately 4 to 8 weeks in a community.

- Using post-exposure prophylaxis (generally for 10 days) to:
  - control small, well-defined disease clusters, e.g., outbreaks in nursing homes or other institutions, to delay or reduce transmission to other communities (see part C above);
  - protect individuals with a known recent exposure to a pandemic virus (e.g., household contacts of pandemic influenza patients).

When a vaccine becomes available, post-exposure prophylaxis may also be used to protect key personnel during the period between vaccination and the development of immunity.

Strategies for antiviral prophylaxis may be revised as the pandemic progresses, depending on supplies, on what is learned about the pandemic strain and on when a vaccine becomes available.

C. Strategies for Combined Treatment and Prophylaxis

During the Pandemic Alert Period, combined antiviral treatment for ill persons and targeted post-exposure prophylaxis of contacts might be considered in attempts to contain small disease clusters (e.g., institutional outbreaks or household introductions). The potential use of targeted prophylaxis to contain disease clusters is considered in **Supplement 8**.

The administration of oseltamivir does not interfere with the development of antibodies to influenza viruses after administration of trivalent inactivated influenza vaccine. Therefore, persons receiving prophylaxis can continue to receive oseltamivir during the period between vaccination and the development of immunity. Whether oseltamivir can interfere with the immune response elicited by a live-attenuated pandemic vaccine is unknown.

D. Pediatric Use

None of the available influenza antivirals are currently FDA approved for use among children aged <1 year. In particular, the safety and efficacy of oseltamivir have not been studied in children aged <1 year for either treatment or prophylaxis of influenza (see oseltamivir package insert). The decision by an individual physician to treat children aged <1 year in an emergency setting on an off-label basis with an antiviral must be made on a case-by-case basis with full consideration of the potential risks and benefits. Additional human data on the safety of these agents in the treatment of influenza in young children are needed.

Oseltamivir is available as an oral suspension for use in children. This formulation of oseltamivir may not be available in sufficient supply during a pandemic to treat all pediatric patients. If physicians consider opening 75 mg oseltamivir capsules and using the contents in an attempt to deliver a partial, pediatric dose to children, it must be recognized that there are insufficient data on palatability, stability, and dosing consistency to predict the safety or effectiveness of such unapproved use. Additional study of these issues is needed.

Appendix 7D. Virginia Department of Health Guidelines for Prescribing Oseltamivir (Tamiflu®)

As concerns about the potential for an influenza pandemic intensify, many Virginians are asking their physicians to prescribe oseltamivir (Tamiflu®) for personal stockpiles for possible later use during an influenza pandemic. The Virginia Department of Health (VDH) is not encouraging the practice of writing such prescriptions or the establishment of personal stockpiles. VDH recognizes, however, that physicians may wish to consider the special circumstances of individual patients before making a decision about whether to honor these requests, and in those situations VDH offers the following guidance regarding the advantages and disadvantages of such prescribing.

Reasons to consider prescribing oseltamivir:

- Covers more than one type of influenza – oseltamivir is active against both Type A and Type B influenza.
- Prophylaxis or therapy – oseltamivir can be used for either prophylaxis against influenza infection or as therapy for established infection.
- May not prevent development of immunity – when used as prophylaxis, oseltamivir can prevent illness while permitting sub-clinical infection and development of protective antibody against circulating influenza viruses. Therefore, some persons who take these drugs will likely develop protective immune responses to circulating influenza viruses.
- In vitro effectiveness against avian influenza – this is the one antiviral medication that shows in vitro activity against the H5N1 strain of avian influenza now in Southeast Asia. This influenza strain now appears to be resistant to the earlier amantidine/rimantidine class of antiviral agents.
- Government stockpiles are limited – there is now a worldwide shortage of oseltamivir, with limited production capability at the present time. Although federal and selected state governments (including Virginia) are acquiring stockpiles of this medication, supplies would not be sufficient for the entire population, especially if a pandemic were to occur in the near future (within the next 12 months).

Problems with prescribing oseltamivir:

- Long duration may be required for prophylaxis – prophylaxis needs to be taken for at least as long as the period of peak influenza activity in a community. A pandemic may affect a community in several waves, further complicating prophylaxis. Additionally, to be maximally effective as prophylaxis, the drug must be taken each day for the duration of influenza activity in the community, not just the peak period. This makes use of oseltamivir as prophylaxis questionable and potentially very costly.
- Timing is critical when used as therapy – oseltamivir should be administered within two days of illness onset in order to have greatest effect on clinical course; this requires rapid, accurate diagnosis.
- Benefits may be limited when used as therapy – oseltamivir can reduce the duration of uncomplicated influenza illness by approximately one day, compared with placebo, in a typical influenza season. Data are limited regarding the drug's effectiveness in preventing serious influenza-related complications.

- Uncertain clinical effectiveness against avian influenza – it is not clear how clinically effective oseltamivir is against human avian influenza infection. Many of the Southeast Asian patients who died of avian influenza H5N1 were taking oseltamivir.
- Uncertain effectiveness against a new pandemic strain – if there is an influenza pandemic, we don't know if it will be caused by the present avian strain in Southeast Asia or a completely different strain that may or may not be sensitive to oseltamivir or other classes of influenza medications.
- Oseltamivir is expensive – it would be expensive to buy treatment courses for all members of a family, and insurance would almost certainly not cover a prescription with no immediate clinical indication. Most insurance plans would also be very unlikely to cover prophylactic use, especially if the practice becomes widespread.
- Limited supplies best used for containment overseas – in view of the worldwide shortage, the limited supply of oseltamivir could be better used by treating those with avian influenza infection, which could help prevent spread of the virus beyond those countries now impacted by human infection, all of which have been in Southeast Asia.
- Limited supplies best used for priority groups in U.S. – if there is a pandemic, it will be important to have enough oseltamivir available to treat healthcare providers who would maintain the healthcare system, and others essential to security of the US population. Wide scale distribution of medication that may or may not be used could limit the supply available to key healthcare and first responder providers, as well as those most likely to die of influenza infection.
- Inappropriate or widespread use may lead to resistance – people may use oseltamivir for inappropriate indications, such as upper respiratory infections, thereby limiting its availability for influenza, and possibly increasing the risk of influenza drug resistance. Widespread use of oseltamivir among patients with influenza could lead to resistant strains of flu, potentially making the drug useless.
- Personal stockpiles may get lost – people may not track where they store the oseltamivir, once again making it unavailable when needed.
- Oseltamivir has a limited shelf life – properly stored, it is only guaranteed for five years, yet no one knows when a pandemic will hit. Stockpiled drugs might pass their expiration date before a pandemic starts.
- Side effects may offset benefits – there also may be side effects that haven't yet come to light because the drug has not been widely used.
- Personal stockpiling as a strategy raises equity issues – at $5 per pill, not everyone will be able to afford a personal stockpile; some will not even have access to a physician to get a prescription.
- Absence of consumer guidance – there are no good guidelines (or research to support such guidelines) for when people at home should take out a stock of medication and begin administering the drug to themselves or their families—this is venturing into 'unknown territory.'

Recommended topics to cover in patient education if oseltamivir is prescribed:

- Clarification of goal of prescription – is it prophylaxis or treatment?
- Contraindications and potential drug interactions
- Recommendations regarding use during pregnancy
- Known side effects
- What will be the trigger to begin taking the medication and how will the trigger be recognized?
- How often and for how long should the medication be taken?
- Hazards of sharing medications with others
- Storage requirements
- Shelf life
- Proper disposal of expired medications

Tab 1. Recommendations on Pandemic Antiviral Use

RECOMMENDATIONS ON PANDEMIC ANTIVIRAL DRUG USE

The Virginia Department of Health (VDH) recognizes that recommendations for antiviral drug use will need to be reconsidered at the time of a pandemic, as it acquires more precise and up-to-date information about drug supply availability, epidemiology of disease, and societal impact.

In making recommendations on pandemic antiviral drug use, VDH considers the primary goal of a pandemic response to be a decrease in overall health impact, including severe morbidity and death. Minimizing societal and economic impacts are considered to be secondary and tertiary goals. VDH favors the antiviral drug use priority recommendations described in the HHS Pandemic Influenza Plan, Appendix D: "NVAC/ACIP Recommendations for Prioritization of Pandemic Influenza Vaccine and NVAC Recommendations on Pandemic Antiviral Drug Use." The NVAC priority group recommendations were thus adopted and the numbers modified to reflect Virginia's population. These recommendations are summarized in **Table D-2** below.

A. Critical Assumptions

Assumptions regarding groups at highest risk during a pandemic and impacts on the healthcare system and other critical infrastructures are the same as those underlying the vaccine priority recommendations. Additional assumptions specific for antiviral drugs included:

1. Treatment with a neuraminidase inhibitor (oseltamivir [Tamiflu®] or zanamivir [Relenza®]) will be effective in decreasing risk of pneumonia, will decrease hospitalization by about half (as shown for interpandemic influenza), and will also decrease mortality.
2. Influenza virus resistance to the adamantanes (amantadine and rimantadine) may limit their use during a pandemic.
3. The primary source of antiviral drugs for a pandemic response will be the supply of antiviral drugs that have been stockpiled. Before annual influenza seasons, about 2 million treatment courses of oseltamivir are available in this country. Efforts are under way to establish a U.S.-based production of oseltamivir with a projected goal of about 1.25 million courses per month.
4. Treating earlier after the onset of disease is most effective in decreasing the risk of complications and shortening illness duration. Generally, treatment should be given within the first 48 hours.
5. Assumptions for the amount of antiviral drug needed for defined priority groups is based on the population in those groups and assumptions that 35% of persons in the priority groups will have influenza-like illness and 75% will present within the first 48 hours and be eligible for treatment. For persons admitted to the hospital, the committee assumed that 80% would be treated, as the 48-hour limit may sometimes be relaxed in more ill patients.
6. Unlike vaccines, where each tier would be protected in turn as more vaccine is produced, for antiviral drugs, the number of priority groups that can be covered would be known at the start of the pandemic based on the amount of drug that is stockpiled. Additional supply that would become available during the pandemic could provide some flexibility.

Table T-1: Antiviral Drug Priority Group Recommendations*

No.	Group	Virginia Est. Pop.‡	Strategy¶	# Courses	Rationale
1	Patients admitted to hospital**	250,000	T 80% treated	200,000	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die.
2	Health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers.	230,000	T 35% ill 75% treated	60,000	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.
3	Highest risk outpatients — immunocompromised persons and pregnant women.	62,500	T 35% ill 75% treated	16,400	Groups at greatest risk of hospitalization and death; immunocompromised cannot be protected by vaccination.
4	Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers.	82,500	T 35% ill 75% treated	21,700	Groups are critical for an effective public health response to a pandemic.
5	Increased risk outpatients-young children 12-23 months old, persons ≥65 yrs old, and persons with underlying medical conditions.	2,137,500	T 35% ill 75% treated	561,000	Groups are at high risk for hospitalization and death.
6	Outbreak response in nursing homes and other residential settings.	NA	PEP	50,000	Treatment of patients and prophylaxis of contacts is effective in stopping outbreaks; vaccination priorities do not include nursing home residents.
7	HCWs in emergency departments, intensive care units, dialysis centers, and EMS providers.	30,000	P 4 courses	120,000	These groups are most critical to an effective healthcare response and have limited surge capacity. Prophylaxis will best prevent absenteeism.
8	Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and HCW without direct patient. contact	255,000	T 35% ill 75% treated	67,000	Infrastructure groups that have impact on maintaining health, implementing a pandemic response, and maintaining societal functions.
9	Other outpatients.	4,500,000	T 35% ill 75% treated	1,200,000	Includes others who develop influenza and do not fall within the above groups.
10	Highest risk outpatients.	62,500	P 4 courses	250,000	Prevents illness in the highest risk groups for hospitalization and death.
11	Other HCWs with direct patient. contact	200,000	P 4 courses	800,000	Prevention would best reduce absenteeism and preserve optimal function.
	Total	7,810,000		3,346,000	

*The NVAC committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DoD) needs should be highly prioritized. A separate DoD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

‡ Virginia population assumed to be 2.5% of U.S. (2004) population; factor of 2.5% applied to National Pandemic Flu Plan population figures (method overestimates Virginia's population by about 300,000). Source: U.S. Census Bureau: State and County QuickFacts.

¶ Strategy: Treatment (T) requires a total of 10 capsules, which is defined here as 1 course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) is assumed to require 40 capsules (4 courses) though more may be needed if community outbreaks last for a longer period.

** There are no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.

B. Definitions and Rationale for Proposed Priority Groups

1. Persons admitted to hospital with influenza infection

a) Definition

Persons admitted to acute care facilities (traditional or non-traditional with a clinical diagnosis of influenza; laboratory confirmation not required). Excludes persons admitted for a condition consistent with a bacterial superinfection (e.g., lobar pneumonia developing late after illness onset) or after viral replication and shedding has ceased (e.g., as documented by a negative sensitive antigen detection test)

b) Strategy

Treatment within 48 hours of system onset.

c) Rationale

This group is at greatest risk for severe morbidity and mortality. Although there are no data to document the impacts of antiviral drug treatment among persons who already suffer more severe influenza illness, benefit is biologically plausible in persons with evidence of ongoing virally-mediated pathology (e.g., diffuse pneumonia, ARDS). Providing treatment to those who are most ill is also consistent with standard medical practices, would be feasible to implement, and would be acceptable to the public.

d) Population size

The number of persons admitted to hospital in an influenza pandemic would vary substantially depending on the severity of the pandemic and on the ability to expand inpatient capacity, if needed.

e) Unresolved issues

More specific guidance should be provided to healthcare workers on implementing antiviral treatment, including when and when not to treat. In some persons with severe illness, the ability to take oral medication or its absorption may be important issues. For infants <1 year old admitted to hospital, decisions about whether to treat with antiviral drugs may depend on the child's age and potential risk versus benefit as the neuraminidase inhibitors are not licensed for use in infants. If possible, data on time from symptom onset to hospital admission, current use of antiviral drug treatment among inpatients, and its impacts should be collected during interpandemic influenza seasons.

2. Healthcare workers and emergency medical service providers who have direct patient contact

a) Definition

Persons providing direct medical services in inpatient and outpatient care settings. This group includes physicians, nurses, technicians, therapists, EMS providers, laboratory workers, medical examiners and others involved in prosection of infectious cases, other care providers who come within 3 feet of patients with influenza, and persons performing technical support functions essential to quality medical care.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Maintaining high quality patient care is critical to reduce health impacts of pandemic disease and to prevent adverse outcomes from other health conditions that will present for care during the pandemic period. Treatment of healthcare providers will decrease absenteeism due to influenza illness and may decrease absenteeism from fear of becoming ill, given the knowledge that treatment can prevent serious complications of influenza. Good data exist documenting the impacts of early treatment on duration of illness and time off work, and on the occurrence of complications such as lower respiratory infections. Treating healthcare providers is feasible to implement, especially for inpatient care providers who can be provided drugs through the occupational health clinic. It also would be acceptable to the public, who would recognize the importance of maintaining quality healthcare and would understand that persons with direct patient contact are putting themselves at increased risk.

d) Population size

There are about 12.6 million persons (approx. 315,000 Virginian) designated as healthcare workers by the Bureau of Labor Statistics and about 820,000 EMS providers (approx. 20,500 Virginian). Among HCWs, two-thirds are estimated to provide direct patient care services.

e) Unresolved issues

Further work is needed to hone definitions and estimate population sizes. Implementation issues include the approach to identifying healthcare providers who would be eligible for treatment and where the treatment would be provided, particularly for outpatient care providers.

3. Outpatients at highest risk for severe morbidity or mortality from influenza infection

a) Definition

The Advisory Committee on Immunization Practices defines groups at high risk (or increased risk) of complications from influenza infection during annual outbreaks based on age (6-23 months and ≥65 years) and underlying illnesses. Among this population of about 88 million persons (approx. 2.2 million Virginians), some can be identified who are at highest risk of severe disease and death. These include persons with hematopoetic stem cell transplants (HSCT) and solid organ transplants; those with severe immunosuppression due to cancer therapy or hematological malignancy; persons receiving immunosuppressive therapy for other illnesses (e.g., rheumatoid arthritis); persons with HIV infection and a CD4 count <200; persons on dialysis; and women who are in the second or third trimester of pregnancy.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Of the large group of persons who are at increased risk of severe disease or death from influenza, these groups represent the population at highest risk and who are least likely to be protected by vaccination. Studies show that neuraminidase inhibitor therapy decreases complications and hospitalizations from influenza in high-risk persons and one unpublished study shows a significant decrease in mortality among patients who have undergone a hematopoetic stem cell transplant.

d) Population size

Using a conversion factor of 2.5% from US to Virginia's population, about 3,750 persons have had an HSCT or solid organ transplant. Assuming that the period of severe immunosuppression after a cancer diagnosis lasts for 1 year, the population targeted with non-skin, non-prostate cancers would equal the incidence of about 33,750 persons. Based on a birth cohort of 102,500 persons, a 28-week risk period during the second and third trimesters, and an 8-week pandemic outbreak in a community, there would be about 10,000 pregnant women included in this risk group. Further work is needed to estimate the size of other immunosuppressed groups.

e) Unresolved issues

Specific definition of included groups and population sizes.

4. Pandemic health responders, public safety workers, and key government decision-makers

a) Definition

Public health responders include those who manufacture vaccine and antiviral drugs; persons working at health departments who are not included in group 2; medical examiner staff involved in pandemic response but without direct patient contact; and those who would be involved in implementing pandemic vaccination or other response components. Public safety workers include police, fire, and corrections personnel. Key government decision-makers include chief executives at federal, state, and local levels.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Preventing adverse health outcomes and social and economic impacts in a pandemic depend on the ability to implement an effective pandemic response. Early treatment of pandemic responders will minimize absenteeism and ensure that vaccination and other critical response activities can be maintained. Implementing early treatment for public health workers and vaccine manufacturers is feasible at workplace settings. Public safety workers prevent intentional and unintentional injuries and death, are critical to maintaining social functioning, and will contribute to a pandemic response, for example by ensuring order at vaccination clinics. A small number of decision-makers at federal, state, and local levels are needed to for an effective pandemic response.

d) Population size

An estimated 7,500 public health workers who would not be included in the HCW category; 75,000 public safety workers; and a small number of government decision-makers.

e) Unresolved issues

Need to define the exact composition and size of this group.

5. Outpatients at increased risk of severe morbidity or mortality from influenza

a) Definition

For planning purposes, this group would include those currently designated as high-risk groups, except for those who have been categorized as being at highest-risk and included in a separate category. This increased-risk group includes persons 6-23 months and ≥65 years old, or who have underlying illnesses defined by the ACIP as

associated with increased risk. Definition of this group may change based on the epidemiology of the pandemic.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Early treatment has been shown to significantly decrease lower respiratory infections and to reduce the rate of hospitalization in elderly and high-risk populations. By extrapolation and based on the results of one small uncontrolled study, significant reductions of mortality can be expected as well. As these risk groups are familiar to the public given recommendations for annual vaccination, communication would be easy and acceptability high.

d) Population size

About 2,137,500 million persons are included in this group. Although all are at increased risk of annual influenza compared with the healthy under-65 year old population, there are different levels of increased risk for severe complications and death within this category. Further stratification may be possible based on several parameters including number of underlying conditions; recent hospitalization for a high-risk condition, pneumonia, or influenza; and age.

e) Unresolved issues

Stratifying this group into those at greater and lesser risk may be important if antiviral supplies are limited. Implementing treatment will be challenging given that it should be provided at the initial point of care to accrue the greatest benefit from early therapy.

6. Outbreak control

a) Definition

Use of antiviral drugs to support public health interventions in closed settings where an outbreak of pandemic influenza is occurring.

b) Strategy

Treatment of cases and post-exposure prophylaxis of contacts (once daily antiviral medication for 10 days).

c) Rationale

Influenza outbreaks in nursing homes are associated with substantial mortality and morbidity. Nursing home residents also are less likely to respond to vaccination. Post-exposure prophylaxis has been shown to be effective in stopping influenza outbreaks in closed settings.

d) Population size

The number of outbreaks that may occur during a pandemic is unclear. Measures should be implemented to prevent outbreaks including limiting visitors, vaccination of staff, furloughing non-critical staff, and screening and exclusion for illnesses consistent with influenza.

e) Unresolved issues

Should this policy also be implemented in prisons or other settings where explosive spread of illness may occur but the risk for severe complications is not high?

