

Harris County

HCPHES

Public Health & Environmental Services

**Public Health Preparedness
and Response Plan**

**Pandemic Influenza and
Highly Infectious Respiratory Diseases**

Harris County, Texas
April 2009

RECORD OF CHANGES

Pandemic Influenza
And
Highly Infectious Respiratory Diseases Plan

Change #	Date of Change	Entered By	Date Entered
1	07/17/07	M. DePoe	07/17/07
2	12/17/08	S. Jones-Wood	12/17/08
3	4/27/09	E. Love	4/27/09

TABLE OF CONTENTS

Introduction.....	3
Assumptions.....	6
Federal, State/Local, Private Sector and Critical Infrastructure Roles	8
The HCPHES Plan.....	10
Command and Control.....	10
Surveillance	13
Prevention and Containment: Implementation of Community Control Measures, Use of Antivirals, Use of Vaccine	16
Emergency Response: Health Systems and Critical Infrastructure	24
Communicating with the Public.....	25
Appendices.....	26
A: Recommended Priority Groups for Antiviral Medication Treatment.....	26
B: Recommended Priority Populations for Vaccine.....	27
C: Considerations for Avian Influenza	29
D: Healthcare System Guidance	31
E: Contact Information	33
F: Acronyms.....	34

Note: As of late April 2009, there are 40 confirmed human cases of swine influenza in the U.S., within five states. Whether or not the World Health Organization updates the current pandemic phase (see below), Harris County Public Health and Environmental Services is following the steps and policies outlined in this plan as appropriate. It is important to note that this plan, though initially developed in response to the threat of avian influenza, is applicable to a wide range of respiratory illnesses.

INTRODUCTION

Background

Influenza is a highly contagious viral disease, with epidemics of influenza affecting hundreds of thousands of people nearly every year. The ability for influenza viruses to “drift,” or frequently make slight structural changes over time, results in the appearance of the different strains that circulate among the human population. Vaccines are developed to match the strains expected to circulate each year.

In contrast to the gradual drift process, the influenza virus can also change suddenly and dramatically, through “shift.” Shift results in a new, or “novel” influenza virus to which very few people, if any, are immune. The potential for a pandemic exists if the novel virus has the ability to spread easily from person to person and can cause serious illness. It is important to note, however, that the influenza virus does not need to be novel to cause large-scale epidemics.

The World Health Organization (WHO) has defined phases of a pandemic to assist with planning and response activities:

WHO Pandemic Phase	Overarching Public Health Goals
<p>Inter-Pandemic Period</p> <p>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 to be low</p> <p>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</p>	<p>Strengthen influenza pandemic preparedness at the global, regional, national and subnational levels</p> <p>Minimize the risk of transmission to humans; detect and report such transmission rapidly if it occurs</p>
<p>Pandemic Alert Period</p> <p>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.</p> <p>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.</p>	<p>Ensure rapid characterization of the new virus subtype, notification and response to additional cases</p> <p>Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine</p>

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)	development Maximize efforts to contain or delay spread, to possibly avert a pandemic, and to gain time to implement pandemic response measures
Pandemic Period Phase 6: Pandemic – increased and sustained transmission in the general population	Minimize the impact of the pandemic

Based on projections from past pandemics in the United States, the Centers for Disease Control and Prevention (CDC) estimates that up to 90 million people in the U.S. may become ill during a pandemic influenza scenario, 45 million people may require outpatient care, about 1 million people may require hospitalization and between 200,000 to 2,000,000 persons may die.¹

Harris County Public Health and Environmental Services (HCPHES) estimates that the impact of an influenza pandemic on the entirety of current population of Harris County could include 1,180,757 persons ill, 590,378 persons requiring outpatient care, 11,808-118,076 persons requiring hospitalization and 2,755-25,189 deaths.² HCPHES estimates that the impact of an influenza pandemic on population of Harris County, excluding the City of Houston, could include 518,302 persons ill, 259,151 persons requiring outpatient care, 5,183-51,830 persons requiring hospitalization and 1,209-11,057 deaths.³ These estimates underscore the need for planning to lessen the impact of a pandemic.

The impact of a pandemic is not measured only by how many people will die. If millions of people across the country 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 to address such potential problems.

