APPENDIX 3 TO ANNEX H - EPIDEMIOLOGY AND SURVEILLANCE

ATTACHMENT A

PANDEMIC INFLUENZA
PREPAREDNESS AND RESPONSE PLAN

City of Houston Department of Health and Human Services

February 17, 2006

APPROVAL & IMPLEMENTATION

PANDEMIC INFLUENZA

PREPAREDNESS AND RESPONSE PLAN

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RECORD OF CHANGES

PANDEMIC INFLUENZA

PREPAREDNESS AND RESPONSE PLAN

Change #	Date of Change	Entered By	Date Entered

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ACRONYMS

AD(s)	Assistant Director(s), HDHHS
ASD	Administrative Support Division
BCH	Bureau of Consumer Health, HDHHS
BI	Bureau of Immunization, HDHHS
BOE	Bureau of Epidemiology, HDHHS
PHP	Bureau of Public Health Preparedness, HDHHS
BLS	Bureau of Laboratory Services, HDHHS
CDC	Centers for Disease Control and Prevention
CDD	Communicable Disease Division, HDHHS
CHS	Community Health Services Division, HDHHS
DSHS	Department of State Health Services, State of Texas
EOC	Emergency Operations Center, City of Houston
EMS	Emergency Medical Services
HA	Health Authority
HAHEMC	Houston Area Hospital Emergency Management Center
HAN	Health Alert Network
HCAC	Harris County Animal Control
HCPHES	Harris County Public Health and Environmental Services
HDHHS	City of Houston Department of Health and Human Services
HMMRS	Houston Metropolitan Medical Response System
HPE	Health Promotion and Education Bureau, HDHHS
HR	Human Resources
ILI	Influenza-Like Illness
LHA	Local Health Authority
LHD	Local Health Department
NVPO	National Vaccine Program Office
NSD	Neighborhood Services Division, HDHHS
OEM	Office of Emergency Management, City of Houston
OSPHP	Office of Surveillance and Public Health Preparedness
OPP	Office of Policy and Planning
PIO	Public Information Office
PHP	Public Health Preparedness (Bureau)
RODS	Retail Over-the-Counter Drug Sales System
TAHC	Texas Animal Health System
SARS	Severe Acute Respiratory Syndrome
USDA	United States Department of Agriculture
VAERS	Vaccine Adverse Event Reporting System
VFC	Vaccines for Children Program
WHO	World Health Organization

I. INTRODUCTION

A. Background

Influenza is an acute viral disease of the respiratory tract characterized by fever, headache, myalgia, prostration, coryza, sore throat and cough. Otitis media, nausea, and vomiting are also commonly reported among children. It is highly contagious with epidemics of influenza affecting hundreds of thousands of people nearly every year.

For surveillance purposes, *influenza-like illness* (ILI) is defined as respiratory illness with temperature greater than 100.4°F plus either sore throat or cough.

Pandemic Influenza is an uncommon type of influenza A that causes greater morbidity and mortality than seasonal influenza. An influenza pandemic occurs when a new influenza A virus (a "pandemic influenza virus") emerges in the human population, causes serious illness, and spreads easily from person to person worldwide. Influenza pandemics occurred three times during the twentieth century—in 1918, 1957 and 1968.

A *Confirmed Case of Influenza A/H5 Infection* is an individual, alive or deceased, in whom laboratory testing demonstrates one or more of the following:

- Positive viral culture for influenza A/H5;
- Positive polymerase chain reaction (PCR) for influenza A/H5;
- Positive immunofluorescence antibody (IFA) test for H5 antigen using H5 monoclonal antibodies;
- 4-fold rise in H5-specific antibody titre in paired serum samples.

An influenza pandemic is a global outbreak of disease that occurs when a new influenza A virus appears or "emerges" in the human population, causes serious illness, and spreads easily from person to person worldwide. Pandemics are different from seasonal outbreaks or "epidemics" of influenza. Seasonal outbreaks are caused by subtypes of influenza viruses that already circulate among people, whereas pandemic outbreaks are caused by new subtypes that have never circulated among people, or by subtypes that have not circulated among people for a long time. Past influenza pandemics have led to high levels of illness, death, social disruption and economic loss.

Although the timing cannot be predicted, history and science suggest that we will face one or more pandemics in this century. The current pandemic threat stems from an unprecedented outbreak of avian influenza in Asia and Europe, caused by the H5N1strain of the influenza A virus. A notable and worrisome feature of the A / H5N1 virus is its ability to infect a wide range of hosts, including birds and humans. To date, the virus has infected birds in 16 countries and has resulted in the deaths, through illness and culling, of approximately 200 million birds across Asia. While traditional control measures have been attempted, the virus is now endemic in Southeast Asia, present in long-range migratory birds, and unlikely to be eradicated soon. As of the date of this document, the virus is known to have infected 121 people in four countries, resulting in 62 deaths over the past two years with a case fatality rate of over 50%. Although the highly pathogenic avian influenza virus A / H5N1virus has not yet shown an ability to transmit efficiently between humans, there is concern that it will acquire this capability through genetic mutation or exchange of genetic material with a human influenza virus to create a novel virus capable of causing a global influenza pandemic with potentially catastrophic consequences.

International organizations, such as the World Health Organization (WHO), track the progress of emergent influenza strains, provide containment measures, in underserved nations, and produce periodic updates on the global status of influenza. WHO has defined periods and phases of pandemic influenza to assist with planning and response activities. For consistency, comparability and coordination of national, state and local response, the United State Center for Disease Control (CDC) will identify and declare the status of these phases.

Table I-1: WHO Pandemic Phases

Inter-Pandemic Period **Phase 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 humans, the risk of human infection or disease is considered low **Phase 2:** No new influenza virus subtypes have been detected in humans. However a circulating animal influenza virus subtype poses a substantial risk of human disease
Pandemic Alert Period **Phase 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. **Phase 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. **Phase 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 **Phase 6:** Pandemic – increased and sustained transmission in the general population.

B. Purpose

The purpose of the Houston Department of Health and Human Services (HDHHS) *Pandemic Influenza Response Plan* (The plan) is to provide a guide for HDHHS and partners on how to respond before, during and after a pandemic situation. The plan aims to prepare, detect, respond to and mitigate pandemic influenza, with the intent of:

- Stopping, slowing or otherwise limiting the spread of a pandemic to the City of Houston;
- Limiting the local spread of a pandemic, and mitigating disease, suffering and death;
- Sustaining infrastructure and mitigating impact to the economy and the functioning of the city.

It is important to note that while the plan focuses on influenza, it is also intended to serve as the template for responding to large-scale outbreaks of other highly infectious respiratory diseases, even if some prevention measures or response tactics may change due to the nature of a particular disease such as Severe Acute Respiratory Syndrome (SARS).

The HDHHS Response Plan follows U.S. National Vaccine Program Office (NVPO) guidance for developing pandemic influenza response plans and US Department of Health and Human Services' *HHS Pandemic Influenza Plan.* It is also intended as a companion to the *Texas Department of State Health Services Pandemic Influenza Plan and Resource Document*. The plan details the activities identified as the responsibility of the local health departments within the state plan, therefore it is imperative to interpret the plan in the context of the state plan.

The Houston Office of Emergency Management (OEM) is responsible for the City of Houston Emergency Management Plan, an "all-hazards" disaster plan that encompasses all City agencies. Within this plan, Annex H includes the responsibilities of HDHHS during a disaster affecting the public's health. The plan presented here is integrated as an appendix to Annex H, along with plans for mass vaccination activities and local administration of the Strategic National Stockpile. As such, the elements of this plan are based on the existing emergency response

structure, authorities and responsibilities identified in the City of Houston Emergency Management Plan's Basic Plan and Annex H.

The plan should be read and understood prior to a pandemic situation. It is a dynamic document that will be updated to reflect new developments in the understanding of the disease agent, its spread, treatment and prevention. The plan will also incorporate changes in response roles and improvements in response capability developed through ongoing planning efforts.

HDHHS Office of Surveillance and Public Health Preparedness (OSPHP) will coordinate review and update the plan on an ongoing basis and provide the plan to key policymakers and other stakeholders.

C. Key Stakeholders

- DSHS and its Regional 5/6 Office
- Surrounding county health departments (Harris, Fort Bend, Galveston, Montgomery, Brazoria)
- OEM
- Mayor's Office
- Health Authority
- HPD
- HFD
- HAHEMC
- Hospitals, clinics, and private healthcare providers
- Assisted living and long-term care providers
- Schools
- Community leaders

II. ASSUMPTIONS

Plans for responding to pandemic influenza are based on existing command and control templates developed at the local, state and regional levels, and integrate with existing emergency plans, activities and inventories.

There may be a three-month warning period of a coming pandemic. In an affected community, a pandemic outbreak will last about 6-8 weeks. At least two pandemic disease waves are likely. The health impact of a pandemic event will be great:

- Up to 25-35% of persons may become ill in a major pandemic influenza wave
- Rates of influenza-related hospitalizations and deaths may vary substantially. Estimates based on past pandemic influenza events indicate that 0.01-8% of the population may be hospitalized and 0.001-1% of the population may die.
- The duration of illness for an uncomplicated case of influenza is five days.
- Medical care services will likely be severely taxed or overwhelmed.
- 10% or more of the workforce may be out of work due to illness at the peak of a major pandemic influenza wave. This estimate includes work lost while caring for oneself or ill family members.

Assuming a moderate pandemic influenza, HDHHS estimates that the impact of an influenza pandemic on the 2.1 million residents of the City of Houston would result in 525,000 sicknesses and 1100 deaths. If the city experiences a severe (1918-like) pandemic, the numbers would increase to 735,000 sicknesses and over 15,000 deaths.

Table II-1. Estimates with Moderate and Severe Pandemic Influenza Scenarios in the City of Houston[1]

	Moderate (1958/68-Like)	**Severe (1918-Like)**
Illness	525,000 (25% of the entire population)	735,000 (35% of the entire population)
Outpatient visits	262,500 (50%)	367,500 (50%)
Hospitalized	5040 (1.92%)	80,850 (22%)
Deaths	1,109 (22%)	17,787 (22%)

These estimates in Table II-1 are based on extrapolations from past pandemics in the United State and do not include the potential impact if interventions are not available during the future pandemics. Influenza pandemics will not only result in high fatality but also serious health effects to large portions of the population, with significant disruption to social, economic and security concerns of the community. A pandemic is also likely to be extremely disruptive, particularly for the health sector. Therefore a vital part of pandemic influenza planning is to develop strategies to address such potential problems and incorporate strategies to minimize the impact to the public infrastructure.

Vaccines and antiviral drugs have the potential to significantly reduce morbidity and mortality during a pandemic. In addition, vaccines and antiviral drugs may also limit viral spread. However, issues surrounding prophylaxis and treatment are complex:

- The time from a candidate vaccine strain to the production of the first vaccine dosage could be six months or more.
- Once vaccine is available, it may take five months to produce an adequate supply of vaccine for the entire U.S. population (currently production capacity is approximately five million doses per week).
- Two doses of vaccine administered 30 days apart may be required to develop immunity to a novel virus.
- The federal government will purchase all influenza vaccine during a pandemic.
- A six to eight week course of antivirals is recommended for prophylaxis; a five day course is recommended for treatment.
- There is a limited supply of antiviral medications. Antiviral distribution to states will occur through the Strategic National Stockpile.

[1] [1]These estimates are based on (1) Census population data, and (2) rates for hospitalizations, outpatient visits and deaths from Meltzer MI, Kownaski M, Crosby, R., 1999. (3) Past Pandemics. Range from attack rates of 30% suggested by HHS plan.

III. ROLES AND RESPONSIBILITIES

A. Federal Roles

The federal government is responsible for nationwide coordination of the pandemic influenza response. The federal and state counterparts will support public health and medical activities as required by the City of Houston in accordance with pre-established activation procedures. Areas of responsibility include the following:

- Surveillance in the U.S. and globally
- Conducting epidemiological investigation in the U.S. and globally
- Development and use of diagnostic laboratory tests and reagents
- Development of reference strains and reagents for vaccines
- Vaccine evaluation and licensure
- Determination of populations at highest risk and strategies for vaccination and antiviral use
- Assessment of measures to decrease transmission (such as travel restrictions, isolation and quarantine)
- Deployment of federally purchased vaccine
- Deployment of antiviral agents in the Strategic National Stockpile
- Evaluation of the efficacy of response measures
- Evaluation of vaccine safety
- Deployment of the Commissioned Corps Readiness Force and Epidemic Intelligence Service Officers
- Medical and public health communications

B. State Roles

States will be individually responsible for coordination of the pandemic influenza response within and between their jurisdictions. Specific areas of responsibility include the following:

- Identification of public and private sector partners needed for effective planning and response
- Development of key components of pandemic influenza preparedness plan: surveillance, distribution of vaccine and antivirals and communications on state level
- Integration of pandemic influenza planning with other planning activities conducted under CDC and the Health Resources and Services Administration's (HRSA) bioterrorism preparedness cooperative agreements within the state
- Coordination with local areas to ensure development of local plans as called for by the state plan and provide resources, such as templates to assist in the planning process
- Development of data management systems needed to implement components of the plan
- Assistance to local areas in exercising plans
- Coordination with adjoining jurisdictions

C. Local Roles

Local governments have the primary responsibility to provide public health, mental health and emergency medical services within the jurisdiction. Specific areas of responsibility include the following:

- Ensure command and coordination of pandemic influenza planning, preparedness and response among OEM, the city departments, healthcare providers and community partners
- Enhance disease surveillance, early detection, and investigation of pandemic influenza in the jurisdiction
- Coordinate specimen testing, subtyping, enhance testing turn around time and increase laboratory surge capacities
- Prevent local disease transmission using a range of containment strategies
- Coordinate request and distribution of public stocks of antiviral drugs and vaccines
- Provide ongoing communication with the public, healthcare providers and community partners with updated guidance on emergency response and infection control tactics as the situation unfolds
- Maintenance of essential business activities of the city government

IV. OPERATIONAL PLAN

The plan adapts a matrix structure to address seven key elements of public health preparedness and response in each of the three defined pandemic phases, including *Inter-pandemic Period, Pandemic Alert Period, Pandemic Period, and Post Pandemic.* Under each key element, the plan delineates specific tasks applicable in different pandemic phases. Tasks are assigned to Bureau level with designated leads. To clarify the importance of inter-agency collaboration, regional and local counterparts, agencies, and key stakeholders related to each specific task are also addressed. The seven key preparedness and response elements are:

- Planning, Command and Coordination: Ensure command and coordination of pandemic influenza planning, preparedness and response among OEM, the city departments, healthcare providers, and community partners
- Pandemic Influenza Surveillance: Enhance disease surveillance, early detection, and investigation of pandemic influenza in the jurisdiction
- Laboratory Testing: Coordinate specimen testing, subtyping, enhance testing turn around time, and increase surge capacities.
- Infection Control and Containment: Prevent local disease transmission using a range of containment strategies by implementation of community level control methods, provide vaccination and antivirals prophylaxis and treatment
- Emergency Response: Health Systems and Critical Infrastructure: Coordinate request and distribution of public stocks of antiviral drugs and vaccines
- Communication and Public Outreach: Provide ongoing communication with the public, healthcare providers and community partners with updated guidance on emergency response and infection control tactics as the situation unfolds.
- Maintenance of Essential Business Activity in HDHHS: Addressed essential business continuity operation issues during pandemic.

A. Planning, Command and Coordination

HDHHS will lead public health preparedness planning, review and update plan for pandemic influenza with key stakeholders.

Existing HDHHS departmental command systems should be applied to pandemic influenza planning and response. These structures should delineate operational priorities and identify responsibility for decision making related to the public health response to a pandemic, for carrying out response activities before, during and after a pandemic and for preparing and maintaining the pandemic response plan. **Please refer to Annex H for details**.

During the pandemic alert period, HDHHS will determine the impact of pandemic disease upon the jurisdiction (Houston residents) and alert HDHHS leadership and staff to stand by for potential implementation of NIMS-compliant emergency operations when either:

- an outbreak of influenza due to a new subtype is identified ***outside*** of the United States.
- outbreaks of influenza of any subtype occur anywhere inside of the United States, Canada, or Mexico.

HDHHS will *activate* emergency operations, when either:

- outbreaks of influenza due to a new subtype **and** sustained human-to-human transmission are identified anywhere within the United States.
- outbreaks of influenza due to a new subtype are identified ***inside*** the state of Texas.
- outbreaks of influenza due to any subtype are identified within Harris County.

HDHHS will request SNS support when a confirmed human-to-human transmission case is identified in or around the jurisdiction, and/or confirmed human outbreak is identified in the state/region. **Please refer to the SNS plan for procedure details.**

B. Pandemic Influenza Surveillance

There are four primary national surveillance components:

- Virologic surveillance – Each week, approximately 75 U.S. collaborating laboratories that are part of the WHO Influenza Surveillance Network and 50 National Respiratory and Enteric Virus Surveillance System laboratories report the number of clinical specimens tested for influenza and the number of positive results by virus type and subtype.
- Surveillance for influenza-like illness (ILI) – Approximately 1000 sentinel health care providers/clinics located in 50 states regularly report the number of patient visits for ILI by age group and the total number of patient visits each week.
- Surveillance for influenza and pneumonia deaths – The vital statistics offices of 122 U.S. cities report each week the percentage of total deaths that may be influenza-related
- State and territorial epidemiologists assess influenza activity levels in their respective states each week and report it as widespread, regional, local, sporadic or no activity.

At the state level, DSHS collaborates with partners to conduct the following surveillance activities:

- Passive surveillance of respiratory specimens to the DSHS Public Health Laboratory for viral isolation, identification of influenza type and subtype.
- Passive surveillance of ILI outbreaks in long-term care facilities.
- Passive surveillance of ILI outbreaks in schools or other institutional settings.
- Each week, a voluntary state network of sentinel physicians report the number of patients presenting with ILI and the total number of patient visits by age group each week.
- Passive reporting of prescription trends by pharmacists.

In addition to these federal and state surveillance activities, HDHHS will collaborate with partners to conduct the following surveillance activities:

- 24/7 passive surveillance of laboratory confirmed influenza cases and/or ILI outbreaks.
- Passive surveillance of ER visits and deaths of ILI via HMMRS website.
- Passive syndromic surveillance of ILI outbreaks in hospitals, laboratories, schools and long-term care facilities.
- Passive surveillance of Death Certificates on death caused by influenza.
- Passive surveillance of over-the-counter pharmaceutical sales via RODS surveillance.

C. Laboratory Testing

The HDHHS virology laboratory currently performs standard tube culture for influenza testing. The culture and typing identification (influenza A or influenza B) process can take anywhere from 4-10 days. If there is a need to subtype influenza A the culture will be sent to DSHS Laboratory.

HDHHS will continue to enhance its in-house influenza testing capacity and its collaboration with regional reference or BSL-3 laboratories to form mutual aid agreements. HDHHS laboratory will coordinate orders of influenza sample testing, and submission of clinical specimens to appropriate testing facilities.

D. Infection Control and Containment

Three methods for preventing influenza and containing its spread include community control measures, antiviral medication and vaccines.

1. Implementation of Community Level Control Methods

The goal of community level containment measures is to slow the spread of pandemic influenza as much as possible and to provide additional time for the development, manufacture, distribution and administration of influenza vaccine and antiviral medications.

There are two key strategies for preventing transmission, each with varying degrees of efficacy. The first involves decreasing the probability that contact will result in infection, and may include activities such as providing education to the public about practicing cough etiquette and proper hand and respiratory hygiene. The second involves decreasing contact between infected and uninfected individuals, and may include activities such as isolating suspected cases and quarantining case contacts, issuing travel advisories and canceling schools and large gatherings.

2. Antiviral Medications

Antiviral medications may play an important role for the control of influenza, particularly in the period of time in a pandemic event before vaccine becomes widely available. However, antivirals are not a substitute for vaccination. Antiviral medications can be used for both prophylaxis and treatment. Four different influenza antiviral medications (amantadine, rimantadine, oseltamivir, and zanamivir) are approved by the U.S. Food and Drug Administration (FDA) for the treatment and/or prevention of influenza. Currently, a 6-8 week course of antivirals is recommended for prophylaxis, and a 5-day course of antivirals is recommended for treatment. Because of the limited supply of antivirals, utilizing antivirals for prophylaxis may not be feasible except in very limited circumstances. Therefore the initial medication should focus on the use of antivirals for treatment of exposed persons rather than on prophylaxis.

Table III-1 includes estimates of the number of persons in each priority population within City of Houston as of November 2005.

Table III-1. Estimated Priority Population for Influenza Antivirals in the City of Houston

	Priority Group	Type	Estimated population
A	Hospitalized patients with influenza	Treatment	5,000
B	Healthcare workers with direct patient contact; EMS personnel	Treatment	10,000
C	Highest-risk outpatients – Immunocompromised persons and pregnant women	Treatment	10,000
D	Pandemic health responders, public safety personnel and key government decision makers	Treatment	10,000
E	Increased-risk outpatients – infants, elderly, etc.	Treatment	100,000
F	Outbreak response personnel in nursing homes and other residential settings	Post-exposure prophylaxis	2,000
G	Healthcare workers working in emergency rooms, intensive care units, emergency medical services and dialysis	Prophylaxis	10,000
H	Pandemic society responders and other healthcare workers	Treatment	30,000
I	Other outpatients	Treatment	150,000
J	Highest-risk outpatients	Prophylaxis	10,000
K	Other healthcare workers with patient contact	Prophylaxis	50,000

3. Vaccination

A vaccine serves as one preventive strategy during an influenza pandemic. Unlike annual production of influenza vaccine, vaccine based on a newly discovered pandemic strain could require four to eight months before large amounts are available for distribution, and therefore there could be a large gap between identification of a pandemic strain and availability of vaccine. Further, once a vaccine becomes available, production capacity may allow for just 1-2% of the population being vaccinated per week. HDHHS will work with partner groups to make recommendations guiding the early use of available vaccine based on priority population groups (Appendices III and IV).