7. Healthcare workers in ER, ICU, EMS, and dialysis settings

a) Definition

Includes all staff in these settings who are required for effective functioning of these health care units.

b) Strategy

Prophylaxis.

c) Rationale

Optimally effective functioning of these units is particularly critical to reducing the health impacts of a pandemic. Prophylaxis will minimize absenteeism in these critical settings.

d) Population size

Need to obtain population estimates.

e) Unresolved issues

Population sizes

8. Pandemic societal responders and healthcare workers who have no direct patient contact

a) Definition

This group includes persons who provide services that must be sustained at a sufficient level during a pandemic to maintain public well-being, health, and safety. Included are workers at healthcare facilities who have no direct patient contact but are important for the operation of those facilities; utility (electricity, gas, water), waste management, mortuary, and some transport workers.

b) Strategy

Treatment within 48 hours of symptom onset.

c) Rationale

Maintaining certain key functions is important to preserve life and decrease societal disruption. Heat, clean water, waste disposal, and corpse management all contribute to public health. Ensuring functional transportation systems also protects health by making it possible for people to access medical care and by transporting food and other essential goods to where they are needed.

d) Population size

Within these broad categories, there are about 50,000 workers at healthcare facilities who have no direct patient contact; 18,250 utility workers; 8,000 waste management workers; 1,550 in mortuary services; and 57,700 in transportation. Not all occupations within these categories would be classified as pandemic societal responders. Estimates are that 35% of this population will develop illness and present within 48 hours of onset regardless of pandemic severity.

e) Unresolved issues

Need to stratify within these groups to identify who fills specific pandemic societal response functions and to assess whether those functions could still operate if a substantial proportion of the workforce became ill during a 6-8 week pandemic outbreak within a community. Implementation issues need to be addressed, especially with respect to how persons would be identified as falling within this priority group when presenting for treatment and where that treatment would be provided.

9. Other outpatients

a) Definition

Includes persons not in one of the earlier priority groups.

b) Strategy

Treatment within 48 hours of illness onset.

c) Rationale

Treatment reduces the risk of complications and mortality, reduces duration of illness and shortens time off work, and decreases viral shedding and transmission. If sufficient antiviral supplies are available, providing treatment to all who are ill achieves equity and will be most acceptable to the public.

d) Population size

There are an estimated 4,500,000 million persons who are not included in previously targeted groups.

e) Unresolved issues

Consider whether there are any strata that can be defined within this population.

C. Additional NVAC recommendations on antiviral drugs for pandemic influenza

In addition to recommendations for priority groups, NVAC unanimously adopted the following recommendations:

- Sufficient drugs should be stockpiled to address top priorities. NVAC recommends that the minimum stockpile size be about 40 million courses (about 1 million courses for Virginia) allowing coverage of the top 7 priority groups.
- Oseltamivir should be the primary drug stockpiled, but some zanamivir also should be obtained as it is effective against some oseltamivir-resistant strains, may be preferred for treatment of pregnant women, and supporting two manufacturers enhances security against supply disruptions. Approximately 10% of the stockpile should be zanamivir if feasible and cost effective. No additional adamantanes should be stockpiled.
- Antiviral drugs can also be used as part of an international effort to contain an initial outbreak and prevent a pandemic. Use to slow disease spread early in a pandemic may be useful but requires large amounts of drug.
- Critical research should be conducted to support development and implementation of recommendations for pandemic influenza antiviral drug use, including:
  - Impact of treatment at hospital admission on outcome
  - Optimal treatment dose for H5N1 and other potential pandemic strains
  - Sensitivity and use of rapid diagnostic tests for H5N1 and other influenza strains with pandemic potential
  - Safety and pharmacokinetics of oseltamivir among infants <1 year old
  - Investigation of the impact of other drugs (new antiviral agents and other classes such as statins) on influenza
  - Additional work with public and private sector groups should be done to further hone definitions of target groups and their estimated population sizes, and to provide further guidance on antiviral drug distribution and dispensing.

OVERVIEW

Supplement 8. Community Disease Control and Prevention outlines the strategy for the Commonwealth's state and local partners on the use of disease containment strategies to prevent disease transmission at different phases of an influenza pandemic. The Interpandemic and Pandemic Alert Period recommendations focus on preparedness planning for implementation of containment measures. They also outline actions that may be taken during the earliest stage of a pandemic when the first potential cases or disease clusters are detected. In this setting, individual-level containment measures (e.g., patient isolation and identification, monitoring, and quarantine of contacts) may be employed.

Pandemic Period recommendations focus on measures that may be beneficial and practical when there is a large number of cases and extensive viral transmission. In such a setting, individual-level measures may no longer be effective or feasible (e.g., if hospital isolation beds can no longer accommodate all patients, if most contacts cannot be traced in time to prevent further exposures, or if staffing constraints make contact-tracing impractical). In that case, measures that decrease social contact within groups or whole communities (e.g., quarantine of groups of exposed persons, cancellation of public events, snow days, self-shielding, or widespread community quarantine) may be used. Effective use of community containment measures during a pandemic will require continuous evaluation of such parameters as viral transmissibility, the number and geographic distribution of cases, the reproductive rate of epidemic propagation, and the nature and severity of illness.

INTRODUCTION

During the Interpandemic and Pandemic Alert Periods, the Commonwealth of Virginia's efforts focus on preparations that would minimize the impact of pandemic influenza, including planning for the use of community containment measures. Strategies that have been considered for the community control and prevention of disease include measures that affect individuals (e.g., isolation of patients, monitoring contacts of patients) as well as measures that affect groups or entire communities (e.g., cancellation of public gatherings; implementation of community-wide snow days, travel restrictions). To the extent possible, the most effective methods for the management of pandemic influenza that would result in the least personal, social and economic disruptions have been identified.

When less efficiently transmitted novel strains of influenza viruses are circulating, or following the initial introduction of a pandemic influenza virus into the United States when the scope of the outbreak is focal, the focus will be on managing individuals who may have been infected with a pandemic influenza and their contacts. The goal will be to end transmission. However, it must be recognized that these measures may only slow, but not completely contain, the further spread of the virus due to:

- the short incubation period of the illness;
- the ability of persons with asymptomatic infection to transmit virus; and,
- the possibility that early symptoms among persons infected with a novel influenza strain may be non-specific, delaying recognition and implementation of containment.

Nevertheless, these measures may be important in providing time for vaccine production and allowing the implementation of other pandemic response activities (e.g., community and individual preparations, implementation of response plans).

Once sustained disease transmission in communities around the U.S. has begun to occur, individual-level measures may not be effective or feasible (e.g., if most contacts cannot be traced in time to prevent further exposures; if staffing constraints make contact tracing impractical). Therefore, it is likely that following the introduction of a pandemic influenza virus into the United States, the focus of containment activities would be expanded to include measures to decrease social contact within groups or the whole community (e.g., closing schools, restricting public gatherings) and emphasize what individuals and institutions can do to reduce their risk of infection (e.g., hand hygiene and cough etiquette, alternative work arrangements) to further slow the spread of disease and limit the number of persons who become infected.

In considering the wide range of options available for the management of novel influenza, the Virginia Department of Health (VDH) has adopted the assumptions outlined in the federal influenza plan in its assessment of the implementation of community interventions. Critical assumptions include:

- The incubation period for a novel influenza strain would likely be approximately 2 days. However, novel strains could require quarantine periods of up to 10 days.
- Persons who become ill may shed virus and can transmit infection for one-half to one day before the onset of illness.
- About 2-3 secondary infections will occur as a result of transmission from an ill person.
- In an affected community, a pandemic outbreak will last about 6 to 8 weeks - between 25% and 30% of persons will become ill during this period. Approx 10% of the workforce may be absent at the peak due to illness or caring for ill family member(s).
- At least two pandemic disease waves are likely. Following the pandemic, the new viral subtype is likely to continue circulating and to contribute to seasonal influenza.

These assumptions, and the recommendations they affect, may need to be adjusted as a pandemic influenza virus becomes better characterized. As a result, the methods used for community containment will need to be guided by epidemiologic data. This will enable state and local authorities to implement the most appropriate measures in efforts to maximize impact on disease transmission and minimize impact on individual freedom of movement. Federal agencies may also assist to prevent the spread of disease from one state or possession into another.

I. Recommendations for the Interpandemic and Pandemic Alert Periods

A. Community preparedness for implementation of pandemic influenza containment measures

Both individual and community-based containment measures raise legal, logistic, economic, psychological and social challenges that should be addressed during the Interpandemic Period and Pandemic Alert Periods. Preparation helps to maximize the effectiveness and minimize the impact of these measures. This section provides

information on planning for disease control and containment to reduce the spread of pandemic influenza.

1. Planning for disease control and containment

Key activities for effectively implementing control measures within Virginia will include:

- Identifying effective control measures that minimize restriction on activities and maximize compliance under the various situations that might occur with a novel influenza virus strain or an influenza pandemic. In some cases, non-standard approaches (e.g., school closures, travel restrictions) may require careful consideration of the risks and benefits, and the criteria to be used to implement the measures;
- Ensuring that legal authorities and procedures exist for various levels of movement restrictions, and that the various authorities (e.g., local government, health department, law enforcement, judiciary) understand these procedures;
- Developing protocols at the state and local level for implementing, monitoring, and enforcing isolation and quarantine measures;
- Identifying and engaging traditional partners (e.g., public heath and healthcare workers) and non-traditional community partners (e.g., transportation workers) and inviting them to participate in preparedness planning and in pandemic influenza containment exercises and drills;
- Identifying potential facilities (e.g., hospitals, hotels, national guard bases) at the local level, and their strengths and limitations, to facilitate the rapid implementation of centralized isolation and/or quarantine;
- Establishing procedures for medical evaluation and isolation of quarantined persons who exhibit signs of influenza-like illness (ILI);
- Developing tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine, as well as to family members of affected persons and other community members;
- Establishing procedures for delivering medical care, food, and services (i.e., meeting essential needs) to persons in isolation or quarantine. To the maximum extent possible, these efforts will take into account the special needs of children, persons with disabilities, cultural and language barriers;
- Where possible, establishing procedures for issues related to employment compensation and job security.

2. Legal preparedness

The federal government, under the authority of Section 361 of the Public Health Service Act (42 USC 264), may make and enforce regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States or from one state or possession into another. In addition, under section 311 of the PHS Act (42 USC 243), the Department of Health and Human Services may cooperate with and aid state and

local authorities in the enforcement of their quarantine and other health regulations. However, states, localities, and tribes have the primary responsibility for public health matters within their borders.

While individual containment measures are most effective on a voluntary basis, the risk of significant morbidity, mortality and economic damage from pandemic influenza require that Virginia be prepared for the need to enforce individual and community-based containment measures. The Commonwealth of Virginia has made significant progress on modernizing the laws related to the management of individuals who may be infected with communicable diseases (including pandemic influenza) that may be a threat to the health of the public. As a result, many of the legal preparedness issues identified within the federal pandemic influenza plan have been addressed, or are in the process of being addressed. For additional details, consult Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat.* This document provides specific, detailed guidance on the implementation of isolation or quarantine for individuals and groups, including the use of voluntary or involuntary methods, under the *Code of Virginia* and Virginia's *Regulations for Disease Reporting and Control*. In addition, it provides resources (forms, information sheets, sample letters) for use in streamlining the implementation of these control measures.

In developing these resources, the VDH has recognized the need to promote training public health staff for the appropriate response to a disease of public health threat. General training on isolation of public health staff in local health departments, as well enhanced training of key local health department staff has been implemented. Statewide exercises have begun to incorporate the legal considerations of community disease control into the goals to improve awareness of the processes and increase the efficiency of the response.

VDH has also begun to establish relationships with non-traditional public health partners (e.g., law enforcement, judicial professionals) for managing individuals, and developing communications to help the public accept the possible need for restrictive measures. VDH also recognizes the need to include other community stakeholders, including community leaders, volunteer groups, and the public in education on the legal processes related to community containment measures. VDH is working on developing education for the various levels of need, to educate these stakeholders and thereby minimize confusion, and maximize compliance, should the need for these measures arise.

Despite the progress to date, continued efforts are being made to increase awareness of these efforts by all stakeholders. These include:

- Providing continued training for public health staff, and exercising this knowledge;

- Develop and distribute training for judges/attorneys, law enforcement and the public on the control measures, as well as rights and responsibilities related to control measures;
- Testing the implementation of the systems to ensure timely and efficient implementation;
- Developing record management to ensure security, flexibility and accuracy, while meeting the legal standards for evidence; and,
- Ensuring adequate understanding and cooperation for the management of persons who may be subject to cross-jurisdictional or multi-jurisdictional issues.

3. Planning for influenza clinics and hotlines

An influenza pandemic is likely to put great stress on the healthcare delivery system, in particular emergency departments. To prevent overwhelming demand from compromising the function of emergency departments, healthcare providers, organizations, and public health authorities in Virginia need to consider optimal methods for delivering information, assessments, and care to citizens.

One option includes designating certain offices, clinics, or otherwise discrete areas for screening, triage, and care of individuals with influenza-like illness. While the large majority of outpatient care during a pandemic will be provided by patients' usual medical care practitioner, health authorities may consider establishing special facilities (*influenza clinics*) to provide rapid medical assessment of potentially infected persons, as part of efforts to control and contain small, well-defined disease clusters, or in geographical areas that are medically underserved.

The state or local health departments may also develop special *influenza hotlines* that provide advice to ill persons on resources available to determine whether to stay home or to seek medical care. These efforts may help prevent hospitals and clinics from being overwhelmed with patients who do not require hospital-level care, and may reduce the number of uninfected persons who mingle with infected persons at clinics and hospitals.

However, a significant number of issues need to be considered in planning for establishing influenza clinics. In particular, the number, distribution and site of these clinics need to be estimated. Specific planning will address estimates of how many clinics could be established, and where they would need to be located across Virginia to provide optimal coverage. This may also affect the actual sites that could be used. For example, some public health departments have clinical services while others do not. Multiple alternative sites may need to be established, especially in high density population areas. Some facilities that serve as medical or para-medical sites (e.g., walk-in clinics, student health in schools) could be commandeered and adapted for this purpose, however issues related to liability insurance and expenses (e.g., compensation of owners for occupied

facilities) would need to be considered. Other options may include temporary facilities (e.g., tents, RV's). Additional issues include:

- Timing: identifying the criteria where traditional healthcare facilities are in danger of being overwhelmed and opening clinics would be reasonable are needed. Since establishing these clinics may take time, these criteria may need to be met early in a pandemic.
- Infrastructure: prospective sites for clinics would need to be evaluated ahead of time to assess infrastructure needs, including modifications that might need to be made to ensure safety, accessibility (e.g., handicap), and security. Identifying companies (e.g., contractors) that may be able to assist in modifying structures may be necessary. Models and criteria for establishing clinics on a short-term basis are also needed, but need to address not only basic considerations (e.g., water, heat/air conditioning, electricity), but also specialized needs (e.g., oxygen supplies), as well as ventilation, infection control, patient flow, security, storage and information management.
- Personnel: who will staff clinics, especially since most public health and medical staff will be overwhelmed by public health activities or providing care as part of their employment. Support staff, including secretaries, medical assistants, information technology, security, etc also need to be considered. Compensation of staff, liability insurance and protection for volunteers are all concerns.
- Equipment: Significant amounts of medical and support equipment would need to be mobilized in a short period to support staff activities.
- Transportation: including proximity to bus/rail lines, parking for staff and patients, options for deliveries, and proximity to other healthcare facilities need to be considered.

In summary, while influenza clinics may play a role in the pandemic influenza response, additional assessments of the potential need and effectiveness of these measures, will be conducted. Since running influenza clinics would be resource-intensive, and may be outside the mandate of most public health departments in Virginia, it may be preferable to work with traditional healthcare providers to identify ways to provide these services.

In addition, in preparing for establishing influenza hotlines, consideration of various issues is necessary, including:

- Establishing telephone hotline numbers that people can call to report specific symptoms (e.g., fever) – these may be set up at the local or state level, however federal hotlines may also be established. Maintaining consistent messages across all participants will be important;
- Identifying sites, staff members, and volunteers to maintain the hotlines;
- Developing protocols for hotline staff members that include training components and triage decision trees or algorithms. In particular, non-medical and even medical staff may not be willing or able to provide medical advice to callers – clear guidelines on appropriate messages and reference to appropriate resources

would need to be established. VDH may also explore working with others (e.g., insurance providers, employee health services) to provide actual medical advice;
- Websites (at the state or local level) may be established to support hotline (e.g., provide sites where vaccinations will be distributed) activities. These may be developed ahead of time for rapid deployment;
- Establishing clear lines of communication with influenza clinics, if they are to be established.

VDH will assess the potential utility of influenza hotlines, and if considered feasible, the issues will be addressed.

4. Public understanding of disease containment measures

Community preparedness for implementation of both individual and community control measures can be enhanced by improving public understanding of the dangers of pandemic influenza and the benefits of communitywide disease control practices. Strategies for disease control will be facilitated by clear communication of the rationale for—and duration of—containment measures. Local public health education campaigns that involve community partners can build public confidence in the ability to cope with an influenza pandemic.

These campaigns should explain how individual action (e.g., strict compliance with respiratory hygiene, staying home when ill) and community efforts (e.g., implementation of snow days and self-shielding, minimizing social gatherings and the amount of time spent in public spaces such as grocery stores and malls) can help reduce disease transmission. Campaigns should include information on the criteria, justification, role, methodology, and duration of isolation and/or quarantine and the social, medical, and psychological ways in which persons will be supported. Messages on social distancing should encourage individuals to comply and focus on the positive aspects (e.g., protecting family and loved ones). These key messages should be translated and modified as required to address the cultural and linguistic needs of local neighborhoods.

Partners in developing and implementing these campaigns may include schools, faith-based organizations, community-based organizations, and other "civil society" institutions that can help educate the public and provide support to families and persons who are incapacitated by illness. A key component of any of these containment measures will be changing patterns of work to encourage social distance. Private sector partners need to be brought into the planning process and provided with specific advice on how they might adapt their work processes.

A major challenge with social distancing methods is financial support (e.g., lost wages, lost business) for individuals and businesses. Snow days, mandatory closings and isolation/quarantine may not actually be as acceptable/easy to implement as assumed. Laws and procedures for closing businesses or schools and suspending public meetings may need to be reviewed. Workers'

compensation laws as they apply to healthcare workers and workers who provide essential services may need to be reviewed to ensure appropriate coverage exists.

By working on these issues prior to an influenza pandemic, it will ensure better understanding and compliance, as well as adequate time to effectively reach communities with messages on disease prevention.

5. Relationships with other Entities

Many other entities (public and private) may play an important role in the community control of pandemic influenza. Identifying these entities would enable better understanding the needs of these groups and thereby ensuring an appropriate response to pandemic influenza.

For example, the roles and expectations of first responders (e.g., emergency management, local and state police, sheriffs, fire, EMTs, and other agencies) need to be defined, and how they may be involved in planning. Virginia has a substantial number of military bases – communication with these entities would enhance the control of pandemic influenza in communities not directly subject to Virginia interventions. In addition, the appropriate use of the military's response capacity needs to be defined. Possible areas in which the military could support public health response include supply chain logistics, mass care, services to high risk individuals, and enforcement measures. Another area of interest is the state's relationship with tribes in Virginia. Legal authority of states to order or recommend containment measures on tribal lands within a state may not be applicable to Virginia, however this should be clarified. Other groups, such as mental health services and legal societies, may also be effective partners in addressing planning for community containment and should be identified.

B. Specific management of patients infected with novel strains of influenza and their contacts

1. Patient isolation

Infection control precautions and procedures for isolating influenza patients—at home or in a residence, community facility, or hospital—are described in **Supplement 4**. In general, in Virginia home isolation is preferred as the least restrictive means of disease control. However, during the Interpandemic or Pandemic Alert periods, patients known or suspected to be infected with novel strains of influenza would probably be admitted to a hospital for isolation to prevent further transmission and for optimal medical care. In Virginia, centralized involuntary isolation may be compelled if there is a suspicion that there is a public health threat (e.g., probable non-compliance with isolation recommendations). Information for evaluating the suitability of homes and facilities for patient isolation is provided in Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat*.

The state or local health department, in consultation with federal agencies, will advise the healthcare providers and healthcare facility on additional steps that may be taken to manage patients suspected of infection with a novel influenza virus. Efforts will be made to continue keeping Virginia healthcare providers aware of developing issues of novel influenza viruses through methods such as the monthly Virginia Epidemiology Bulletin, as well as Health Alert Networks, if needed. In addition, VDH will work with other local, state and federal agencies such LHD animal control, the Department of Game and Inland Fisheries (VDGIF), Department of Agriculture and Consumer Services (VDACS), and the CDC Quarantine Stations on plans for managing individuals (including humans and companion animals) who are known or suspected of having become infected with a novel influenza virus.

2. Management of close contacts

A patient's close contacts may include family, friends, work colleagues, classmates, fellow passengers, and/or healthcare providers. In most situations—even at the earliest stages of a pandemic—it will not likely be possible to trace and quarantine all close contacts of suspected or confirmed cases within a 48 hour period (the average incubation period for human influenza). However, in certain situations efforts to identify exposed individuals or groups might be recommended. Some examples include:

- Suspected or confirmed cases of novel influenza. For example, a suspected or confirmed case of avian influenza A (H5N1) in persons who have traveled to an H5N1-affected country and have been exposed to sick poultry (either through handling or eating poultry products) or a laboratory-confirmed human case of H5N1 influenza;
- Suspected or confirmed cases of avian influenza A (H5N1) or another novel strain of influenza in travelers on airplanes or cruise ships about to arrive in the United States;
- Suspected or confirmed cases of avian influenza of any type in persons with known exposure to sick poultry or birds in the United States;
- Clusters of avian influenza A (H5N1) or another novel strain of influenza in small, well defined settings, such as a military base; or,
- Cases of laboratory exposure to avian influenza A (H5N1) or influenza viruses with the potential to cause a pandemic (e.g., influenza A [H2N2]).