Purpose

The purpose of the *Response Plan for Pandemic Influenza and Highly Infectious Respiratory Diseases* is to provide a guide for HCPHES on how to respond before, during and after a pandemic situation. The HCPHES Response Plan follows U.S. Department of Health and Human Services guidance for developing pandemic influenza response plans (<http://www.hhs.gov/pandemicflu/plan/part2.html>) and is intended as a companion to the *Texas Department of State Health Services Pandemic Influenza Plan Operational Guidelines* (<http://www.dshs.state.tx.us/comp/pan/pandemic/PIPOG%20072008.pdf>). The Pandemic Influenza Plan Operational Guidelines (PIPOG) and its appendices details the activities identified

¹ *HHS Pandemic Influenza Plan*, Part 1, page 18. U.S. Department of Health and Human Services, November 2005.

² Calculations are based on 2007 US Census population estimates for Harris County, Texas.

³ Calculations are based on 2007 US Census populations estimates for Harris County, excluding the City of Houston.

as the responsibility of the local health departments within the state plan. It is imperative to interpret the HCPHES Response Plan in the context of both the federal and state plans.

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 such as Severe Acute Respiratory Syndrome (SARS).

The Response 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.

The Harris County Office of Homeland Security and Emergency Management (OHS&EM) is responsible for the Harris County Basic Plan, an “all-hazards” disaster plan that encompasses all County agencies. Within this plan, Annex H includes the responsibilities of HCPHES during a disaster affecting the public’s health. The Response 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 Harris County Basic Plan and Annex H.

DRAFT

ASSUMPTIONS

There may be a three month warning period of a coming pandemic.

The duration of a pandemic influenza outbreak in a community will likely last from six to eight weeks per wave. There may be more than one wave in a given community. The entire pandemic event may last as long as 18 months.

The health impact of a pandemic event will be great:

- An estimated 30% of persons may become ill in a major pandemic influenza wave
- An estimated 15% of persons will seek outpatient care
- An estimated 0.3-3% of persons may need hospitalization
- An estimated 0.04-0.5% of persons may require intensive care
- An estimated 0.02-0.25% of persons may require mechanical ventilation
- An estimated 0.07-0.64% of persons 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.
- An estimated 30-40% 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 loss while caring for oneself or for ill family members.
- Local government will receive very little outside assistance.

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 10 day course of antivirals is recommended for prophylaxis; a 5 day course is recommended for post-exposure treatment.
- There is a limited supply of antiviral medications. Antiviral distribution to states will occur through the Strategic National Stockpile.
- The pre-pandemic vaccine stockpiled by the federal government may or may not be effective against the pandemic strain of H5N1 influenza.
- Seasonal influenza vaccination may or may not provide some level of protection against a novel pandemic influenza strain.

Local governments have the primary responsibility to provide public health, mental health and emergency medical services within their jurisdictions. State government will augment public health, mental health and emergency medical services that exceed the capabilities of the local

government. The Federal Response Plan will support public health and medical activities as required by the State of Texas in accordance with pre-established activation procedures.

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.

DRAFT

FEDERAL, STATE/LOCAL, PRIVATE SECTOR AND CRITICAL INFRASTRUCTURE ROLES

The following is an excerpt from the U.S. Homeland Security Council's *National Strategy for Pandemic Influenza*, November 2005.⁴

The Federal Government

While the Federal government plays a critical role in elements of preparedness and response to a pandemic, the success of these measures is predicated on actions taken at the individual level and in states and communities. Federal responsibilities include the following:

- Advancing international preparedness, surveillance, response and containment activities.
- Supporting the establishment of countermeasure stockpiles and production capacity by:
 - Facilitating the development of sufficient domestic production capacity for vaccines, antivirals, diagnostics and personal protective equipment to support domestic needs, and encouraging the development of production capacity around the world;
 - Advancing the science necessary to produce effective vaccines, therapeutics and diagnostics; and
 - Stockpiling and coordinating the distribution of necessary countermeasures, in concert with states and other entities.
- Ensuring that federal departments and agencies, including federal health care systems, have developed and exercised preparedness and response plans that take into account the potential impact of a pandemic on the federal workforce, and are configured to support state, local and private sector efforts as appropriate.
- Facilitating state and local planning through funding and guidance.
- Providing guidance to the private sector and the public on preparedness and response planning, in conjunction with states and communities.

Lead departments have been identified for the medical response (Department of Health and Human Services), veterinary response (Department of Agriculture), international activities (Department of State) and the overall domestic incident management and federal coordination (Department of Homeland Security).

States and Localities

Our communities are on the front lines of a pandemic and will face many challenges in maintaining continuity of society in the face of widespread illness and increased demand on most essential government services. State and local responsibilities include the following:

- Ensuring that all reasonable measures are taken to limit the spread of an outbreak within and beyond the community's borders.