Though in the summer 2005 the NVPO has recommended that the federal government stockpile 133 million courses of antiviral, the existing supply and production capacity for antiviral drugs is far less than would be needed to provide treatment for the anticipating number of persons exposed during a pandemic event. It is crucial to develop recommendations for prioritizing population groups to receive antivirals for therapy during a pandemic event.

The following Table III-2 includes estimates of the number of persons in each priority population within the City of Houston as of November 2005.

Table III-2. Estimated Priority Population for Influenza Vaccination in the City of Houston

	Priority Group	**Estimate**	**Cumulative**
1A	Healthcare workers with direct patient contact plus essential healthcare support staff	63,000	63,000
1B	Persons in the highest-risk groups		
	Persons >64 years with 1+ high-risk conditions	130,000	193,000
	Persons 6 months-64 years with 2+ high-risk conditions	48,000	241,000
	Persons with a hospitalization in prior years with pneumonia or influenza or an ACIP high-risk condition	5,000	246,000
1C	Household contacts of children less than 6 months and persons who are severely immunocompromised; pregnant women	75,000	321,000
1D	Key government leaders and critical public health pandemic responders	1,500	322,500
2A	Persons in the remaining high risk groups		
	Persons ≥65 years with no high-risk conditions	120,000	442,500
	Persons 6 months-64 years with 1 high-risk condition	250,000	692,500
	Persons 6-23 months	39,000	731,500
2B	Persons in critical infrastructure groups		
	Other public health emergency responders	2,000	733,500
	Public safety personnel (fire, police, 911 dispatchers, correctional facility staff)	21,000	754,500
	Utility workers essential for maintaining power, water and sewage systems	2,500	757,000
	Transportation workers critical for transporting fuel, food, water and medical supplies and for public ground transportation	27,000	784,000
	Telecommunications/IT personnel essential for maintaining functional communication and network operations	50,000	834,000
3	Other key government health decision makers and mortuary services	3,000	837,000
4	Healthy persons aged 2-64 years not included in above categories	1,200,000	2,037,000

4. Vaccine and Pharmaceutical Delivery
Although antiviral drugs can be stockpiled, a pandemic vaccine can only be made once the pandemic virus is identified. HHS is increasing and diversifying antiviral medicines in the SNS program. Procedures to request SNS support on mass prophylaxis is available in the HDHHS SNS plan.

E. Emergency Response: Health Systems and Critical Infrastructure

While the City of Houston's disaster plan addresses all hazards, pandemic influenza differs from many threats due to the magnitude and duration of its impact and the likelihood of subsequent waves of disease. Of great concern during a pandemic event is its effect on the capacities of the healthcare system and other critical community services.

Healthcare providers play an essential role in the detection of an initial case of novel or pandemic influenza in a community. Clinical awareness of novel or pandemic influenza disease can help:

- Quickly identifying and triaging cases
- Containing the spread of infection
- Beginning an efficient and comprehensive workup
- Initiating antiviral and other supportive therapy
- Anticipating clinical complications

According to data collected in a survey conducted by HDHHS Public Health Preparedness team in 2004, there are a total of over 100 Houston area healthcare facilities. These healthcare facilities provide a total of over 2000 ICU beds, 500 negative pressure rooms, 1300 ventilators, and 15000 non-ICU beds. There are an average 2300-8700 inpatients and 6,000 – 14,000 ER visits.

Using CDC's FluSurge calculation, for a moderate pandemic influenza attack over an 8 week course, the 5th week will be the peak week of the pandemic outbreak. Peak usage daily may consume about 15% of the total ICU beds and ventilators for hospitalized influenza patients. The usage will be significantly higher for larger hospitals and healthcare systems and most receiving hospitals will require surge support.

The absentee rate will be significant during a pandemic of influenza, especially among healthcare providers. Absenteeism may be predicted to peak at 30%-60%. Appendix I provides further healthcare system guidance on clinical management and infection control. Appendix II also includes a hospital preparedness checklist abstracted from *HHS Pandemic Flu Plan.*

The City of Houston, as one of the original 21 City Readiness Initiative (CRI) cities works closely with local and regional counterparts and partners to increase the contingency of operations under mass prophylaxis scenarios. HAHEMC is one important partner that leads Houston area hospitals by increasing hospital surge capacity using federal funding. Houston Fire Department has recently acquired a grant to augment medical facility surge capacity by acquiring medical contingency shelters in Houston. Further planning of medical surge capacity is needed for effective coordination of local surge capacity development and resource utilization.

F. Public Information and Risk Communication

Dissemination and sharing of timely and accurate information with the health care community, the media, and the general public will be one of the most important facets of the pandemic response. Instructing the public in actions they can take to minimize their risk of exposure or actions to take if they have been exposed will reduce the spread of the pandemic and may also serve to reduce panic and unnecessary demands on vital services. Appendix III includes examples of statements to healthcare providers and to the media and public may be used as templates and revised as appropriate to the actual event. Appendix III includes information for the media on Pandemic Influenza. Please refer to the HDHHS Crisis and Emergency Risk Communication (CERC) plan for details.

G. Maintenance of Essential Business Activity in HDHHS

HDHHS will document essential business activities and essential services personnel, and maintain up-to-date contact information. Refer to HDHHS COOP Plan for more details.

HDHHS also provided Annex III as business community guidance for work place influenza management.

Table IV-1. Summary of Pandemic Influenza Preparedness Key Elements in each WHO Pandemic Period

Key Element	Interpandemic Period	Pandemic Alert Period	Pandemic Period
I. Planning, Command and Coordination	HDHHS will lead public health preparedness planning, review and update plan for pandemic influenza with key stakeholders.	HDHHS will assess preparedness status and identify actions needed to fill gaps. Legal preparedness regarding business continuity, credentialing, Quarantine, Worker's Comp, etc.	Health Authority (HA) will activate an NIMS structure, determine mass prophylaxis needs, and coordinate vaccine & antiviral delivery/dispensing. HDHHS will staff OEM/Joint Operation Center.
II. Surveillance, investigation and Protective Public Health Measures	OSPHP Bureau of Epidemiology (BOE) will define and describe local priority population, passive/syndrome/school/mortality surveillance; plan for outbreak investigation & reporting.	HDHHS will enhance surveillance to ensure early detection in the jurisdiction; active surveillance to track emerging infectious disease; Implement outbreak control measures.	HDHHS will enhance all components of surveillance system. Outbreak investigation and profiling; Revise priority population; Monitor vaccine coverage, antiviral usage tracking, and adverse effects.
III. Laboratory Testing	OSPHP Bureau of Laboratory Services (BLS) will coordinate specimen testing, sub-typing, and enhance turn-around time.	HDHHS will enhance laboratory testing surge capacity. Enhance epidemiological and lab-based monitoring.	HDHHS will coordinate with hospitals to ensure samples are directed to the correct laboratory for testing.
IV. Infection Control & Containment	HDHHS will develop strategies to prevent spread of infection and integrate flu plan with City Annex H. HDHHS Immunization will plan for the procurement of vaccine, antiviral and supplies.	Health Authority (HA) will determine feasibility of containing the initial outbreak of a potential pandemic, and implement control and containment activities. HDHHS will coordinate allocation of stockpiled antiviral drugs; OSPHP will develop or adopt a tracking system and prophylaxis pre-defined priority groups for vaccinations and prophylaxis.	OEM will provide clinical guidance on case management and infection control; HA will consider implementing quarantine and isolation measures as appropriate. OSPHP will coordinate SNS & mass prophylaxis related activities. HDHHS will assess vaccine coverage on priority groups, evaluate need to expand vaccine and antiviral supply request.
V. Healthcare and Emergency response	OSPHP will coordinate with healthcare providers to assess and maintain information of hospital surge capacity. Collaborate with OEM to plan for disaster mental and social support services according to City Annex O.	HDHHS will assess the capacity of area hospitals and identify their resource needs, and coordinate resource allocation; Coordinate psychological and social support services to responders and public.	OEM will activate hospital emergency response plans and Disaster Medical Unified Command (DMUC); HDHHS will assist resource request and allocation, special needs, and surge mortuary services.
VI. Communication and Public Outreach	HDHHS will improve communication with partners and enhance rapid/mass communication and 24/7 coverage;	PIO will communicate with the public via the news media; disseminate information to inform pandemic alert status, containment measures, and response effort.	HDHHS will ensure ongoing communication with authorities and partners to provide accurate and timely info and counter confusion and panic of the public.
VII. Maintenance of Essential Business Activities	HDHHS will document essential business activities and essential services personnel.	HDHHS will confirm availability of resources to support pandemic response and prioritize available resources.	HDHHS will monitor pandemic response actions and activate COOP plan as needed.

ACTIVITIES BY PANDEMIC PERIOD

INTERPANDEMIC PERIOD

Global Pandemic Phase:

Phase 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 humans, the risk of human infection or disease is considered low.

Phase 2: No new influenza virus subtypes have been detected in humans. However a circulating animal influenza virus subtype poses a substantial risk of human disease.

I. Planning, Command and Coordination

- Office of Surveillance and Public Health Preparedness (OSPHP) will lead the department in planning the public health response to pandemic influenza and ensure that planning and response activities are coordinated within City of Houston.
- Bureau of Public Health Preparedness will coordinate with all Assistant Directors to review, evaluate and revise existing influenza plans to ensure an adequate and coordinated public health response.
- Bureau of Public Health Preparedness will coordinate with all Assistant Directors to review bureau/lead assignments with staff of all bureaus/programs within the department.
- Bureau of Public Health Preparedness will coordinate and/or participate in pandemic influenza exercises to test preparedness.
- Bureau of Public Health Preparedness through Bureau of Epidemiology, will maintain information about the capacity of hospitals and treatment centers through the Houston Metropolitan Medical Response System (HMMRS).
- Human Resources will maintain information about the capacity of essential services personnel within the Department.

II. Surveillance, Investigation and Protective Public Health Measures

- Communicable Disease and Neighborhood Services Divisions will enhance community capacity for responding to pandemic influenza by providing disease prevention, health promotion and conduct educational outreach activities.
- Bureau of Epidemiology will establish and coordinate local surveillance activities in addition to the federal and state surveillance activities.
- Bureau of Epidemiology will continue work with local hospitals to address influenza surveillance, early detection, reporting, and epidemiological investigation activities.
- Bureau of Epidemiology will enhance HMMRS and RODS syndrome surveillance systems for emergency room visits and deaths due to acute febrile respiratory illness.
- Bureau of Laboratory Services will ensure results of positive rapid influenza test kits and influenza viral cultures are provided to HDHHS.
- Bureau of Epidemiology will monitor over-the-counter (OTC) drug sale information through RODS OTC Drug Sales system.
- Bureau of Epidemiology will continue independent school district ILI surveillance.
- Bureau of Epidemiology will continue influenza related mortality surveillance.
- Bureau of Epidemiology will maintain regular communication with external partners to keep informed about suspect clinical symptoms identified through passive surveillance in local avian populations including poultry wholesalers and results of the subsequent investigations.

- Bureau of Public Health Preparedness, Health Authority and City of Houston Legal will regularly review the legal authorities regarding the implementation of community level control measures and will develop and maintain the City of Houston Quarantine and Isolation Plan

III. Laboratory Testing

- Bureau of Laboratory Services will ensure lab capacity to rapidly detect and report influenza
- Bureau of Laboratory Services will coordinate specimen testing and typing and coordinate sub-typing submission.
- Bureau of Laboratory Services will conduct lab-based occupational monitoring for flu activities.
- Public Health Preparedness will work with the Bureau to establish back-up functions with UTMB's BSL-4.

IV. Infection Control and Containment

- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will define and quantify local priority population groups (including special needs) to receive vaccine or antivirals for prevention, prophylaxis and treatment, and update estimates on an annual basis.
- Bureau of Immunizations working with Neighborhood Services Division will implement these recommendations for vaccination and treatment.
- Bureau of Public Health Preparedness will develop and maintain contact information of partners with whom HDHHS may communicate information about community level control measures.
- Bureau of Public Health Preparedness will coordinate planning for the request, procurement, delivery, and distribution of vaccines, antivirals and supplies, review and update the methodology within HDHHS *SNS Plan* for providing vaccination during a pandemic.
- Bureau of Health Planning and Evaluation and OSPHP working with Area Agency on Aging will identify infection control and containment methods specific for special population groups and coordinate implementation.

V. Emergency Response: Health Systems and Critical Infrastructure

- Bureau of Public Health Preparedness and Bureau of Epidemiology with Bureau of Health Planning and Evaluation will work with area hospitals through HAHEMC to ensure that policies, plans and protocols for pandemic influenza are developed and maintained. Key policies will include those regarding reporting to HDHHS and those regarding infection control procedures.
- Bureau of Public Health Preparedness and Bureau of Epidemiology will estimate the impact of pandemic influenza on healthcare services and critical infrastructure within City of Houston Hospital and long-term care bed capacity:
    - Intensive care unit capacity
    - Ventilators
    - Personal protective equipment (PPE)
    - Specimen collection/transport materials
    - Sources of consumable medical supplies
    - Medical personnel who may be utilized during an emergency situation
    - Pharmacies and pharmacists
    - Contingency medical facilities
    - Mortuary/funeral services
    - Social services
    - Mental health services
- Bureau of Immunization working with Bureau of Epidemiology and Bureau of Public Health Preparedness will disseminate epidemic control strategies and educational materials to area health care providers, including a summary of the most current influenza vaccine recommendations.
- Bureau of Public Health Preparedness will enhance medical volunteer recruitment and training through surrounding communities and Medical Reserve Corps.
- Bureau of Immunizations working with Neighborhood Services Division will continue activities to enhance annual influenza vaccination coverage levels in high-risk groups.

- Bureau of Public Health Preparedness will work with HAHEMC to develop adequate hospital surge capacity.
- Bureau of Public Health Preparedness working with City of Houston Legal will obtain MOUs with local medical schools, nursing schools, schools of public health, universities and colleges.
- Bureau of Public Health Preparedness working with City of Houston Legal will obtain MOUs with Harris County Medical Society (HCMS) Physician Alert System and convene the Community Disease Alert System (CDAS).

VI. Communication and Public Outreach

- Public Affairs will notify hospitals, heath care providers, and first responder agencies of Interpandemic Period designation.
- OSPHP will develop public health campaigns that emphasize preventative health measures such as vaccination and proper hygiene.
- OSPHP and Bureau of Health Planning and Evaluation will identify for Public Affairs affected target audiences to communicate information about community level control measures and identify appropriate strategies for dissemination.
- OSPHP and Bureau of Health Planning and Evaluation will engage community partners to participate in planning activities and facilitate open communication.
- Public Affairs will develop public information messages that address public health issues and concerns (vaccine supply, antiviral use, low-tech prevention methods, and maintenance of essential services) regarding pandemic influenza.
- Public Affairs will disseminate these campaigns and messages to the public through media outlets.

VII. Maintenance of Essential Business Activities in HDHHS

- Human Resources will identify essential business activities, core people, core knowledge and skills.
- Human Resources will publish policies for absence and illness and adjust them accordingly.
- Human Resources will develop strategies for workplace flexibility.
- Informational Technology will work on strategies to allow employees to work remotely.
- All Bureau Chiefs will update the COOP regularly to reflect contingency planning for absence and illness.
- Human Resources will update contact information in VIM to enhance communication.

PANDEMIC ALERT PERIOD

WHO Global Pandemic Phases:

Phase 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.

Phase 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.

Phase 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)

I. Planning, Command and Coordination

- OSPHP will initiate communication with local, state and national counterparts to discuss local influenza trends.
- OSPHP will disseminate information regarding influenza within the Department at regularly scheduled intervals.
- OSPHP will work with Public Affairs to develop appropriate public health information messages for general public and local partners.
- Bureau of Public Health Preparedness will notify the SNS Memoranda of Understanding (MOU) school districts and inform them about the possibility of activating schools as mass vaccination sites, in accordance with MOU currently in place.
- All Divisions will prepare for activation of pandemic emergency operations.
- All Divisions will implement regular testing of staff notification protocols.
- OSPHP will determine the impact of pandemic disease upon the jurisdiction and alert leadership and staff to stand-by for potential implementation of NIMS-compliant emergency operations (*See* Operational Plan)

II. Surveillance, Investigation, and Protective Public Health Measures

- Bureau of Epidemiology will monitor the Health Alert Network (HAN), EpiX, and other channels of information to provide ongoing assessments of the situation to the Director, HA, and other relevant HDHHS personnel.
- Bureau of Epidemiology will ensure that all interpandemic influenza surveillance activities are underway regardless of the time of year, enhancing activities as needed based on information received.
- Bureau of Epidemiology will monitor and institute recommendations from CDC for any additional surveillance activities that should be undertaken given the specific circumstances.
- OSPHP will assess the need to screen travelers arriving in the area from affected countries.
- Bureau of Epidemiology will assess the completeness and timeliness of reports from all participating laboratories and sentinel providers and will collaborate with these partners to enhance and facilitate complete and timely reporting.
- Bureau of Epidemiology will inform state and federal partners about increased local flu surveillance activities. If necessary requests will be made on additional resources for local surveillance and case tracking activities.
- Bureau of Epidemiology, upon identification of first person-to-person pandemic influenza case, will commence investigation, contact tracking, isolation, and confirmation of laboratory test results.
- Bureau of Epidemiology will add influenza indicators to weekly indicator report.

III. Laboratory Testing

- Bureau of Laboratory Services will provide instructions to reinforce the safe handling of the potential novel influenza virus to local laboratories.
- Bureau of Laboratory Services will coordinate the collection of ILI specimens among area providers and laboratories and facilitate the transfer of ILI specimens.
- Bureau of Laboratory Services will provide instructions for directing samples from patients presenting with severe or unusual ILI to the appropriate laboratory for testing.
- OSPHP will enhance laboratory testing surge capacity through upgrades and agreements.
- OSPHP will enhance epidemiological and lab-based influenza monitoring.

IV. Infection Control & Containment

1. Possible containment measures if cases are first detected outside the U.S.

- Communicable Disease and Neighborhood Services Divisions will continue seasonal influenza vaccination using city clinics.
- Health Authority may recommend isolation of persons who are recent travelers to affected regions if they have ILI. If influenza is suspected or confirmed, HDHHS may recommend isolation at home or in a hospital until isolate subtyping is accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be a novel influenza A virus.
- Health Authority may recommend quarantine for contacts of cases (*See* Annex H).
- HDHHS will increase education about the importance of hand hygiene, cough etiquette and annual influenza vaccination.

2. Possible containment measures if cases are first detected in the U.S. outside City of Houston

- Health Authority may recommend that persons who are positive for influenza A be placed in isolation at home or in a hospital until isolate subtyping can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.
- Health Authority may recommend quarantine for contacts of cases and implement HDHHS Quarantine and Isolation plan. (*See* Annex H, Quarantine & Isolation Plan)
- HDHHS will increase public education regarding the importance of hand hygiene and cough etiquette.

3. Possible containment measures if cases are first detected in City of Houston

- Public Affairs will initiate Joint Information Center (JIC).
- Health Authority may recommend that persons who have ILI be placed in isolation at home or in a hospital until subtyping of their isolate can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.
- Health Authority may recommend quarantine for contacts of cases.
- If an animal source is identified and there is ongoing transmission within the animal population, Bureau of Animal Regulation and Control with the Bureau of Epidemiology may recommend that persons who may be in contact with potentially infected animals wear appropriate personal protective equipment. (*See* Appendix B)
- Health Authority may recommend that citizens limit travel to destinations outside of City of Houston, as well as limit non-essential travel within the city.
- Health Authority may recommend cancellation of large gatherings depending on the level of person-to-person transmission. Based on the epidemiology of the known infected cases, HDHHS may consider closure of schools, including colleges and universities, and closure of office buildings.
- Bureau of Epidemiology and the Bureau of Immunizations will monitor VAERS data for evidence of adverse reactions to the influenza vaccine. Report findings routinely to DSHS.

- Health Authority will review surveillance data for changes in risk factors that could require modification of recommendations for priority groups for receiving vaccine.
- Health Authority will monitor availability of antivirals and, when appropriate, recommend changes in priority groups for receiving vaccine or antivirals.
- Health Authority can modify recommendations and agreements on priority groups for receiving the vaccine based on availability of vaccine.
- HDHHS will increase public education regarding the importance of hand hygiene and cough etiquette.