Decisions on whether to trace a patient's contacts and how to manage them will be made on a case-by-case basis by local and/or state public health departments, in consultation with CDC, taking into consideration:

- Likelihood that the suspected case is due to a novel influenza strain (based on symptoms and travel history, if laboratory results are not yet available)

- Likelihood that the causative virus is transmitted from person-to-person with a moderate or high efficiency (as reflected in the designated Pandemic Alert phase)
- Feasibility of conducting contact-tracing given the short incubation period for influenza.

Management of contacts might include passive or active monitoring without activity restrictions and/or quarantine at home or in a designated facility. In the Pandemic Alert Period, especially during Phase 3 or 4 when little or limited person-to- person transmission has been documented, quarantine of contacts should be implemented **only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others**.

In Virginia, centralized involuntary quarantine, if necessary, could be compelled if there is a suspicion that a public health threat exists (e.g., probable non-compliance with quarantine recommendations). Information for evaluating the suitability of homes and facilities for contact quarantine is provided in Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat*.

Contacts who are quarantined will be monitored by a health department official (or designee) at least once a day—by phone or in person—to assess symptoms, ensure compliance with activity restrictions and address any needs. However, more frequent monitoring (e.g., twice a day) will help to facilitate early detection, reducing the interval between the onset of symptoms and the isolation of the sick person. Early signs of influenza that will be monitored for include fever, respiratory symptoms, and chills, rigors, myalgia, headache, or diarrhea. Quarantine may be lifted as soon as the exposed contact has remained without signs or symptoms of disease for a complete incubation period for influenza disease. (Experience with seasonal influenza suggests the incubation period is 1-4 days, with an average length of 2 days. However, the clinical behavior of a novel influenza virus may be different and could potentially be as long as 10 days. Pandemic influenza preparedness activities should plan for containment measures that may last between 1-10 days, however, public health authorities should be prepared to adjust the time frame as more data is collected).

Additional efforts will be made to develop monitoring protocols, as well as ensure that communication occurs between local health departments, and across state lines, so that seamless management of contacts occurs. In addition, policy decisions will need to be made to determine if, as noted in the HHS Pandemic Influenza plan, quarantined individuals should be the first to receive all available medical interventions to prevent/control disease. If so, then this will need to be incorporated into plans for distribution of medical resources.

3. Data collection

Public health officials will collect information on cases and contacts, including:

- Demographic and contact information on each contact;
- Relationship to the case-patient;
- Nature and time of exposure;
- Whether the contact was vaccinated or on antiviral prophylaxis;
- Underlying medical conditions;
- Number of contacts (including any in quarantine) that become ill; and,
- Number of days between onset of symptoms and reporting to health officials.

These data will guide decision-making on whether to implement more stringent containment measures, as well as provide the foundation for the epidemiologic information that will determine evaluations of viral transmissibility and virulence, and the efficacy of community containment measures and antiviral medications.

Work has been ongoing in acquiring and implementing software systems [e.g., the CDC's Outbreak Management System (OMS)] to enhance data collection. However, continued efforts need to be made by the VDH Office of Epidemiology prior to an influenza pandemic to ensure its timely availability and functioning. In addition, training on the use of this tool by local and state health department staff will be needed to ensure accurate data entry in a timely manner. Planning to support the surge in capacity needed to manage data entry at the local level will be required.

C. Containment of small clusters of infection with novel strains of influenza

Community-based control measures that state and local health officials might use to contain small clusters of infection with novel strains of influenza (during the later Pandemic Alert phases or when cases are first introduced into the U.S.) include targeted chemoprophylaxis and early detection of new cases by healthcare providers as well as potentially by influenza hotlines and/or influenza clinics. These approaches may be implemented in small, well-defined settings; however, it is not expected that they will be useful in containing pandemic influenza, although they may provide additional response capability.

1. Targeted chemoprophylaxis of disease clusters

This intervention includes investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected pandemic influenza, and provision of drug prophylaxis to all likely exposed persons in the affected community (based on availability). CDC may assist state health departments in these efforts, as needed.

Targeted chemoprophylaxis also requires intensive disease surveillance to ensure coverage of the entire affected area, effective communication with the affected

community, and rapid distribution and administration of antivirals because they are most effective when provided within 48 hours of symptom onset or when used as post-exposure prophylaxis before onset of illness. These capabilities are being developed as part of the overall effort to identify and manage pandemic influenza.

Unfortunately, it will not be known until after a novel influenza virus strain appears if this strategy is effective. For example, some strains that have appeared have been whole or partly resistant to some or all classes of antivirals. In addition, there is a relatively limited supply of these antiviral medications, and use may be severely restricted depending on conditions outside of Virginia.

Additional specific efforts in this area have included developing fact sheets on medications that may be needed to educate individuals on pandemic influenza, as well as antiviral medications that they may be provided to ensure compliance.

2. Influenza hotlines and clinics

During the later phases of a Pandemic Alert, in a community experiencing a disease cluster a combination of self-assessment and establishment of influenza hotlines may be effective in detecting potential influenza disease and conducting "community triage" to direct persons with symptoms to the appropriate site and level of care. This intervention includes asking members of the affected community to monitor their symptoms in accordance with instructions from the local and state health department, and the CDC. For example, all members of the community might be asked to take their temperature (and the temperature of their household members) once or twice daily. Persons with temperatures above a critical level (to be defined as experience with the virus indicates adequate sensitivity and specificity) may be asked to stay home and self-treat, and/or telephone a designated influenza hotline for a medical referral, or proceed to a neighborhood influenza clinic established by local public health and healthcare authorities. Healthcare workers could then determine whether the patient's symptoms are likely due to pandemic influenza, to a different contagious disease, or to a non-contagious condition. If a person is judged likely to be infected with pandemic influenza, they would be referred for isolation and care as needed. Advantages to developing pre-screening criteria include the ability to reduce or re-direct surge at critical points (e.g., ERs, physician offices), and to reduce the exposure of uninfected individuals to those who may be infected.

The establishment of hotlines and influenza clinics requires preparation to identify sites and personnel and to facilitate the procurement and distribution of thermometers and other supplies, as outlined earlier. Clinic personnel should also be prepared to keep records and report cases, as requested, by state health departments and CDC.

II. Activities for the Pandemic Period

During the Pandemic Period, control measures applied to individuals may have limited impact in decreasing influenza transmission and/or may no longer be feasible. During this stage, state and local health departments should consider measures that decrease social contact within groups or whole communities (e.g., self-shielding, cancellation of public events, snow days) and measures that individuals can take personally to decrease their risk of infection

Appendix 1 (Interventions For Community Containment) outlines measures that may be employed at different stages of a pandemic, as disease becomes more widespread. These begin with containment activities for individuals and evolve, as needed, to community-based measures. Depending on the specific circumstances of an epidemic, these steps may not necessarily be taken in sequential order.

A. Containment measures for individuals

1. Patient isolation

As noted above, a patient with a suspected or confirmed case of pandemic influenza should be separated from persons who are well. If a surge in patients overwhelms healthcare capacity or if home isolation is not feasible, health departments may need to use alternative facilities for isolation of influenza patients. Guidance on selecting alternative facilities for the isolation of patients is provided in Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat*.

However, this resource does not provide detailed information or a 'toolkit' for establishing alternative isolation sites. Therefore, planning should take into account the detailed needs for establishing alternative facilities, including supplies and materials checklists, staffing schemes, liability issues for healthcare staff and volunteers, etc. This will require a multi-disciplinary approach to ensure that issues of safety, cultural competence, etc. are addressed appropriately.

In addition, public health needs to further develop relationships with volunteer and community groups (e.g., Meal-on-Wheels, Food Banks, local grocers, pharmacists, etc) to develop plans to support home isolation.

2. Management of contacts

Contact tracing, contact monitoring, and quarantine of close contacts may be effective only in special situations, such as during the earliest stages of a pandemic. Because the usefulness and feasibility of these measures will be limited once the pandemic has started to spread, community-based measures that reduce disease transmission by increasing social distance will be extremely important. Public health needs to further develop relationships with volunteer and

community groups (e.g., Meal-on-Wheels, Food Banks, local grocers, pharmacists, etc). to develop plans to support home quarantine/social distancing.

B. Community-based containment measures

Once novel influenza disease transmission in the community is significant and sustained, state and local public health authorities will implement community-based containment measures. Community-based containment measures are grouped into two broad categories: 1) measures that affect groups of exposed or at-risk persons and 2) measures that affect entire communities.

1. Measures that affect groups of exposed or at-risk persons

Measures that affect groups of exposed or at-risk persons should be considered when: there is limited disease transmission in the area; most cases can be traced to contact with an earlier case or exposure to a known transmission setting (e.g., a school or workplace where a person has fallen ill); the intervention is likely to either significantly slow the spread of infection or to decrease the overall magnitude of an outbreak in the community.

These include quarantine of groups of exposed persons and containment measures that apply to use of specific sites or buildings.

a) Quarantine of groups of exposed persons

The purpose of quarantine is to reduce influenza transmission by separating exposed persons from others, monitoring exposed persons for symptoms, and providing medical care and infection control precautions as soon as symptoms are detected. Quarantine may be considered for those who might have been exposed to an influenza case, such as family members, school-mates or co-workers, persons attending a public gathering, passengers on an airplane, cruise ship or other closed conveyance, or healthcare providers who work at a facility where influenza cases receive care.

As with all individual and community containment measures, group quarantine is optimally performed on a voluntary basis, in accordance with instructions of healthcare providers and health officials. However, legal authority to compel mandatory isolation and quarantine of individuals and groups when necessary exist in Virginia to protect the public's health. Recommendations for quarantine and monitoring of quarantined persons in different situations (home quarantine, quarantine in a designated facility, working quarantine) are provided in Virginia's *Isolation and*

Quarantine Guide for Communicable Diseases of Public Health Threat.

Note that the current assumptions of the characteristics of a pandemic strain of influenza suggest that the effectiveness of quarantine is likely to be minimal. The Federal Plan notes that, even at the earliest stages of a pandemic, it will not likely be possible to trace and quarantine close contacts of suspected or confirmed cases within 48 hours (the average incubation period for human influenza). Public health follow-up with all of those under home-quarantine may be limited by resources. Additionally, the logistics associated with a 10-day quarantine are daunting and impacts government, private sector, volunteer organizations, etc. Therefore, this measure is likely to be used only early in the pandemic.

In making recommendations for the restrictions to be placed on the movement of quarantined individuals, all available information on the modes of transmission, infectivity, and effectiveness of infection control measures will be considered. Of note, at the present time, the benefit of wearing masks by well persons in public settings (as opposed to healthcare workers working with patients) has not been established and is not recommended as a public health control measure at this time.

In addition, the likely effectiveness of "working quarantine" may also not be very practical for pandemic influenza. While it enabled critical personnel, such as healthcare providers, to continue working during the SARS epidemic, the potential for asymptomatic viral shedding may make this impractical. Instead, guidance will be developed to provide workplaces with appropriate infection control procedures for their staff.

b) Measures that apply to use of specific sites or buildings

"Focused measures to increase social distance" might include:

- Cancellation of public events (e.g., concerts, sports events, movies, plays)
- Closure or restricted access to sites or buildings (e.g., recreational facilities such as community swimming pools, youth clubs, gymnasiums)

Lists of the various events and facilities that may need to considered need to be developed, and considered carefully. Appropriate infection control measures some facilities could

enable some facilities to continue operating – efforts will need to be made to work with various groups to determine if this is feasible.

2. Measures that affect communities

As community outbreaks of pandemic influenza occur, community-wide infection control measures (affecting both exposed and non-exposed persons) may decrease the overall magnitude of the outbreak. These measures should be considered when:

- There is moderate to extensive disease transmission in the area;
- Many cases cannot be traced to contact with an earlier case or known exposure;
- Cases are increasing among contacts of influenza patients; and,
- There is a significant delay between the onset of symptoms and the isolation of cases because of the large number of ill persons.

Options include:

a. Promotion of community-wide infection control measures (e.g., respiratory hygiene/cough etiquette)
b. Snow days and self-shielding
c. Closure of office buildings, shopping malls, schools, and public transportation (e.g., subways, buses)
d. Travel restrictions
e. Widespread community quarantine (*cordon sanitaire*).

a) Community-wide infection control measures

Throughout a pandemic, public health authorities will encourage all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects or materials.

Persons at high risk for complications of influenza will be advised to avoid public gatherings (e.g., movies, religious services, public meetings) when pandemic influenza is in the community. They should also avoid going to other public areas (e.g., food stores, pharmacies); the use of other persons for shopping or home delivery service is encouraged.

Disposable surgical-type masks are used by healthcare workers taking care of ill patients to prevent splashes and droplets of

potentially infectious material (e.g., from coughs and sneezes) from reaching the mucous membranes of the healthcare worker's nose or mouth. The benefit of wearing masks by well persons in public settings has not been established and is not recommended as an pandemic influenza public health control measure at this time. In contrast to healthcare workers who necessarily have close contact with ill patients, the general public should try to avoid close contact with ill individuals. In addition, large-scale mask use in communities may limit the availability for healthcare settings where the importance and effectiveness of this use has been documented.

Nevertheless, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings. Mask use may be most important for persons who are at high risk for complications of influenza and those who are unable to avoid close contact with others or must travel for essential reasons such as seeking medical care. Public education may be provided on how to use and dispose of masks appropriately. In addition, this education should emphasize that mask use is not a substitute for social distance or other personal protection measures.

Methods for communicating these messages will use traditional public health approaches, including media (television, radio and newspaper), internet (e.g., VDH and partner websites), posters (e.g., in healthcare provider facilities). These efforts may be intensified during an influenza pandemic (e.g., posters in daycares, and public places such as malls, churches). Work will need to be done to develop these messages prior to the pandemic, and to translate them to other languages, as well as to ensure cultural appropriateness. Additional methods of reaching community members (e.g., through community leaders) will also be explored.

b) Snow days and self-shielding

Implementation of "snow days"— asking everyone to stay home — may be instituted to increase social distancing. Even a brief duration of social distancing could slow transmission. However, this assumes that individuals would not stay home from work, but socialize in other ways (e.g., go to the mall).

The HHS Pandemic Influenza Plan suggests that the initial period for "snow days" would last 10-days initially. This decision would likely be revised based on an epidemiologic and social assessment of the situation. This duration is selected based on the suspected

'maximum' incubation period for pandemic influenza of 10 days. However, it may be less if the incubation period of a pandemic strain is found to be shorter. Conversely, for safety, it may need to be extended so that it equals twice the known incubation period of a strain of pandemic influenza, or that it will be in effect for some period of time after the last case has been diagnosed. It may also need to be adjusted for certain populations. For example, children may be found to shed a pandemic influenza strain longer than adults, therefore persons at high risk may need to self-shield from children for a longer duration. Other options (such as "alternate snow days", where groups of individuals stay home on some days, and work others) may be useful at increasing social distancing, but still enable critical functions to be maintained to some extent.

States and local authorities will consider recommendations to the public for acquisition and storage of necessary provisions including type and quantity of supplies needed during snow days. Consideration should be given to personnel who maintain primary functions in the community (e.g., law enforcement personnel, transportation workers, utility workers [electricity, water, gas, telephone, sanitation]).

c) Closure of office buildings, shopping malls, schools, and public transportation

Closure of office buildings, stores, schools, and public transportation systems may be possible community containment measures during a pandemic. However, these measures have significant impact on the community and workforce, and careful consideration will be needed to determine their potential effectiveness, how they can most effectively be implemented, and how to maintain critical supplies and infrastructure while limiting community interaction. For example, when public transportation is cancelled, other modes of transportation must be provided for emergency medical services and medical evaluation.

Although data are limited, school closures may be effective in decreasing spread of influenza and reducing the overall magnitude of disease in a community. In addition, the risk of infection and illness among children is likely to be decreased, which would be particularly important if the pandemic strain causes significant morbidity and mortality among children. Children are known to be efficient transmitters of seasonal influenza and other respiratory illnesses. Anecdotal reports suggest that community influenza outbreaks may be limited by closing schools. Results of mathematical modeling also suggest a reduction of overall disease,

especially when schools are closed early in the outbreak. During a Pandemic Period, parents should be encouraged to consider child care arrangements that do not result in large gatherings of children outside the school setting.

Criteria for closing various facilities (schools, public transportation, malls) will need to be developed.

d) Travel restrictions

Issues related to international and interstate travel are dealt with in **Supplement 9**. In general, it should be noted that during an influenza pandemic, travel restrictions are not widely recommended, but people may choose to take precautions at the individual level, such as limiting non-essential travel, especially to areas experiencing significant impact from the disease. Education and communication are critical to individuals making choices that reduce individual risk.

It is possible that intrastate movement may need to be managed as well. This may include developing, with local authorities, travel warnings (e.g., radio alerts) concerning areas that are particularly hard hit by pandemic influenza. In addition, restricting mass transit (metro buses and subways, private bus lines, trains) may also need to be explored.

e) Widespread community 'quarantine' (*cordon sanitaire*)

In extreme circumstances, public heath officials may consider the use of widespread community 'quarantine'. Like snow days, widespread community 'quarantine' involves asking everyone to stay home. However, it may also involve a legally enforceable action, and it restricts travel into or out of an area circumscribed by a real or virtual "sanitary barrier" or "*cordon sanitaire*" except to authorized persons, such as public heath or healthcare workers.

Implementation of this measure during a pandemic is unlikely to prevent the spread of pandemic disease except in uncommon or unique circumstances (such as in a community that is able to remain completely self-sufficient). In many cases, less restrictive approaches such as snow days can be implemented to slow disease spread or decrease its magnitude in a community. Because of this, *cordon sanitaire* is not recommended during a pandemic unless a community is in a setting where it is likely to be applied effectively and has planned with neighboring jurisdictions how such an

approach would be implemented and maintained during a pandemic.

3. Scaling back community containment measures

The decision to discontinue community-level measures must balance the need to lift individual movement restrictions against community health and safety. Premature removal of containment strategies can increase the risk of additional transmission. Decisions should be based on evidence of improving local/regional control, such as:

- Consistent decrease in the number of confirmed cases;
- Reduction in the number of probable and known cases; or,
- Effective protective countermeasures are in place (e.g., high coverage with a pandemic influenza vaccine).

General recommendations are to withdraw the most stringent or disruptive measures first (e.g., widespread community quarantine, snow days, mass transit interruptions). These recommendations would be communicated to the public through traditional public health methods, such as media (television, radio, newspaper), websites, etc.

However, since waves of pandemic influenza may circulate, it will be important to understand that interventions may need to be re-instated as events develop. Communicating clearly and effectively to reduce public frustration and distrust will be important.

Table 1. Graded Implementation of Community Containment Measure

Level of Influenza Activity	Response
No novel influenza strains of public health concern in global circulation	Preparedness planning
Limited novel influenza virus* transmission abroad; all local cases are either imported or have clear epidemiologic links to other cases; **OR**	Quarantine of close contacts
Limited novel influenza virus transmission in the area, with either a small number of cases without clear epidemiologic links to other cases or with increased occurrence of influenza among their close contacts	
Sustained novel influenza virus transmission in the area, with a large number of cases without clear epidemiologic links to other cases; control measures aimed at individuals and groups appear to be effective	Focused measures to increase social distance;[@] consider community-based measures
Sustained novel influenza activity in the area, with a large number of cases in persons without an identifiable epidemiologic link at the time of initial evaluation; control measures are believed to be ineffective	Community-level measures to increase social distance; consider snow days and communitywide quarantine
Decreases in the number of new cases, unlinked (or "unexpected") cases, and generations of transmission	Quarantine of contacts
Transmission has been controlled or eliminated; no new cases reported	Active monitoring in high-risk populations; continue for 2-3 incubation periods after control or elimination of transmission.

[*] "Novel influenza viruses" include avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or reemerging human viruses that cause cases or clusters of human disease.

[@] "Focused measures to increase social distance" include measures applied to groups rather than individuals or whole communities (e.g., quarantine of groups of exposed persons and measures that apply to the use of specific sites or buildings)

Table 2. Threshold Determinants for the Use of Community Containment Measures

Data on cases and contacts—as well as on depletion of healthcare and public health resources over the course of a pandemic—can help state and local health authorities decide when to implement community-level containment measures. As part of preparedness planning, state and local health agencies and healthcare partners may estimate at what point in the pandemic—in terms of such variables as numbers of cases and numbers of unoccupied hospital beds—that more extensive measures may be imposed. During an actual pandemic, state and local departments may also evaluate social considerations, such as levels of community cooperation and mobility.

Variable	
Cases and contacts	Number of cases (absolute or estimated)
	Rate of incident cases
	Number of hospitalized cases
	Number and percentage of cases with no identified epidemiologic link
	Morbidity (including disease severity) and mortality
	Number of contacts under surveillance and/or quarantine
Healthcare resources	Hospital/facility bed capacity
	Staff resources
	Patient/staff ratio
	Number of ill or absent staff members
	Availability of specifically trained specialists and ancillary staff members
	Availability of ventilators
	Availability of other respiratory equipment
	Availability of personal protective equipment and other measures
	Availability of therapeutic medications (influenza and non-influenza specific)
Public health resources	Investigator to case and contact ratios
	Number of contacts under active surveillance
	Number of contacts under quarantine
	Ability to rapidly trace contacts (number of untraced/interviewed contacts)
	Ability to implement and monitor quarantine (staff member to contact ratio)
	Ability to provide essential services (food, water, etc.)