⁴ *National Strategy for Pandemic Influenza*, page 10-11. U.S. Homeland Security Council, November 2005

- Establishing comprehensive and credible preparedness and response plans that are exercised on a regular basis.
- Integrating non-health entities in the planning for a pandemic, including law enforcement, utilities, city services and political leadership.
- Establishing state and community-based stockpiles and distribution systems to support a comprehensive pandemic response.
- Identifying key spokespersons for the community, ensuring that they are educated in risk communication and have coordinated crisis communications plans.
- Providing public education campaigns on pandemic influenza and public and private interventions.

The Private Sector and Critical Infrastructure Entities

The private sector represents an essential pillar of our society because of the essential goods and services that it provides. Moreover, it touches the majority of our population on a daily basis, through an employer-employee or vendor-customer relationship. For these reasons, it is essential that the U.S. private sector be engaged in all preparedness and response activities for a pandemic.

Critical infrastructure entities also must be engaged in planning for a pandemic because of our society's dependence upon their services. Both the private sector and critical infrastructure entities represent essential underpinnings for the functioning of American society.

Responsibilities of the U.S. private sector and critical infrastructure entities include the following:

- Establishing an ethic of infection control in the workplace that is reinforced during the annual influenza season, to include, if possible, options for working offsite while ill, systems to reduce infection transmission and worker education.
- Establishing contingency systems to maintain delivery of essential goods and services during times of significant and sustained worker absenteeism.
- Where possible, establishing mechanisms to allow workers to provide services from home if public health officials advise against non-essential travel outside the home.
- Establishing partnerships with other members of the sector to provide mutual support and maintenance of essential services during a pandemic.

THE HCPHES PLAN

I. Command and Control

A National Incident Management System (NIMS) compliant incident command structure will be utilized for planning and carrying out response activities before, during and after a pandemic influenza or highly infectious respiratory diseases event. The organization, staffing, and incident command roles of the NIMS structure is detailed in the *Harris County Basic Plan*.

A. Interpandemic Period

1. HCPHES will take the lead in planning the public health response to pandemic influenza for Harris County (outside the City of Houston). HCPHES will coordinate with the Houston Department of Health and Human Services (HDHHS), Harris County Hospital District and the Mental Health and Mental Retardation Authority of Harris County to ensure that planning and response activities are coordinated within Harris County.
2. The Epidemiology Section within the HCPHES Disease Control and Clinical Prevention (DCCP) Division will coordinate surveillance and epidemiological investigation activities, including implementing ongoing influenza surveillance, planning for pandemic epidemiological investigation and coordinating specimen testing with the HDHHS laboratory, the Baylor Influenza Research Center laboratory, the Texas Children's Hospital Diagnostic Virology Laboratory and the TDSHS Bureau of Laboratories
3. The HCPHES Executive Director, as Public Health Authority, will co-facilitate the Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infections Respiratory Diseases to define and quantify local priority groups to receive vaccine and antiviral medications and critical care services.⁵ Draft recommendations for vaccines and antivirals are presented in Appendix A and B of this document.
4. The HCPHES Office of Public Health Preparedness (OPHP) will coordinate planning for the procurement of vaccines, antivirals and supplies.
5. The DCCP Division along with the OPHP, will coordinate planning for the distribution of vaccines, antivirals and supplies.
6. OPHP will maintain contact with the Harris County Medical Examiner's Office regarding plans to address mass mortality events.
7. The HCPHES Veterinary Public Health Division will provide educational information related to planning for the public health response to identify avian influenza in the animal population.

⁵ The Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infectious Respiratory Diseases ("Committee") is co-facilitated by Harris County Public Health and Environmental Services and the City of Houston Department of Health and Human Services. The Committee consists of executive leadership from Baylor College of Medicine, Harris County Hospital District, Harris County Medical Society, Mental Health and Mental Retardation Authority of Harris County, and the University of Texas Health Science Center at Houston. For additional information, go to: <http://www.hcphe.org/2007forum/resource.pdf>

8. The HCPHES Office of Public Information (OPI) will coordinate the planning of communications activities for a pandemic response.
9. The HCPHES OPHP, in conjunction with the HCPHES Office of Policy and Planning (OPP) when necessary, will review and update the Response Plan on an ongoing basis.
10. HCPHES will work with community partners to enhance community capacity for responding to pandemic flu.
11. The HCPHES Executive Director will provide the Plan to key policymakers and other stakeholders.