V. Emergency Response: Health Systems and Critical Infrastructure

- OSPHP will issue regular alerts regarding surveillance and case tracking activities to the medical community through Rapid Alert Systems.
- If necessary, OSPHP will issue special requests to healthcare providers to increase laboratory diagnosis of influenza for persons presenting with ILI, especially those with recent travel history to regions where the pandemic strain of influenza is circulating or those with unusual or severe symptoms.
- Health Authority will recommend that emergency medical providers and hospitals activate severe respiratory illness protocols and provide guidance about the appropriate use of personal protective equipment.
- Administrative Support Division will confirm availability of resources to support a pandemic response.
- OSPHP will review and modify response plan for the provision of antivirals as needed to account for updates received regarding the novel virus.
- Bureau of Public Health Preparedness will review and modify its *SNS Plan* as needed to account for updates received regarding the novel virus. Such updates may include recommended target groups and projected vaccine supply.
- Public Affairs will notify the medical community of the status of antiviral availability and plans to disseminate it to the established priority groups
- Public Affairs will disseminate antiviral use guidelines to the medical community.
- Bureau of Public Health Preparedness will augment Community Emergency Medical Centers sites and temporary infirmary locations as needed in coordination with local mass-care organizations to respond to the overwhelming caseload.

VI. Communication and Public Outreach

- Public Affairs will initiate Joint Information Center (JIC).
- Public Affairs will disseminate alerts and appropriate information to the public through media outlets and will notify hospitals, healthcare providers, and first responder agencies of Pandemic Alert Period designation.
- Health Authority will draft and issue health advisory recommending limiting travel to the affected region and screening travelers arriving from the affected region.
- Through Rapid Alert Systems, HDHHS will regularly provide updated information about the epidemiology and spread of the novel virus to the local healthcare community.
- Public Affairs will provide updated information about the epidemiology of the novel virus.
- Public Affairs will increase public information effort designed to keep ill persons at home, providing translations into Spanish and other major languages.

VII. Maintenance of Essential Business Activities in HDHHS

- Administrative Support Division will assess 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.
- All Bureaus will prepare for the eventuality of workplace business closing.
- All Bureaus will maintain essential operating and emergency management information in known shared locations.

- All Bureaus will communicate with staff about health and safety issues, potential for business stand-down, and leave arrangements.

PANDEMIC PERIOD

WHO Global Pandemic Phase:

Phase 6: Pandemic – increased and sustained transmission in the general population

I. Planning, Command and Coordination

- Health Authority and Public Affairs will announce the pandemic status while ensuring ongoing communication with local, state and federal authorities.
- OSPHP will activate NIMS incident command structure and/or Joint Operation Center (JOC).
- Bureau of Public Health Preparedness will determine the need for and scope of mass vaccination activities.
- OSPHP will activate SNS protocol.
- Bureau of Public Health Preparedness will coordinate delivery of vaccine and/or antivirals with DSHS.

II. Surveillance, Investigation, and Protective Public Health Measures

- Bureau of Epidemiology will continue enhanced surveillance, contact tracing, and treatment tracking activities.
- Bureau of Epidemiology will assess the epidemiology of the pandemic daily and provide the OEM with protective action recommendations.
- Bureau of Epidemiology will assess the epidemiology of the pandemic daily and provide the Department with trending analysis.
- Bureau of Epidemiology will enhance ongoing surveillance activities to include the following:
    - Monitor health impacts, including deaths and hospitalizations
    - Monitor community impacts, including absenteeism in essential services
    - Monitor reports of antiviral resistance
    - Monitor reports of vaccine effectiveness

III. Laboratory Testing

- Bureau of Laboratory Services will ensure samples are directed to the correct laboratory for testing.
- Bureau of Laboratory Services will activate redundancy agreements.

IV. Infection Control & Containment

- OSPHP will fully activate mass vaccination activities according to the *SNS Plan.*
- Bureau of Public Health Preparedness will communicate with the regional DSHS office regarding the availability and, if applicable, the delivery of antivirals through the Strategic National Stockpile.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will provide DSHS with an estimated number of persons within each priority population as well as the population as a whole.
- Bureau of Public Health Preparedness will ensure that antivirals are appropriately allocated among Community Emergency Medical Centers and coordinate efforts to provide antiviral therapy.
- OSPHP will evaluate antiviral delivery and administration procedures and modify plans as necessary.
- Prior to widespread vaccine availability, Bureau of Immunization and Neighborhood Services will provide vaccine as it is available to priority groups based on the methodology described the *SNS Plan.*
- HDHHS will collaborate with HCPHES and other area jurisdictions to coordinate mass vaccination efforts.
- Bureau of Epidemiology and the Bureau of Immunizations will track and monitor adverse vaccine reactions (VAERS).
- Bureau of Epidemiology and the Bureau of Immunizations will provide persons receiving vaccine with information about reporting such reactions to the Department.

- Bureau of Epidemiology and the Bureau of Immunizations will then report any reactions to the CDC Vaccine Adverse Event Reporting System (VAERS).
- All Bureaus will ensure that supplies are inventoried and returned as appropriate.
- OSPHP will evaluate vaccine delivery and administration procedures and modify plans as necessary.
- Health Authority may recommend:
    - all persons who are ill and their contacts remain in isolation at home
    - limitation or suspension of large gatherings and recreation activities
    - the closure of schools, including colleges and universities and closure of office buildings
    - the limitation of non-essential work activities, encouraging telecommuting when possible
    - an area quarantine
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness working with Area Agency on Aging will coordinate antivirals delivery for special need populations.

V. Emergency Response: Health Systems and Critical Infrastructure

- Health Authority will assess the capacity of area hospitals and identify their resource needs.
- Public Health Preparedness will activate local or regional alternate healthcare and emergency services facilities.
- Health Authority will coordinate the request for state and federal surge support for healthcare and emergency services.
- Health Authority will coordinate with local law enforcement in maintaining public order during a pandemic.

VI. Communication and Public Outreach

- Public Affairs will develop and disseminate appropriate information to the public.
- Bureau of Public Health Preparedness will communicate with the regional DSHS office regarding the availability and delivery of vaccine.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will provide DSHS with an estimated number of persons within each priority population.

VII. Maintenance of Essential Business Activities in HDHHS

- All Bureaus will make pre-determined personnel available to essential business operations per COOP.
- All Bureaus will restrict workplace entry of people with influenza symptoms.
- All Bureaus will implement additional hygiene measures to minimize the virus transmission.
- Increase staff and customer social distancing.
- Business model shifted to on-line activities.
- Workplace flexibility instituted and employees may work remotely from home.

POST-PANDEMIC

I. Planning, Command and Coordination

- OSPHP will develop a detailed report of the pandemic, utilizing surveillance data to evaluate the efficacy of local response activities. Analysis may include:
    - Severity of influenza outbreaks among demographic groups
    - Age-specific attack rate, morbidity and mortality
    - Efficacy of vaccination distribution and implementation of infection control measures
    - Extent of medical, social and economic impact
- The Director will convene relevant parties to debrief from response activities.
- The Director will communicate the status of the response to appropriate local, state and federal authorities.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will develop an After Action Report and update the Response Plan based on lessons learned from response activities.

II. Surveillance, Investigation, and Protective Public Health Measures

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- Bureau of Epidemiology will resume its routine surveillance activities.
- Bureau of Epidemiology will continue heightened surveillance for possible second wave attack.

III. Laboratory Testing

- Bureau of Laboratory Services will coordinate with Level A labs to continue monitoring unusual influenza activities.
- Laboratory surveillance should also return to **pandemic imminent status** while maintaining surveillance for possible antigenic drift.

IV. Infection Control & Containment

- Bureau of Immunization efforts in lower risk groups will continue as vaccine becomes available to increase "herd immunity" in the population in the event of a second wave.
- Health Authority will suspend all community level control measures.
- OSPHP will assess the compliance with community level control measures and evaluate the efficacy of community level control measures.

V. Emergency Response: Health Systems and Critical Infrastructure

- Bureau of Public Health Preparedness will discontinue and demobilize antiviral administration, ensuring that supplies are inventoried and returned as appropriate. Restock vaccine and drug inventory to pre-pandemic locations where possible.
- Bureau of Public Health Preparedness will evaluate antiviral delivery and administration procedures and modify plans as necessary.
- Following the *SNS Plan*, Public Health Preparedness and Bureau of Immunization will discontinue and demobilize mass vaccination activities, ensuring that supplies are inventoried and returned as appropriate.
- Bureau of Immunization will evaluate vaccine delivery and administration procedures and modify plans as necessary.
- Participate in recovery and demobilization efforts in coordination with the OEM.

VI. Communication and Public Outreach

- Health Planning and Evaluation and OSPHP will provide OEM with an assessment of the impact, response and control of the public health response during the pandemic.
- Public Affairs will provide public announcement for post-pandemic stage.

VII. Maintenance of Essential Business Activities in HDHHS

- Human Resources will assess and report staff availability.
- All Bureaus will assess and report damages to resources.
- All Bureaus will restore equipment, files, records, phones, etc to pre-pandemic status.

ACTIVITIES BY KEY ELEMENT

I. PLANNING, COMMAND AND COORDINATION

Interpandemic Period

- Office of Surveillance and Public Health Preparedness (OSPHP) will lead the department in planning the public health response to pandemic influenza and ensure that planning and response activities are coordinated within City of Houston.
- Bureau of Public Health Preparedness will coordinate with all Assistant Directors to review, evaluate and revise existing influenza plans to ensure an adequate and coordinated public health response.
- Bureau of Public Health Preparedness will coordinate with all Assistant Directors to review bureau/lead assignments with staff of all bureaus/programs within the department.
- Bureau of Public Health Preparedness will coordinate and/or participate in pandemic influenza exercises to test preparedness.
- Bureau of Public Health Preparedness through Bureau of Epidemiology, will maintain information about the capacity of hospitals and treatment centers through the Houston Metropolitan Medical Response System (HMMRS).
- Human Resources will maintain information about the capacity of essential services personnel within the Department.

Pandemic Alert Period

- OSPHP will initiate communication with local, state and national counterparts to discuss local influenza trends.
- OSPHP will disseminate information regarding influenza within the Department at regularly scheduled intervals.
- OSPHP will work with Public Affairs to develop appropriate public health information messages for general public and local partners.
- Bureau of Public Health Preparedness will notify the SNS Memoranda of Understanding (MOU) school districts and inform them about the possibility of activating schools as mass vaccination sites, in accordance with MOU currently in place.
- All Divisions will prepare for activation of pandemic emergency operations.
- All Divisions will implement regular testing of staff notification protocols.
- OSPHP will determine the impact of pandemic disease upon the jurisdiction and alert leadership and staff to stand-by for potential implementation of NIMS-compliant emergency operations (*See* Operational Plan)

Pandemic Period

- Health Authority and Public Affairs will announce the pandemic status while ensuring ongoing communication with local, state and federal authorities.
- OSPHP will activate NIMS incident command structure and/or Joint Operation Center (JOC).
- Bureau of Public Health Preparedness will determine the need for and scope of mass vaccination activities.
- OSPHP will activate SNS protocol.
- Bureau of Public Health Preparedness will coordinate delivery of vaccine and/or antivirals with DSHS.

Post-Pandemic

- OSPHP will develop a detailed report of the pandemic, utilizing surveillance data to evaluate the efficacy of local response activities. Analysis may include:
    - Severity of influenza outbreaks among demographic groups
    - Age-specific attack rate, morbidity and mortality
    - Efficacy of vaccination distribution and implementation of infection control measures
    - Extent of medical, social and economic impact
- The Director will convene relevant parties to debrief from response activities.

- The Director will communicate the status of the response to appropriate local, state and federal authorities.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will develop and After Action Report and update the Response Plan based on lessons learned from response activities.

II. SURVEILLANCE, INVESTIGATION AND PROTECTIVE PUBLIC HEALTH MEASURES

Interpandemic Period

- Communicable Disease and Neighborhood Services Divisions will enhance community capacity for responding to pandemic influenza by providing disease prevention, health promotion and conduct educational outreach activities.
- Bureau of Epidemiology will establish and coordinate local surveillance activities in addition to the federal and state surveillance activities.
- Bureau of Epidemiology will continue work with local hospitals to address influenza surveillance, early detection, reporting, and epidemiological investigation activities.
- Bureau of Epidemiology will enhance HMMRS and RODS syndrome surveillance systems for emergency room visits and deaths due to acute febrile respiratory illness.
- Bureau of Laboratory Services will ensure results of positive rapid influenza test kits and influenza viral cultures are provided to HDHHS.
- Bureau of Epidemiology will monitor over-the-counter (OTC) drug sale information through RODS OTC Drug Sales system.
- Bureau of Epidemiology will continue independent school district ILI surveillance.
- Bureau of Epidemiology will continue influenza related mortality surveillance.
- Bureau of Epidemiology will maintain regular communication with external partners to keep informed about suspect clinical symptoms identified through passive surveillance in local avian populations including poultry wholesalers and results of the subsequent investigations.
- Bureau of Public Health Preparedness, Health Authority and City of Houston Legal will regularly review the legal authorities regarding the implementation of community level control measures and will develop and maintain the City of Houston Quarantine and Isolation Plan

Pandemic Alert Period

- Bureau of Epidemiology will monitor the Health Alert Network (HAN), EpiX, and other channels of information to provide ongoing assessments of the situation to the Director, HA, and other relevant HDHHS personnel.
- Bureau of Epidemiology will ensure that all interpandemic influenza surveillance activities are underway regardless of the time of year, enhancing activities as needed based on information received.
- Bureau of Epidemiology will monitor and institute recommendations from CDC for any additional surveillance activities that should be undertaken given the specific circumstances.
- OSPHP will assess the need to screen travelers arriving in the area from affected countries.
- Bureau of Epidemiology will assess the completeness and timeliness of reports from all participating laboratories and sentinel providers and will collaborate with these partners to enhance and facilitate complete and timely reporting.
- Bureau of Epidemiology will inform state and federal partners about increased local flu surveillance activities. If necessary requests will be made on additional resources for local surveillance and case tracking activities.
- Bureau of Epidemiology, upon identification of first person-to-person pandemic influenza case, will commence investigation, contact tracking, isolation, and confirmation of laboratory test results.
- Bureau of Epidemiology will add influenza indicators to weekly indicator.

Pandemic Period

- Bureau of Epidemiology will continue enhanced surveillance, contact tracing, and treatment tracking activities.

- Bureau of Epidemiology will assess the epidemiology of the pandemic daily and provide the OEM with protective action recommendations.
- Bureau of Epidemiology will assess the epidemiology of the pandemic daily and provide the Department with trending analysis.
- Bureau of Epidemiology will enhance ongoing surveillance activities to include the following:
    - Monitor health impacts, including deaths and hospitalizations
    - Monitor community impacts, including absenteeism in essential services
    - Monitor reports of antiviral resistance
    - Monitor reports of vaccine effectiveness

Post-Pandemic

- Bureau of Epidemiology will resume its routine surveillance activities.
- Bureau of Epidemiology will continue heightened surveillance for possible second wave attack.

III. LABORATORY TESTING

Interpandemic Period

- Bureau of Laboratory Services will ensure lab capacity to rapidly detect and report influenza
- Bureau of Laboratory Services will coordinate specimen testing and typing and coordinate sub-typing submission.
- Bureau of Laboratory Services will conduct lab-based occupational monitoring for flu activities.
- Public Health Preparedness will work with the Bureau to establish back-up functions with UTMB's BSL-4.

Pandemic Alert Period

- Bureau of Laboratory Services will provide instructions to reinforce the safe handling of the potential novel influenza virus to local laboratories.
- Bureau of Laboratory Services will coordinate the collection of ILI specimens among area providers and laboratories and facilitate the transfer of ILI specimens.
- Bureau of Laboratory Services will provide instructions for directing samples from patients presenting with severe or unusual ILI to the appropriate laboratory for testing.
- OSPHP will enhance laboratory testing surge capacity through upgrades and agreements.
- OSPHP will enhance epidemiological and lab-based influenza monitoring.

Pandemic Period

- Bureau of Laboratory Services will ensure samples are directed to the correct laboratory for testing.
- Bureau of Laboratory Services will activate redundancy agreements.

Post-Pandemic

- Bureau of Laboratory Services will coordinate with Level A labs to continue monitoring unusual influenza activities.
- Laboratory surveillance should also return to **pandemic imminent status** while maintaining surveillance for possible antigenic drift.

IV. INFECTION CONTROL AND CONTAINMENT

Interpandemic Period

- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will define and quantify local priority population groups (including special needs) to receive vaccine or antivirals for prevention, prophylaxis and treatment, and update estimates on an annual basis.
- Bureau of Immunizations working with Neighborhood Services Division will implement these recommendations for vaccination and treatment.
- Bureau of Public Health Preparedness will develop and maintain contact information of partners with whom HDHHS may communicate information about community level control measures.
- Bureau of Public Health Preparedness will coordinate planning for the request, procurement, delivery, and distribution of vaccines, antivirals and supplies, review and update the methodology within HDHHS *SNS Plan* for providing vaccination during a pandemic.
- Bureau of Health Planning and Evaluation and OSPHP working with Area Agency on Aging will identify infection control and containment methods specific for special population groups and coordinate implementation.

Pandemic Alert Period

1. Possible containment measures if cases are first detected outside the U.S.

- Communicable Disease and Neighborhood Services Divisions will continue seasonal influenza vaccination using city clinics.
- Health Authority may recommend isolation of persons who are recent travelers to affected regions if they have ILI. If influenza is suspected or confirmed, HDHHS may recommend isolation at home or in a hospital until isolate subtyping is accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be a novel influenza A virus.
- Health Authority may recommend quarantine for contacts of cases (*See* Annex H).
- HDHHS will increase education about the importance of hand hygiene, cough etiquette and annual influenza vaccination.

2. Possible containment measures if cases are first detected in the U.S. outside City of Houston

- Health Authority may recommend that persons who are positive for influenza A be placed in isolation at home or in a hospital until isolate subtyping can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.
- Health Authority may recommend quarantine for contacts of cases and implement HDHHS Quarantine and Isolation plan. (*See* Annex H, Quarantine & Isolation Plan)
- HDHHS will increase public education regarding the importance of hand hygiene and cough etiquette.

3. Possible containment measures if cases are first detected in City of Houston

- Public Affairs will initiate Joint Information Center (JIC).
- Health Authority may recommend that persons who have ILI be placed in isolation at home or in a hospital until subtyping of their isolate can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.
- Health Authority may recommend quarantine for contacts of cases.
- If an animal source is identified and there is ongoing transmission within the animal population, Bureau of Animal Regulation and Control with the Bureau of Epidemiology may recommend that persons who may be in contact with potentially infected animals wear appropriate personal protective equipment. (*See* Appendix B)

- Health Authority may recommend that citizens limit travel to destinations outside of City of Houston, as well as limit non-essential travel within the city.
- Health Authority may recommend cancellation of large gatherings depending on the level of person-to-person transmission. Based on the epidemiology of the known infected cases, HDHHS may consider closure of schools, including colleges and universities, and closure of office buildings.
- Bureau of Epidemiology and the Bureau of Immunizations will monitor VAERS data for evidence of adverse reactions to the influenza vaccine. Report findings routinely to DSHS.
- Health Authority will review surveillance data for changes in risk factors that could require modification of recommendations for priority groups for receiving vaccine.
- Health Authority will monitor availability of antivirals and, when appropriate, recommend changes in priority groups for receiving vaccine or antivirals.
- Health Authority can modify recommendations and agreements on priority groups for receiving the vaccine based on availability of vaccine.
- HDHHS will increase public education regarding the importance of hand hygiene and cough etiquette.

Pandemic Period

- OSPHP will fully activate mass vaccination activities according to the *SNS Plan.*
- Bureau of Public Health Preparedness will communicate with the regional DSHS office regarding the availability and, if applicable, the delivery of antivirals through the Strategic National Stockpile.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will provide DSHS with an estimated number of persons within each priority population as well as the population as a whole.
- Bureau of Public Health Preparedness will ensure that antivirals are appropriately allocated among Community Emergency Medical Centers and coordinate efforts to provide antiviral therapy.
- OSPHP will evaluate antiviral delivery and administration procedures and modify plans as necessary.
- Prior to widespread vaccine availability, Bureau of Immunization and Neighborhood Services will provide vaccine as it is available to priority groups based on the methodology described the *SNS Plan.*
- HDHHS will collaborate with HCPHES and other area jurisdictions to coordinate mass vaccination efforts.
- Bureau of Epidemiology and the Bureau of Immunizations will track and monitor adverse vaccine reactions (VAERS).
- Bureau of Epidemiology and the Bureau of Immunizations will provide persons receiving vaccine with information about reporting such reactions to the Department.
- Bureau of Epidemiology and the Bureau of Immunizations will then report any reactions to the CDC Vaccine Adverse Event Reporting System (VAERS).
- All Bureaus will ensure that supplies are inventoried and returned as appropriate.
- OSPHP will evaluate vaccine delivery and administration procedures and modify plans as necessary.
- Health Authority may recommend:
    - all persons who are ill and their contacts remain in isolation at home
    - limitation or suspension of large gatherings and recreation activities
    - the closure of schools, including colleges and universities and closure of office buildings
    - the limitation of non-essential work activities, encouraging telecommuting when possible
    - an area quarantine
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness working with Area Agency on Aging will coordinate antivirals delivery for special need populations.

Post-Pandemic

- Bureau of Immunization efforts in lower risk groups will continue as vaccine becomes available to increase "herd immunity" in the population in the event of a second wave.
- Health Authority will suspend all community level control measures.
- OSPHP will assess the compliance with community level control measures and evaluate the efficacy of community level control measures.