Community cooperation, mobility, and compliance	Degree of compliance with voluntary individual isolation
	Degree of compliance with active surveillance and voluntary individual quarantine
	Degree of movement out of the community
	Degree of compliance with community-containment measures

Appendix 8A. Interventions for Community Containment

Contacts of pandemic influenza patients can be managed by use of a range of interventions, all of which are designed to facilitate early recognition of illness in persons at greatest risk of becoming infected and thereby prevent transmission to others. Whereas many of these interventions are applied individually to persons identified as contacts of a person with possible or known influenza disease, others are applied to larger groups of persons, or communities, that share a similar risk of exposure. Measures applied to individuals may not be feasible during the Pandemic Period, when quarantining individuals and tracing close contacts may not be possible. The range of interventions includes the following:

Passive Monitoring	
Definition	The contact is asked to perform self-assessment at least twice daily and to contact authorities immediately if respiratory symptoms and/or fever occur.
Application	Situations in which 1) the risk of exposure and subsequent development of disease is low, and 2) the risk to others if recognition of disease is delayed is also low
Benefits	Requires minimal resources
	Places few constraints on individual movement
Challenges	Relies on self-reporting
	Affected persons may not perform an adequate self-assessment
Resources Required	Supplies (thermometer; symptom log; written instructions)
	Hotline to notify authorities about symptoms or needs
	Staff to receive telephone reports and provide in-person evaluation and care
	Plans and procedures for rapid isolation of persons who develop symptoms
Partners	Household members
Forms/Templates	Symptom logs
	Instructions for patients and healthcare workers
Active Monitoring without Explicit Activity Restrictions	
Definition	A healthcare or public health worker evaluates the contact on a regular (at least daily) basis by phone and/or in person for signs and symptoms suggestive of influenza
Application	Situations in which: 1) the risk of exposure to and subsequent development of disease is moderate to high, 2) resources permit close observation of individuals, and 3) the risk of delayed recognition of symptoms is low to moderate
Benefits	Places few constraints on individual liberties
Challenges	Requires adequate staffing
	Requires a system to track information and to verify monitoring and appropriate actions based on findings
Resources Required	Trained staff to provide in-person and/or telephone evaluations
	Plans and procedures for rapid isolation of persons who develop

	symptoms
	Contingency plans for managing noncompliant persons
	Hotline to notify authorities about symptoms or needs
Partners	Professional and lay healthcare workers to perform evaluations on behalf of the health department
	Possible need for law enforcement to assist with management of noncompliant persons
Forms/Templates	Checklist for assessment of active monitoring
	Template for recording results of clinical evaluation
Active Monitoring with Activity Restrictions (Quarantine)	
Definition	The contact remains separated from others for a specified period (up to 10 days after potential exposure), during which s/he is assessed on a regular basis (in person at least once daily) for signs and symptoms of influenza disease. Persons with fever, respiratory, or other early influenza symptoms may require additional evaluation by a trained healthcare provider. Restrictions may be voluntary or legally mandated; confinement may be at home or in an appropriate facility. No specific precautions are required for those sharing the household with a person in quarantine as long as the person remains asymptomatic. Because onset of symptoms may be insidious, it may be prudent to minimize interactions with household members during the period of quarantine, if feasible
Application	Situations in which the risk of exposure and subsequent development of disease is high and the risk of delayed recognition of symptoms is moderate
Benefits	Reduces risk of spread from persons with subacute or subclinical presentations or from delayed recognition of symptoms
Challenges	May infringe on personal movement
	May lead to a feeling of isolation from family and friends
	May lead to loss of income or employment
	Requires plans/protocols for provision of essential services
	Requires plan for provision of mental health support
	Risk of noncompliance, particularly as duration increases
	May require enforcement for noncompliance
Resources Required	Staff for monitoring and evaluation
	Appropriate facility if home setting is unavailable or inadequate
	Staff, funding, and goods for provision of essential services
	Hotline for notification of symptoms or personal needs
	Mechanisms to communicate with family members outside the household or facility
	Mental health and social support services
	Delivery systems for food and other essential supplies
Partners	Professional and lay healthcare workers to perform assessments on behalf of the health department

	Community volunteers/workers to assist with provision of essential services
	Potential need for law enforcement to assist with noncompliant persons
Forms/Templates	Checklist for active monitoring
	Template for recording results of clinical evaluation
	Checklist and guidelines for evaluation of homes for quarantine
	Checklist and guidelines for evaluation of community-based sites for quarantine
	Guidelines for monitoring compliance with home quarantine
	Guidelines for monitoring compliance with quarantine in community-based facilities
	Forms for recording compliance with quarantine
	Examples Home quarantine (voluntary or mandatory)
	Facility quarantine (voluntary or mandatory)
Working Quarantine	
Definition	Employees are permitted to work but must observe activity restrictions while off duty. Monitoring for influenza-like illness before reporting for work is usually required. This may change based on the clinical presentation of the pandemic strain. Use of appropriate PPE while at work is required.
Application	Persons for whom activity restrictions (home or facility quarantine) are indicated but who provide essential services (e.g., healthcare workers)
Benefits	Reduces risk of community spread from high-risk contacts while minimizing adverse impact of activity restrictions on provision of essential services
	Clinical monitoring at work reduces the staff required for active monitoring at the quarantine site
Challenges	Need for close and consistent pre-shift monitoring at the work site to prevent inadvertent exposures
	May require means of transporting persons to and from work site to minimize interactions; persons in working quarantine should wear appropriate PPE during transport.
	Must maintain close cooperation and communication between work site and local health authorities
	Need to provide mental health services to address concerns about isolation from family and friends
Resources Required	Appropriate facility for off-duty quarantine if home is unavailable or inadequate
	Staff, funding, and goods for provision of essential services
	Personal protective equipment
	Hotline for notification of symptoms and personal needs
	System to track results of work-site monitoring and location(s) of off-duty quarantine
	Mental health, psychological, and behavioral support services, especially if work includes care of influenza patients

Partners	Work-site administrators and infection control personnel
	Community volunteers/workers
	Staff/volunteers to assist with transportation to and from work
	Mental health professionals
	Potential need for law enforcement to assist with noncompliant persons
Forms/Templates	Guidelines and instructions for persons in working quarantine
	Instructions for supervisors of persons in working quarantine
	Checklist to evaluate homes for quarantine
	Guidelines for monitoring compliance
	Checklist for active monitoring at work site
	Template for recording results of clinical evaluation
	Forms for recording compliance
Focused Measures to Increase Social Distance	
Definition	Intervention applied to specific groups, designed to reduce interactions and thereby transmission risk within the group. When focused, the intervention is applied to groups or persons identified in specific sites or buildings, most but not necessarily all of whom are at risk of exposure to influenza.
	Examples Quarantine of groups of exposed persons
	Cancellation of public events
	Closure of office buildings, schools, and/or shopping malls; closure of public transportation such as subways or bus lines
Application	Groups or settings where transmission is believed to have occurred, where the linkages between cases is unclear at the time of evaluation, and where restrictions placed only on persons known to have been exposed is considered insufficient to prevent further transmission
Benefits	Applied broadly, reduces the requirement for urgent evaluation of large numbers of potential contacts to determine indications for activity restrictions
	May enable reductions in transmission among groups of persons without explicit activity restrictions (quarantine)
Challenges	May be difficult to solicit cooperation, particularly if popular buildings are closed or popular events are cancelled
	Requires excellent communication mechanisms to notify affected persons of details and rationale
	May need to provide replacement for affected activities (e.g., school, essential services)
	Generally relies on passive monitoring
Resources Required	Systems to communicate relevant messages
	May require enforcement, particularly if closure of buildings or gathering places is necessary
	Requires resources for passive monitoring
	Hotlines to report symptoms and obtain follow-up instructions
	Transportation for medical evaluation, with appropriate infection control precautions

Partners	News media and communication outlets
	Law enforcement
	Community groups
Forms/Templates	Messages for affected persons
	Messages for employers of affected persons
	Messages for persons supplying essential services
Community-Wide Measures to Increase Social Distance	
Definition	Intervention applied to an entire community or region, designed to reduce personal interactions and thereby transmission risk. The prototypical example is implementation of a "snow day," in which offices, schools, and transportation systems are cancelled as for a major snowstorm.
Examples	Snow days
Application	All members of a community in which 1) extensive transmission of influenza is occurring, 2) a significant number of cases lack clearly identifiable epidemiologic links at the time of evaluation, and 3) restrictions on persons known to have been exposed are considered insufficient to prevent further spread
Benefits	Reduces need for urgent evaluation of large numbers of potential contacts to determine indications for activity restrictions
	May enable reductions in transmission among groups without explicit activity restrictions (quarantine)
	"Snow days" are familiar concepts and thus are easy to implement on short notice
Challenges	May be difficult to solicit cooperation
	Requires excellent communication mechanisms to notify affected persons of details and rationale
	May need to provide replacement for affected activities (e.g., school, essential services)
	May need to address mental health and financial support issues
	When an entire community is involved, requires cooperation with neighboring jurisdictions that may not be using a similar intervention, particularly in situations where persons live in one city and work in another and only one locale is affected by the intervention
	Generally relies on passive monitoring
	Social and economic impact of public transportation closures
Resources Required	Communication outlets
	Enforcement
	Resources for passive monitoring
	Hotlines and other communication systems to report symptoms and obtain follow-up instructions
Partners	News media and other communication outlets
	Law enforcement and transportation officials to enforce restrictions (e.g., closure of bridges, roads, or mass transit systems) and plan for provision of critical supplies and infrastructure

Forms/Templates	Messages for affected persons
	Messages for employers of affected persons
	Messages for persons supplying essential services
Widespread Community Quarantine, Including *Cordon Sanitaire*	
Definition	Legally enforceable action that restricts movement into or out of the area of quarantine of a large group of people or community; designed to reduce the likelihood of transmission of influenza among persons in and to persons outside the affected area. When applied to all inhabitants of an area (typically a community or neighborhood), the intervention is referred to as *cordon sanitaire* (sanitary barrier).
Application	All members of a group in which 1) extensive transmission is occurring, 2) a significant number of cases lack identifiable epidemiologic links at the time of evaluation, and 3) restrictions placed on persons known to have been exposed are considered insufficient to prevent further spread.
	Widespread quarantine is unlikely to be necessary because other less restrictive measures (e.g., snow days) may be equally effective.
Benefits	Reduces need for urgent evaluation of large numbers of potential contacts to determine indications for activity restrictions
Challenges	Controversial because of the degree that individual movement is restricted
	Difficult to solicit cooperation for extended periods, particularly if the rationale is not readily apparent or was not clearly explained
	Requires excellent communication mechanisms to inform affected persons and to maintain public confidence in the appropriateness of the chosen course of action
	Need to ensure continuation of essential services
	Need to provide financial support and mental health support services for the affected population When an entire community is involved, requires cooperation with neighboring jurisdictions that may not be using a similar intervention, particularly in situations where persons live in one city and work in another and only one locality is affected by the intervention
	Need to provide mechanisms for isolating symptomatic persons with minimal delay
Resources Required	Systems to communicate relevant messages
	Enforcement to maintain security at borders
	Transportation for persons requiring medical evaluation, with appropriate infection control precautions
	Staff and supplies to maintain access to and availability of essential services and goods, including food, water, medicine, medical care, and utilities
	Psychological support staff
	Plan to divert flow of critical infrastructure supplies and materials that normally transit through quarantined area
Partners communication	News media and other mass
	Public and private groups, industries, and officials to coordinate supply

outlets	and provision of essential services to affected area
	Law enforcement to maintain security at borders and to enforce movement restrictions
	Transportation industry
Forms/Templates	Messages for affected persons
	Messages for employers of affected persons
	Messages for persons supplying essential services
Examples	Quarantine (*cordon sanitaire*) of a city or town
	Quarantine of occupants of a housing complex or office building

Appendix 8B. Preparedness Checklist for Community Containment Measures

General

- □ Establish an incident command structure that can be used for influenza response.
- □ Establish a legal preparedness plan.
- □ Establish relationships with partners, such as law enforcement, first responders, healthcare facilities, mental health professionals, local businesses, and the legal community.
- □ Plan to monitor and assess factors that will determine the types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation.
- □ Develop communication strategies for the public, government decision-makers, healthcare and emergency response workers, mental health professionals, and the law enforcement community.
- □ Invite key partners to participate in pandemic influenza containment exercises and drills.

Management of cases and contacts (including quarantine)

- □ Develop protocols, tools, and databases for:
  - o Case surveillance
  - o Clinical evaluation and management
  - o Contact tracing, monitoring, and management
  - o Reporting criteria
- □ Develop standards and tools for home and non-hospital isolation and quarantine.
- □ Establish supplies for non-hospital management of cases and contacts.
- □ Establish a telecommunications plan for "hotlines" or other services for:
  - o Case and contact monitoring and response
  - o Fever triage
  - o Public information
  - o Provider information
- □ Plan to ensure provision of essential services and supplies to persons in isolation and quarantine, keeping in mind the special needs of children. Services and supplies include:
  - o Food and water
  - o Shelter
  - o Medicines and medical consultations
  - o Mental health and psychological support services
  - o Other supportive services (e.g., day care or elder care)
  - o Transportation to medical treatment, if required
- □ Plan to address issues of financial support, job security, and prevention of stigmatization.
- □ Establish procedures for medical evaluation and isolation of quarantined persons who exhibit signs of illness.
- □ Develop protocols for monitoring and enforcing quarantine measures, such as:
  - o Protocols for follow-up of persons who cannot be reached by telephone. These may include a threshold period for non-responsiveness that should trigger a home visit or other means to locate the person. Partnerships with law enforcement and

other community-based resources will be helpful in tracing the whereabouts of persons who have violated restrictions.
- Protocols for monitoring persons who cannot or will not comply with voluntary home quarantine. These may include:
- Issuing official, legally binding quarantine orders
- Posting a guard outside the home
- Using electronic forms of monitoring
- Using guarded facilities
- Protocols for using checkpoints to restrict travel between neighborhoods.

Temporary emergency facilities for patient isolation or quarantine, and assessment of patients with fever (see Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat* for facility characteristics)

- □ Identify appropriate community-based facilities for isolation or quarantine of patients who have minimal healthcare requirements or for persons for whom home isolation is indicated but who do not have access to an appropriate home setting, such as travelers and homeless populations. Prepare contingency plans for staffing and equipping them.
- □ Develop policies related to use of these facilities.
- □ Ensure that required procedures for assessment of potential isolation or quarantine sites are available and up to date.
- □ Identify potential sites for fever clinics and prepare contingency plans for staffing and equipping them, including the ability to dispense antiviral drugs to identified cases in the priority groups.

Community containment measures

- □ Ensure that legal authorities and procedures are in place to implement the various levels of movement restrictions as necessary.
- □ **Establish procedures for medical evaluation and isolation of quarantined persons who exhibit signs of illness.**
- □ **Develop tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine.**
- □ Identify key partners and personnel for the implementation of movement restrictions, including quarantine, and the provision of essential services and supplies:
  - Law enforcement
  - First responders
  - Other government service workers
  - Utilities
  - Transportation industry
  - Local businesses
  - Schools and school boards

Establish procedures for delivering medical care, food, and services to persons in isolation or quarantine. Examples of services that will require the help of non-traditional partners include:

- □ Training for responders and healthcare workers, as necessary, in use of personal protective equipment
- □ Plans for the mobilization and deployment of public health and other community-service personnel

General

- □ Establish an incident command structure that can be used for influenza response.
- □ Establish a legal preparedness plan.
- □ Establish relationships with partners, such as law enforcement, first responders, healthcare facilities, mental health professionals, and the legal community.
- □ Plan to monitor and assess factors that will determine the types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation.
- □ Develop communication strategies for the public government decision-makers, healthcare and emergency response workers, mental health professionals, and the law enforcement community. These strategies should consider privacy concerns.
- □ Invite key partners to participate in pandemic influenza containment exercises and drills.

Management of cases and contacts (including quarantine)

- □ Develop protocols, tools, and databases for management of cases and contacts, considering account security and privacy concerns. These may include protocols for:
  - o Case surveillance
  - o Clinical evaluation and management
  - o Contact tracing, monitoring, and management
  - o Reporting criteria
- □ Develop standards and tools for home and non-hospital isolation and quarantine.
- □ Establish supplies for non-hospital management of cases and contacts.
- □ Establish a telecommunications plan for "hotlines" or other services for case and contact monitoring and response
  - o Fever triage
  - o Public information
  - o Provider information
- □ Plan to ensure provision of essential services and supplies to persons in isolation and quarantine, including:
  - o Food and water
  - o Shelter
  - o Medicines and medical consultations
  - o Mental health and psychological support services
  - o Other supportive services (e.g., day care or elder care).
  - o Transportation to medical treatment, if required
- □ Plan to address issues of financial support, job security, privacy concerns and prevention of stigmatization.

For recommendations for home or facility isolation/quarantine – see Virginia's *Isolation and Quarantine Guide for Communicable Diseases of Public Health Threat.*

I. Activities for the Interpandemic and Pandemic Alert Periods

A. Preparedness for implementation of travel-related containment measures

If a pandemic begins outside the United States, early application of travel-related control measures (i.e., identification and isolation of ill travelers, quarantine of close contacts) might slow the introduction of the virus into the United States, allowing more time for healthcare preparedness efforts. The effectiveness of these measures might be limited because asymptomatic travelers can transmit disease, travelers in the incubation phase might not become symptomatic until after arrival at their destinations, and it might not be possible to trace contacts within the incubation period for influenza. Results of mathematical models suggest that even with international flights, if persons are asymptomatic but incubating influenza when they board, they may remain asymptomatic when they arrive and therefore may not be detected by either exit or entry screening. Nevertheless, the ability to detect some cases early in the pandemic may slow disease spread even for a short time. The effective implementation of travel-related containment measures depends on advance planning, preparedness, and coordination at the state, local, federal and international levels.

The newly established Washington, D.C. quarantine station, operated by the Centers for Disease Control and Prevention, Division of Global Migration and Quarantine (CDC DQ), is located at Dulles International Airport in northern Virginia. This quarantine station is responsible for preventing the introduction of infectious diseases of public health importance and covers all ports of entry (airports and seaports) within the Commonwealth of Virginia. The primary entry port for international flights in Virginia is Dulles International Airport, which is staffed with U.S. Customs and Border Protection (CBP) agents. Seaports in Richmond and Norfolk are also staffed with CBP agents. Some international travel may occur at other airports and seaports; however, these are not staffed with CBP agents, who are the main federal law enforcement presence available to assist with federal isolation and quarantine orders.

Quarantine officials at the Washington Quarantine Station are developing Communicable Disease Response Plans for use at all main ports of entry in Virginia. Initially, a plan is being developed for Dulles International Airport with assistance from the Metropolitan Washington Airport Authority (MWAA) and its emergency medical services (EMS) personnel. The MWAA is the governing body for both Dulles International Airport and Ronald Reagan Washington National Airport, located in Loudoun/Fairfax Counties and Arlington County, respectively. VDH and the local health districts in northern Virginia are providing input into the Dulles Communicable Disease Response Plan. The plan developed for Dulles International Airport will be used as a template for other ports of entry in the state. VDH and local health districts will continue to work closely with quarantine officials to develop

additional plans. The Virginia Department of Health and local health districts participate in exercises and drills at the airports.

CDC has developed memoranda of agreement (MOA) with eight hospitals in northern Virginia and the Richmond area that are equipped to isolate, evaluate, and manage suspected influenza patients. EMS personnel can perform on-site assessments of ill passengers, in consultation with the CDC quarantine officials, and transport ill passengers to hospitals for evaluation, as needed.

The Office of the Attorney General is providing assistance to ensure appropriate implementation of Virginia Isolation and Quarantine laws as VDH and the local health districts collaborate with the CDC for managing travel-related disease risk during a Pandemic Alert and Pandemic Period. As planning for training, mobilizing, and deploying public health staff and other emergency workers continues, additional community partners might include:

- First responders (firefighters, police officers)
- Local members of the legal community
- Emergency medical services and other emergency responders
- American Red Cross and other humanitarian organizations

Although the federal government is primarily responsible for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the U.S., VDH and the local health districts may also take measures, such as isolation of ill travelers and quarantine of their contacts, to prevent the spread of communicable diseases within the Commonwealth. Because jurisdictions and authorities at airports and other ports of entry overlap, VDH will work closely with federal health authorities to establish protocols and outline roles and responsibilities for managing travel-related risks in accordance with state laws and regulations, and VDH guidelines. VDH has the legal authority for the isolation of ill persons and the quarantine of exposed persons and will need to address overlapping multi-jurisdictional issues. Close collaboration with local, state and federal law enforcement officials will be needed in developing plans for enforcing potential travel restrictions, such as the cancellation of nonessential travel and restrictions on the use of mass transit systems.