B. Pandemic Alert Period

1. The Executive Director will initiate communication with local, state and national counterparts, including HCOHS&EM, HDHHS, TDSHS and CDC.
2. The Epidemiology Section will monitor all electronic sources of information, including but not limited to the Health Alert Network (HAN), Epi X, Promed, Cidrap, CDC HAN, and the Texas PHIN and will provide ongoing assessments of the situation to the Executive Director and other relevant HCPHES personnel.
3. The Epidemiology Section will ensure that local surveillance and, if applicable, case tracking activities are ongoing.
4. OPHP and the HCPHES Materials Management Section will confirm availability of resources to support a pandemic response.
5. OPHP will ensure that Memoranda of Understanding currently in place with area Independent School Districts authorize the use of schools as mass vaccination sites
6. OPI will develop and disseminate appropriate information to the public.
7. The OPHP in coordination with the HCPHES Epidemiology Section will review information about the capacity of hospitals and treatment centers available through the Catastrophic Medical Operations Center (CMOC).
8. OPHP will obtain information about the capacity of essential and critical infrastructure services within the County affected by widespread supply shortages, illness, death and concerns about exposure to influenza.

C. Pandemic Period

1. The Executive Director will activate an incident command structure to:
 - Continue surveillance and tracking activities
 - Determine the need for and scope of mass vaccination activities
 - Coordinate delivery of vaccine and/or antivirals with TDSHS
 - Carry out mass vaccination activities in accordance with the HCPHES *Mass Vaccination Plan*
 - Assess the capacity of area hospitals and identify their resource needs
 - Develop and disseminate appropriate information to the public
 - Ensure ongoing communication with local, state and federal authorities
2. The Executive Director, as Public Health Authority, will consider implementing quarantine and isolation measures for residents of Harris County as appropriate

3. OPHP will maintain information about the capacity of essential services and critical infrastructure personnel within the County.
4. OPHP will continue to monitor essential and critical infrastructure services within the County.

D. Post-Pandemic

1. The Executive Director will convene relevant parties to debrief from response activities.
2. The Executive Director will communicate the status of the response to appropriate local, state and federal authorities.
3. OPHP, in conjunction with OPP when necessary, will review and update the Response Plan based on lessons learned from response activities.

DRAFT

II. 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.”
- Information regarding these national surveillance components is updated weekly and can be accessed at www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm.

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

- Passive surveillance of respiratory specimens to the TDSHS 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. As of June 2005 there were approximately 70 participating sentinel physicians reporting throughout the year with at least one site in each region of Texas
- Passive reporting of prescription trends by pharmacists

In addition to these federal and state surveillance activities, HCPHES will establish and coordinate the following local surveillance activities:

A. Interpandemic Period

1. HCPHES will establish and coordinate the CDC sentinel surveillance system within Harris County. HCPHES will strive to recruit a minimum of two physicians for each of the five epidemiological zones, which would provide a sentinel network of one physician for every 150,000 population. HCPHES will seek to recruit representation from each of the following disciplines – internal medicine, family practice, infectious disease, emergency medicine, urgent care, pediatric, obstetrics/gynecology and student health.
2. HCPHES will collaborate with hospital laboratories to establish a system whereby counts of positive rapid influenza test kits and influenza viral cultures are provided to HCPHES on a weekly basis during the months of October through May.
3. HCPHES will collaborate with area hospitals to establish a system whereby counts of emergency room visits and deaths due to acute febrile respiratory illness (International

Statistical Classification of Diseases, 10th Revision, codes 460-487) are provided to HCPHES on an ongoing basis.

4. HCPHES will collaborate with area Independent School Districts to develop a system whereby counts of reports of ILI occurrences are provided to HCPHES on a regular basis
5. HCPHES will collaborate with area long-term care facilities to establish a system whereby counts of reports of ILI occurrences are provided to HCPHES on a regular basis
6. HCPHES will establish a system for monitoring over-the-counter (OTC) drug sale information through the Retail OTC Drug Sales system (RODS). This system will allow HCPHES to monitor sales of cough and fever suppressants by zip code. At this time 70%-90% of all major pharmaceutical sales chains participate in the RODS system.
7. HCPHES will establish and maintain linkages with the Texas Animal Health Commission (TAHC) to stay informed about suspect clinical symptoms identified and investigated through their passive surveillance in local avian populations, including poultry wholesalers. See Appendix C for background on the role of TAHC in the identification and control of avian influenza.
8. HCPHES will establish linkages with local poultry wholesalers, live bird markets and, when possible, owners of backyard flocks. HCPHES will conduct inspections of wholesalers and live bird markets in response to citizen complaints regarding unsanitary conditions or violations of state regulations, reporting any suspect clinical signs in the bird population to TAHC and TDSHS. In addition, on an ongoing basis HCPHES will provide education and literature to proprietors of poultry wholesalers, live bird markets and backyard flocks regarding appropriate biosecurity practices, clinical signs and symptoms of avian influenza and how and when to contact TAHC and/or HCPHES. This literature will also be made available at local feed stores.