V. EMERGENCY RESPONSE: HEALTH SYSTEMS AND CRITICAL INFRASTRUCTURE

Interpandemic Period

- Bureau of Public Health Preparedness and Bureau of Epidemiology with Bureau of Health Planning and Evaluation will work with area hospitals through HAHEMC to ensure that policies, plans and protocols for pandemic influenza are developed and maintained. Key policies will include those regarding reporting to HDHHS and those regarding infection control procedures.
- Bureau of Public Health Preparedness and Bureau of Epidemiology will estimate the impact of pandemic influenza on healthcare services and critical infrastructure within City of Houston Hospital and long-term care bed capacity:
    - Intensive care unit capacity
    - Ventilators
    - Personal protective equipment (PPE)
    - Specimen collection/transport materials
    - Sources of consumable medical supplies
    - Medical personnel who may be utilized during an emergency situation
    - Pharmacies and pharmacists
    - Contingency medical facilities
    - Mortuary/funeral services
    - Social services
    - Mental health services
- Bureau of Immunization working with Bureau of Epidemiology and Bureau of Public Health Preparedness will disseminate epidemic control strategies and educational materials to area health care providers, including a summary of the most current influenza vaccine recommendations.
- Bureau of Public Health Preparedness will enhance medical volunteer recruitment and training through surrounding communities and Medical Reserve Corps.
- Bureau of Immunizations working with Neighborhood Services Division will continue activities to enhance annual influenza vaccination coverage levels in high-risk groups.
- Bureau of Public Health Preparedness will work with HAHEMC to develop adequate hospital surge capacity.
- Bureau of Public Health Preparedness working with City of Houston Legal will obtain MOUs with local medical schools, nursing schools, schools of public health, universities and colleges.
- Bureau of Public Health Preparedness working with City of Houston Legal will obtain MOUs with Harris County Medical Society (HCMS) Physician Alert System and convene the Community Disease Alert System (CDAS).

Pandemic Alert Period

- OSPHP will issue regular alerts regarding surveillance and case tracking activities to the medical community through Rapid Alert Systems.
- If necessary, OSPHP will issue special requests to healthcare providers to increase laboratory diagnosis of influenza for persons presenting with ILI, especially those with recent travel history to regions where the pandemic strain of influenza is circulating or those with unusual or severe symptoms.
- Through Rapid Alert Systems, Health Authority will recommend that emergency medical providers and hospitals activate severe respiratory illness protocols and provide guidance about the appropriate use of personal protective equipment.
- Administrative Support Division will confirm availability of resources to support a pandemic response.
- OSPHP will review and modify response plan for the provision of antivirals as needed to account for updates received regarding the novel virus.
- Bureau of Public Health Preparedness will review and modify its *SNS Plan* as needed to account for updates received regarding the novel virus. Such updates may include recommended target groups and projected vaccine supply.
- Public Affairs will notify the medical community of the status of antiviral availability and plans to disseminate it to the established priority groups

- Public Affairs will disseminate antiviral use guidelines to the medical community.
- Bureau of Public Health Preparedness will augment Community Emergency Medical Centers sites and temporary infirmary locations as needed in coordination with local mass-care organizations to respond to the overwhelming caseload.

Pandemic Period

- Health Authority will assess the capacity of area hospitals and identify their resource needs.
- Public Health Preparedness will activate local or regional alternate healthcare and emergency services facilities.
- Health Authority will coordinate the request for state and federal surge support for healthcare and emergency services.
- Health Authority will coordinate with local law enforcement in maintaining public order during a pandemic.

Post-Pandemic

- Bureau of Public Health Preparedness will discontinue and demobilize antiviral administration, ensuring that supplies are inventoried and returned as appropriate. Restock vaccine and drug inventory to pre-pandemic locations where possible.
- Bureau of Public Health Preparedness will evaluate antiviral delivery and administration procedures and modify plans as necessary.
- Following the *SNS Plan*, Public Health Preparedness and Bureau of Immunization will discontinue and demobilize mass vaccination activities, ensuring that supplies are inventoried and returned as appropriate.
- Bureau of Immunization will evaluate vaccine delivery and administration procedures and modify plans as necessary.
- Participate in recovery and demobilization efforts in coordination with the OEM.

VI. COMMUNICATION AND PUBLIC OUTREACH

Interpandemic Period

- Public Affairs will notify hospitals, heath care providers, and first responder agencies of Interpandemic Period designation.
- OSPHP will develop public health campaigns that emphasize preventative health measures such as vaccination and proper hygiene.
- OSPHP and Bureau of Health Planning and Evaluation will identify for Public Affairs affected target audiences to communicate information about community level control measures and identify appropriate strategies for dissemination.
- OSPHP and Bureau of Health Planning and Evaluation will engage community partners to participate in planning activities and facilitate open communication.
- Public Affairs will develop public information messages that address public health issues and concerns (vaccine supply, antiviral use, low-tech prevention methods, and maintenance of essential services) regarding pandemic influenza.
- Public Affairs will disseminate these campaigns and messages to the public through media outlets.

Pandemic Alert Period

- Public Affairs will initiate Joint Information Center (JIC).
- Public Affairs will disseminate alerts and appropriate information to the public through media outlets and will notify hospitals, heath care providers, and first responder agencies of Pandemic Alert Period designation.

- Health Authority will draft and issue health advisory recommending limiting travel to the affected region and screening travelers arriving from the affected region.
- Through Rapid Alert Systems, HDHHS will regularly provide updated information about the epidemiology and spread of the novel virus to the local healthcare community.
- Public Affairs will provide updated information about the epidemiology of the novel virus.
- Public Affairs will increase public information effort designed to keep ill persons at home, providing translations into Spanish and other major languages.

Pandemic Period

- Public Affairs will develop and disseminate appropriate information to the public.
- Bureau of Public Health Preparedness will communicate with the regional DSHS office regarding the availability and delivery of vaccine.
- Bureau of Health Planning and Evaluation and Bureau of Public Health Preparedness will provide DSHS with an estimated number of persons within each priority population.

Post-Pandemic

- Health Planning and Evaluation and OSPHP will provide OEM with an assessment of the impact, response and control of the public health response during the pandemic.
- Public Affairs will provide public announcement for post-pandemic stage.

VII. MAINTENANCE OF ESSENTIAL BUSINESS ACTIVITIES IN HDHHS

Interpandemic Period

- Human Resources will identify essential business activities, core people, core knowledge and skills.
- Human Resources will publish policies for absence and illness and adjust them accordingly.
- Human Resources will develop strategies for workplace flexibility.
- Informational Technology will work on strategies to allow employees to work remotely.
- All Bureau Chiefs will update the COOP regularly to reflect contingency planning for absence and illness.
- Human Resources will update contact information in VIM to enhance communication.

Pandemic Alert Period

- Administrative Support Division will assess 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.
- All Bureaus will prepare for the eventuality of workplace business closing.
- All Bureaus will maintain essential operating and emergency management information in known shared locations.
- All Bureaus will communicate with staff about health and safety issues, potential for stand-down, and leave arrangements.

Pandemic Period

- All Bureaus will make pre-determined personnel available to essential business operations per COOP.
- All Bureaus will restrict workplace entry of people with influenza symptoms.
- All Bureaus will implement additional hygiene measures to minimize the virus transmission.
- Increase staff and customer social distancing.
- Business model shifted to on-line activities.
- Workplace flexibility instituted and employees may work remotely from home.

Post-Pandemic

- Human Resources will assess and report staff availability.
- All Bureaus will assess and report damages to resources.
- All Bureaus will restore equipment, files, records, phones, etc to pre-pandemic status.

REFERENCES

HHS Pandemic Influenza Plan. U.S. Department of Health and Human Services (November 2005). http://www.hhs.gov/pandemicflu/plan/

Influenza Pandemic Response Plan. California Department of Health Services (September 2001). http://www.dhs.ca.gov/ps/dcdc/izgroup/pdf/pandemic.pdf

Influenza (the Flu) Questions and Answers. National Center for Infectious Diseases (CDC) (October 2003). http://www.cdc.gov/ncidod/diseases/flu/facts.htm

Public Health Preparedness and Response Plan:Pandemic Influenza and Highly Infectious Respiratory Diseases. Harris County Department of Public Health and Environmental Services (HCPHES) (August 2005)

Pandemic Influenza: A Planning Guide for State and Local Officials (Draft 2.1). CDC National Vaccine Program Office (January 2003). http://www.cdc.gov/od/nvpo/pubs/pandemicflu.htm

Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR April 12, 2002 / 51(RR03);1-31. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5103a1.htm

Recommendations for the Prevention, Detection, And Control of Influenza Outbreaks in California Long-Term Care Facilities, 2002-2003. California Department of Health Services. http://www.dhs.ca.gov/ps/dcdc/disb/pdf/Flurecs-0203.pdf

Additional Influenza links

1. The official U.S. government Web site for information on pandemic flu and avian influenza
(http://pandemicflu.gov)

2. Influenza Branch, National Center for Infectious Diseases, CDC
(http://www.cdc.gov/ncidod/diseases/flu/fluvirus.htm)
Contains information on influenza vaccine, antiviral agents, and surveillance.
The Influenza Branch provides leadership for the prevention and control of influenza in the U.S. and worldwide. The Influenza Branch operates one of the four World Health Organization (WHO) Collaborative Centers for Reference and Research on Influenza and is the main reference laboratory for characterizing influenza viruses in the U.S. and North America. It also:

- Characterizes influenza viruses circulating in the U.S. and worldwide, using molecular and serological techniques to detect new strains and the emergence of viruses with pandemic potential.
- Coordinates U.S. influenza surveillance and publishes a weekly influenza surveillance update (http://www.cdc.gov/ncidod/diseases/flu/weekly.htm) from October through May.

3. Center for Biologics Evaluation and Research (CBER), FDA
(http://www.fda.gov/cber/index.htm)
The mission of CBER is to protect and enhance the public health through regulation of biological products including blood, vaccines, therapeutics, and related drugs and devices according to statutory authority. The regulation of these products is founded on science and law to ensure their purity, potency, safety, efficacy, and availability. CBER plays a critical role in the manufacture and licensing of influenza vaccine.

4. National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID)
(http://www.niaid.nih.gov/)
The National Institute of Allergy and Infectious Diseases (NIAID), part of the NIH, conducts and supports research aimed at finding better ways to treat and prevent influenza infections. This site includes NIAID fact sheets, brochures and news releases on influenza, as well as links to influenza information maintained by other federal agencies.

5. Animal and Plant Health Inspection Service, Veterinary Services, U.S. Department of Agriculture
(http://www.aphis.usda.gov/)

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) protects the health, quality, and marketability of our nation's livestock and poultry resources. Within VS, the Emergency Programs staff coordinates efforts to prepare for and respond to outbreaks of exotic animal diseases, including highly pathogenic avian influenza. Surveillance for influenza A viruses in avian species in the U.S. are reported each year by the USDA, APHIS, VS, National Veterinary Services Laboratories in the Proceedings of the U.S. Animal Health Association Annual Meeting (http://www.usaha.org/reports/poult97.html).

6. The USDA Agricultural Research Service (ARS)
(http://www.ars.usda.gov/)
The ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination. The ARS' Southeast Poultry Research Laboratory publishes information on avian influenza research and contacts for further information.

7. The Department of Defense Global Emerging Infections Surveillance and Response System
(http://www.geis.ha.osd.mil/main2.html).
(DoD-GEIS) was created in response to Presidential Decision Directive NSTC-7. In the directive, former President Clinton recognized the threat posed by emerging infectious diseases to the health of our global community and to our national security. Responsibilities and actions to improve our nation's ability to identify and respond to the threat are assigned to many organizations and agencies, including the DoD.

8. The World Health Organization
(http://who.int/emc/diseases/flu/)
The World Health Organization's Influenza Program was created in 1946 as an international centre to collect and distribute information, coordinate laboratory work on influenza, and train laboratory workers.

9. The National Immunization Program (NIP), CDC
(http://www.cdc.gov/nip)
The NIP is a part of the Centers for Disease Control and Prevention, located in Atlanta, Georgia. As a disease-prevention program, NIP provides leadership for the planning, coordination, and conduct of immunization activities nationwide.

APPENDIX I: HEALTH CARE SYSTEM GUIDANCE

The following is excerpted from the U.S. Department of Health and Human Services' *National Influenza Preparedness and Response Plan*, Annex 2, *Health Care System Guidance*, August 2004

An influenza pandemic will create significant challenges for the health care system. The number of children and adults seeking care for febrile and respiratory illnesses will increase substantially; some disease will be severe, requiring inpatient care; and many of those infected will have underlying risk factors for adverse outcome, including death. Influenza also will occur among health care workers and their family members, resulting in shortages of trained staff to care for others. Physical resources, such as hospital beds and respiratory therapy equipment, may not be sufficient to meet demand. Shortages of antiviral medications and vaccine will limit the ability to implement these preventive interventions.

Although these stresses on the health care system are inevitable in an influenza pandemic, coordination, planning and exercising preparedness plans can improve the effectiveness of a pandemic response and limit mortality and morbidity.

HDHHS will work with hospitals, treatment centers and long-term care facilities to share information about preparing for and responding to pandemic influenza. Central to this will be the *Health Care System Guidance.*

The goal of the *Health Care System Guidance* is to assist medical provider organizations, health care systems, hospitals, long-term care facilities, home health agencies and other groups that provide health care services plan for and respond to pandemic influenza. This Guidance, which can be accessed at http://www.hhs.gov/nvpo/pandemicplan/annex2.pdf, contains information to aid in the development of a comprehensive pandemic influenza preparedness and response plan. The Guidance provides recommendations for developing a plan with the following components:

I. Preparedness and Response Activities
   - A. Decision-Making and Coordination
   - B. Surveillance and Triage
   - C. Triage and Clinical Evaluation of Patients
   - D. Human and Physician Resources for Inpatient Care
     - Staffing
     - Bed Availability
     - Equipment and Supplies
   - E. Education, Training and Communications

II. Health Care Systems, Antiviral Drugs and Influenza Vaccine

III. Infection Control
   - A. Background
   - B. General Principles of Routine Infection Control
   - C. Standard Precautions
   - D. Respiratory Hygiene/Cough Etiquette
   - E. Droplet Precautions
   - F. Other Components of Infection Control for Influenza Pandemic
     - Staff Education
     - Bed Management
     - Patient Transport
     - Cleaning, Disinfection and Sterilization
     - Patient Education
     - Visitors
     - Health Care Workers with Influenza-Like Illness
     - Elective Utilization of Health Care Facilities
     - Home Health Care

IV. Outbreak Control

V. Medical Care at Non-Traditional Facilities

APPENDIX II. HOSPITAL PREPAREDNESS CHECKLIST

The checklist below is abstracted from *HHS Pandemic Influenza Plan,* Part Two, Supplement 3.

1. Structure for planning and decision making

□ An internal, multidisciplinary planning committee for influenza preparedness has been created.
□ 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)
- □ Administration _____
- □ Legal counsel _____
- □ Infection control _____
- □ Hospital disaster coordinator _____
- □ Risk management _____
- □ Facility engineering _____
- □ Nursing administration _____
- □ Medical staff _____
- □ Intensive care _____
- □ Emergency Department_____
- □ Laboratory services _____
- □ Respiratory therapy _____
- □ Psychiatry _____
- □ Environmental services _____
- □ Public relations _____
- □ Security _____
- □ Materials management _____
- □ Staff development _____
- □ Occupational health _____
- □ Diagnostic imaging_____
- □ Pharmacy _____
- □ Information technology _____
- □ Other members _____

□ A state or local health department person has been identified as a committee liaison.
(Insert name) _____
□ A linkage with local or regional emergency preparedness groups has been established
(Planning organization) _____

2. Development of a written pandemic influenza plan

□ A written plan has been completed or is in progress that includes the elements listed in #3 below.
□ The plan specifies the circumstances under which the plan will be activated.
□ The plan describes the organization structure that will be used to operationalize the plan.
□ Responsibilities of key personnel related to executing the plan have been described.
□ 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.
- □ Number of first priority personnel _____
- □ Number of second priority personnel _____
- □ Number of remaining personnel _____
- □ Number of first priority patients _____
- □ 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 freeup 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. _____

APPENDIX III. SAMPLE ALERT AND ANNOUNCEMENT

Figure I-1: Sample Healthcare Provider Information Statement – Novel Virus Alert

Novel Virus Alert

As you are aware, one or more human cases of an influenza novel virus, for which there is no immunity in the general population, has been detected in _____. This could potentially, but not inevitably, be a precursor to a pandemic.

The City of Houston Department of Health and Human Services is working closely with the State to monitor reports of disease progression and surveillance to detect the arrival of disease caused by the novel virus in Texas. Currently there have been no reported cases in City of Houston.

The CDC has issued recommendations for enhanced influenza surveillance for state health departments. The purpose of these recommendations is to enhance the capacity to rapidly identify an importation of this virus.
We will continue to provide you with updates on influenza activity and will distribute recommendations on any additional surveillance activities that may become necessary.

For more information, please contact the Houston Department of Health and Human Services at (713) 794-9181.

Figure I-2: Sample Provider Information Statement – Pandemic Imminent

Pandemic Imminent

The _____novel virus____ is causing unusually high rates of morbidity and mortality in widespread geographic areas. Travel advisories remain in effect for the following areas: ___

If your patient is ill with influenza-like illness and has recently traveled to these areas, or is a close contact to someone who has traveled to these areas the following recommendations should be considered:

1. home isolation
2. antivirals for household contacts
3. self-monitoring of symptoms
4. report to HDHHS
5. ___

The City of Houston continues to work closely with the State and CDC regarding influenza vaccine. We do not have a manufacturer's release date at this time but continue to review plans for distribution.

Providers are encouraged to use antivirals for household contacts of confirmed or strongly suspected cases of influenza.

Enforcement of respiratory hygiene is essential. Continue to implement respiratory control programs in your area of practice:

- At entry, triage, or registration, ask all patients with symptoms of respiratory illness to wear a surgical mask, and provide instructions on their proper use and disposal.
- Offer masks to all other persons who enter the emergency room to use voluntarily for their own protection.
- For patients who cannot wear a surgical mask, provide tissues to cover the nose and mouth when coughing or sneezing and a small bag for mask and tissue disposal.
- Encourage and provide access to hand washing or a waterless hand hygiene product and instruct patients to decontaminate their hands after handling respiratory secretions and before their contact with a healthcare worker.
- Separate patients with respiratory illness from other patients by either placing them into a cubicle, examination room, or some physical separation by at least 3 feet.

The City of Houston has reported _____deaths related to complications of influenza by _____(date).

Daily updates can be obtained at the state web site http://www.houstonhealth.org/ or at http://www.cdc.gov.

For more information, please contact Houston Department of Health and Human Services at (713) 794-9181.

Figure I-3: Sample Provider Information Statement –Pandemic Alert Declaration

Pandemic Alert Declaration

A formal declaration was made today by the CDC regarding the influenza pandemic. Further spread with involvement of multiple continents has been reported.

The United States reported _____hospitalizations or deaths to the CDC with _____being from _____.

City of Houston has had _____related to complications from influenza.

Manufacturers of flu vaccine report a release date of _____. City of Houston continues to make plans for mass vaccination/prophylaxis/ public education. Current supply of antivirals remains low.

Up-to-date summaries of influenza activity are available at http://www.DSHS.state.tx.us/

For more information, please contact Houston Department of Health and Human Services at (713) 794-9181.

Figure I-4: Sample Provider Information Statement –Pandemic Alert Case Information

Pandemic Alert Case Information

The novel virus_____ has demonstrated sustained person-to-person transmission and multiple cases in the same geographic area.

Confirmed case definition:

Probable case definition:

Possible case definition:

The number of confirmed cases are _____. Number of deaths are_____.

The CDC and State Department of Health Services has released a travel advisory for_____ .

The City of Houston has reported _____number of confirmed/ probable case (s) of influenza A _____. No deaths have been reported.

Daily updates can be obtained at the state web site http://www.houstonhealth.org/ or http://www.cdc.gov/

Antivirals are recommended for household contacts of confirmed cases and strongly suspected cases of influenza. Recommendations for asymptomatic household contacts can be downloaded from the county website at http://www.houstonhealth.org.

Figure I-5: Sample Provider Information Statement – Pandemic Second Wave

Pandemic Second Wave

Typically in a pandemic, the number of new cases of influenza peaks and then declines, giving the impression that the pandemic is over. Health care providers need to remain vigilant for the return of the epidemic activity. Health care providers must make use of the interim period to prepare for a resurgence of disease.

The City of Houston continues to urge providers to keep a respiratory hygiene program in place. Inventory and order supplies that may be necessary for disease resurgence. Continue to vaccinate (if applicable).

Log onto the City of Houston web site http://www.houstonhealth.org for current information about self protection.

For more information, please contact Houston Department of Health and Human Services at (713) 794-9181.