B. Evaluation of travel-related cases of infection with novel strains of influenza

During the interpandemic and pandemic alert periods, VDH will maintain close contact with the Washington Quarantine Station to gather and further disseminate relevant information statewide. Travel-related cases of infection might be reported during transit by airline or cruise ship personnel before arrival of an ill passenger or detected after entry into the United States. Information on the detection and identification of novel strains of influenza is provided in **Supplement 1**.

1. Managing ill travelers at ports of entry

Quarantine officials evaluate ill passengers who are identified by flight crews, U.S. Customs Service inspectors, or other Federal Inspection Service personnel. CDC is working with partners in the travel industry to ensure that airplane and cruise ship personnel are familiar with case definitions (e.g., symptoms, travel history) for avian influenza A (H5N1) and clinical and epidemiologic criteria for infection with a novel influenza strain of public health concern. CDC will provide additional and updated case definitions, as necessary, during the Pandemic Alert and Pandemic Periods. Additional or updated case definitions for infection with novel strains of influenza will be issued, as needed, if the level of heightened surveillance increases from a situation of little immediate pandemic risk (corresponding to WHO Pandemic Alert Phase 3), to one in which pandemic risk is moderate or substantial (corresponding to WHO Pandemic Alert Phases 4 or 5).

CDC will inform partners in the travel industry of the actions to take and persons to contact if they are concerned about a sick passenger who might have novel influenza. If an ill passenger with a suspected case of novel influenza is reported aboard an arriving airplane or cruise ship, a quarantine officer from the Washington Quarantine Station will determine if it is appropriate to meet the arriving passenger. If a quarantine officer decides to meet the airplane or cruise ship and perform an initial medical evaluation of the ill traveler, the passengers and crew should be informed of the situation and should not be allowed to disembark until the evaluation is complete. If quarantine officials are not available to meet the arriving vessel, EMS personnel will assess the ill passenger(s) in consultation with CDC DQ and according to protocol. Quarantine officials will request information on the ill passenger's symptoms and travel and exposure history to make an initial assessment if the illness meets the current clinical and epidemiologic criteria for avian influenza A (H5N1) or is suspicious for a novel influenza strain. Passengers meeting the clinical and epidemiologic criteria and/or those requiring immediate medical treatment may be transported to a pre-designated, nearby medical facility where appropriate infection control procedures can be implemented for transit and patient isolation. The flight will be assessed for other ill passengers so that they may be separated from those who are not sick. Guidance on infection control procedures will be provided to the crew, if needed (e.g., separate the ill passenger as much as possible from other passengers; provide the ill passenger with a mask or tissues to cover coughs and sneezes). Federal law enforcement authorities will assist with enforcing isolation of ill passengers and/or their contacts, if necessary, when they are uncooperative.

VDH and the local health districts near the airport will be notified when ill passengers are arriving and there are concerns about avian influenza or a novel influenza strain. Notification procedures are currently being

developed. In turn, other appropriate partners will be notified. Additional information from the public health assessment and any recommendations or referrals for evaluation and care will also be provided. VDH and the local health districts may be called upon to assist quarantine officials with the assessment of ill passengers. The quarantine station will provide information and training about the public health assessment. Additionally, VDH will coordinate activities with the Division of Consolidated Laboratory Services to provide timely diagnostic services. Emergency courier services to the laboratory can be arranged for rapid specimen transport.

2. Quarantine preparedness and managing travel contacts

CDC DQ may issue federal quarantine orders for individuals traveling with the ill passenger, as appropriate. The quarantine officials are currently developing plans with the MWAA for on-site quarantine at Dulles International Airport for an initial period up to 72 hours. In addition to the federal quarantine order, VDH may issue state quarantine orders, either voluntary or involuntary, to further protect citizens of the Commonwealth and aid with the federal quarantine process. Local and state law enforcement officials can assist with the enforcement of state quarantine orders. CDC DQ, the VDH Office of Epidemiology and the local health director will consult and determine if state quarantine orders are needed. CDC DQ will assist by providing necessary passenger, crew and/or emergency services personnel information needed to draft the quarantine orders for the Commissioner of Health's signature. Local public health officials, with assistance from the state as needed, should identify quarantine facilities for housing passengers, crew, and emergency workers who may have been exposed to an ill traveler. These facilities should be equipped for temporary quarantine (a few days), until the results of diagnostic tests become available, or longer-term quarantine (up to 10 days) if a diagnosis of pandemic influenza is confirmed. Local health districts are responsible for identifying appropriate short and long-term quarantine facilities in their districts and ensuring the provision of goods and services to persons in quarantine, as outlined in VDH isolation and quarantine guidelines (see Supplement 8).

VDH and the local health districts, in consultation with CDC, will consider the following factors in deciding how to manage an ill person's travel contacts on a case-by-case basis:

- Likelihood that the suspected case is due to a novel influenza strain (based on symptoms and travel history, if laboratory results are not available)
- Likelihood that the causative virus is transmitted from person to person with a moderate or high efficiency (as in later phases of the Pandemic Alert Period)

- Feasibility of tracing and monitoring travel contacts, as well as the patient's family members, workmates, schoolmates, and healthcare providers

Management of contacts might include:

- Passive or active monitoring without activity restrictions
- Quarantine at home or in a designated facility, and/or
- Antiviral prophylaxis or treatment.

For retrospectively identified cases, if passengers and crew members cannot be traced within 48-72 hours of the presumed exposure, VDH, in consultation with CDC, might consider other options (e.g., issue a public notice through the news media). During the Pandemic Alert Period, especially during the earlier phases, VDH will consider quarantining travel contacts (i.e., passengers, crew, response workers) **only when there is a high probability that the ill passenger is infected with a novel influenza strain that is transmitted between people.**

If a decision is made to initiate quarantine, persons who cannot be quarantined at home should be housed in a pre-designated temporary care facility until the diagnosis of the ill passenger is confirmed or disproved. Each quarantined person should receive a preliminary medical assessment and should be interviewed to ascertain their travel and exposure histories. If the diagnosis of a novel strain of influenza is confirmed, quarantined persons should remain there for the maximum length of the incubation period for influenza. Each quarantined person may receive antiviral medication and should be monitored twice a day for fever and other signs of influenza (see **Supplement 8**).

C. Health information for travelers

CDC's Travelers' Health website (www.cdc.gov/travel/) will provide up-to-date travel notices for international travelers to countries affected by novel influenza viruses during the Pandemic Alert Period and Pandemic Period. These notices are issued depending on the scope, risk for travelers, and recommended preventive measures. Four types of travel notices can be issued:
In the News, Outbreak Notices, Travel Health Precautions, and Travel Health Warnings. Additional Travel Health Precautions or Warnings (see Appendix 9A) may be issued to inbound and outbound travelers during the Pandemic Alert Period if avian influenza spreads internationally and causes additional cases of human influenza. Quarantine officials are primarily responsible for the distribution of health information to travelers. Assistance in disseminating travel notices may be provided by VDH and the local health districts, if requested.

II. Recommendations for the Pandemic Period

Over the course of an influenza pandemic, VDH, in consultation with CDC, may consider a range of travel-related control measures to decrease the spread of disease in Virginia and into, out of, or within the United States. The following factors may be considered in developing policy:

- The relative magnitude, duration, and stage of indigenous transmission versus the risk associated with further introduced cases. When pandemic disease is widespread in the U.S., the additional contribution of introduced cases to the magnitude or spread of the pandemic will be minimal depending on the state of the epidemic in the specific location of introduction.
- The value of compulsory restrictions in a setting of voluntary changes in travel patterns. Voluntary changes in travel will occur during a pandemic as persons choose to cancel nonessential travel to decrease their potential exposure and risk of acquiring influenza infection. In this context, the added value of compulsory restrictions should be considered relative to the societal disruptions that limitations on movement would cause. Because travel-related measures implemented by one jurisdiction will inevitably affect others, communication, collaboration, and especially coordination before any measures are implemented is crucial.

A. Travel-related containment measures

1. Travel into the United States

Early during an influenza pandemic that begins outside the United States, CDC DQ authorities will heighten disease surveillance at U.S. airports and seaports and maintain close communication with WHO, foreign governments, and the airline industry. VDH will maintain close communication with CDC DQ and the Washington Quarantine Station to provide information to the local health districts. Travel-related disease control measures will include management of ill travelers arriving at ports of entry and provision of travel health alert notices to incoming travelers.

a) Managing arriving ill passengers

Identification and management of incoming ill travelers may delay and decrease the introduction of novel influenza strains into the United States during the Pandemic Alert Period. These efforts will continue during the early stages of the Pandemic Period, especially if a pandemic strain emerges in another country but has not yet entered the United States. Once the pandemic has spread outside and within the United States, screening for arriving ill passengers will become less useful and feasible. Although exit-screening of travelers from affected areas (“source control”) is likely to be a more effective disease control measure, its effectiveness too will be limited.

Arriving ill passengers will be managed in the same way as during the interpandemic and pandemic alert periods.

b) Travel health precautions and warnings

As the pandemic spreads from country to country, HHS will update country-specific travel notices and post them on the CDC Travelers' Health website (http://www.cdc.gov/travel/). Advisories might include:

• **Travel Health Precautions** that describe steps that can be taken to reduce the risk of infection (e.g., avoiding travel to high-risk settings and communities where transmission is occurring)

• **Travel Health Warnings** that recommend postponement of nonessential travel

c) Travel-related measures at early stages of a pandemic

When there is limited transmission in other countries and potential for importation of cases into the United States, VDH may consider the following actions, in collaboration with CDC DQ:

- Initiate enhanced disease surveillance at ports of entry.
- Provide guidance on infection control procedures that can be implemented, if needed, on airplanes or ships (e.g., separate the ill passenger from other passengers; provide the ill passenger with a mask or tissues to prevent viral spread via coughing).
- Isolate arriving ill passengers, and quarantine their contacts as necessary.
- Collect information on all arriving passengers if notification is warranted (e.g., for antiviral administration, vaccination, or health monitoring).

d) Travel-related measures at later stages of a pandemic

If the situation worsens overseas and there is extensive and sustained transmission in other countries, VDH might consider these actions, in collaboration with CDC DQ:

- Distribute travel health alert notices to passengers arriving from affected countries (i.e., countries for which health warnings have been issued).
- Post travel health alert notices in airports (e.g., on posters).
- Arrange with airline industry partners to show videos or public announcements about pandemic influenza on airplanes or cruise ships arriving from affected countries.
- Recommend canceling or limiting nonessential travel to affected countries.

- Collect information on all arriving passengers if notification is warranted (e.g., for antiviral administration, vaccination, or health monitoring). Decisions regarding the implementation of these actions may depend on how widely the pandemic disease has spread within the U.S.
- Other potential control measures might include increasing disease surveillance among passengers arriving from affected countries by visually inspecting travelers as they disembark, screening travelers for fever or other influenza symptoms, or administering questionnaires on possible exposures to influenza (e.g., contacts with influenza patients or visits to high-risk areas). Serious consideration will be given to these measures prior to implementation as they are highly labor-intensive and of unproven benefit.

2. Travel out of the United States

If the level of influenza transmission in the United States presents a high risk for exportation of disease, CDC DQ may recommend the following actions and request assistance from VDH and the local health districts:

- Distribute travel health warnings to outbound passengers.
- Recommend the cancellation of nonessential travel to other countries from ports of entry in affected parts of Virginia or other parts of the United States.
- Implement pre-departure screening (e.g., temperature screening or visual screening) of outbound travelers.

3. Travel within the United States

If the level of influenza transmission in a U.S. area is high and if most other areas have not yet been affected, HHS and state and local health authorities might decide to recommend limiting or canceling nonessential travel to that area or to implement increased disease surveillance measures. Other containment measures and travel restrictions to slow disease spread within the United States that might be considered include:

- Distributing travel health alert notices on domestic flights
- Isolating ill arriving passengers on domestic flights and quarantining passengers and crew, following protocols developed for international flights
- Closing mass transit systems (e.g., buses and subways; see **Supplement 8**)
- Closing interstate bus and train routes

The potential effectiveness of these measures and the feasibility of implementing them should be considered in decision-making.

B. De-escalation of travel-related control measures

VDH will receive recommendations from CDC DQ regarding decisions to de-escalate control measures related to international travel.

1. Outbound passengers

VDH will receive information when CDC downgrades a Travel Health Warning for outbound U.S. passengers to a Travel Health Precaution for a given country or area when there is adequate and regularly updated reporting of surveillance data from the area, and limited or no recent instances of cases in the area.

2. Inbound passengers

VDH may provide assistance to CDC DQ with distributing travel health alert notices. These notices are provided, on arrival, to inbound passengers from areas under a Travel Health Warning. Because it is often difficult to determine passengers' points of origin, it may be more practical to continue providing travel health alert notices until Travel Health Precautions have been lifted for all areas. CDC will remove a Travel Health Precaution when there is adequate and regularly updated reporting of surveillance data from the area and limited or no recent instances of cases exported from the area.

Appendix 9A. Travel-Related Definitions

Travel Notices:
Different types of notices for international travelers. During the 2003 SARS outbreak, CDC issued two types of travel notifications about disease occurrences in specific geographic areas. A travel alert, a lower-level notice, provided information on the outbreak and informed travelers about how to reduce their risk of acquiring infection. When the health risk for travelers was thought to be high, CDC issued a travel advisory recommending against nonessential travel to the area. Travel advisories were intended to reduce the number of travelers to high-risk areas and the risk for spreading disease to other areas. The levels of notification have since been revised to include four types of travel notices: In the News, Outbreak Notice, Travel Health Precautions, and Travel Warnings.

In the News:
Notification by CDC of an occurrence of a disease of public health significance affecting a traveler or travel destination. The purpose is to provide information to travelers, Americans living abroad, and healthcare providers. "In the News" is issued when the risk for disease exposure is not increased beyond the usual baseline risk for that area, and only standard guidelines are recommended.

Outbreak Notice:
Notification by CDC that an outbreak of a disease is occurring in a limited geographic area or setting. The purpose is to provide information to travelers, Americans living abroad, and healthcare providers about the status of the outbreak and to remind travelers about standard or enhanced travel recommendations for the area. Outbreak Notices are issued when the risk for disease exposure is increased but well defined and limited to specific settings.

Travel Health Precaution:
Notification by CDC that a disease outbreak of significant scope is occurring in a large geographic area. The purpose is to provide information to travelers, Americans living abroad, and healthcare providers about the status of the outbreak (its magnitude, scope, and rapidity of spread), specific precautions to reduce the risk of infection, and what actions to take if they become ill. Travel Health Precautions are issued when the risk for the individual traveler is increased in defined settings or associated with specific risk factors (e.g., transmission in a healthcare or hospital setting). Travel Health Precautions do NOT recommend canceling travel to the area.

Travel Health Warning:
Notification by CDC that a widespread outbreak of a disease of public health concern is expanding outside the area or populations that were initially affected. The purpose is to provide information to travelers, Americans living abroad, and healthcare providers about the status of the outbreak (its magnitude, scope, and rapidity of spread), specific precautions to reduce the risk of infection, and what actions to take if they become ill.

Appendix 9A. Travel-Related Definitions continued

Travel Health Warnings recommend canceling nonessential travel to the area because the risk for the traveler is considered high (i.e., there is evidence of transmission outside defined settings and/or inadequate containment). Additional preventive measures may be recommended, depending on the circumstances (e.g., travelers may be requested to monitor their health for a certain period after their return; arriving passengers may be screened at ports of entry). A Travel Health Warning may reduce the volume of traffic to an affected area, which in turn can reduce the risk of disease spread to previously unaffected sites.

Travel Health Alert Notice: Notice with travel-related information and recommendations designed for inbound travelers.

Travel contact: A person on the same conveyance as the ill person.

Close contact: A person who has cared for or lived with the ill person or had a high likelihood of direct contact with respiratory secretions and/or body fluids of the ill person. Examples of close contact with an ill person include kissing or hugging, sharing eating or drinking utensils, talking within 3 feet, and direct touching. Close contact does not include activities such as walking by a person or briefly sitting across a waiting room or office.

RATIONALE

Strategic communications activities based on scientifically derived risk communications principles are an integral part of a comprehensive public health response before, during and after an influenza pandemic. Effective communication guides the public, the news media, health-care providers and other groups in responding appropriately to outbreak situations and complying with public health measures.

The goals of the Supplement 10 are to:

- Describe the integral role of communications in preparing for, implementing and evaluating public health actions to protect health and prevent pandemic influenza-associated morbidity and mortality.
- Increase understanding of the Virginia Department of Health (VDH) role in combating infectious disease outbreaks and pandemic influenza.
- Provide local and state health officials and other responders with guidance to assist them in developing and implementing communication plans that support an effective public health response and help minimize anxiety, fear and stigmatization.
- Provide for coordinated and consistent communications across jurisdictions.
- Provide key messages, templates and best practices that can be adapted at the local, regional and state level to increase communications before and during a pandemic.

Supplement 10 emphasizes the following strategies to help state and local communications professionals collaborate with each other, VDH, CDC and other organizations accomplish these goals:

- Provide timely, accurate, consistent and appropriate information about pandemic influenza public health interventions.
- Emphasize the rationale and importance of adherence to public health measures that some people may consider intrusive (e.g., isolation and quarantine).
- Help set realistic expectations of public health and health-care systems.
- Promptly address rumors, inaccuracies and misperceptions.
- Minimize stigmatization that may occur during a pandemic.
- Adapt materials for others with special needs (e.g., non-English speaking populations, difficult-to-reach communities and persons living in institutional settings).
- Acknowledge the anxiety, distress and grief that people experience during long-term, major public health events such as pandemics.

Portions of this document have been modified and borrowed from the North Carolina and Massachusetts Influenza Pandemic Preparedness Plans.

OVERVIEW

Communications preparedness for an influenza pandemic, as outlined in this communications plan, follows seven key risk communications concepts.

- When health risks are uncertain, as likely will be the case during an influenza pandemic, people need information about what is known and unknown, as well as interim guidance to formulate decisions to help protect their health and the health of others.

- Coordination of message development and release of information among federal, state and local health officials is critical to help avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures.
- Guidance to community members about how to protect themselves, their family members and colleagues is an essential component of crisis management.
- Information provided to the public should be technically correct and succinct without seeming patronizing.
- Information presented during an influenza pandemic should minimize speculation and avoid over-interpretation of data, overly confident assessments of investigations and control measures.
- An influenza pandemic will generate immediate, intense and sustained demand for information from the public, health-care providers, policy makers and news media. Health-care workers and public health staff are likely to be involved in media relations and public health communications.
- During the Interpandemic Period, national, state and local health communications professionals should focus on preparedness planning and on building flexible, sustainable communications networks. During the Pandemic Period, they should focus on well-coordinated health communications to support public health interventions designed to help limit influenza-associated morbidity and mortality.

Assumptions

- Dissemination and sharing of timely and accurate information among state and local public health and government officials, medical care providers, the media and the general public will be one of the most important facets of the pandemic response.
- Different types of information will have to be communicated, often to different audiences.
- Basic messages will change over the duration of the pandemic as the disease circumstances, vaccine availability and other variables evolve.
- There will be widespread circulation of conflicting information, misinformation and rumors.
- Communication must be coordinated among all relevant agencies to ensure consistent messages to the general public.
- There will be a great demand for accurate and timely information regarding:
    1. Circulation of a pandemic strain
    2. Disease complications and mortality
    3. Disease control efforts, including availability and use of vaccines, antivirals and other preventive and treatment measures
    4. Where to get influenza vaccine
    5. "Do's and Don'ts" for the general public
    6. Maintenance of essential community services
- There will be a special need for information for the general public about how and why a priority group list for receipt of vaccine was developed. Appropriate risk communications will need to be employed to mitigate any sense of special treatment being afforded to one or more segments of the population over others. Public education will be an important part of the immunization campaign.
- Demand for information by health-care providers will be so great that existing methods for educating health-care providers will have to be expanded during the inter-pandemic period.

- Certain groups will be hard to reach, including people whose primary language is not English, people who are homeless, people who are hearing and visually impaired, etc. Special populations should be included in all communications efforts.

Audiences

Unlike many of the emergency situations and crises that we have faced in recent years, the onset of a pandemic will mean that we have a larger audience than in any previous emergency. However, there is not one universal way to reach out to all of these groups, as each will have its own specific needs before and during a pandemic. Therefore, it is important to weave the key messages discussed in this document into all communications, but also tailor communications to these specific audiences to achieve the highest level of success.