B. Pandemic Alert Period

1. HCPHES will ensure that all interpandemic influenza surveillance activities are underway regardless of the time of year, enhancing activities as needed based on information from HAN alerts, Epi-X alerts, communication from state and federal partners and other sources and investigating the epidemiology of early cases through case tracking activities.
2. HCPHES will monitor the HAN, CDC's Epi-X and other appropriate sources for updates regarding international, federal and state surveillance activities.
3. HCPHES will monitor and institute recommendations from CDC for any additional surveillance activities that should be undertaken given the specific circumstances
4. HCPHES will inform state and federal partners about increased local surveillance activities. If necessary, HCPHES will request additional resources for local surveillance and case tracking activities (e.g. CDC Epidemic Intelligence Service Officers, reagents to detect and identify the novel strain, instructions for safe handling and testing of a potential novel influenza virus).
5. If necessary, HCPHES will utilize HAN-Houston to notify area hospitals, physicians, emergency rooms and urgent care centers, requesting that they 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. HCPHES will provide instructions for the safe handling of a potential novel influenza virus.

6. HCPHES will coordinate the collection of ILI specimens among area providers and laboratories and facilitate the transfer of ILI specimens to TDSHS and/or CDC
 - HCPHES will coordinate with area hospitals, physicians, emergency rooms and urgent care centers to provide instructions for directing samples from patients presenting with severe or unusual ILI to the appropriate laboratory for testing. HCPHES will provide instructions for the safe handling of a potential novel influenza virus
 - HCPHES will communicate with laboratory staff regarding the testing and reporting of ILI specimens. HCPHES will provide instructions for the safe handling and testing of a potential novel influenza virus
7. HCPHES will assess the completeness and timeliness of reports from all participating laboratories and sentinel providers. HCPHES will collaborate with these partners to enhance and facilitate complete and timely reporting.
8. HCPHES will issue regular alerts regarding surveillance and case tracking activities to the health community through HAN-Houston.
9. In coordination with the CDC Quarantine Officer, HCPHES will assess the need to screen travelers arriving in the area from affected countries.

C. Pandemic Period

1. HCPHES will enhance ongoing surveillance activities to include the following:
 - Monitoring health impacts, including deaths and hospitalizations
 - Monitoring community impacts, including absenteeism in schools and essential services
 - Monitoring reports of antiviral resistance
 - Monitoring reports of vaccine effectiveness

D. Post-Pandemic Period

1. HCPHES will develop a detailed summary 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

III. Prevention and Containment

Three basic types of community-level interventions will be utilized to control the spread of disease in an influenza pandemic. These types include (1) non-pharmaceutical interventions such as social distancing strategies, (2) pharmaceutical interventions which include viral medications and vaccine, and (3) public education.

Implementation of Community Control Methods

The goal of community 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. Strategies to achieve this goal must take into consideration the modes of transmission of influenza, the short incubation period, non-specific clinical presentation, the likelihood of asymptomatic infected persons who may be transmitting infection and past experience in the use of containment measures during pandemic influenza.

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 employing voluntary social distancing strategies such as canceling schools and large gatherings, discouraging gatherings in malls and places of worship.

The *HCPHES Disease Containment Strategies: Information and Protocols Manual* outlines current laws surrounding community control measures and provides specifics on how HCPHES will implement isolation, quarantine and social distancing strategies.

A. Interpandemic Period

1. HCPHES will conduct ongoing education regarding the importance of hand hygiene, cough etiquette and annual influenza vaccination.
2. HCPHES will review appropriate legal authorities regarding the implementation of community control measures, including quarantine laws. HCPHES will maintain templates of documentation needed to enact community control measures.
3. HCPHES will develop and maintain contact information with partners through whom HCPHES may communicate information about the impact of community control measures, including but not limited to hospitals, independent school districts, private school associations, parks and recreation departments, the child day care licensing authority, homeowners associations, chambers of commerce/private industry, sports organizations, etc.
4. HCPHES will develop plans for communicating information to the public about community control measures.