Figure I -6: Influenza Alert for Public Release

FOR PUBLIC RELEASE

Influenza Alert

For Immediate Release Contact:_____

Date:_____ Title: _____

Dr. _____, City of Houston Public Health Authority, declared a public health emergency this morning/evening, alerting City of Houston residents to take precautions to minimize the spread of the influenza virus. There is new strain of influenza virus that is unusually virulent, which means that most people have little or no natural immunity to protect them from illness. This means that, not only might more people come down with the "flu," the illness is likely to be more severe. *(Add data about current number of local hospitalizations, etc.)*

At this time, there is no vaccine available to prevent this new strain of the flu. Vaccine development may be delayed and vaccine may initially be in short supply. This makes prevention measures even more important.

Symptoms of the flu include abrupt onset of chills and fever, muscle aches, sore throat, and cough. Those who develop flu symptoms should notify their health care provider. *(Consider if we want everyone to do this, or just recommend that the elderly and those with medical conditions that increase their risk contact their provider.)*

Influenza virus is contagious from person-to-person. Infection spreads when droplets from a cough or sneeze of an infected person reach the mucous membranes of another person's mouth, nose, or eyes, or if they touch a surface or object (such as a doorknob or stair railing contaminated with infectious droplets and then touch their own mouth, nose, or eyes.

The risk of becoming ill can be reduced by frequent hand washing and keeping your hands away from your eyes, nose, and mouth. Also, try to avoid contact with people who have respiratory illnesses.

Those who become ill should stay home. This is crucial to preventing the spread of this disease to others, including co-workers and other people who would be encountered in public places.

If someone in the household has the flu, other family members can decrease their risk of becoming ill by wearing a mask over their nose and mouth whenever they come within three feet of the sick person. They should wear gloves whenever they come in contact with him or her or items they have handled and wash their hands after removing the gloves.

For more information, visit the City of Houston website at: http://www.houstonhealth.org/

APPENDIX IV. INFORMATION FOR THE MEDIA

Overview of Influenza Pandemic

- Pandemics result from the emergence of an influenza A virus that is novel for the human population.
- The hallmark of pandemic influenza is excess mortality --- the number of deaths observed during an epidemic of influenza-like illness in excess of the number expected.
- During the last century, pandemics occurred in 1918, 1957, and 1968.
- 1918-19 "Spanish flu" A caused the highest known influenza-related mortality: at least 500,000 deaths in the United States, and 20 million worldwide.
- 1957-58 "Asian flu" A: 70,000 deaths in the United States.
- 1968-69 "Hong Kong flu" A: 34,000 deaths in the United States.
- Although mortality rates associated with the pandemics of 1957 and 1968 were confined primarily to the elderly and chronically ill, both pandemics were associated with high rates of illness and social disruption, with combined economic losses of approximately $32 billion (in 1995 dollars).
- The potential impact of an influenza virus in humans depends on its virulence (ability to cause severe illness or death) and on whether there is protective immunity in the population. Protective immunity will inhibit the virus' ability to be passed from person-to-person and will decrease the severity of illness.
- Influenza viruses undergo two kinds of change. One is a series of mutations over time that causes a gradual evolution of the virus, known as antigenic drift. The other is an abrupt change in the surface antigen proteins, known as antigenic shift, thus suddenly creating a new subtype of the virus.
- When antigenic shift occurs, the population does not have antibody protection against the virus.
- Birds are the primary reservoir for influenza viruses. All 15 recognized influenza A subtypes have been found in birds.

In most years in the United States, influenza is responsible for 10,000-40,000 excess deaths, 50,000-300,000 hospitalizations, and approximately $1-3 billion in direct costs for medical care.

Influenza: Background Information

The influenza (flu) epidemics that happen nearly every year are important events. Influenza is a respiratory illness that makes hundreds of thousands of people sick each year. The illness can cause severe health problems for the elderly and for younger people with diseases like diabetes, heart or lung disease, and illness that can weaken the immune system. Typical primary influenza illness lasts about a week and is characterized by abrupt onset of fever, muscle aches, sore throat, and nonproductive cough. In some persons, severe malaise and cough can persist for several days or weeks.

Influenza infection not only causes primary illness but also can lead to severe secondary medical complications, including influenza viral pneumonia; secondary bacterial pneumonia; worsening of underlying medical conditions, such as congestive heart failure, asthma, or diabetes; or other complications such as ear infections (i.e., otitis media) in children.

Elderly persons (i.e., those 65 years and over) and persons with certain underlying medical conditions, such as chronic heart or lung disease, are at increased risk for developing complications from influenza infection. These complications increase the risk for hospitalization or death.

One of the most important features about influenza viruses is that their structure changes slightly but frequently over time (a process known as "drift"), and that this process results in the appearance of different strains that circulate each year. The composition of the flu vaccine is changed each year to help protect people from the strains of influenza virus that are expected to be the most common ones circulating during the coming flu season.

The ability of the vaccine to protect against influenza during a particular season depends on several factors, but particularly 1) the match between influenza strains in the vaccine and strains circulating in the community, and 2) the ability of each person's immune system to mount a protective response as a result of the vaccination. Although the vaccine may not prevent everyone who takes it from getting sick, it does

reduce the risk of severe illness, hospitalization, and death. That's why it is so important for anyone who wants to reduce his or her risk of getting severely ill from influenza to receive the vaccine each year.
In contrast to the more gradual process of drift, in some years the influenza virus changes dramatically and unexpectedly through a process known as "shift." Shift results in the appearance of a new influenza virus to which few (if any) people are immune. If this new virus spreads easily from person-to-person, it could quickly travel around the world and cause increased levels of serious illness and death, affecting millions of people. This is called an influenza pandemic.

Fortunately, pandemics don't occur very often. There has not been an influenza pandemic since 1968. In 1997, however, a flu virus, that had previously infected only birds, caused an outbreak of illness in humans. This virus, known as the "avian flu," resulted in 18 illnesses and six deaths in Hong Kong but did not easily spread from person-to-person. Still, it provided a frightening reminder that the next pandemic could occur at any time. Governments around the world took notice. The U.S. government worked with state and local governments and private-sector partners to develop strategies and programs that would prepare our country for a pandemic.

How Does an Influenza Pandemic Start?

There are three main types of influenza viruses: A, B, and C. Influenza C causes only mild disease and has not been associated with widespread outbreaks. Influenza types A and B, however, cause epidemics nearly every year. Influenza A viruses are divided into subtypes, based on differences in two surface proteins: hemagglutinin (H) and neuraminidase (N). Influenza B viruses are not divided into subtypes. During an influenza season, one or more influenza A subtype and B viruses can circulate at the same time.

A pandemic is possible when an influenza A virus makes a dramatic change (i.e., "shift") and acquires a new H or H+N. This shift results in a new or "novel" virus to which the general population has no immunity. The appearance of a novel virus is the first step toward a pandemic. However, the novel influenza A virus also must spread easily from person-to-person (and cause serious disease) for a pandemic to occur. Influenza B viruses do not undergo shift and do not cause influenza pandemics.
The reservoir for type A influenza viruses is wild birds, but influenza A viruses also infect animals such as pigs and horses, as well as people. The last two pandemic viruses were combinations of bird and human influenza viruses. Many people believe that these new viruses emerged when an intermediate host, such as a pig, was infected by both human and bird influenza A viruses at the same time, so that a new virus was created. Events in Hong Kong in 1997, however, showed that this is not the only way that humans can become infected with a novel virus. Sometimes, an avian influenza virus can "jump the species barrier" and move directly from chickens to humans and cause disease.

Since, by definition, a novel virus is a virus that has never previously infected humans, or hasn't infected humans for a long time, it's likely that almost no one will have immunity, or antibody to protect them against the novel virus. Therefore, anyone exposed to the virus--young or old, healthy or weak--could become infected and get sick. If the novel virus is related to a virus that circulated long ago, older people might have some level of immunity. It is possible that the novel virus may be especially dangerous to some age groups that are not usually at risk of severe illness or death from annual influenza (such as healthy young adults). Such widespread vulnerability makes a pandemic possible and allows it to have potentially devastating impact.

How Does a Pandemic Spread?

Although all pandemics begin with the appearance of a novel virus, most novel viruses do not spread and cause pandemics. It's more common for a novel virus to be detected and cause illness in a few people, but not go on to infect large numbers of people.

For a novel virus to cause a pandemic, a sequence of events must occur over time. A planning tool, developed by pandemic planners, of how those events might unfold can be found at the following web site: www.who.int/emc-documents/influenza/whoccscsredc991c.html. However, the phases will not occur simultaneously around the world.

Table II-1. The Phases of a Pandemic

Pandemic Phase	Definition
Novel Virus Alert	• Novel virus detected in one or more humans • Little or no immunity in the general population • Potential, but not inevitable precursor to pandemic
Pandemic Alert	• Novel virus demonstrates sustained person-to-person transmission and causes multiple cases in the same geographic area
Pandemic Imminent	• Novel virus causing unusually high rates of morbidity and/or mortality in multiple, widespread geographic areas
Pandemic	• Further spread with involvement of multiple continents; formal declaration made
Second Wave	• Reoccurrence of epidemic activity within several months following the initial wave of infection
Pandemic over	• Cessation of successive pandemic "waves," accompanied by return (in the U.S.) of more typical wintertime "epidemic" cycle

The Impact of a Pandemic: How Serious Might It Be?

There's no simple answer to the question of how serious a pandemic might be. It all depends on how virulent (severe) the virus is, how rapidly it can spread from population to population, and the effectiveness of pandemic prevention and response efforts. The 1918 Spanish flu is an example of a worst-case scenario because the strain was highly contagious and quite deadly. This pandemic killed more Americans than all the wars of the 20th century. Since our world today is vastly more populated, and people travel the globe with ease, the spread of a next pandemic could be more rapid than that of previous pandemics.

The impact of a pandemic isn't measured only by how many people will die. If millions of people get sick at the same time, major social consequences will occur. If many doctors and nurses become ill, it will be difficult to care for the sick. If the majority of a local police force is infected, the safety of the community might be at risk. If air traffic controllers are all sick at once, air travel could grind to a halt, interrupting not only business and personal travel, but also the transport of life-saving vaccines or antiviral drugs. Therefore, a vital part of pandemic planning is the development of strategies and tactics to address all these potential problems.

Historical Overview

History suggests that influenza pandemics have probably happened during at least the last four centuries. During the 20th century, three pandemics and several "pandemic scares" occurred. These are described in more detail below

1918: Spanish Flu

The Spanish influenza pandemic is the catastrophe against which all modern pandemics are measured. It is estimated that approximately 20 to 40 percent of the worldwide population became ill and that over 20 million people died. Between September 1918 and April 1919, approximately 500,000 deaths from the flu occurred in the U.S. alone. Many people died from this very quickly. Some people who felt well in the morning became sick by noon and were dead by nightfall. Those who did not succumb to the disease within the first few days often died of complications from the flu (such as pneumonia) caused by bacteria.

One of the most unusual aspects of the Spanish flu was its ability to kill young adults. The reasons for this remain uncertain. With the Spanish flu, mortality rates were high among healthy adults as well as the usual high-risk groups. The attack rate and mortality was highest among adults 20 to 50 years old. The severity of that virus has not been seen again.

1957: Asian Flu

In February 1957, the Asian influenza pandemic was first identified in the Far East. Immunity to this strain was rare in people less than 65 years of age, and a pandemic was predicted. In preparation, vaccine production began in late May 1957, and health officials increased surveillance for flu outbreaks.

Unlike the virus that caused the 1918 pandemic, the 1957 pandemic virus was quickly identified, due to advances in scientific technology. Vaccine was available in limited supply by August 1957. The virus came to the U.S. quietly, with a series of small outbreaks over the summer of 1957. When U.S. children went back to school in the fall, they spread the disease in classrooms and brought it home to their families. Infection rates were highest among school children, young adults, and pregnant women in October 1957. Most influenza- and pneumonia-related deaths occurred between September 1957 and March 1958. The elderly had the highest rates of death.

By December 1957, the worst seemed to be over. However, during January and February 1958, there was another wave of illness among the elderly. This is an example of the potential "second wave" of infections that can develop during a pandemic. The disease infects one group of people first, then infections appear to decrease, and thereafter infections increase in a different part of the population. Although the Asian flu pandemic was not as devastating as the Spanish flu, about 69,800 people in the U.S. died.

1968: Hong Kong Flu

In early 1968, the Hong Kong influenza pandemic was first detected in Hong Kong. The first cases in the U.S. were detected as early as September of that year, but illness did not become widespread in the U.S. until December. Deaths from this virus peaked in December 1968 and January 1969. Those over the age of 65 were most likely to die. The same virus returned in 1970 and 1972. The number of deaths between September 1968 and March 1969 for this pandemic was 33,800, making it the mildest pandemic in the 20th century.

There could be several reasons why fewer people in the U.S. died due to this virus. First, the Hong Kong flu virus was similar in some ways to the Asian flu virus that circulated between 1957 and 1968. Earlier infections by the Asian flu virus might have provided some immunity against the Hong Kong flu virus that may have helped to reduce the severity of illness during the Hong Kong pandemic. Second, instead of peaking in September or October, like pandemic influenza had in the previous two pandemics, this pandemic did not gain momentum until near the school holidays in December. Since children were at home and did not infect one another at school, the rate of influenza illness among schoolchildren and their families declined. Third, improved medical care and antibiotics that are more effective for secondary bacterial infections were available for those who became ill.

1976: Swine Flu Scare

When a novel virus was first identified at Fort Dix, it was labeled the "killer flu." Experts were extremely concerned because the virus was thought to be related to the Spanish flu virus of 1918. The concern that a major pandemic could sweep across the world led to a mass vaccination campaign in the United States. In fact, the virus--later named "swine flu"--never moved outside the Fort Dix area. Research on the virus later showed that if it had spread, it would probably have been much less deadly than the Spanish flu.

1977: Russian Flu Scare

In May 1977, influenza A/H1N1 virus emerged in northern China, spread rapidly, and caused epidemic disease in children and young adults (< 23 years) worldwide. The 1977 virus was similar to other A/H1N1 viruses that had circulated prior to 1957. (In 1957, the A/H1N1 virus was replaced by the new A/H2N2 viruses). Because of the timing of the appearance of these viruses, persons born before 1957 were likely to have been exposed to A/H1N1 viruses and to have developed immunity against A/H1N1 viruses. Therefore, when the A/H1N1 reappeared in 1977, many people over the age of 23 had some protection against the virus, and it was primarily younger people who became ill from A/H1N1 infections. By January 1978, the virus had spread around the world, including the United States. Because illness occurred primarily in children, this event was not considered a true pandemic. Vaccine containing this virus was not produced in time for the 1977-78 season, but the virus was included in the 1978-79 vaccine.

1997: Avian Flu Scare

The most recent pandemic "scares" occurred in 1997 and 1999. In 1997, at least a few hundred people became infected with the avian A/H5N1 flu virus in Hong Kong and 18 people were hospitalized. Six of the hospitalized persons died. This virus was different because it moved directly from chickens to people, rather than having been altered by infecting pigs as an intermediate host. In addition, many of the most severe illnesses occurred in young adults similar to illnesses caused by the 1918 Spanish flu virus. To prevent the spread of this virus, all chickens in Hong Kong (approximately 1.5 million) were slaughtered. The avian flu did not easily spread from one person to another, and after the poultry slaughter, no new human infections were found.

In 1999, another novel avian flu virus – A/H9N2 – was found that caused illnesses in two children in Hong Kong. Although neither of these viruses have gone on to start pandemics, their continued presence in birds, their ability to infect humans, and the ability of influenza viruses to change and become more transmissible among people is an ongoing concern.

Ongoing Influenza Defense Tactics

Fighting the flu in the U.S. is a yearly battle that requires the combined resources of the Department of Health and Human Services, the World Health Organization (WHO), vaccine and drug companies, state and local health authorities, and the medical community. Early detection of changes in influenza viruses and rapid development of effective vaccines are the keys to defending against influenza each year and responding to the possibility of a pandemic. The cycle of surveillance and vaccine formulation is a never-ending process.

Ongoing Surveillance

The first line of defense against influenza is a worldwide surveillance system coordinated by WHO. This system makes it possible for changes in circulating influenza viruses and the emergence of novel influenza A viruses to be detected as soon as possible.
The task of identifying circulating strains of influenza--whether known or novel--is done by a worldwide network of 110 National Influenza Centers and many other WHO laboratories in 83 countries. WHO Collaborating Reference Centers for Influenza in London, Atlanta, Melbourne, and Tokyo coordinate the system and intensively analyze samples of virus isolated and collected by approximately 180 laboratories.

Each year, some influenza virus isolates from laboratories in the U.S. and overseas are sent to the Centers for Disease Control and Prevention (CDC) in Atlanta. Tests are done to determine the antigenic and molecular make-up of the viruses. CDC examines the viruses to determine which are the most important emerging influenza viruses and their ability to cause outbreaks, and then provides this information at yearly meetings held by the Food and Drug Administration (FDA) and by WHO so it can be used to formulate vaccine for the next influenza season.

During January through March, WHO, FDA, and CDC undertake the process of deciding which strains will be selected for vaccine production in the U.S.

In addition, the CDC actively monitors U.S. disease activity and deaths related to influenza between October and May of each year. This information is provided each week in influenza surveillance summaries.

Vaccine Development

The best method of preventing and reducing the severity of the flu is the timely development, distribution, and administration of influenza vaccine. The influenza vaccine used each year is an inactivated trivalent vaccine. This means that the flu vaccine contains three inactivated (or "killed") flu viruses that protect against three different strains of influenza virus (one influenza B and two influenza A strains). Because the current licensed vaccines are inactivated vaccines, flu vaccine cannot cause the flu – a common misconception. The effectiveness of the trivalent vaccine depends upon the "match" between strains of influenza that are circulating and the viruses in the vaccine. Although there is no guarantee that the strains picked for the vaccine will be the strains that go around during the following flu season, the match between vaccine strains and circulating strains has been good about 90 percent of the time.

The vaccine strain selection process requires surveillance information collected year-round. In late January of each year, the FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) reviews worldwide surveillance data. The Committee usually makes an initial recommendation about at least one of the three strains to be included in the vaccine. By mid-February, the WHO completes its review and makes recommendations for the Northern Hemisphere vaccine. The WHO repeats this process in September for Southern Hemisphere vaccine recommendations. In March, VRBPAC meets to finalize the recommendations for the U.S. influenza vaccine.

While the vaccine strain selection process is going on, the four influenza vaccine manufacturers licensed in the U.S. begin preparations for vaccine production. Because flu vaccine viruses are grown inside eggs, manufacturers must buy enough eggs to manufacture 80 million or more doses of vaccine. The FDA prepares the specific viral material for the manufacturers to use, in order to begin vaccine production. During the manufacturing process, the live viral ingredient is killed so that the vaccine will not cause people to become sick with the flu. As the manufacturers produce vaccine, FDA reviews safety data. The last steps of vaccine preparation include production and bottling of vaccine, distribution to vaccine providers, and administration to patients. All this must be done in time for vaccination campaigns to begin by late September.

Working closely with State and local health authorities, partners in the private sector, CDC, FDA, and vaccine manufacturers have built a successful program for vaccine delivery each year. CDC and its Advisory Committee on Immunization Practices (ACIP) issue recommendations each year for the prevention and control of influenza. ACIP strongly recommends influenza vaccine for any person, 6 months of age or older, who is at increased risk for complications of influenza. Groups at increased risk include persons 65 years of age and older; residents of nursing homes and other chronic-care facilities; adults and children with chronic lung, heart, metabolic, kidney, or immune system disorders; and women who will be in the 2nd or 3rd trimester of pregnancy during the influenza season. Influenza vaccine also should be given to people who have close contact with high-risk persons, such as health care providers, family members of such persons, and others such as medical volunteers. The reason for vaccinating the close contacts is to prevent transmission of flu viruses to people who are at high risk for developing serious complications from flu. Influenza vaccine should also be administered to any person who wishes to reduce the likelihood of becoming ill with influenza.

Antiviral Drugs

In addition to vaccines, antiviral drugs are available for both the prevention and treatment of influenza. Currently, there are two classes of drugs--amantadines and neuraminidase inhibitors. The amantadines (amantadine and rimantadine) are approved for the treatment and prophylaxis of influenza A only. The

neuraminidase inhibitors (zanamivir and oseltamivir) have activity against both influenza A and B, but are currently approved by FDA only for treatment.

To prevent the flu, antiviral drugs must be taken consistently before infection occurs. When used to reduce the impact of the flu for someone who is already infected, antiviral drugs must be taken within two days after flu symptoms start. It is important to know that antiviral drugs can have some potentially serious side effects.

In non-pandemic situations, antiviral drugs have been useful in helping to control outbreaks in settings such as nursing homes, where many people could become sick with flu and develop serious complications. In addition, antivirals can be useful in preventing influenza in certain individuals who have a weakened immune systems and, therefore, would not respond to the vaccine, or in those who have a known allergic reaction to the vaccine. There are important differences among the influenza antiviral drugs, including age-approved indications, side effects, and costs. A knowledgeable health care professional should be consulted when they are used.

During a pandemic, antiviral drugs are likely to play an important, but limited role. Guidelines are being developed to address how antiviral drugs should be used during a pandemic.

Preparing for the Next Pandemic

In the event of a pandemic, good surveillance, timely vaccine development and production, and the ability to administer vaccine to large numbers of people in a short amount of time will be very important. The vaccination program during a pandemic will probably be different from current annual flu shot programs in several respects:

- More people will want and need to be vaccinated, so we will need a larger supply of vaccine.
- The warning period before a pandemic is likely to be short. Because the current vaccine manufacturing process takes a minimum of 6 months, it is likely that there will not be enough vaccine at the beginning of a pandemic to vaccinate everyone who wants it.
- It may be necessary for an individual to receive two doses of vaccine to be fully protected against the virus.