Typical audiences that we will have to communicate with include:
- Government leaders
- Localities
- Other state/local agencies
- Health-care professionals
- Schools
- Business owners
- Individual citizens
- Non English-speaking citizens
- Other emergency response agencies who will be trying to communicate pandemic flu information
- Neighboring localities and states
- Senior citizens
- Faith communities
- Public safety
- State Police

Communications Partners

VDH cannot bear the communications responsibility for pandemic influenza alone. In the case of a pandemic, multiple agencies will be working to convey important public health information to Virginians. VDH must partner with these entities in advance to coordinate messages and clearly define communications protocols. VDH will also work to ensure consistency and availability of materials for these organizations.
- Local health districts
- Locality officials and PIOs
- Governor's Office
- Virginia Department of Emergency Management (VDEM)
- Virginia Department of Agriculture and Consumer Services (VDACS)
- Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services
- Division of Consolidated Laboratory Services (DCLS)
- CDC

- HHS
- Pandemic Influenza Advisory Committee Members
- School officials
- Poultry industry
- Businesses
- Other applicable business and community public relations staff
- Faith communities
- Public safety
- State Police

Challenges

- A pandemic may initially strike in one area, but will quickly grow into a statewide, national and international issue. This will create confusion as to response and communications responsibilities and will make it difficult to control messages**.**
- Multiple spokespersons will arise from multiple agencies, making message consistency an ongoing coordination issue.
- The duration, scope and severity of the pandemic will quickly overwhelm response capacity and will shake normal procedures.
- VDH will be looked to for answers that we do not have. We will be forced to rely on communications as a primary tool, and we will have to emphasize that VDH is aware and working on the situation, but response to a pandemic will fall back to individuals.
- Basic response procedures and resources will break down as illness and fear of infection impact staffing levels and resource availability.
- Lack of existing VDH public relations staff in Central Office and the NW region will provide resource strain, especially if we are asked to staff the ECC, EOC and our regions simultaneously over a long period of time. This will be significantly compounded if existing staff fall ill and are unable to work.
- During a major crisis such as a pandemic, it is likely that regional and jurisdictional joint information centers will be activated. It will be a challenge to ensure consistency of message and coordination among the public information entities.
- It may also be unclear who the lead agency in this response effort is since it is taking place across jurisdictional and traditional agency boundaries.

I. Activities for the Interpandemic and Pandemic Alert Periods

During the initial stages of a pandemic, health communications professionals should work together to develop and maintain communications preparedness and to keep the public and other target groups updated about risks as the threat of a pandemic evolves.

Actions fall into four major categories:

- Assessing communications capacity and needs
- Conducting collaborative planning
- Developing and testing standard procedures for disseminating information
- Developing, testing and disseminating locally tailored messages and materials

A. Assessing communications capacity and needs

A first step in effective risk communications preparedness is to conduct an assessment of communications strengths and challenges. (For more details about these processes, you can view the federal pandemic flu plan at www.pandemicflu.gov. Communications is in Supplement 10)

In Virginia, VDH has an existing communications plan that governs routine and crisis communications for the agency. That plan is a basic template for communications and is available on the internal VDH Newsroom site, http://vdhweb/news/VDH_Communications_Plan.doc

- VDH ACTION ITEM: VDH needs to update its crisis communications protocols to reflect streamlined procedures for emergency releases of information and to better define job duties and coordination efforts for communications and epidemiology staff during a crisis such as a pandemic.
- VDH ACTION ITEM: VDH should continue to test its communications plans during drills and exercises.
- VDH ACTION ITEM: Local health districts should update their own crisis communications plan, including designation of primary spokesperson and backup spokespersons for a pandemic.

- Determine whether adequate human and fiscal resources will be available for all phases of a pandemic. If not, plan to augment these resources.
  - VDH ACTION ITEM: Current public information and communications staffing resources are extremely limited. VDH must develop staffing plans to cover sustained emergency communications responsibilities in the state EOC/JIC, the VDH Emergency Coordination Center (ECC) and also to staff field response to events at a regional, district and local level. These plans should include ways to augment trained communications staff with additional non-communications staff resources, and strategies to augment communications staff with trained communicators and other communications professionals.
- Review or establish procedures to help ensure that technology such as networks, servers and system backups are available, periodically tested and integrated into overall planning for pandemic influenza. Identify and include other types of technology, such as faxes and mass mailing systems. Establish priorities and implement improvement plans for any technology deficiencies.
  - VDH ACTION ITEM: Procure additional redundancies for communications, to include alternate cell phone services, blackberry services and redundant means to disseminate information to the media and directly to the public.
  - VDH ACTION ITEM: Develop a means to quickly distribute template information to local health districts so it can be produced and distributed to local audiences in an efficient manner.
- Ensure ongoing proficiency among all staff engaged in pandemic influenza response, especially given personnel changes, reorganization, or other variables.

- Identify communications professionals and media spokespersons. Provide media training and instruction in crisis and risk communication. Encourage familiarity with professional counterparts from local/regional jurisdictions or communities to facilitate collaboration.
    - VDH ACTION ITEM: Increase pandemic flu communications training for VDH staff and public relations staff assigned to areas outside disease or emergency response. Conduct subject matter and media and message training for VDH staff regularly.
    - VDH ACTION ITEM: Conduct routine training for field staff in pandemic flu communications response.
- Familiarize key officials with available communications resources and gaps; apprise policy and key decision-makers of plans to deploy staff and resources during an influenza pandemic.
    - VDH ACTION ITEM: Complete VDH Crisis Communications and Staffing Plan and distribute to VDH management team. Train VDH communications staff on these protocols.
- When appropriate, coordinate training and other preparedness activities that include options for backing up key communications personnel in the event of their personal illness or emergency.
    - VDH ACTION ITEM: Complete a pandemic flu training forum with designated public information staff from VDH, local health departments and key locality (county PIO) staff. Explain key messages, background on pandemic flu and train them on available resources.
- Coordinate with partner agencies to prepare for appropriate public, health-care provider, policy and media responses to outbreaks of pandemic influenza.
    - VDH ACTION ITEM: In addition to hosting media and pandemic flu training (as mentioned above), hold a pandemic flu communications forum with communications professionals from other government entities, private sector, health-care providers and emergency response agencies to enhance coordination, educate on messages and develop rapport.
- Identify common communications opportunities or challenges with neighboring jurisdictions, particularly with regard to reaching people in high-priority risk groups; consider novel opportunities to pool communications resources.
    - VDH ACTION ITEM: Develop non-English speaking resources and target communications to other special needs groups. Use and expand upon existing networks to reach these populations directly, bearing in mind challenges that may arise from reluctance to miss work, to go to mass vaccination sites or to interact with government officials because of immigration status.
    - VDH ACTION ITEM: Adapt federally supplied translations for Virginia and local use.
- Define roles and responsibilities of diverse pandemic response stakeholders
    - VDH ACTION ITEM: Work with Pandemic Flu Advisory Committee to help define various responders' roles in pandemic response communications and agree upon methods to ensure consistency in message and identification of proper spokespeople for various issues stemming from a pandemic.

- Ensure that communications professionals have opportunities to participate with other public health and emergency staff in tabletop exercises and drills to help identify and resolve potential problems in the Interpandemic and Pandemic Alert periods.

B. Developing and testing standard state and local procedures for disseminating information

The following recommendations can aid development of effective state and local information dissemination plans for use during an influenza pandemic:

  - VDH ACTION ITEM: Establish and maintain a VDH Pandemic Flu Web site with current information, links to alternate resources and a means for citizens to gather answers to their questions.
  - VDH ACTION ITEM: Develop a single VDH e-mail account for use in collecting and answering Pandemic Flu questions from the public.
  - VDH ACTION ITEM: Foster two-way communications with the public and media regarding pandemic flu issues. Hold a series of open houses or town hall meetings to present information about pandemic flu and to answer questions regarding this subject.

- Federal hotlines, such as the CDC-INFO telephone line (1-800-CDC-INFO; 1-800-232-4636), will be available for public information. However, during an influenza pandemic, state and local health departments may also wish to tailor additional information for their localities.
  - VDH ACTION ITEM: Work with VDEM and DMV to develop a plan regarding how the Virginia Public Inquiry Line can be used during a pandemic and alternative means of increasing two-way communications during a pandemic.
- Prepare contingency plans to manage increased media demands. Jurisdictions with possible or early confirmed cases of pandemic influenza can expect focused media attention. Local media relations specialists will need to prepare for media requests and facilities needs, especially for television.
  - VDH ACTION ITEM: In the first days of a pandemic outbreak, localities will be a main focus for television, especially if Virginia sees some of the first cases in the country. VDH must develop a means to support these local efforts using state resources, and then develop clear thresholds to determine when we will elevate the issue to a statewide event, implementing the EOC, JIC, ECC and other communications means to ease the local burden.
- Develop ongoing coordination procedures with other agencies and organizations to conserve resources and avoid duplication in such areas as developing and pre-testing messages, and in training media spokespersons.
  - VDH ACTION ITEM: VDH must work with localities, especially in major urban centers, to avoid turf battles and duplication of efforts. Efforts are already underway in the National Capitol Region to coordinate efforts, but challenges remain statewide. VDH must play an active collaborative and leadership role to ensure that communications issued by locality partners reflect consistent messages with public health and scientific messages issued by VDH and CDC.

C. Developing, testing and disseminating locally tailored Interpandemic messages and materials

The Interpandemic period is the ideal time to identify and learn about target audiences and raise awareness and knowledge of pandemic influenza. The need to inform and educate the public, health-care professionals, policy makers and others about the threat of a pandemic must be balanced against the possibility that a pandemic may not occur for many years and may or may not be severe.

VDH must also prepare communications materials in advance for use during the Pandemic Alert and Pandemic Periods. Reviewing and clearing these materials in advance can help identify potential areas of disagreement and allow time to work through issues. State and local communications professionals should identify methods to assess the unique needs of target audiences in their populations and communities. Such activities can help identify potential barriers to compliance with response measures, and inform message development to build support and trust.

VDH ACTION ITEMS:

- Assess existing organizational resources for pandemic flu communications and identify current and potential information gaps.
- Update and maintain current, accessible and secure communications contact lists and databases for key VDH staff, media and partner public information resources internal and external to VDH.
- Develop a portfolio of communications information sources, including material on topics such as clinical and laboratory diagnostics, infection control practices, isolation and quarantine procedures, stigmatization management, travel control authority and legal issues related to the pandemic.
- Adapt federal fact sheets and information resources for use in Virginia and our localities.
- Complete and distribute a Pandemic Influenza in Virginia informational video to districts for use in civic, community and local government meetings. Provide written materials to augment this videotaped message.
- Develop a specific, consistent plan to monitor media coverage and identify and address rumors and misinformation promptly. Test the plan before a pandemic occurs and modify as needed to ensure that it works.
- Ensure the availability of communications products in multiple languages, based on the demographics of the jurisdiction.
- Begin disseminating messages and materials to increase the knowledge and understanding of the public, health-care professionals, policy makers, media and others about unique aspects of pandemic influenza that distinguish it from seasonal influenza, and generally what to expect during different phases of an influenza pandemic.
- Regularly reach out to the media (as we did in fall 2005 with statewide information meetings) to reinforce pandemic flu awareness and inspire continuous media coverage.

II. Recommendations for the Pandemic Period

The HHS Pandemic Influenza plan states: "Domestic health communications, including state and local public health communications efforts, should be directed to rapid sharing of appropriate, up-to-date information on what is known and what is unknown about the progression of the outbreak, the possible disruptions to routines and events and contingency measures. Consistency in messaging across jurisdictions is strongly advised".

Primary areas on which communications professionals should focus during the Pandemic Period are providing timely, accurate information in especially challenging conditions, coordinating communications leadership across all tiers of jurisdiction (e.g., local, state, regional, and national) and promptly addressing rumors, misperceptions, stigmatization and any unrealistic expectations about public and private health provider response capacity.

VDH ACTION ITEMS:

- Develop thresholds and criteria to determine when to elevate communications plans and efforts from routine to emergency levels.
- Provide regular updates and offer opportunities to address questions (e.g., in partnership with news media, in public forums and in printed or electronic messages).
- Distribute practical information, such as travelers' advisories, infection control measures and information about potential priority distribution of antiviral medications and first-generation vaccines. Be prepared to immediately address questions related to initial case(s) and to provide guidance to the public about disease susceptibility, diagnosis and management, as well as other topics.
- Reinforce and verify ways to help people protect themselves, their families and others, including self-care information for psychological well-being.
- Address rumors and misinformation promptly and persistently.
- Take steps to minimize stigmatization.

A. Providing coordinated communications leadership across jurisdictional tiers (e.g., local, regional, state, and national)

- Work with state and local officials to involve communications professionals on senior leadership teams, including roles as liaisons to national communications teams at CDC and other agencies as necessary.
- Maintain strong working relationships with colleagues in other jurisdictions and regions, even when an outbreak may not yet have affected your area directly or may have subsided locally. The following colleagues are especially important to consider.
    - Public affairs directors and information officers from other local and state health departments
    - City and state government public affairs officers
    - Communications staff at congressional and other government offices
    - Communications staff at local and regional police, fire and emergency management offices
    - Regional health and emergency preparedness colleagues
    - State and local mental health agencies

  - Hospital public relations/affairs departments
  - State and local Emergency Operations Center coordinators
  - Federal Emergency Operations Centers
- Promote public acceptance and support for national response measures and contingency plans.

B. Promptly addressing rumors, misperceptions, stigmatization and unrealistic expectations about the capacity of public and private health providers

After the initial stages of a pandemic, news media coverage may become more mixed, with both positive and critical coverage. Hero stories may emerge, while "what ifs" and negative images may start to compete for the public attention. As the media proceeds into in-depth analysis of what happened and why, these elements become important to an effective response:

- Monitor news media reports and public inquiries to identify emerging issues, rumors and misperceptions and respond accordingly.
  - VDH ACTION ITEM: Develop a protocol for rumor control and media monitoring, and identify VDH staff to help fill this role as communications professionals will likely be busy with other responsibilities
- Conduct "desk-side briefings" and editorial roundtables with news media decision-makers.
- Proactively address groups that voice overly critical, unrealistic expectations.
- Maintain regular access to pandemic subject-matter experts to balance the media's needs with other subject-matter expert priorities.

A regularly updated set of pandemic flu talking points and key messages is available on the VDH pandemic flu Web site at http://www.vdh.virginia.gov/pandemicflu/. General key message points are also included in Appendix 10A.

Appendix 10A. Pandemic Influenza Key Messages

- By definition, pandemic influenza will result from a new influenza A subtype against which humans have limited or no natural immunity. Pandemic influenza virus infection therefore is likely to cause serious, possibly life-threatening disease in greater numbers than occurs during seasonal interpandemic influenza outbreaks. This may even occur among previously healthy persons.
- Global and domestic surveillance, coupled with laboratory testing, are vital to identifying new influenza A subtypes virus strains with pandemic potential.
- The threat of a pandemic may be heightened when a highly pathogenic avian influenza A virus spreads widely among birds and infects other animals, including humans. The strains can mutate or adapt and give rise to a strain that spreads easily from person to person in a sustained manner, causing a pandemic.
- Illness and death may be much higher during a pandemic than during annual seasonal community influenza outbreaks; pandemics can also occur in waves over several months.
- It could take many months to develop an effective pandemic influenza vaccine and immunize substantial numbers of people. Antiviral medications for treatment or prevention of pandemic influenza could have an important interim role to reduce the severity of symptoms and shorten the duration of illness for those infected by the virus, but may also be in short supply. Consequently, practical and common sense measures, such as frequent handwashing, covering your mouth and nose while sneezing or coughing and staying home from work or school if you are ill with influenza-like illness will be very important to help prevent the spread of pandemic influenza.
- Although travel restrictions and isolation and quarantine procedures may limit or slow the spread of pandemic influenza in its earliest stages, these measures are likely to be much less effective once the pandemic is widespread. Alternative containment measures (e.g., cancellation of public events) may be necessary.
- The United States is preparing for pandemic influenza by:
    - Developing a coordinated national strategy to prepare for and respond to an influenza pandemic
    - Educating health-care workers about pandemic influenza diagnosis, case management, and infection control practices
    - Refining global and domestic pandemic influenza surveillance systems
    - Developing guidelines for minimizing transmission opportunities in different settings
    - Expanding supplies of antiviral medications in the Strategic National Stockpile and establishing guidelines for their use
    - Developing candidate vaccines and establishing plans for the rapid development, testing, production, and distribution of vaccines that may target specific pandemic influenza strains
    - Developing materials that states and localities can adapt as guidance for use during an influenza pandemic.

- Virginia is also preparing for a pandemic:
  - In Virginia, pandemic flu planning efforts have been underway for several years. A draft pandemic flu response plan was developed in 2002 that gives Virginia a template for dealing with this issue.
  - In early 2005, the Virginia Department of Health led efforts to create a Pandemic Flu Advisory Committee comprising representation from the fields of public health, private industry, law enforcement, government and the private health-care industry to lead the Commonwealth's preparedness efforts. This team's goal is to develop additional strategies and enhance Virginia's pandemic flu response plans.
  - Virginia is also working closely with national and other state partners to coordinate our efforts.
  - VDH is leading public information efforts to raise awareness of this issue and to help Virginians better understand the complex issues that will arise if pandemic flu becomes a reality. These include prioritizing who will receive scarce medications and vaccine supplies and how a pandemic will impact the daily activities we all take for granted such as having to close schools or cancel sporting events and large public gatherings during a pandemic.

Appendix 10B. Sample Materials

Prescripted materials for each phase of the pandemic, reflecting the key messages and latest scientific information for the pandemic will be shared continuously via the VDH Web site and the VDH Emergency Preparedness and Response intranet site. In both of these locations, updated information will be regularly posted in the sections designated for pandemic flu. Local health districts and partner agencies should use these materials to enhance any local communications efforts and to ensure consistency with well-established public health messages.

These materials will reflect consistent messaging with federal, neighboring state and locality materials as much as possible. For additional information, visit the federal www.pandemicflu.gov Web site.

The following link will take you directly to our VDH Pandemic Flu Information Page: http://www.vdh.virginia.gov/pandemicflu/

For internal-only documents and talking points, visit http://vdhweb/epr/

Appendix 10C. HHS Pandemic Influenza Risk Communication and Public Outreach Strategy

GENERAL RISK COMMUNICATION PRINCIPLES

Using sound and thoughtful risk communication strategies can assist public officials in preventing fear-driven, and potentially damaging public responses to crises such as bioterrorism and pandemic disease outbreaks. These strategies can help foster trust and confidence that are vital to public health.(Covello et al., 2001; Maxwell, 1999). Before a crisis occurs, public officials can prepare communities, risk managers, government spokespersons, public health officials, the news media, physicians, and hospital personnel with appropriate messages that can help build public confidence in public officials and the measures they recommend. (O'Toole, 2001).

The HHS National Pandemic Influenza Risk Communications and Public Outreach Strategy follows seven key risk communications concepts.

1. When health risks are uncertain, as likely will be the case during an influenza pandemic, people need information about what is known and unknown, and interim guidance to formulate decisions to help protect their health and the health of others.
2. An influenza pandemic will generate immediate, intense, and sustained demand for information from the public, health-care providers, policy makers and news media. Health-care workers and public health staff may need training in media relations and public health communications.
3. Timely and transparent dissemination of accurate, science-based information about pandemic influenza and the progress of the response can build public trust and confidence, particularly when such communication efforts are guided by established principles of risk communication.
4. Coordination of message development and release of information among federal, state, and local health officials is critical to help avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures.
5. Guidance to community members about how to protect themselves and their family and colleagues is an essential component of crisis management.
6. Information to public audiences should be technically correct and sufficiently complete to encourage support of policies and official actions without seeming patronizing to the public.
7. Information presented during an influenza pandemic should minimize speculation and avoid over-interpretation of data, overly confident assessments of investigations and control measures and critical comments related to other jurisdictions.

The two most important concepts relate to communicating uncertainty, openly and honestly acknowledging that "this will not be business as usual."

Recognizing and admitting uncertainty is a component of most risk communication situations (Plough et al., 1988; and Chess, 1989). Scientific uncertainty can complicate communications when officials try to satisfy the public's demand for reliable and meaningful information for many risk situations. Public health officials frequently face the dilemma of having to acknowledge and explain uncertainty to a public that thinks scientific findings are precise,

repeatable and reliable. ***Moreover, the public often associates correlation and association as being the same as causality. As a result, officials often face the additional task of trying to explain the data's limitations and uncertainties***. Audiences need to be provided as much information as possible to help them understand that uncertainty is part of the process and that the answers may change as new information and science becomes available.

Public officials must also acknowledge that a crisis demands an acknowledgment that "this will not be business as usual." This can be communicated by:

- Emphasizing the rationale and importance of adherence to public health measures that some people may consider intrusive (e.g., quarantine).
- Helping to set reasonable expectations of public health and health-care systems.
- Promptly address rumors, inaccuracies and misperceptions.
- Minimizing stigmatization that may occur during a pandemic.
- Ensuring that high-risk groups and others with special needs (e.g., non-English speaking populations, difficult-to-reach communities, and persons living in institutional settings) receive appropriate information.
- Acknowledging the anxiety, distress and grief that people experience during long-term, major public health crises such as pandemics.

HHS PANDEMIC INFLUENZA RISK COMMUNICATION AND PUBLIC OUTREACH STRATEGY

During the prepandemic or interpandemic period, national, state and local communities need to disseminate messages explaining why pandemic influenza is a potential public health threat, what is being done to prepare, how a pandemic would be different from annual influenza outbreaks and what communities can do in advance. A portfolio of materials, including other sources of information is being developed by HHS for use by communities and other groups. A national Web site www.pandemicflu.gov will be updated regularly and serve as a national information clearinghouse. Nine key components define the HHS communications strategy:

1) PLANNING AND ASSESSMENT OF CURRENT KNOWLEDGE

- Determine what communications actions will be taken and by whom in advance of a pandemic (i.e. prepandemic) and once a pandemic is confirmed by WHO
- Ascertain communication needs for various audience segments (i.e. What materials, resources, processes, and systems, will be necessary in both phases?)
- Conduct an environmental scan or an assessment of current knowledge of pandemic influenza, which will include: Scholarly literature review on Avian Flu or whatever pandemic flu strain is the problem, public health risks, public and political response to similar incidents (e.g., SARS),.
- Review of media coverage of pandemics, Review of web sources
- Assess and analyze media and public baseline knowledge and attitudes.
- Review current national and international efforts and programs to control the pandemic and work with international partners to coordinate activities (WHO)

2) FORMATIVE AUDIENCE RESEARCH

- Define public perceptions, attitudes, beliefs. Study these from communication perspective to determine how to position information so that people attend to messages and act upon them.
- Conduct 2 sets of 9 cognitive interviews and 16 focus groups with general public.
- Conduct 18 telephone stakeholder interviews with health professionals and community leaders.

3) MESSAGE AND MATERIAL DEVELOPMENT

- Develop prepandemic (WHO intrapandemic and pandemic alert levels) and pandemic messages and materials based on risk communication principles, as outlined in the WHO Outbreak Communication Guidelines.
- Define audiences and develop materials for these audiences.
- Develop message maps and concepts appropriate for each "Phase" of an influenza pandemic development. To test event messages, a video-based scenario will be used to simulate emotional response during a pandemic.
- Coordinate with other agencies to identify pre-event and event material needs and to develop new materials as needed.
- Materials may include:
    - "HHS Prepares for Pandemic Influenza" - a sixteen page, color version of the pandemic plan for the public that describes the major issues, decisions, actions regarding pandemic influenza.
    - Live announcer copy
    - Core Q&As
    - Hotline response materials
    - Fact sheets
    - B-roll (stock video footage for the media)
    - Graphics to support HHS communication (animation)
    - Conduct focus groups with general public to pretest event messages separately and/or materials. Provide additional support for material development as needed.

4) CROSS GOVERNMENT COLLABORATION AND COORDINATION

- Establish a cross agency working group that includes communication, policy and subject matter experts. This working group will review and shares strategies and activities being undertaken by each agency and develop a coordinated communication approach. This working group will:
    - Develop consistent messages about pandemic influenza
    - Ensure common understanding of HHS objectives and strategies
    - Leverage existing activities and resources to address pandemic influenza
    - Develop an inventory of current activities
    - Identify gaps and make recommendations on how they can be filled
    - Coordinate media planning, stakeholder outreach
    - Coordinate communications systems as appropriate
    - Outreach to other departments in the federal government and international partners

5) TRAINING

- Coordinate Training sessions for emergency risk communication among "master trainers" as identified through previous training courses provided by CDC, as well as CDC recommendations. These core trainers would then provide on the ground training within their regions and states focusing specifically on Pandemic Influenza.
- Conduct media training for spokespersons on public health crisis response and risk communications principles.
- Prepare a highly specialized risk communication and message development workshop. This workshop would be focused on building trust across policy makers, communications experts, and subject matter experts across HHS and partner agencies to support effective risk communication during an outbreak of Pandemic Influenza.
- Run a senior official pandemic influenza/communication-focused exercise in cooperation with other government departments.

6) MEDIA OUTREACH

- Coordinate closely with the CDC and other HHS agencies on a National Pandemic Influenza Media Plan , which would include:
    - Develop core press materials to serve as backgrounder documents for federal, state and local partners, using existing CDC materials as a starting point
    - Conduct media briefing with key national outlets to demonstrate how HHS will function and discuss community planning Coordinate media relations with Canada, UK, Mexico, WHO, PAHO, Japan, the EU, and GHSAG, as appropriate.
    - Coordinate and host a total of six informational roundtables with: Key science and health writers/reporters to lay out the groundwork for basic understanding of a pandemic, the risk of an outbreak, the public health response, fact/myths about pandemics, the role of infection control in managing the outbreak, etc.

Key minority media and those representing special-needs groups.

- Review and enhance media lists.

7) COMMUNITY CONTINUITY PLANNING

In collaboration with other government offices (e.g. Department of Education) HHS will develop toolkits specific to different audience segments (e.g. socio-economic considerations) to help inform them about the potential threat of a pandemic, the implications of a pandemic for this sector, and what this sector needs to know in advance so that they can best prepare.

HHS will:

- Conduct research into existing infrastructures and plans that can be models for this effort
- Engage community leaders in pre-pandemic planning
- Convene multiple stakeholders meeting
- Publish proceedings as a document on community continuity planning for Pandemic Influenza and distribute widely including online/electronically
- Develop tool kits for communities for continuity planning working with other governmental partners (e.g. Dept of Education on Tool Kit for Schools)
- Provide exercises/scenarios with leaders' guide on the Pandemic so that communities can use these to determine what they need to put in place, what choices/options they face

- Develop an online exercise activity designed to help community groups plan for ensuring that community members have access to needed services (e.g., child care, transportation to essential appointments and essential supplies) in a pandemic influenza event. The exercise will be designed similarly to a board game. The outcome for community groups participating in the game will be to have developed a set of materials such as telephone trees, transportation plans, and community maps marked with the location of essential services, the location of individuals who need assistance, etc. Training will be based on core scenario developed for other trainings.

8) BUSINESS CONTINUITY PLANNING

Stimulate and support business leader continuity planning.

- Engage business leaders in pandemic flu continuity planning
- Help them understand nature of the outbreak and why employees should stay home. Provide information on how to plan to continue operations during a pandemic
- Support their exploration of how they can use volunteers to deliver good and services to quarantined community members
- Support their exploration of how they can support public health response

Conduct Business Roundtables

- Work with SBA, DOC, DOL and other stakeholders such as Chambers of Commerce, to convene four key business leader and union representatives in a series of roundtables segmented by business size, and/or geography, and/or nature of business
- Publish outcome of meeting proceedings and widely distribute
- Provide handbook for business leaders and other stakeholders to encourage and support their planning for/coping with Pandemic Influenza. This would include background information on all relevant topics.

9) PUBLIC ENGAGEMENT

Expert Discussions

Host roundtable discussions with medical influencers and opinion leaders Identify and convene key health professional influencers for an "expert discussion" to better understand the likely criticisms the agency may face from the public, and also help these influencers better understand the challenges of pandemic influenza management, relevant research underway, etc. so that they will have a better understanding of what they are commenting on if called upon by the media during an outbreak.

Town Hall Meetings in Six Cities (San Diego, San Francisco or Seattle; Detroit; Miami; Dallas or Fort Worth; Philadelphia and Mobile) Work with Council for Excellence in Government to convene town meetings across the nation with key stakeholders to engage them in planning for pandemic and community continuity.

- public health/public officials
- private sector clinicians
- education sector
- business sector
- non-profit/volunteer sector

Format of town meetings will include a primary session of 200 participants across stakeholder groups, with breakout sessions following. This will include location scouting, panelist research, media and community outreach. Tasks will include:

- secure panelists and sub panelists in the following areas: HHS leadership; local public heath leadership; local private sector clinical officials; local nonprofit/volunteer community; local education community; local business leaders
- publicize event through media partnerships and strategic outreach to build community audience of 200 people
- conduct on-line registration that includes audience pre-event polling
- research on locality and specific issues and concerns for discussion
- secure nationally recognized media personality for moderator and A/V vendor
- produce moderator guide (show script)
- oversee all media relations prior, during and post event
- produce town hall event, including show production, live audience polling and on-site event management
- produce and facilitate post town hall leadership symposium

Public Dialogue Sessions—Meetings with national stakeholder organizations at IOM in July, September to discuss priority groups for vaccination during a pandemic. Meetings with local citizens in Atlanta, Omaha, Boston and Portland in August and September.

10) INTERNATIONAL SUPPORT

- Work with WHO to support public health risk communications needs globally
- If requested, provide template materials that can be adapted to local needs
- Support global risk communication training through WHO

OVERVIEW

The response to an influenza pandemic will pose substantial physical, personal, social and emotional challenges to healthcare providers, public health officials, and other emergency responders and essential service workers. The recommendations included in Supplement 11 focus on the establishment of psychosocial support services that will help workers manage emotional stress during the response to an influenza pandemic and resolve personal, professional and family issues. The recommendations also address the preparation of information materials and resources, as well as the development of workforce resilience programs, to assist employees and their families. Several resources, including checklists and sample media releases, are provided in the Appendices. Appendix 10E outlines human resource issues for state agencies that may also be relevant to other employers.

I. Activities for the Interpandemic and Pandemic Alert Periods

A. State and local health departments and other groups should:

- Lay the groundwork for the development and implementation of workforce resilience programs to maximize responders' performance and personal resilience during a public health emergency.
- Within VDH, develop and implement a workforce resilience program
- Inform public that Virginia has a plan.
- Create specialized support teams.
- Provide training and training materials.
- Job preparedness: provide cross training opportunities and alternate employee contact.
- Develop telecommuting strategies.
- Recommend that state agencies address psychosocial support in their Continuity of Operations Plans (COOP).
- Review and broaden the base of "Helping to Heal" program to cover all public health emergencies, including pandemic influenza.
- Use behavioral health expertise to develop public health messages, train staff on the use of personal protective equipment (PPE), and conduct other relevant activities.
- Consult TADBHAC on behavioral health issues and public messages.
- Emphasize the importance for healthcare employers to realize that their employee may be stigmatized by treating/transporting the sick.
- Emphasize that employees may also be stigmatized because they will have been protected because of their occupation while friends and other family may not have been immunized.

B. Preparing workforce support materials

- Employers of response workers and providers of essential services should obtain or prepare workforce support materials (in hard copy or electronic format) for distribution during a pandemic. These materials should be designed to do the

following:

- Educate and inform employees about emotional responses they might experience or observe in their colleagues and families (including children) during an influenza pandemic, and about techniques for coping with these emotions (See Appendices).
- Educate employees about the importance of developing "family communication plans" so that family members can maintain contact during an emergency.
- Describe workforce support services that will be available during an emergency, including confidential behavioral health services and employee assistance programs. Identify the support service (Community Service Board, Public health CISM)
- Answer questions about infection control practices to prevent the spread of pandemic influenza in the workplace and employment issues related to illness, sick pay, staff rotation, and family concerns.

- Healthcare institutions should be prepared to provide materials that address healthcare and training issues related to pandemic influenza. To support these efforts, CDC, HRSA, NIH, and SAMHSA will collaborate with the Department of Homeland Security, other federal agencies, and nongovernmental organizations to identify or develop educational materials on: stressors related to pandemic influenza; signs of distress; traumatic grief; psychosocial aspects related to management of mass fatalities; stress management and coping strategies; strategies for building and sustaining personal resilience; behavioral and psychological support resources; strategies for helping children and families in times of crisis; strategies for working with highly agitated patients. As these documents become available state, local and private agencies will promote and distribute.

C. Developing workforce resilience programs

State and local health agencies should consider establishing workforce resilience programs that will help deployed workers prepare for, cope with, and recover from the social and psychological challenges of emergency field work. CDC has used this approach with staff members who participated in the tsunami relief effort in 2004-2005 and the Marburg hemorrhagic fever outbreak in Angola in 2005.

To prepare for implementation of workforce resilience programs to cope with the special challenges posed by an influenza pandemic, agencies should do the following:

- Plan for a long response (i.e., more than 1 year).
- Identify pre-deployment briefing materials.
- Augment employee assistance programs with social support services for the families of deployed workers.
- Provide program administrators and counselors with information on:
  - Cognitive, physiological, behavioral, and emotional symptoms that might be exhibited by patients and their families (especially children), including symptoms that might indicate severe mental disturbance

- Self-care in the field (i.e., actions to safeguard physical and emotional health and maintain a sense of control and self-efficacy)
- Cultural (e.g., professional, educational, geographic, ethnic) differences that can affect communication
- Potential impact of a pandemic on special populations (e.g., children, ethnic or cultural groups, the elderly). Refer to "Helping to Heal" and "The Road to Resilience" (See Appendix 10X. Resources).

II. Recommendations for the Pandemic Period

A. Virginia healthcare institutions, state and local health agencies, first-responder organizations, and employers of essential service workers should:

- Provide psychological and social support services for employees and their families (Employee Assistance Program, Community Service Board, public and private mental health providers, public health CISM, faith based and any other agency sponsored program). Refer to "Helping to Heal" crisis intervention.
- Protect, direct and connect with support groups.
- Address stigmatization issues that might be associated with participation in such services.
- Remind healthcare employers to realize that their employee may be stigmatized by treating/transporting the sick.
- Recognize that employees may also be stigmatized because they will have been protected because of their occupation while friends and other family may not have been immunized.
- Enforce positive coping strengths, such as: taking care of yourself; taking care of your family, being prepared for the unusual, being ready to accept new challenges.
- Healthcare institutions should provide employees with ongoing access to up-to-date information on healthcare and training issues, as well as on the national and local status of the pandemic.
- State and local health departments and other groups should implement workforce resilience programs.

B. Delivering psychosocial support services

Healthcare facilities and public health agencies—as well as companies and local governments that employ essential service providers—should make full use of public health techniques and communication tools that can help response workers manage emotional stress and family issues and build coping skills and resilience. These tools can include:

- Stress control/resilience teams- these teams can assist and support employees and foster cohesion and morale by:
  - Monitoring employee health and well-being (in collaboration with occupational health clinics, if possible), providing health monitors in offices, and providing tissue and hand wipes stations.
  - Staffing "rest and recuperation sites"- sites can be stocked with healthy snacks

and relaxation materials (e.g., music, relaxation tapes, movies), as well as pamphlets or notices about workforce support services.
    - Distributing informational materials.
- Confidential telephone support lines staffed by behavioral health professionals (800 contact number for confidential support)
- Services to families of employees who work in the field, work long hours, and/or remain in hospitals or other workplaces overnight, including:
    - Help with elder care and child care.
    - Help with other issues related to the care or well-being of children.
    - Provision of cell phone or wireless communication devices to allow regular communication among family members.
    - Provision of information via websites or hotlines.
    - Access to expert advice and answers to questions about disease control measures and self care.
    - Carpooling, employer-provided private transportation, alternate work schedules during off-peak hours to avoid exposure to large groups of potentially infected persons.

Each organization should review these support service suggestions and implement the ones that are best suited to their organization

B. Providing information to responders

1. Healthcare providers

Healthcare providers—especially those who work in hospitals—are likely to be under extreme stress during a pandemic and will have special needs for open lines of communication with employers and access to up-to-date information. Healthcare facilities should ensure that employees have ongoing access to information on the following:

- International, national, and local progress of the pandemic.
- Work issues related to illness, sick pay, staff rotation, shift coverage, overtime pay, use of benefit time, transportation, and use of cell phones.
- Family issues, especially availability of child care.
- Healthcare issues such as availability of vaccines, antiviral drugs, and PPE; actions to address understaffing or depletion of PPE and medical supplies; infection control practices as conditions change; approaches to ensure patients' adherence to medical and public health measures without causing undue anxiety or alarm; management of agitated or desperate persons; guidance on distinguishing between psychiatric disorders and common reactions to stress and trauma; management of those who fear they may be infected, but are not (so-called "worried well"); and guidance and psychosocial support for persons exposed to large numbers of influenza cases and deaths and to persons with unusual or disturbing disease symptoms.
- Because healthcare workers might be called upon to fill in for sick colleagues and perform unfamiliar tasks, healthcare facilities should consider providing written

instructions for "just-in-time" cross training on essential tasks.

2. Other occupational groups

Other occupational groups that might participate in the response to pandemic influenza (including police, firefighters, and community outreach workers) should receive training materials that will help them anticipate behavioral reactions to public health measures such as movement restrictions (e.g., quarantine, isolation, closure of national or regional borders), especially if such actions are compounded by an economic crisis or abrupt loss of essential supplies and services.

3. Stigmatization issues

Healthcare workers and other emergency responders should be provided with information on what to do if they or their children or other family members experience stigmatization or discrimination because of their role in the pandemic influenza response. Hospital public affairs offices should be prepared to address these issues without delay.

C. Implementing workforce resilience programs

During an influenza pandemic, state and local health agencies should consider implementing workforce resilience programs that meet the special needs of deployed workers—including workers who do not change job site but whose assignments shift to respond to the pandemic—and the central operations personnel who support them around the clock. First-responder or nongovernmental organizations that send employees or volunteers to assist patients at home or in hospitals might establish similar programs. Workforce resilience programs could provide the following services:

1. Predeployment/assignment

- Conduct briefings and training on behavioral health, resilience, stress management issues, and coping skills. Refer to "Helping to Heal".
- Train supervisors in strategies for maintaining a supportive work environment. Refer to "Helping to Heal".

2. During deployment/assignment

- To support responders in the field:
    - Deploy several persons as a team and/or assign "buddies" to maintain frequent contact and provide mutual help in coping with daily stresses.
    - Frequently monitor the occupational safety, health, and psychological well-being of deployed staff.
    - Provide access to activities that help reduce stress (e.g., rest, hot showers, nutritious snacks, light exercise).
    - Provide behavioral health services, as requested.
- For central operations personnel:
    - Enlist stress control or resilience teams to monitor employees' occupational safety, health, and psychological wellbeing.
    - Establish rest and recuperation sites and encourage their use.
    - Provide behavioral health services, as requested.
- For families of responders:
    - Provide all of the services listed under "Services for Families" in Supplement 11 of the HHS Pandemic Influenza Plan.
    - Enlist employee assistance programs to provide family members with instrumental support (e.g., assistance obtaining food and medicine) and psychosocial support (e.g., family support groups, bereavement

counseling, and courses on resilience, coping skills, and stress management).
- Provide a suggestion box for input via e-mail or anonymous voice-mail with a toll-free number.
- Continue to provide outreach to employees' families to address ongoing psychological and social issues. Throughout the response, policies on personnel health and safety should be reviewed and revised, as needed.

3. Post-deployment/assignment

- Interview responders and family members (including children) to assess lessons learned that might be applied to future emergency response efforts.
- Provide ongoing access to post-emergency psychosocial support services for responders and their families (on-site or through partner organizations).
- Conduct an ongoing evaluation of the after-effects of the pandemic on employees' health, morale, and productivity.

Appendix 10A. Checklist for Recognizing Potential Reactions in Children and Strategies to Help Them Cope

Children may be affected by natural disasters and terrorism. The information below lists common reactions and how you can help children cope with them now and in the future.

Common Reactions in Children of All Ages

- ☐ Anxiety and irritability
- ☐ Clings, afraid of strangers
- ☐ Fear of separation, being alone
- ☐ Head, stomach, or other aches
- ☐ Increased shyness or aggressiveness
- ☐ Nervousness about what the future may bring
- ☐ Regression to immature behavior
- ☐ Reluctance to go to school
- ☐ Sadness and crying
- ☐ Withdraws
- ☐ Worries, has nightmares

Preschool Age (1-5)

- ☐ Changes in eating habits
- ☐ Changes in sleeping habits
- ☐ Clings to parent
- ☐ Disobedience
- ☐ Fear of animals, the dark, "monsters"
- ☐ Hyperactive
- ☐ Regresses to an earlier behavioral stage, such as resuming thumbsucking, bedwetting
- ☐ Speech difficulties

Early Childhood (5-11)

- ☐ Becomes aggressive
- ☐ Changes in eating habits
- ☐ Changes in sleeping habits
- ☐ Competes more for the attention of parents
- ☐ Fear of going to school; the dark; "monsters"
- ☐ Difficulty concentrating
- ☐ Returns to "more childish" behaviors; for example, they may ask to be fed or dressed
- ☐ School performance drops

Adolescence (12-14)

- ☐ Abandons chores, schoolwork, and other responsibilities they previously handled
- ☐ Becomes disruptive at home or in the classroom
- ☐ Begins to experiment with high-risk behaviors such as drinking or drug abuse
- ☐ Competes vigorously for attention from parents and teachers
- ☐ Resists authority

How to Help Children Cope

- ✓ Stay calm
- ✓ Take care of yourself
- ✓ Answer questions about what happened or what may happen honestly and at a level the child will understand, but don't dwell on frightening details or allow the subject to dominate family or classroom time indefinitely
- ✓ Don't be afraid to admit that you can't answer all their questions
- ✓ Encourage children of all ages to express emotions through talking, drawing, or painting, but allow silences
- ✓ Encourage children to express their feelings to adults (including teachers and parents) who can help them understand their sometimes strong and troubling emotions
- ✓ Encourage children to participate in recreational activities
- ✓ Establish a family emergency plan, and include children in the process
- ✓ Give them lots of love
- ✓ Help children understand that there are no bad emotions and that a wide range of reactions is normal
- ✓ Limit viewing of news coverage and when you do, watch it together so you can answer questions and provide support
- ✓ Listen attentively to what children are saying and provide reassurance without minimizing their fears
- ✓ Maintain routine and regular discipline
- ✓ Provide reassurance
- ✓ Provide verbal support
- ✓ Reassure youth that you are together, and you will do everything you can to protect them
- ✓ Spend extra time with them

Appendix 10B. Checklist of Potential Reactions and Coping Strategies

It is common to experience a variety of emotional, physical, or behavioral reactions to highly stressful or traumatic situations, such as natural disasters or terrorism. The information below shows common reactions, ways to help you and others cope now and in the future, and when to seek professional help.