In addition, communication and emergency response systems are in place to assist in managing a pandemic. Since 1993, federal, state and local health officials have been working on several different preparedness efforts to reduce pandemic influenza-related deaths, sickness, and social disruption including enhancing surveillance and early detection of a novel virus, and improving the public health infrastructure so that pandemic-related programs can be effectively administered.

Source of “Information for the Media”: http://www.cdc.gov/od/nvpo/pandemics/

Appendix V. Businesses Community Guidance for Work Place Influenza Management

Important note: The workplace in this example has multiple locations/sites and employs its own health staff, including a Chief Medical Advisor. These characteristics will vary from business to business, and need to be taken into account in adapting the plan to other situations.

The extent of your planning in this area will depend on the nature of your business / workplace.

- Larger enterprises, or those providing essential services or infrastructure, should maintain a reasonably high level of preparedness. These organizations may be able to include the likelihood of a pandemic into existing business continuity plans.
- Smaller workplaces and those providing "non-essential" services will benefit significantly from some degree of preparedness. Planning will reduce the human cost and improve business viability during and after a pandemic.

Aims and Objectives of Plan

The plan aims to manage the impact of Influenza pandemic on employees and business via the health impacts on two main strategies: 1) Containment of the disease by reducing spread within Business Facilities; and 2) Maintenance of essential services if containment is not possible.

This plan will provide guidance on the following:

1. Communication
    a. To the business from external or internal sources regarding pandemic phases
    b. Within business
    c. To employees

2. Containment Activities
    a. Reducing risk of infected persons entering the site
    b. Social distancing
    c. Cleaning
    d. Managing fear
    e. Management of cases at work

3. For Travelers
    a. Travel advisories
    b. Travel advice

4. Treatment
    a. Anti-viral medication
    b. Influenza vaccine

5. Maintenance of Essential Business Activities
    a. Identification of core people and core skills
    b. Business planning for absence (for peak rate of 30-60%)
    c. Communication
    d. Knowledge Management
    e. Short, Medium and Long Term Planning
    f. Reasonable Risks to Employees and Others
    g. Deciding Whether a Workplace Should Stay Open or Close

Background Information

Influenza pandemics with novel viruses are recurring events, are unpredictable and result in serious health effects to large proportions of the population, with significant disruption to social, economic and security concerns of the community.

The recent appearance of the highly pathogenic avian Influenza virus A / H5N1 has raised concerns that this virus may mutate to create a novel virus capable of causing a significant global Influenza pandemic.

Predicted spread and virulence:
• Illness rates in population: 20-50%
• Global spread in: 3 months
• Vaccine availability: 6 months after initial outbreak
• Anti-viral treatment: Likely to be in short supply and may not be effective

Potential Effects:
• Widespread disruption to business: 20-60% of working population unable to work for 2-4 weeks at the height of a severe pandemic wave. Each wave may last about 8 weeks
• Significant death rate – loss of people and expertise
• Loss of emergency and essential services – fire, police, health services, air traffic controllers
• Loss of other services – retail, transport, government departments, etc.

Effect for Business:
• Loss of people to operate the business (either temporary or permanent)
• Loss of services from suppliers
• Operations (e.g. production) and support (e.g. IT) will be affected
• Business travel will be affected

Table 1. Difference between Influenza and a Common Cold

Symptom	Influenza	Common Cold
Fever	**Usual, sudden onset over 100F and lasts 3-4 days**	**Rare**
Headache	**Usual and can be severe**	**Rare**
Aches and pains	**Usual and can be severe**	**Rare**
Fatigue and weakness	**Usual and can last 2-3 weeks or more after the acute illness**	**Rare**
Debilitating fatigue	**Usual, early onset can be severe**	**Rare**
Nausea, vomiting, diarrhea	**In children <5 years old**	**Rare**
Watering of the eyes	**Rare**	**Usual**
Runny, stuffy nose	**Rare**	**Usual**
Sneezing	**Rare in early stages**	**Usual**
Sore throat	**Usual**	**Usual**
Chest discomfort	**Usual and can be severe**	**Sometimes, but mild to moderate**
Complications	**Respiratory failure, can worsen a current chronicle condition; can be life threatening**	**Congestion or ear-ache**
Fatalities	**Well recognized**	**Not reported**
Prevention	**Influenza vaccine, frequent hand washing, cover your cough**	**frequent hand washing, cover your cough**

I. Communication

1. Notification of change in alert code (escalation of pandemic) to the business regarding pandemic phases will be from
    a. Federal, State, and Local Health Officials through their media contacts
    b. Houston Health Department Rapid Communication Tool and community partner distribution list
    c. Website http://www.houstonhealth.org/
2. Within line of business
    a. Notification of change in Alert Code
    b. The Business Chief Medical Advisor (CMA) will advise CEO to invoke business continuity plan when appropriate
    c. Activate crisis management team
    d. Designate worksite influenza managers
3. Communications to Employees
    a. Communications to employees will be managed per business continuity plan
    b. This will be via email, internet and intranet website, telephone, SMS or postal services
    c. Links to relevant Business or external site will be included (HDHHS, CDC, WHO, etc)
    d. Instructions regarding information numbers to call, and the centre for reporting problems or concerns will be used.
    e. A website showing the names of all worksite Influenza Managers will be posted on the Business Intranet.
4. Report known influenza case and workplace increased influenza like illness to Houston Department of Health and Human Services at (713) 794-9181

INFLUENZA NOTIFICATION

Influenza is a contagious disease. There is currently an increase in the numbers of people with influenza in the City of Houston. In order to reduce the spread of influenza in this workplace, the following is required of everybody:

DO NOT COME TO WORK if you have:

- chills, shivering and a fever (temperature >100 ^{o}F)
- onset of muscle aches and pains
- sore throat
- dry cough
- trouble breathing
- sneezing
- stuffy or runny nose
- extreme fatigue.

If some of the above apply to you, please stay home and wait until you have recovered before returning to work.

If you have recently arrived from overseas or returned from overseas, or

if you start to feel ill at work, DO NOT leave your work area

Call your Influenza Manager …… Ext……

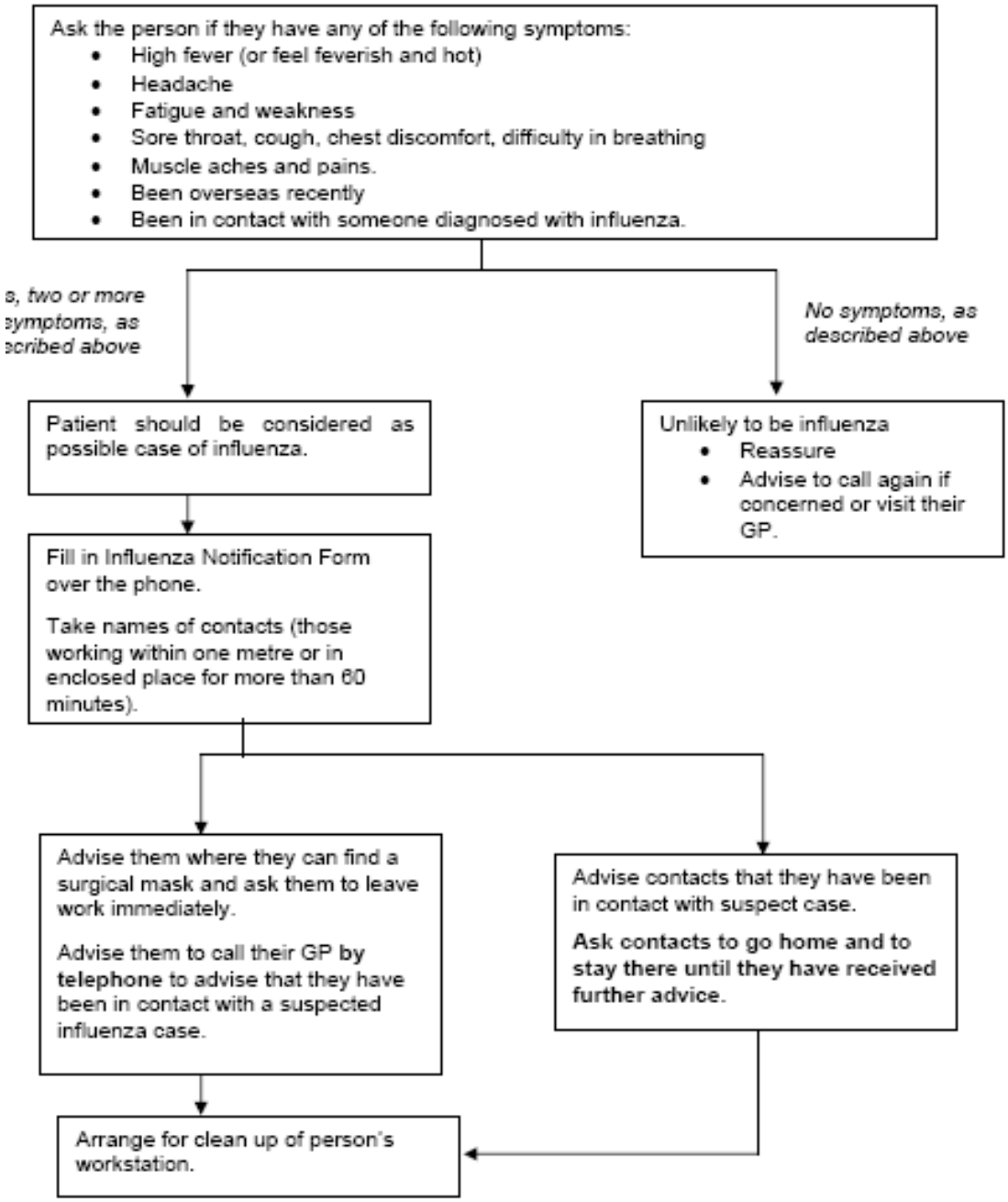
Table 1. Suggested Summary Actions for Businesses during each Alert Code

STAGE	STRATEGY	CDC ALERT CODE	SUGGESTED ACTIONS FOR BUSINESSES
1	**Plan for it** (Planning)	**WHITE** (Information / advisory)	Review business continuity plans: • Identify essential services (including contractors), facilities/plants, other production inputs • Plan for up to 50% staff absences for periods of 2-3 weeks at the height of the pandemic, and lower levels of staff absences for a few weeks on either side of the pandemic • Assess core staff and skill requirement needs, and ensure essential positions are backed-up by an alternative staff member • Identify ways to increase "social distancing" in the workplace, reduce movement etc. • Consider organizational policies to encourage the sick to stay at home; and enable staff to work from home • Identify ways to minimize illness amongst staff and customers, and consider how essential messages (e.g. basic hygiene) can be communicated to staff • Identify needs for PPE and cleaning equipment, and check air conditioning. Purchase additional contingency supplies.
		YELLOW (Standby)	
2	**Keep it out** (Border Management)	**RED** (Activation)	• Alert staff to change in pandemic status • Activate staff overseas travel restrictions • Review/test essential business continuity measures
3	**Stamp it out** (Cluster Control)		• Alert staff to change in pandemic status • Activate essential business continuity measures o • Activate measures to minimize introduction and/or spread of influenza in work place (post notices; social distancing, managing ill staff members, workplace cleaning, etc.) • Communicate with staff to promote confidence in the workplace • Activate contact tracing where staff become ill at work during Cluster Control phase • Activate process for recovered / well staff members to return to work
4	**Manage it** (Pandemic Management)		
5	**Recover from it** (Recovery)	**GREEN** (Stand down)	• Manage return to business as normal

Screening Checklist
for Detection and Management of Suspected Pandemic Influenza Cases

Process

1) The Influenza Manager receives a call from a person suspecting they may have influenza
2) Do not visit the person if this can be avoided – manage the process over the telephone
3) Follow the flowchart below



NOTIFICATION FORM: SUSPECTED INFLUENZA CASE AT WORK

Details of Affected Staff

Name:	Worksite:	Location of Isolation:
Job title:	Nationality if Visitor to Site:	Date of birth:
Address:		
Telephone no: _____ (W) _____ (H) _____(M)		
Symptoms noticed: Fever ☐ Body aches ☐ Headache ☐ Fatigue ☐ Dry cough ☐ Others ☐ Details: _____ Cold ☐ Time of fever on-set: _____ Time of isolation: _____		
Travel history over the past 8 days: Countries visited _____ Flights taken: _____		
Where referred:		
Contact List (See separate page)		

Details of Reporter

Name:
Job title:
Telephone no: _____ (W) _____ (H) _____ (M)

Table 3. Summary of Influenza Protection Measures

Protection measure	Where applicable
Hand hygiene, cough etiquette, ventilation	Everyone, all the time
Organizational policies and procedures	Every organization, all the time
Social distancing	Everyone, whenever practical
Protective barriers	In situations where regular work practice requires unavoidable, relatively close contact with the public
Disposable surgical mask	Workers in any community or health care setting who are caring for the sick (this includes first responders) Also as a possible adjunct to protective barriers
Disposable particulate respirator masks, eye protection, gloves, gowns / aprons	Health care workers participating directly in close contact patient care when there is a high risk of contact with respiratory secretions, particularly via aerosols (mostly inpatient settings).

II. Containment Activities

A. Reducing risk of infected persons entering the site

1. A list of worksite "Influenza Managers" will be maintained by the crisis team
2. The Influenza Managers will manage all local health related activities under the direction of the CMA.
3. On notification from the CMA, the health staff and nominated Influenza Managers for each location will do the following:
    a. Set up prominent notices at all entry points to facility, advising staff and visitors not to enter if they have symptoms of Influenza
    b. Set up Key General Infection Control (basic hygiene and hand hygiene) notices around workplace (including entrances, notice boards, meeting rooms and toilets
    c. Ensure they have adequate supplies of tissues, medical and hand hygiene products, cleaning supplies as well as masks for people who become ill at work.
4. Ensure that employee communications include pandemic Influenza fact sheet and information on Key General Infection Control Notices and Social Distancing.

B. Social distancing

1. Social distancing refers to strategies to reduce the frequency of contact between people. Generally it refers to mass gatherings but the same strategies can be used in the workplace setting
2. Information on social distancing will be sent by email by CMA
3. Influenza Managers should put up notices about social distancing
4. Where operationally allowed, teams are encouraged to split into different work locations to build up back up and avoid cross infection.
5. Where operationally allowed, shift changes should be managed as follows: when one shift goes off duty, there should be an interval before the next shift begins so that the worksite can be thoroughly ventilated (either opening all doors and windows or turning up air conditioning system).
6. Social distancing strategies include:
    a. Avoid meeting people face to face – use the telephone, video conferencing and the Internet to conduct business as much as possible even when participants are in the same building.
    b. Avoid any unnecessary travel and cancel or postpone non-essential meetings / gatherings / workshops / training sessions.
    c. If possible, arrange for employees to work from home or work flex hours to avoid crowding at the workplace.
    d. Avoid public transport: walk, cycle, drive a car or go early or late to avoid rush hour crowding on public transport.
    e. Bring lunch and eat at desk or away from others (avoid the cafeteria and crowded restaurants). Introduce staggered lunchtimes so numbers of people in the lunch room are reduced.

f. Do not congregate in break rooms or other areas where people socialize. Do what needs to be done and then leave the area.

7. If a face-to-face meeting with people is unavoidable, minimize the meeting time, choose a large meeting room and sit at least one meter away from each other if possible; avoid shaking hands or hugging.
8. Set up systems where clients / customers can pre-order/request information via phone / email / fax and have order / information ready for fast pick-up or delivery.
9. Encourage staff to avoid recreational or other leisure classes / meetings.

C. Cleaning

1. Office cleaning should be stepped up during the pandemic period.
2. Filters of the air conditioning systems should be cleaned and anti-bacteria solution applied.
3. Telephone sets in common areas should be cleaned daily.
4. Anti-bacteria solutions should be applied to all common areas, counters, railings, washbasins, toilet bowls, urinals and septic tanks (where are present) daily.
5. Details of suitable cleaning solutions can be found in the tables below.

D. Personal Hygiene

Basic personal hygiene measures should be reinforced and people should be encouraged to practice them to minimize potential influenza transmission:

- Cover nose and mouth when sneezing and coughing (preferably with a disposable single use tissue);
- Immediately dispose of used tissues;
- Adopt good hand washing / hand hygiene practices, particularly after coughing, sneezing or using tissues; and
- Keep hands away from the mucous membranes of the eyes, mouth, and nose.
- Ensure that adequate supplies of hand hygiene products are available. This is a high planning priority as there may be interruption to the supply or shortages of soap and hand towels.
- Communicate hand and personal hygiene information to staff and visitors:
- Hygiene notices (see below) should be posted in all workplace entrances, washrooms, hand washing stations and public areas.
- Use brochures, newsletters, global emails, employee notice boards, and information included with pay slips, to inform your employees of the importance of hand hygiene and environmental cleaning during a pandemic.
- Examples of notices can be found on the following pages. Another good source of notices and brochures is on www.cdc.gov

HAND HYGIENE

The most important thing you can do to keep from getting sick is to wash your hands!

Handwashing is the single most important measure to reduce the risks of transmitting infection from one person to another.

Hand washing with soap and water, alcohol-based hand rub, or antiseptic handwash should be performed regularly. Hands should be thoroughly dried, preferably using disposable tissues or towels. Use the disposable towel to open the door.

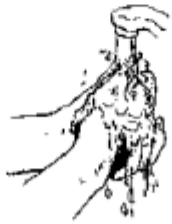
Hand washing and drying should always be done after coughing, sneezing or handling used tissues or after touching objects, materials or hard surfaces that may have been contaminated by someone else with the infectious illness.

Hand-to-face contact such as can occur during eating, normal grooming, or smoking presents significant risks because of the potential for transmission of influenza from surfaces contaminated with wet respiratory droplets. Handwashing should always be carried out before and after eating, grooming, smoking or any other activity that involves hand-to-face contact.

PROTECTING YOURSELF AND OTHERS AGAINST RESPIRATORY ILLNESS

- **HANDWASHING** IS THE MOST IMPORTANT THING YOU CAN DO TO PROTECT YOURSELF
- Cover your nose and mouth when coughing or sneezing
    - Use a tissue and dispose of this once used in the waste
    - Always wash hands after coughing and sneezing or disposing of tissues.
- Keep your hands away from your mouth, nose and eyes.
- Avoid contact with individuals at risk (e.g. small children or those with underlying or chronic illnesses such as immune suppression or lung disease) until influenza-like symptoms have resolved.
- Avoid contact with people who have influenza-like symptoms.
- Ask people to use a tissue and cover their nose and mouth when coughing or sneezing and to wash their hands afterwards.

Hand Hygiene with Soap and Water

1. Remove jewelry. Wet hands with warm water 	**2. Add soap to palms** 	**3. Rub hands together to create a lather** 
4. Cover all surfaces of the hands and fingers 	**5. Clean knuckles, back of hands and fingers** 	**6. Clean the space between the thumb and index finger** 
7. Work the finger tips into the palms to clean under the nails 	**8. Rinse well under warm running water** 	**9. Dry with a single-use towel and then use towel to turn off the tap** 
Minimum wash time 10-20 seconds.		

Hand Hygiene with Alcohol-based Hand Sanitizer

1. Remove jewelry. Apply enough product to open palms.** 	**2. Rub hands together palms to palms** 	**3. Rub in between and around fingers** 
4. Cover all surfaces of the hands and fingers 	**5. Rub backs of hands and fingers. Rub each thumb.** 	**6. Rub fingertips of each hand in opposite palm** 
7. Keep rubbing until hands are dry. ****The volume required to be effective varies from product to product. Enough product to keep hands moist for 15 seconds should be applied.** Do not use these products with water. Do not use paper towels to dry hands.		
Note: Wash hands with soap and water if hands are visibly dirty or contaminated with blood or other body fluids. Certain manufacturers recommend washing hands with soap and water after 5-10 applications of gel.		

E. Managing Fear

1. It is likely there will be anxiety regarding the pandemic situation and this is likely to contribute to increased work absence and/or increased distress to staff
2. The suggested ways to manage this is to:
    a. Have communicated the possibility of a pandemic and the business's preparedness to manage it very early to staff
    b. Have a comprehensive management plan in place which is clearly communicated to staff
    c. Provide clear, timely and proactive communications to staff when things are changing
    d. Provide clear communications on how the business is handling the situation if the pandemic does occur)
    e. Provide back up assistance for counseling staff through the EAP service

F. Management of cases at work

Influenza Managers will put up posters giving information on what to do if people get sick at work.

The CMA will access latest CDC advice regarding managing staff who become ill, contact definition and contact management from their website and modify the process outlined below as appropriate. Then provide this information to Crisis Team and Influenza Managers.

The CMA will send out emails to all staff regarding what to do if people get sick at work including key message: if they feel unwell, don't come to work. Send out information regarding difference between Influenza and common cold.

If a person feels ill, or if someone observes that another person is exhibiting symptoms of Influenza at work, they are to contact their Influenza Manager by telephone if at all possible.