Common Reactions

- ☐ Anger
- ☐ Anxiety
- ☐ Appetite changes
- ☐ Colds or flu-like symptoms
- ☐ Concentration problems
- ☐ Confusion
- ☐ Crying easily
- ☐ Denial
- ☐ Fatigue
- ☐ Fear/of being left alone; of crowds or strangers; of darkness
- ☐ Feelings of hopelessness
- ☐ Guilt
- ☐ Headaches
- ☐ Hyperactivity
- ☐ Hyperviligence/increased watchfulness
- ☐ Increased drug and alcohol use
- ☐ Irritability
- ☐ Isolation
- ☐ Mood-swings
- ☐ Nausea/stomach problems
- ☐ Nightmares
- ☐ Poor work performance
- ☐ Reluctance to leave home or to be apart from loved ones
- ☐ Sad
- ☐ Sensitivity to loud noises
- ☐ Sleep difficulties

How to Cope and Help Others Cope

- ✓ Avoid drugs or alcohol
- ✓ Be assertive instead of aggressive; "assert" your feelings, opinions, or beliefs instead of becoming angry, defensive, or passive
- ✓ Do things you enjoy
- ✓ Draw on your faith and spirituality
- ✓ Eat healthy, well-balanced meals
- ✓ Establish a family emergency plan
- ✓ Exercise
- ✓ Focus on your strengths and abilities
- ✓ Identify the feelings you are experiencing
- ✓ Understand that your feelings are normal
- ✓ If you must worry, schedule time to for it and don't worry at other times
- ✓ It is common to want to strike back at people who have caused great pain; however, nothing good is accomplished by hateful language or actions
- ✓ Limit exposure to news
- ✓ Maintain your routine as best as you can
- ✓ Sleep regularly
- ✓ Spend time with family and friends
- ✓ Talk about your feelings with someone you trust
- ✓ Use existing support groups of family, friends, and church
- ✓ Use stress management techniques such as breathing, prayer, or relaxation

When To Seek a Professional

The following reactions, behaviors, and symptoms may signal a need to consult with the appropriate professional for further assistance.

- ☐ Disorientation - dazed, memory loss, inability to give date or time, state where he or she is, recall events of the past 24 hours or understand what is happening
- ☐ Inability to care for self - not eating, bathing or changing clothes, inability to manage activities of daily living
- ☐ Suicidal or homicidal thoughts or plans
- ☐ Problematic use of alcohol or drugs
- ☐ Domestic violence, child abuse or elder abuse

Appendix 10C. Helping Children Cope with Crisis: Care for Caregivers National Association of School Psychologists

The Challenge of Caregiving

It almost goes without saying that parents, teachers, and other caregivers play a critical role in helping children cope with crises. The natural instinct is to put one's own needs aside and tend to children first. **It is extremely important, however, for caregivers to monitor their own reactions and take care of their own needs.** Failure to do so can result in burnout, which interferes with one's ability to provide crisis intervention assistance. This can be true in the aftermath of immediate crisis like a natural disaster or terrorist attack as well as during extended periods of stress and anxiety like the war in Iraq. Following are some suggestions that help caregivers maintain their own well-being even as they support the needs of children in their care.

Role of the Caregiver

Traditional crisis caregivers include emergency response professionals, mental health providers, medical professionals, victim assistance counselors, and faith leaders. They are trained to handle exposure to images of destruction and loss and to assist victims or survivors to cope with the impact. Teachers and administrators are key stabilizing elements in the lives of children, but most have had no formal training in mental health or crisis response and intervention. **Educators who lack the requisite skills need to be careful not to go beyond their training because they run the risk of making a very difficult situation worse.**

The Potential for Burnout

At the early stages of crisis response, caregivers may have abounding energy and motivation. Their cognitive functioning, training, and resilience make them important assets to the children under their care. However, as a crisis intervention continues, caregivers may find themselves experiencing physical or psychological "burnout." Images of violence, despair and hardship and/or continuous concern over possible danger can contribute to feeling professionally isolated and depressed, particularly if caregivers do not have the opportunity to process their reactions. Successes may be ambiguous or few and far between, and, in some cases lack of sleep and limited opportunities for healthy nourishment breakdown the capacity to cope effectively. Caregivers can begin to feel more like a victim than a helper. Additionally, caregivers who have their own history of prior psychological trauma, mental illness (including substance abuse), or who lack social and family resources will be more vulnerable to burnout.

Signs of the Burnout

Burnout develops gradually, but its warning signs are recognizable beforehand. These include:

Cognitive

- An inability to stop thinking about the crisis, crisis victims, and/or the crisis intervention.
- Loss of objectivity.
- An inability to make decisions, and/or express oneself either verbally or in writing.
- Personal identification with crisis victims and their families.

Physical

- Overwhelming/Chronic fatigue and/or sleep disturbances.
- Gastrointestinal problems, headaches, and other aches and pains.

- Eating problems including eating too much or loss of one's appetite.

Affective

- Suicidal thoughts and/or severe depression.
- Irritability leading to anger or rage.
- Intense cynicism and/or pessimism.
- Excessive worry about crisis victims and their families.
- Being upset or jealous when others are doing crisis interventions.
- A compulsion to be involved in every crisis intervention.
- Significant agitation and restlessness after conducting a crisis intervention.

Behavioral

- Alcohol and substance abuse.
- Withdrawal from contact with co-workers, friends, and/or family.
- Impulsive behaviors.
- Maintaining an unnecessary degree of contact/follow-up with crisis victims and their families.
- An inability to complete/return to normal job responsibilities.
- Attempts to work independently of the crisis intervention team.

Preventing Burnout

Whether it is in the aftermath of a serious crisis or during an extended period of high stress, unrelenting demand for support may result in burnout for even the most seasoned crisis caregivers, particularly if they themselves are feeling vulnerable due to the circumstances. The risk may be even higher for teachers and other caregivers who are not trained crisis responders. Consequently all caregivers need to consider the following personal and professional suggestions to prevent burnout:

- Know your limitations and with what you feel reasonably comfortable or uncomfortable handling.
- Recognize that your reactions are normal and occur frequently among many well-trained crisis professionals.
- To the extent possible, maintain normal daily routines (especially physical exercise activities, meal-time, and bed-time routines). Connect with trusted friends or family who can help take the edge off of the moment
- Give yourself permission to do things that you find pleasurable (e.g., going shopping or out to dinner with friends).
- Avoid using alcohol and drugs to cope with the effects of being a caregiver during times of crisis.
- Ask for support from family and friends in terms of reducing pressures or demands during the crisis response.
- Be sure to maintain healthy eating habits and drink plenty of water.
- Take periodic rest breaks at least every couple of hours.
- As much as possible, try to get some restful sleep, preferably without the use of sleep aids or alcohol.

- Take time at the end of each day to process or debrief the events of the day with other caregivers or colleagues.
- Be kind and gentle on yourself and others, as you have all shared exposure to a life-changing event. Everyone needs time to process the impact of these events into their lives.

References and Resources

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For further information on helping children cope with crisis, visit www.nasponline.org.

Appendix 10D. Sample News Releases

Release #1

For Immediate Release

Recognizing and Dealing with Reactions to _____ Pandemic

Virginia--The recent _____ pandemic has caused many of us to have reactions such as anxiety, fear, and anger. While these reactions are to be expected and normal, the Virginia Department of Health offers the following information about typical reactions and ways to cope.

Typical Reactions to a Traumatic Event or Disaster

All Ages

- Fears and anxieties
- Reluctance to leave home
- Hyperviligance, excessive watchfulness, being on-guard for possible threats
- Irritability
- Fatigue or exhaustion
- Anger
- Confusion
- Changes in appetite
- Changes in sleeping patterns; problems going to sleep, nightmares
- Sensitivity to loud noises
- Alcohol and other drug use
- Sadness, crying
- Inability to concentrate

Children

- Crying, whimpering, screaming
- Fear of darkness, separation, being alone
- Excessive clinging, fear of strangers
- Worry, nightmares
- Regressing to bedwetting or thumb sucking
- Reluctance or refusal to go to school
- Increased shyness or aggressiveness
- Headaches, stomachaches, other pain

-more-

Recognizing and Dealing with Reactions to _____ Pandemic, page 2

What You Can Do To Help

When helping family, friends and co-workers, individuals often benefit from talking about the experience. Some tips "Do's and Don'ts" for listening are:

Do say:

- These are normal reactions to an abnormal situation.
- It is understandable that you feel this way.
- You are not going crazy.
- It wasn't your fault; you did the best you could.
- Things may never be the same, but they will get better, and you will feel better.

Don't say:

- It could have been worse.
- It's best if you just stay busy.
- I know just how you feel.
- You need to get on with your life.

For children, reassurance is the key. Very young children need a lot of cuddling, as well as verbal support. Answer questions about the situation honestly but don't dwell on frightening details or allow the subject to dominate family or classroom time indefinitely. Encourage children of all ages to express emotions through conversation, drawing, or painting but allow silences. Listen attentively to what children are saying and provide reassurance without minimizing their fears. Additionally, try to maintain a normal household and encourage children to participate in recreational activity and limit viewing of news coverage and when you view news coverage do it together so you can answer questions and provide support. Adults should try to resume regular social and recreational activities when appropriate.

Finally, acknowledge that you may have reactions associated with the traumatic pandemic, and take steps to promote your own physical and emotional healing.

For help with reactions to the recent _____ pandemic, call _____ or visit _____ for more information.

###

Release #2

For Immediate Release

Help for Parents and Teachers to Recognize Children's Reactions to the Recent _____ Pandemic

Virginia--Children of all ages may experience a wide range of reactions to the recent _____ pandemic, such as feeling frightened, confused, and insecure. Knowing the signs that are common at different ages can help parents and teachers to recognize problems and respond appropriately. To help parents and teachers, the Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services offers the tips below.

Preschool Age

Children from one to five years in age find it particularly hard to adjust to change and loss. In addition, these youngsters have not yet developed their own coping skills, so they must depend on parents, family members, and teachers to help them through difficult times.

Very young children may regress to an earlier behavioral stage after a traumatic event. For example, preschoolers may resume thumbsucking or bedwetting or may become afraid of strangers, animals, darkness, or "monsters." They may cling to a parent or teacher or become very attached to a place where they feel safe.

Changes in eating and sleeping habits are common, as are unexplainable aches and pains. Other symptoms to watch for are disobedience, hyperactivity, speech difficulties, and aggressive or withdrawn behavior. Preschoolers may tell exaggerated stories about the traumatic event or may speak of it over and over.

Early Childhood

Children aged five to eleven may have some of the same reactions as younger boys and girls. In addition, they may withdraw from play groups and friends, compete more for the attention of parents, fear going to school, allow school performance to drop, become aggressive, or find it hard to concentrate. These children may also return to "more childish" behaviors; for example, they may ask to be fed or dressed.

-more-

Help for Parents and Teachers to Recognize Children's Reactions to the Recent _____ Pandemic, page 2

Adolescence

Children twelve to fourteen are likely to have vague physical complaints when under stress and may abandon chores, schoolwork, and other responsibilities they previously handled. While on the one hand they may compete vigorously for attention from parents and teachers, they may also withdraw, resist authority, become disruptive at home or in the classroom, or even begin to experiment with high-risk behaviors such as drinking or drug abuse. These young people are at a developmental stage in which the opinions of others are very important. They need to be thought of as "normal" by their friends and are less concerned about relating well with adults or participating in recreation or family activities they once enjoyed.

In later adolescence, teens may experience feelings of helplessness and guilt because they are unable to assume full adult responsibilities as the community responds. Older teens may also deny the extent of their emotional reactions to the traumatic event.

How to Help

Reassurance is the key to helping children through a traumatic time. Very young children need a lot of cuddling, as well as verbal support. Answer questions about the event honestly, but don't dwell on frightening details or allow the subject to dominate family or classroom time indefinitely. Encourage children of all ages to express emotions through conversation, drawing, or painting and to find a way to help others who were affected by the disaster.

Try to maintain a normal household or classroom routine and encourage children to participate in recreational activity. Reduce your expectations temporarily about performance in school or at home, perhaps by substituting less demanding responsibilities for normal chores.

Finally, acknowledge that you, too, may have reactions associated with the traumatic event, and take steps to promote your own physical and emotional healing.

For help with reactions to the recent _____ pandemic, call _____ or visit _____ for more information.

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Release #3

For Immediate Release

How to Talk to Children about the _____ Pandemic

Virginia--Experts encourage parents and teachers to talk to children about their feelings about the recent _____ pandemic. To help parents and teachers, the Virginia Department of Health offers the tips below.

- Provide children with opportunities to talk about what they are seeing on television and to ask questions.
- Don't be afraid to admit that you can't answer all their questions.
- Answer questions at a level the child can understand.
- Provide ongoing opportunities for children to talk. They will probably have more questions as time goes on.
- Use this as an opportunity to establish a family emergency plan. Feeling that there is something you can do may be very comforting to both children and adults.
- Allow children to discuss other fears and concerns about unrelated issues. This is a good opportunity to explore these issues also.
- Monitor children's television watching. Some parents may wish to limit their child's exposure to graphic or troubling scenes. To the extent possible, watch reports of the event with children. It is at these times that questions might arise.
- Help children understand that there are no bad emotions and that a wide range of reactions is normal. Encourage children to express their feelings to adults (including teachers and parents) who can help them understand their sometimes strong and troubling emotions.
- Try not to focus on blame.
- In addition to the tragic things they see, help children identify good things, such as heroic actions.

-more-

How to Talk to Children about the _____ Pandemic, page 2

Teachers also can help children through art and play activities, as well as by encouraging group discussions in the classroom and informational presentations about the event.

For help with reactions to the recent _____ pandemic, call _____ for information.

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Appendix 10E. DRAFT Human Resource Issues and Pandemic Influenza
Revised 12/28/05

There are numerous Human Resource (HR) considerations related to the information and recommendations contained in the U.S. Department of Health and Human Services' (HHS) Pandemic Influenza (PI) Plan of November 2005. Additionally, a memorandum of 11/12/05 from Troutman Sanders LLP provides their comments regarding legal preparedness issues, including HR, related to the HHS Pandemic Influenza Plan.

In general, for state agencies, and likely for other employers, there appear to be a number of HR policy and practice issues that should be identified and addressed well in advance of a pandemic influenza event. Based on the organizational conventions in the HHS Plan, planning activities would occur during the Interpandemic and Pandemic Alert periods, with operations occurring during the Pandemic Period. These HR issues may also transcend pandemic influenza and apply to other public health events of similar significance.

HR staff in state agencies can begin to prepare by taking actions such as updating planning documents, employee work profiles, position and performance documents, gathering employee emergency contact information and training Critical Incident Stress Management peers. However, in order to address and resolve many of the HR issues, central control agencies (such as the Department of Human Resource Management (DHRM), Department of Employment Dispute Resolution, Virginia Retirement System, Office of the Attorney General, Industrial Commission) should take the lead in state policy development, since a Pandemic Influenza outbreak will significantly impact all state agencies. Staff in line agencies (such as the Virginia Department of Health and Mental Health Mental Retardation and Substance Abuse Services) could provide technical assistance to central control agencies in the development of policies and procedures.

Timely decisions, funding and implementation of statewide programs and services, clear communications and appreciation of the need for both conventional and unconventional solutions will be essential. It is evident that decisions made regarding PI response planning will be precedent setting and impact the lives of workers and their families.

Staffing

Agencies may need ready access to contractors and volunteers to routinely supplement the usual compliment of state workers and/or provide surge capacity. There are associated procurement, liability issues and performance issues.

State workers' roles, responsibilities and expectations may need to change to meet the unique challenges of a pandemic. Employee Work Profiles must contain clearly articulated, appropriate and defensible duty statements and performance expectations. Positions requiring vaccine and/or antiviral must be identified. Staff essential to providing services in a pandemic must also be identified.

As public employees are asked to make difficult choices regarding their personal and professional priorities, the public workforce may be negatively branded, impacting future recruitment and retention efforts.

DHRM and the Department of Social Services could provide standardized guidance to state agencies in the management of volunteers.

Continuity of Operations

Continuity of Operations planning must take into consideration the characteristics and impact of a PI outbreak event. A lengthy event is anticipated with 10-25% of the workforce absent at any given time over the course of 12 or more months.

The need to use telecommuting and alternate work sites may expand significantly. Employers must have clear guidance regarding liability and risk management in those environments.

Resources for technology and technology support must be available for agencies that implement strategies using significant numbers of workers in remote sites. Funding and training will be necessary.

Existing or new policies regarding employee failure to respond/job abandonment must be appropriate and clearly communicated.

Compensation and Leave

New leave categories or expanded use of existing categories may be necessary. The HHS Plan recommends the use of "snow days" or "administrative leave" as a mechanism to keep at-risk and caretaker workers away from worksites. Policy, compensation strategies and perhaps changes in law may need to be developed.

Pay for exempt and non-exempt employees required to work beyond the normal work week should be considered as a statewide strategy, with funding provided. Huge balances of earned leave that will not likely be used during a PI event may be inappropriate compensation during a period of greatly reduced staff levels. Funding should be available for increased use of overtime and comp pay for exempt and non-exempt workers.

Funding may be needed to implement new or expanded use of shifts, shift differentials, hazard pay, acting pay and employee recognition in state agencies.

Benefits and Employee Support Systems

Line agency benefits systems may be overwhelmed as demand increases and benefits administrators are absent from work. Central Control agencies may need to provide a hotline/800 number/internet site to handle surge and gaps in service at the line agency level.

Occupational Health and Safety

Agencies will likely need new or increased funding for safety officers and programs. DHRM technical assistance to state agencies may need to be expanded.

Clearly articulated rules and guidelines regarding employee and visitor access to the workplace may be necessary, including use of personal protective equipment. Training for staff in applicable occupational health and safety issues may be necessary.

If there are Workers Compensation (WC) issues uniquely related to the administration of vaccine and antiviral as well as occupational exposure to disease during PI, they must be identified and addressed. There may be both policy and legal issues. If a dramatic increase in WC claims is anticipated, funding must be available to cover experience-based charges to agencies.

Central control agencies must provide clear and efficient processes involving the administration of WC and leave programs. Clear communication with line agencies and employees is essential to avoid excessive administrative costs and unnecessary stress and expense to employees.

Model Return-to-Work programs that may be unique to PI should be developed and communicated to state agencies.

Many state employees are not now required to receive vaccine or antiviral. Medical records for employees are not typically maintained nor does medical monitoring and tracking of adverse reactions occur. Policies and procedures for state agencies would be needed if employee medical records related to PI will be required.

Risk Management & Liability

As use of replacement workers and volunteers increases, additional resources to staff and fund their background investigations will be needed. Virginia State Police may need to assure that the process for state agencies is as timely and cost-effective as possible.

Resources for the security and safety of state employees involved in the storage, transportation and administration of vaccine and antiviral and other aspects of the PI response plan may be necessary. As employees may be required to shelter in place or rest between shifts, facilities will need to be retro-fitted, stocked with provisions and worker security provided.

Support for Workers and Families

Quality and timely Employee Assistance Programs (EAP) will need to be available for all state workers, as demand increases. In addition to providing EAP services for existing eligible employees, services for employees who currently do not have access to EAP must be available. For example, 11% of salaried VDH employees and 100% of wage employees do not have access to EAP as a state benefit. For VDH that represents a total of approximately 800 workers (as of 12/1/05.)

Critical Incident Stress Management (CISM) services will need to be available, for example, through existing employee assistance programs and/or the use of trained peers.

Employee and family psychosocial support programs that are recommended by HHS may need to be developed, funded and staffed. (See Supplement 11-IV.A recommendations from sub committee.)

HHS recommends implementing effective communication with off-site and ill state employees and their families. This may require establishing or expanding the use of hotlines, 800 numbers, web sites and written materials and will require additional financial resources to establish and staff.

Central control agencies should provide models and best practices of workforce resiliency initiatives.

Activity Tracking

Central control agencies should develop standardized ways to centrally track and report impact of PI on the state workforce, such as absences, accidents/injuries/illnesses, WC costs, impact on productivity, use of CISM and other support programs and associated costs.

Standardized processes for documenting expenses during a declared emergency may facilitate and expedite reimbursement from the federal government (eg. Federal Emergency Management Agency) for which state agencies may be eligible.

Training

Standardized training regarding all aspects of PI response planning and workforce expectations should be developed and available to all state workers, with specialized training for groups such as supervisors and health care workers. Line agencies will need resources to customize products to meet their unique business needs.

Appendix 10F. Additional Resources

- American Psychological Association and Discovery Health Channel. *The Road to Resilience.* Available by calling 1-800-964-2000 or at www.apa.org.
- U.S. Department of Health and Human Services. *A Guide to Managing Stress in Crisis Response Professions.* DHHS Pub. No. SMA 4113. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2005.
- U.S. Department of Health and Human Services. *Developing Cultural Competence in Disaster Mental Health Programs: Guiding Principles and Recommendations.* DHHS Pub. No. SMA 3828. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2003.
- U.S. Department of Health and Human Services. *Tips for Managing and Preventing Stress: A Guide for Emergency and Disaster Response Workers.* DHHS Pub. No. KEN-01-0098. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2005.