Using the screening flowchart:

1. The Influenza Manager should avoid visiting this person if it can be avoided – manage the process over the phone
2. The Influenza Manager should check if the employee has any of the symptoms outlined in the first section of the flowchart
3. If the employee does *not* have any symptoms like those listed, they are very unlikely to have Influenza, and should be reassured but advised to call the Influenza Manager again later or to contact their physician if they are still concerned.
4. If the employee does have symptoms that match two or more of those listed, they should be treated as a "suspect case." The Influenza Manager should complete staff Influenza notification form, including details of any staff and/or visitors the person has been in contact with. This information will permit the CMA / Influenza Manager to monitor staff whereabouts and well-being during the pandemic.
5. The employee / suspect case should be informed where they can find a surgical mask and instructed to wear it immediately. This is to help protect other staff.
6. The suspect case should leave work immediately and be advised to contact their physician **by telephone** for a review. They should not use public transport if at all possible – the business will pay for a taxi if necessary.
7. The manager of the suspect case should be informed that they have left work.
8. Contact management – the Influenza Manager will:
    a. identify contacts (once an employee is suspected to be infected);
    b. advise contacts in person that they have been in contact with a person suspected of having Influenza; and
    c. Ask contacts to go home, and stay at home until advised otherwise.
9. The suspect case's work station should be cleaned and disinfected, as indicated in the section on Workplace cleaning.
10. Return to work of the suspect case and their contacts:
    a. Advise staff member on how long to stay away from work the CDC's websote will have advice on this once the characteristics of a pandemic are known)
    b. Check on the staff member during his/her absence from work. This will facilitate treatment, contact tracing, etc., if they become ill.
    c. Staff are to have confirmation from GP that they are well prior to their return to work.

III. For Travelers

A. Traveler Advisories

a. Travel advisories are communicated by the City of Houston Department of Health and Human Services
b. Travel advisories should be communicated to staff early to avoid the potential for travelers to be stranded overseas if flights etc are cancelled to minimize risk of spread

1. Preventing travel to infected areas
    a. Travel Agent will be notified by the CEO or delegate that all bookings to that location are to be blocked
    b. Travel Agent should be contacted to determine who may be already booked and due to travel to infected areas and immediate telephone contact made with travelers to advise that travel will be cancelled
    c. The persons responsible for this will be the PA to the CEO, and the HR General Manager, under the direction of the CEO.
    d. Back up information on impending travelers can be obtained from Travel Agent
2. Managing Those Already in Infected areas
    a. Travel Agent will be contacted (as above) to determine who is currently in infected areas.

b. Advice regarding infection control precautions and potential for travel home will be provided to those business travelers already in infected areas
c. Back up lists of current travelers can be obtained from Travel Agent
d. Advice to expatriates will also be given, and will include input from the Business Manager for expatriates. Expatriates may be advised not to travel back to Houston so as to minimize the risk of infection

3. Those recently returned from Infected Areas
    a. Travel Agent will be contacted (as above) for lists of those recently returned from infected areas
    b. Advice will be sent by the CMA regarding the need to be vigilant regarding self-checking for symptoms and to seek medical advice by phone immediately if symptoms occur. The traveler should report their travel history to the treating doctor or nurse.

IV. Treatment

1. Anti-Viral medication
    a. HDHHS will provide recommendations of the use of anti-viral medication.
    b. The CMA should check the CDC/HDHHS website for the latest information on the use of anti-viral medication supply.
2. Influenza Vaccine
    a. Vaccine development cannot commence until the pandemic virus has been isolated
    b. The CDC will provide advice on priority groups for immunization.
    c. It may take 6 months after the declaration of a pandemic by WHO before vaccine is generally available for use in the City of Houston.

V. Maintenance of Essential Business Activities

Important note: An example of how this might be contained in your plan is not provided, as the variation from business to business, sector to sector is too great.

Your management team should ensure that core functions, people and skills have been identified and that strategies are in place to manage these prior to the pandemic. The Pandemic Planning Guide contains information to assist in the process of identifying core people and skills, planning for absences, information management, etc. This information is summarized here for convenience.

1. Identification of core people and core skills
    a. Who are the core people required to keep the essential parts of the business running?
    b. What are core skills required to keep business running?
    c. Are there sufficient back ups for people and skills in view of absence?
    d. Is there a pool of retirees, volunteers etc who may be able to provide backup?
    e. Who are core people required to manage the disease contingency plan? These people should consider social distancing – even working from home, very early in the pandemic phase.
    f. Are there any systems which rely on periodic physical intervention by a key individual, to keep them going? How long would the system last without attention, if there was no one looking after it?

2. Business Planning for Absence
    a. Any employer or other person who controls the workplace has responsibility for the health and safety of employees and others there, and to ensure that employees' actions or inactions do not cause harm to others.
    b. Independent contractors and volunteer workers have the right to withdraw their labor or services at any time, including when they feel the work environment presents an unsatisfactory level of risk.
    c. What are critical numbers and skills required to keep essential sectors of the business running – at what absence level does business stop

d. Who shall make the decision to shut sections of the business down when absence rates threaten safe business continuity?
e. Determine if people can logistically work from home (social distancing)

3. Communications
    a. What are essential communication channels regarding business continuity
        i. With other business units within the Business
        ii. With Government
        iii. With key providers
        iv. With key customers
        v. With key contractors

4. Knowledge Management
    a. Knowledge will need to be stored in easily accessible shared locations as key people may become sick or die
    b. Consider setting up shared locations for contingency planning information
    c. Consider where essential business information should be stored

5. Short, Medium and Long Term Planning
    a. Absence rates can be significant (30-60% predicted peaks)
    b. The pandemic may last for 6 months and occur in several waves
    c. Staff may be sick or may die
    d. Planning should consider short, medium and long-term issues
    e. The health plan primarily deals with the short-term issues
    f. Succession planning and back up planning is essential

6. Deciding Whether a Workplace Should Stay Open or Close
    a. A workplace may close through lack of staff, lack of customers, or because it presents an unacceptable level of risk to employees or others.
    b. Different industries will involve varying degrees of risk in a pandemic, and there will be varying scope for staying in operation while reducing the hazard.
    c. Primary industries for example, should be able to manage hazards with relatively few restrictions. On the other hand, the challenges in the service sector – including health, education, entertainment, hospitality and other industries – will be far greater. In the health sector, for example, the inherent risks will be compounded by a need to stay open to provide treatment and care.

7. Preparing for the Possibility of a Workplace or Business Closing
    a. It is strongly recommended that employers should discuss this possibility with their staff, staff representatives and contractors as part of their preparedness planning. This discussion should include identifying whether services can be delivered outside of the workplace in a way that does not pose any health and safety risk, and implementing methods of communicating workplace closure to employees.
    b. Statutory requirements relating to the employment relationship and any specific requirements of employment agreements will not be affected by workplace closure in a pandemic.
    c. In the event that the employer decides, or is required to, suspend business during a pandemic, it is important that the employment conditions during the business suspension are discussed with, and made clear to, employees. Those discussions may include, for example, the use of annual leave.
    d. Contractors for services will be subject to their contracts, and contract law generally.
    e. If a workplace or business stays open during a pandemic, employment relations legislation will continue to apply according to the circumstances.

In all cases, it will be useful to discuss any likely impacts with employees, unions and others that may be affected beforehand. Whatever agreement and clarification can be achieved before a pandemic will prove a valuable investment should the emergency occur. For more information on pandemic influenza planning, please visit www.pandemicflu.org.

APPENDIX VI. ACTION PLAN QUICK REFERENCE TABLES

A. INTERPANDEMIC PERIOD

Global Pandemic Phase:

Phase 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 humans, the risk of human infection or disease is considered low.

Phase 2: No new influenza virus subtypes have been detected in humans. However a circulating animal influenza virus subtype poses a substantial risk of human disease.

I. Planning, Command and Coordination

Task	Division (Bureau)	Lead(s)	Partnership
Lead in planning the public health response to pandemic influenza and ensure that planning and response activities are coordinated within City of Houston.	Director's Office (HPE) All Divisions OSPHP (PHP, BOE)	HPE Chief ADs PHP Chief BOE Chief	OEM, All key stakeholders
Review, evaluate and revise existing influenza plans to ensure an adequate and coordinated public health response	Director's Office All Divisions OSPHP (PHP, BOE)	HPE Chief ADs PHP Chief BOE Chief	OEM
Review bureau/lead assignments with staff of all bureaus/programs within HDHHS	Director's Office All Divisions OSPHP (PHP, BOE)	HPE Chief ADs PHP Chief BOE Chief	OEM
Participate and/or coordinate pandemic influenza exercises to test preparedness.	All Divisions OSPHP (PHP)	All Bureau Chiefs PHP Chief	OEM HAHEMC DSHS
Enhance community capacity for responding to pandemic flu by providing disease prevention, health promotion and education outreach activities.	Director's Office (HPE) CDD NSD OSPHP	HPE Chief AD for CD AD for NS AD for OSPHP	All key stakeholders
Maintain information about the capacity of hospitals and treatment centers through the Houston Metropolitan Medical Response System (HMMRS).	OSPHP (PHP, BOE)	BOE Chief PHP Chief	OEM HAHEMC HCMS
Maintain information about the capacity of essential services personnel within the Department.	ASD (HR) OSPHP (PHP)	HR Division Manager PHP Chief	OEM

II. Surveillance, Investigation and Protective Public Health Measures

In addition to the federal and state surveillance activities, HDHHS Bureau of Epidemiology will establish and coordinate the following local surveillance activities.

Task	Division (Bureau)	Lead(s)	Partnership
Establish and coordinate local surveillance activities in addition to the federal and state surveillance activities.	OSPHP (BOE)	BOE Chief	HAHEMC
Continue work with local hospitals to address influenza surveillance, early detection, reporting, and epidemiological investigation activities.	OSPHP (BOE, PHP)	BOE Chief PHP Chief	OEM HAHEMC
Enhance HMMRS and RODS syndrome surveillance system for emergency room visits and deaths due to acute febrile respiratory illness.	OSPHP (BOE, PHP, VS) ASD (IT)	BOE Chief PHP Chief Registrar CTO	HAHEMC
Ensure results of positive rapid influenza test kits and influenza viral cultures are provided to HDHHS.	OSPHP (BLS, BOE)	Lab Chief BOE Chief	Local Laboratories
Monitor over-the-counter (OTC) drug sale information through RODS OTC Drug Sales system.	OSPHP (BOE, PHP) ASD (IT)	BOE Chief PHP Chief CTO	RODS
Continue Independent School Districts ILI surveillance.	OSPHP (BOE)	BOE Chief	ISDs
Continue influenza related mortality surveillance.	OSPHP (BOE, VS)	BOE Chief Registrar	Harris Co. ME Office
Maintain regular communication with external partners to keep informed about suspect clinical symptoms identified through passive surveillance in local avian populations including poultry wholesalers and results of the subsequent investigations	OSPHP (BOE) EHSD (BARC)	BOE Chief BARC Chief	Texas Animal Health Commission Harris County Animal Control
Review appropriate legal authorities regarding the implementation of community level control measures; Develop and maintain City of Houston Quarantine and Isolation Plan with templates of documentation needed to enact community level control measures.	LHA ASD (Legal) OSPHP (PHP)	HA AD for ASD PHP Chief	OEM HPD HAHEMC
Conduct ongoing education regarding the importance of hand hygiene, cough etiquette and annual influenza vaccination.	Director's Office (HPE, PA) OSPHP (PHP) CDD (BI) NSD EHSD (BCH)	HPE Chief PIO PHP Chief BI Chief AD for NSD BCH Chief	OEM HAHEMC

III. Laboratory Testing

Task	Division (Bureau)	Lead(s)	Partnership
Ensure lab capacity to rapidly detect and report influenza	OSPHP (BLS, BOE)	BLS Chief BOE Chief	Local laboratories
Coordinate specimen testing and typing, coordinate sub-typing submission.	OSPHP (BLS)	BLS Chief	Local laboratories DSHS
Conduct lab-based occupational monitoring for flu activities.	OSPHP (BLS, BOE)	BLS Chief BOE Chief	Local laboratories
Establish back-up functions with UTMB's BSL-4.	OSPHP (BLS, PHP)	BLS Chief PHP Chief	UTMB

IV. Infection Control and Containment

Task	Division (Bureau)	Leads	Partnership
Define and quantify local priority population groups (including special needs) to receive vaccine or antivirals for prevention, prophylaxis and treatment, and update estimates on an annual basis.	Director's Office (HPE) OSPHP (PHP, BOE) AAA CDD (BI)	HPE Chief PHP Chief BOE Chief AAA Director BI Chief	OEM HAHEMC
Implement recommendations for vaccination and treatment.	Director's Office (HPE) OSPHP (BOE, PHP) CDD (BI) NSD	HPE Chief PHP Chief BOE Chief BI Chief AD for NSD	Community Relation Specialists
Develop and maintain contact information of partners with whom HDHHS may communicate information about community level control measures.	OSPHP (PHP) ASD (IT)	PHP Chief CTO	HAHEMC Schools All key stakeholders
Coordinate planning for the request, procurement, delivery, and distribution of vaccines, antivirals and supplies, review and update the methodology within HDHHS *SNS Plan* for providing vaccination during a pandemic.	OSPHP (PHP, Pharmacy)	PHP Chief Pharmacy Chief	OEM, HAHEMC Other LHDs
Identify infection control and containment methods specific for special population groups and coordinate implementation.	Director's Office (HPE) OSPHP (BOE, PHP) AAA	HPE Chief BOE Chief PHP Chief AAA Director	OEM DMUC

V. Emergency Response: Health Systems and Critical Infrastructure

Task	Division (Bureau)	Leads	Partnership
Work with area hospitals through HAHEMC to ensure that policies, plans and protocols for pandemic influenza are developed and maintained. Key policies will include those regarding reporting to HDHHS and those regarding infection control procedures	Director's Office (HPE) OSPHP (PHP, BOE)	HPE Chief PHP Chief BOE Chief	HAHEMC OEM
Estimate the impact of pandemic influenza on healthcare services and critical infrastructure within local hospital and long-term care bed capacity: • Intensive care unit capacity • Ventilators • Personal protective equipment (PPE) • Specimen collection/transport materials • Sources of consumable medical supplies • Medical personnel who may be utilized during an emergency situation • Pharmacies and pharmacists • Contingency medical facilities • Mortuary/funeral services • Social services • Mental health services	OSPHP (PHP, BOE)	PHP Chief BOE Chief	OEM HMMRS
Disseminate epidemic control strategies and educational materials to area health care providers, including a summary of the most current influenza vaccine recommendations.	CDD (BI) OSPHP (PHP, BOE) Director's Office (PA)	BI Chief BOE Chief PHP Chief PIO	HAHEMC Healthcare providers Nursing homes
Enhance medical volunteer recruitment and training through surrounding communities and Medical Reserve Corps.	OSPHP (PHP) ASD (HR)	PHP Chief HR Division Manager	Red Cross HAHEMC Medical Reserve Corps
Continue activities to enhance annual traditional influenza vaccination coverage levels in traditional high-risk groups.	CDD (BI) NSD AAA	BI Chief AD for NSD AAA Director	Community Relation Specialists
Work with HAHEMC to develop adequate surge capacity.	OSPHP (PHP)	PHP Chief	OEM HAHEMC
Obtain MOUs with local medical schools, nursing schools, schools of public health, universities, and colleges.	ASD (Legal) OSPHP (PHP)	Legal PHP Chief	Universities and Schools Private sector
Obtain MOUs with local and regional partners, including Harris County Medical Society (HCMS) Physician Alert System and Convene the Community Disease Alert System (CDAS).	ASD (Legal) OSPHP (PHP)	Legal PHP Chief	OEM CDAS Harris County Harris Co. Medical Society

VI. Communication and Public Outreach

Task	Division (Bureau)	Leads	Partnership
Notify hospitals, health care providers, and first responder agencies of Interpandemic Period designation.	Director's Office (PA)	PIO	OEM HAHEMC
Develop public health campaigns that emphasize preventative health measures such as vaccination and proper hygiene.	Director's Office (HPE, PA) OSPHP (PHP, BOE)	HPE Chief PIO PHP Chief BOE Chief	OEM HAHEMC Community leader Media Outlets Community Relation Specialists
Identify for public affairs affected target audiences to communicate information about community level control measures and identify appropriate strategies for dissemination.	Director's Office (HPE, PA) OSPHP (PHP, BOE)	HPE Chief PIO BOE Chief PHP Chief	OEM HAHEMC Community leader Media Outlets Community Relation Specialists
Engage community partners to participate in planning activities and facilitate open communication.	Director's Office (HPE) OSPHP (PHP, BOE)	HPE Chief BOE Chief PHP Chief	OEM HAHEMC Community leader
Develop public information messages that address public health issues and concerns (vaccine supply, antiviral use, low-tech prevention methods, and maintenance of essential services) regarding pandemic influenza.	Director's Office (PA, HPE) OSPHP (PHP, BOE)	PIO HPE Chief BOE Chief PHP Chief	Media Outlets
Disseminate these campaigns and messages to the public through media outlets.	Director's Office (PA) OSPHP (PHP)	PIO PHP Chief	Media Outlets

VII. Maintenance of Essential Business Activities in HDHHS

Task	Division (Bureau)	Leads	Partnership
Identify essential business activities, core people, core knowledge and skills.	ASD (HR) All Divisions	HR Division Manager PHP Chief	OEM
Publish policies for absences and illness and adjust them accordingly.	ASD (HR)	HR Division Manager	Legal
Develop strategies for workplace flexibility.	ASD (HR)	HR Division Manager	Legal
Work on strategies to allow employees to work remotely.	ASD (IT, HR)	CTO HR Division Manager	Legal
Update the COOP regularly to reflect contingency planning for absence and illness	All Divisions	All Bureau Chiefs and Managers	OEM
Update contact information in VIM to enhance communication.	ASD (HR, IT)	HR Division Manager CTO	ITD

B. PANDEMIC ALERT PERIOD

WHO Global Pandemic Phases:

Phase 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.

Phase 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.

Phase 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)

All of the activities of the pandemic imminent stage and the following:

I. Planning, Command and Coordination

Task	Division (Bureau)	Lead(s)	Partnership
Initiate communication with local, state and national counterparts to discuss trending.	OSPHP (PHP)	PHP Chief	OEM DSHS Other LHDs
Disseminate information regarding influenza within the Department at regularly scheduled intervals.	Director's Office (PA) OSPHP (PHP, BOE) ASD (IT)	PIO PHP Chief BOE Chief CTO	OEM DSHS Other LHDs
Develop appropriate public health information messages.	OSPHP (PHP, BOE) Director's Office (PA)	PHP Chief BOE Chief PIO	OEM
Notify the SNS Memoranda of Understanding (MOU) school districts and inform them about the possibility of activating schools as mass vaccination sites, in accordance with MOU currently in place.	OSPHP (PHP)	PHP Chief	School districts
Prepare for activation of Pandemic Emergency Operations.	All Divisions	All ADs	OEM
Implement regular testing of staff notification protocols.	All Divisions	All ADs	OEM
Determine the impact of pandemic disease upon the jurisdiction and alert leadership and staff to stand-by for potential implementation of NIMS-compliant emergency operations (See Operational Plan)	OSPHP (PHP)	PHP Chief	OEM

II. Surveillance, Investigation, and Protective Public Health Measures

Task	Division (Bureau)	Lead(s)	Partnership
Monitor the Health Alert Network (HAN), EpiX, and other channels of information to provide ongoing assessments of the situation to the Director, HA, and other relevant HDHHS personnel.	OSPHP (BOE)	BOE Chief	DSHS CDC HCPHES FBI
Ensure that all interpandemic influenza surveillance activities are underway regardless of the time of year, enhancing activities as needed based on information received.	OSPHP (BOE)	BOE Chief	Hospitals and healthcare providers
Monitor and institute recommendations from CDC for any additional surveillance activities that should be undertaken given the specific circumstances.	OSPHP (BOE)	BOE Chief	CDC DSHS
Assess the need to screen travelers arriving in the area from affected countries.	LHA OSPHP (BOE, PHP)	HA BOE Chief PHP Chief	Quarantine Officer Airport authority
Assess the completeness and timeliness of reports from all participating laboratories and sentinel providers. Collaborate with these partners to enhance and facilitate complete and timely reporting.	OSPHP (BOE)	BOE Chief	Local Laboratories
Inform state and federal partners about increased local flu surveillance activities. If necessary request additional resources for local surveillance and case tracking activities.	OSPHP (BOE)	BOE Chief	DSHS CDC OEM HAHEMC
Upon identification of first person-to-person pandemic influenza case, start investigation, contact tracking, isolation, and confirming laboratory test results.	OSPHP (BOE, BLS)	BOE Chief BLS Chief	DSHS CDC OEM
Add influenza indicators to weekly indicator report	OSPHP (BOE)	BOE Chief	Mayor's Office

III. Laboratory Testing

Task	Division (Bureau)	Lead(s)	Partnership
Provide instructions for the safe handling of a potential novel influenza virus.	OSPHP (BLS)	BLS Chief	Hospital libratory
Coordinate the collection of ILI specimens among area providers and laboratories and facilitate the transfer of ILI specimens.	OSPHP (BLS)	BLS Chief	DSHS and/or CDC
Provide instructions for directing samples from patients presenting with severe or unusual ILI to the appropriate laboratory for testing.	OSPHP (BLS)	BLS Chief	Hospitals physicians ER Urgent care providers
Enhance laboratory testing surge capacity through upgrades and agreements.	OSPHP (BLS, PHP)	BLS Chief PHP Chief	DSHS
Enhance epidemiological and lab-based monitoring.	OSPHP (BLS, BOE)	BLS Chief BOE Chief	Hospital Laboratories

IV. Infection Control & Containment

1. Possible containment measures if cases are first detected outside the U.S.

Task	Division (Bureau)	Lead(s)	Partnership
Continue provide seasonal influenza vaccination using city clinics	CDD (BI) NSD	BI Chief AD for NSD	
HDHHS may recommend isolation of persons who are recent travelers from affected regions if they have ILI. If influenza is suspected or confirmed, HDHHS may recommend isolation at home or in a hospital until isolate subtyping is accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be a novel influenza A virus.	LHA Director's Office (PA) CDD (BI) OSPHP (PHP, BOE)	HA PIO BI Chief PHP Chief BOE Chief	Healthcare Providers Media City Officials CDAS
HDHHS may recommend quarantine for contacts of cases [*See* Annex H].	LHA OSPHP (PHP, BOE) Director's Office (PA)	HA PHP Chief BOE Chief PIO	Mayor Media City Officials CDAS schools Quarantine Officer
Increase education about the importance of hand hygiene, cough etiquette and annual influenza vaccination.	Director's Office (PA) OSPHP (PHP, BOE) NSD CDD ASD (HR) EHSD (BCH)	PIO PHP Chief BOE Chief AD for NSD AD for CDD HR Division Manager BCH Chief	Media Community Relations Specialist

2. Possible containment measures if cases are first detected in the U.S. outside City of Houston

Task	Division (Bureau)	Lead(s)	Partnership
HDHHS may recommend that persons who are positive for influenza A be placed in isolation at home or in a hospital until isolate subtyping can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.	LHA OSPHP (BOE, PHP) Director's Office (PA)	HA BOE Chief PHP Chief PIO	Healthcare Providers Media City Officials CDAS
HDHHS may recommend quarantine for contacts of cases and implement HDHHS Quarantine and Isolation plan. [S*ee* Annex H and Q & I plan]	LHA OSPHP (PHP, BOE)	HA PHP Chief BOE Chief	Media schools City Officials Mayor CDAS businesses

HDHHS will increase public education regarding the importance of hand hygiene and cough etiquette.	Director's Office (PA) OSPHP (PHP, BOE) NSD CDD ASD (HR) EHSD (BCH)	PIO PHP Chief BOE Chief AD for NSD AD for CDD HR Division Manager BCH Chief	Media Community Relations Specialist

3. Possible containment measures if cases are first detected in City of Houston and/or surrounding areas

Task	Division (Bureau)	Lead(s)	Partnership
Recommend the implementation of a Joint Information Center (JIC).	Director's Office (PA) OSPHP (PHP)	PIO PHP Chief	OEM, Mayer's Office
Recommend that persons who have ILI be placed in isolation at home or in a hospital until subtyping of their isolate can be accomplished. Isolation should continue for at least seven days, until viral shedding is no longer detected or until the isolate is laboratory confirmed not to be the novel virus.	LHA OSPHP (BOE, PHP) Director's Office (PA)	HA PHP Chief PIO	Healthcare Providers Media City Officials CDAS
Recommend quarantine for contacts of cases.	LHA OSPHP (BOE, PHP) Director's Office (PA)	HA PHP Chief BOE Chief PIO	Media schools City Officials Mayor CDAS businesses Quarantine Officer
If an animal source is identified and there is ongoing transmission within the animal population, Bureau of Animal Regulation and Control with the Bureau of Epidemiology may recommend that persons who may be in contact with potentially infected animals wear appropriate personal protective equipment. (*See* Appendix B)	OSPHP (BOE) EHSD (BARC)	BOE Chief BARC Chief	Harris County Animal Control DSHS Harris County Veterinary Society Houston Zoo
Recommend that citizens limit travel to destinations outside of City of Houston, as well as limit non-essential travel within the city.	LHA OSPHP (PHP) Director's Office (PA)	HA PHP Chief PIO	Harris Co Judge Mayor City Council Media DSHS CDC Quarantine Officer
Recommend cancellation of large gatherings depending on the level of person-to-person transmission. Based on the epidemiology of the known infected cases, HDHHS may consider closure of schools, including colleges and universities, and closure of office buildings.	LHA OSPHP (PHP) Director's Office (PA)	HA PHP Chief PIO	Media schools Mayor City Officials CDAS Harris County Officials
Monitor VAERS data for evidence of adverse reactions to the influenza vaccine. Report findings routinely to DSHS.	CDD (BI) OSPHP (BOE, PHP)	BI Chief BOE Chief PHP Chief	DSHS

Review surveillance data for changes in risk factors that could require modification of recommendations for priority groups for receiving vaccine.	LHA OSPHP (BOE) CDD (BI)	HA BOE Chief BI Chief	CDC State Health Commissioner
Monitor availability of antivirals and, when appropriate, recommend changes in priority groups for receiving vaccine or antivirals.	LHA OSPHP (BOE) CDD (BI)	HA BOE Chief AD for CDD BI Chief	CDC State Health Commissioner CDAS
Modify recommendations and agreements on priority groups for receiving the vaccine based on availability of vaccine.	LHA OSPHP (BOE) CDD (BI)	HA BOE Chief AD for CDD BI Chief	CDC State Health Commissioner CDAS
Increase public education regarding the importance of hand hygiene and cough etiquette	LHA OSPHP (BOE) CDD (BI)	HA BOE Chief AD for CDD BI Chief	CDC State Health Commissioner CDAS

V. Emergency Response: Health Systems and Critical Infrastructure

Task	Division (Bureau)	Lead(s)	Partnership
Issue regular alerts regarding surveillance and case tracking activities to the medical community through Rapid Alert Systems.	OSPHP (PHP, BOE)	AD for OSPHP	HAHEMC LHDs
If necessary, issue special requests to healthcare providers to increase laboratory diagnosis of influenza for persons presenting with ILI, especially those with recent travel history to regions where the pandemic strain of influenza is circulating or those with unusual or severe symptoms.	OSPHP (PHP, BOE)	AD for OSPHP	HAHEMC Healthcare providers
Recommend that emergency medical providers and hospitals activate severe respiratory illness protocols and provide guidance about the appropriate use of personal protective equipment through Rapid Alert System.	LHA OSPHP (PHP, BOE)	HA PHP Chief BOE Chief	OEM HAHEMC Hospitals HCMS
Confirm availability of resources to support a pandemic response.	ASD OSPHP (PHP)	AD for ASD PHP Chief	OEM HAHEMC Hospitals
Review and modify response plan for the provision of antivirals as needed to account for updates received regarding the novel virus.	OSPHP (BOE, PHP)	Incident Commander PHP Chief BOE Chief	OEM Mayor's Office
Review and modify *SNS Plan* as needed to account for updates received regarding the novel virus. Such updates may include recommended target groups and projected vaccine supply.	OSPHP (BOE, PHP)	Incident Commander PHP Chief BOE Chief	OEM Mayor's Office DSHS
Notify the medical community of the status of antiviral availability and plans to disseminate it to the established priority groups	Director's Office (PA) OSPHP (BOE, PHP)	PIO BOE Chief PHP Chief	Healthcare providers
Disseminate antiviral use guidelines to the medical community.	Director's Office (PA) OSPHP (BOE, PHP)	PIO BOE Chief PHP Chief	Healthcare providers
Augment Community Emergency Medical Centers sites and temporary infirmary locations as needed in coordination with local mass-care organizations to respond to the overwhelming caseload.	LHA Director's Office (PA) OSPHP (BOE, PHP) NSD	HA Incident Commander PIO BOE Chief PHP Chief AD for NSD	Red Cross Salvation Army

VI. Communication and Outreach

Task	Division (Bureau)	Lead(s)	Partnership
Initiate Joint Information Center (JIC).	Director's Office (PA)	PIO	OEM
Disseminate alerts and appropriate information to the public through media outlets and will notify hospitals, heath care providers, and first responder agencies of Pandemic Alert Period designation	Director's Office (PA) OSPHP (PHP)	PIO PHP Chief	OEM
Draft and issue health advisory recommending limiting travel to the affected region and screening travelers arriving from the affected region.	LHA Director's Office (PA) OSPHP (PHP)	HA PIO PHP Chief	JIC OEM
Regularly provide updated information about the epidemiology and spread of the novel virus to the local healthcare community through Rapid Alert System.	All Divisions OSPHP (PHP, BOE)	All Ads PHP Chief BOE Chief	OEM
Notify hospitals, heath care providers, and first responder agencies of Pandemic Stage.	Director's Office (PA) OSPHP (PHP, BOE)	PIO PHP Chief BOE Chief	JIC OEM
Provide updated information about the epidemiology of the novel virus.	OSPHP (BOE) Director's Office (PA) ASD (IT)	BOE Chief PIO CTO	JIC OEM Emergency medical providers and hospitals
Increase public information effort designed to keep ill persons at home, providing translations into Spanish and other major languages.	Director's Office (PA) OSPHP (BOE)	PIO BOE Chief	JIC Community partners

VII. Maintenance of Essential Business Activities in HDHHS

Task	Division (Bureau)	Lead(s)	Partnership
Assess 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.	ASD	Assistant Directors	Mayor's Office OEM
Prepare for the possibility of workplace business closing.	All Bureaus	Bureau Chiefs	Mayor's Office
Maintain essential operating and emergency management information in known shared locations.	All Bureaus	Bureau Chiefs	Mayor's Office
Communicate with staff about possible health and safety issues, potential for stand down, and leave arrangements.	All Bureaus	Bureau Chiefs	Mayor's Office

C. **PANDEMIC PERIOD**

WHO Global Pandemic Phase:

Phase 6: Pandemic – increased and sustained transmission in the general population

1. Planning, Command and Coordination

Task	Division (Bureau)	Lead(s)	Partnership
Announce the pandemic status and ensure ongoing communication with local, state and federal authorities.	LHA Director's Office (PA) OSPHP (PHP, BOE)	HA PIO AD for OSPHP	JOC OEM Mayor's Office
Activate NIMS incident command structure and/or Joint Operation Center (JOC).	LHA Director's Office OSPHP (PHP)	HA Director PHP Chief	JOC DSHS OEM HAHEMC
Determine the need for and scope of mass vaccination activities.	Director's Office (HPE) OSPHP (PHP, BOE) CDD (BI)	HPE Chief PHP Chief BOE Chief BI Chief	JOC DSHS OEM HAHEMC
Activate SNS protocol	LHA OSPHP (PHP, BOE) CDD (BI) NSD	HA AD for OSPHP BI Chief AD for NSD	JOC DSHS OEM HAHEMC
Coordinate delivery of vaccine and/or antivirals with DSHS.	OSPHP (PHP) CDD (BI)	PHP Chief BI Chief	JOC DSHS OEM HAHEMC

II. Surveillance, Investigation, and Protective Public Health Measures

Task	Division (Bureau)	Lead(s)	Partnership
Continue enhanced surveillance, contact tracing, and treatment tracking activities.	OSPHP (BOE) CDD	BOE Chief AD for CDD	OEM JOC
Assess the epidemiology of the pandemic daily and provide the OEM with protective action recommendations.	OSPHP (BOE)	BOE Chief	OEM DMUC JOC
Assess the epidemiology of the pandemic daily and provide the Department with trending analysis.	OSPHP (BOE)	BOE Chief	OEM DMUC JOC
Enhance ongoing surveillance activities to include the following: • Monitor health impacts, including deaths and hospitalizations • Monitor community impacts, including absenteeism in essential services • Monitor reports of antiviral resistance • Monitor reports of vaccine effectiveness	OSPHP (BOE) CDD (BI, Nursing)	BOE Chief BI Chief Nursing Chief	OEM DMUC JOC

III. Laboratory Testing

Task	Division (Bureau)	Lead(s)	Partnership
Ensure samples are directed to the correct laboratory for testing.	OSPHP (BLS)	BLS Chief BOE Chief	DSHS CDC Hospitals Labs
Activate redundancy agreements.	OSPHP (BLS)	BLS Chief	

IV. Infection Control & Containment

Task	Division (Bureau)	Lead(s)	Partnership
Fully activate mass vaccination activities according to the *SNS Plan.*	OSPHP (PHP)	PHP Chief	DSHS LHDs
Communicate with the regional DSHS office regarding the availability and, if applicable, the delivery of antivirals through the SNS.	Director's Office (HPE) OSPHP (PHP, BOE) NSD	HPE Chief PHP Chief BOE Chief AD for NSD	DSHS LHDs
Provide DSHS with an estimated number of persons within each priority population as well as the population as a whole	Director's Office (HPE) OSPHP (PHP, Pharmacy) NSD	HPE Chief AD for OSPHP AD for NSD	DSHS LHDs
Ensure that antivirals are appropriately allocated among Community Emergency Medical Centers and coordinate efforts to provide antiviral therapy.	LHA CDD (BI) OSPHP (PHP, Pharmacy) NSD	HA AD for CDD PHP Chief	DSHS OEM
Evaluate antiviral delivery and administration procedures and modify plans as necessary.	OSPHP (BOE, PHP) NSD CDD (BI)	BOE Chief PHP Chief AD for NSD BI Chief	

Prior to widespread vaccine availability, coordinate vaccine administration as it is available to priority groups based on the methodology described the *SNS Plan.*	OSPHP (PHP) CDD (BI) NSD	PHP Chief AD for CD AD for NS	
Collaborate with HCPHES and other area jurisdictions to coordinate mass vaccination efforts.	LHA Director's Office OSPHP (PHP) CDD (BI)	HA Director PHP Chief BI Chief	Harris County CDAS OEM DSHS
Track and monitor adverse vaccine reactions (VAERS).	OSPHP (PHP, BOE) CDD (BI)	PHP Chief BOE Chief BI Chief	DSHS OEM
Provide persons receiving vaccine with information about reporting such reactions to the Department.	OSPHP (PHP, BOE) CDD (BI)	PHP Chief BOE Chief	DSHS OEM
Report any reactions to the CDC Vaccine Adverse Event Reporting System (VAERS).	OSPHP (PHP, BOE) CDD (BI)	Incident Command PHP Chief BOE Chief	DSHS OEM
Ensure that supplies are inventoried and returned as appropriate.	All Divisions	All ADs	
Evaluate vaccine delivery and administration procedures and modify plans as necessary.	OSPHP (PHP) NSD CDD (BI)	ADs for NS, CD, and OSPHP	
Recommend that • all persons who are ill and their contacts remain in isolation at home • limitation or suspension of large gatherings and recreation activities • the closure of schools, including colleges and universities and closure of office buildings • the limitation of non-essential work activities, encouraging telecommuting when possible • an area quarantine	LHA Director's Office (PA) OSPHP (PHP, BOE) ASD (Legal)	HA PIO PHP Chief BOE Chief Legal	OEM Mayor's Office Quarantine Officer Media Schools Businesses
Coordinate antivirals delivery for special need populations.	Director's Office (HPE) OSPHP (PHP) AAA NSD	HPE Chief PHP Chief AAA Director AD for NSD	OEM

V. Emergency Response: Health Systems and Critical Infrastructure

Task	Division (Bureau)	Lead(s)	Partnership
Assess the capacity of area hospitals and identify their resource needs.	LHA Director's Office (HPE) OSPHP (PHP, BOE)	HA HPE Chief PHP Chief BOE Chief	OEM Mayor's Office
Activate local or regional alternate healthcare and emergency services facilities.	OSPHP (PHP)	PHP Chief	OEM DSHS
Coordinate the request for state and federal surge support for healthcare and emergency services.	OSPHP (PHP, BOE)	PHP Chief	OEM Mayor's Office
Coordinate with local law enforcement in maintaining public order during a pandemic. .	LHA ASD (Legal) Director's Office (PA)	HA Legal	OEM Mayor's Office HPD HFD Media

VI. Communication and Outreach

Task	Division (Bureau)	Lead(s)	Partnership
Develop and disseminate appropriate information to the public.	Director's Office (PA, HPE) OSPHP (PHP) CDD (BI)	PIO HPE Chief PHP Chief BI Chief	City Planning Dept
Communicate with the regional DSHS office regarding the availability and delivery of vaccine.	OSPHP (PHP) CDD (BI)	PHP Chief BI Chief	
Provide DSHS with an estimated number of persons within each priority population.			DSHS

VII. Maintenance of Essential Business Activities in HDHHS

Task	Division (Bureau)	Lead(s)	Partnership
Make pre-determined personnel available to essential business operations per COOP plan.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Restrict workplace entry of people with influenza symptoms.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Implement additional hygiene measures to minimize the virus transmission.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Increase staff and customer social distancing.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Business model shifted to on-line activities.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Workplace flexibility instituted.	All Divisions All Bureaus	All ADs, Bureau Chiefs	
Employees work remotely from home.	All Divisions All Bureaus	All ADs, Bureau Chiefs	

D. **POST-PANDEMIC**

I. Planning, Command and Coordination

Task	Division (Bureau)	Lead(s)	Partnership
Develop a detailed report of the pandemic, utilizing surveillance data to evaluate the efficacy of local response activities. Analysis may include: • Severity of influenza outbreaks among demographic groups • Age-specific attack rate, morbidity and mortality • Efficacy of vaccination distribution and implementation of infection control measures • Extent of medical, social and economic impact	OSPHP (PHP) All Divisions All Bureaus	Director All ADs, Bureau Chiefs	Harris County Hospitals Greater Houston Partnership
Convene relevant parties to debrief from response activities.	Director's Office	Director	OEM JOC DMUC
Communicate the status of the response to appropriate local, state and federal authorities.	Director's Office	Director	OEM JOC DMUC
Develop an After Action Report and update the Response Plan based on lessons learned from response activities.	Director's Office (HPE) OSPHP (PHP) All Divisions All Bureaus	Director, All ADs PHP Chief	OEM JOC DMUC

II. Surveillance, Investigation, and Protective Public Health Measures

Task	Division (Bureau)	Lead(s)	Partnership
Maintaining vigilant surveillance reporting activities.	LHA OSPHP (BOE, PHP)	HA. BOE Chief PHP Chief	Media CDAS Harris County Officials
Continue heightened surveillance for possible second wave attack.	LHA OSPHP (BOE, PHP)	HA. BOE Chief PHP Chief	All

III. Laboratory Testing

Task	Division (Bureau)	Lead(s)	Partnership
Coordinate with local laboratories to continue monitor of unusual influenza activities.	OSPHP (BLS)	BLS Chief	Local Laboratories
Laboratory surveillance should also return to **pandemic imminent status** while maintaining surveillance for possible antigenic drift.	OSPHP (BOE, BLS)	BOE Chief BLS Chief	Local Laboratories

IV. Infection Control & Containment

Task	Division (Bureau)	Lead(s)	Partnership
Immunization efforts in lower risk groups should continue as vaccine becomes available to increase "herd immunity" in the population in the event of a second wave.	CDD (BI) OSPHP (PHP)	PHP Chief BI Chief	Mayor's Office
Suspend all community level control measures.	LHA OSPHP (PHP)	HA PHP Chief	Mayor CDAS Hospitals DSHS
Assess the compliance with community level control measures and evaluate the efficacy of community level control measures.	OSPHP (BOE, PHP)	BOE Chief PHP Chief	Mayor CDAS Hospitals DSHS

V. Emergency Response: Health Systems and Critical Infrastructure

Task	Division (Bureau)	Lead(s)	Partnership
Discontinue and demobilize antiviral administration, ensuring that supplies are inventoried and returned as appropriate, Restock vaccine and drug inventory to pre-pandemic locations where possible.	OSPHP (PHP)	PHP Chief	HAHEMC
Evaluate antiviral delivery and administration procedures and modify plans as necessary.	OSPHP (PHP, BOE)	PHP Chief BOE Chief	DSHS
Following the *SNS Plan*, discontinue and demobilize mass vaccination activities, ensuring that supplies are inventoried and returned as appropriate.	CDD (BI) OSPHP (PHP)	BI Chief PHP Chief	DSHS
Evaluate vaccine delivery and administration procedures and modify plans as necessary.	CDD (BI) OSPHP (PHP, BOE)	BI Chief PHP Chief BOE Chief	DSHS
Participate in recovery and demobilization efforts in coordination with the OEM.	OSPHP (PHP)	PHP Chief	OEM DMUC

VI. Communication and Outreach

Task	Division (Bureau)	Lead(s)	Partnership
Provide OEM with an assessment of the impact, response and control of the public health response during the pandemic.	Director's Office (HPE) OSPHP (PHP, BOE)	HPE Chief PHP Chief BOE Chief	OEM Mayor's Office
Provide public announcement for post-pandemic stage.	Director's Office (PA)	PIO	OEM

VII. Maintenance of Essential Business Activities in HDHHS

Task	Division (Bureau)	Lead(s)	Partnership
Assess and report work place accessibility and staff availability.	ASD (Facility, HR)	AD for ASD HR Division Manager	HR
Assess and report damages to resources.	All Bureaus	All Bureau Chiefs	HR
Restore equipment, files, records, phones, etc to pre-pandemic status.	All Bureaus	All Bureau Chiefs	City SPD