B. Pandemic Alert Period

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

1. HCPHES may recommend isolation of persons who are recent travelers to affected regions if they have ILI. If influenza is suspected or confirmed, HCPHES may recommend isolation at home or in a hospital until isolate sub-typing 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 virus
2. HCPHES may recommend quarantine for contacts of cases.
3. HCPHES may issue an advisory recommending limiting travel to the affected region and screening travelers arriving from the affected region for illness compatible with influenza.
4. HCPHES will increase education about the importance of hand hygiene, cough etiquette and annual influenza vaccination.

Possible containment measures if cases are first detected in the U.S. outside Harris County

1. HCPHES may recommend that persons who are positive for influenza 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. Special consideration should be given to children under age 5, who may shed longer than 7 days.
2. HCPHES may recommend quarantine for contacts of cases.
3. HCPHES will increase public education regarding the importance of hand hygiene and cough etiquette.

Possible containment measures if cases are first detected in Harris County

1. HCPHES may recommend that persons who have ILI be placed in isolation at home or in a hospital until sub-typing 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.
2. HCPHES may recommend quarantine for contacts of cases.
3. If an animal source is identified and there is transmission involved in or associated with the human population, HCPHES may recommend that persons who may be in contact with potentially infected animals wear appropriate personal protective equipment. Refer to Appendix C for more information about procedures when an animal source is identified.
4. HCPHES may recommend that citizens limit travel to destinations outside of Harris County, as well as limit non-essential travel within Harris County.
5. HCPHES may recommend cancellation of large gatherings depending on the level of person-to-person transmission. Based on the epidemiology of the known infected cases, HCPHES may consider closure of schools, including colleges and universities, closure of office buildings, and any other social distancing strategies needed.
6. HCPHES will increase public education regarding the importance of hand hygiene and cough etiquette.

C. Pandemic Period

1. HCPHES may recommend that all persons who are ill and their contacts remain in isolation at home.
2. HCPHES may recommend limitation or suspension of large gatherings and recreation activities.
3. HCPHES may recommend the closure of schools, including colleges and universities and closure of office buildings.
4. HCPHES may recommend the limitation of non-essential work activities, encouraging telecommuting when possible.
5. HCPHES may recommend an area quarantine.

D. Post-Pandemic Period

1. HCPHES will suspend all community level control measures.
2. HCPHES will assess the compliance with community level control measures and evaluate the efficacy of community level control measures.

Use of Antivirals

Although vaccine, when developed, will be the primary strategy for preventing pandemic influenza virus infection and its complications, antiviral medications combined with community-based mitigation strategies may be effective for the prevention and treatment of influenza. Antiviral medications will play a particularly important role in a pandemic event during the period of time before a well-matched pandemic vaccine becomes available in sufficient quantities.

Antiviral medications can be used for both prophylaxis and treatment. Because of the limited supply of antivirals, utilizing antivirals for prophylaxis may not be feasible except in very limited circumstances (e.g., containment of disease clusters). Therefore planning must be focused on the use of antivirals for treatment of ill persons rather than on prophylaxis. Further, plans should designate the treatment delivery site for antivirals to be the point of care (e.g. hospitals) rather than a Point of Dispensing (POD) site such that is used in mass prophylaxis planning.

Four licensed influenza antivirals agents are currently available in the United States: Symmetrel (amantadine), Flumadine (rimantadine), Relenza (zanamivir), and Tamiflu (oseltamivir). New antivirals are currently being developed. When used correctly, these antivirals may reduce the duration of symptoms and some influenza complications. It is unknown if existing antivirals will be effective in future pandemics. In addition, resistance and side effects can be complicating factors in the use of antivirals.⁶

⁶ Texas Department of State Health Services, “Antiviral Allocation, Distribution, and Storage Guidelines”, Version 1.2, June 2, 2008

Because it is best suited for treatment, Tamiflu (oseltamivir) will likely be the primary antiviral utilized during a pandemic event. Relenza (zanamivir) will likely be utilized for oseltamivir-resistant viruses and for pregnant women.

Though in summer 2005 the National Vaccine Program Office recommended that the federal government stockpile 133 million courses of antiviral, the existing supply and production capacity for antiviral drugs is far less than what would be needed to provide treatment for the anticipating number of persons exposed during a pandemic event. In anticipation of this scenario, the Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infections Respiratory Diseases has drafted recommendations for prioritizing population groups to receive antivirals for therapy during a pandemic event. Draft recommendations are available in Appendix A.

A. Interpandemic Period

1. On an ongoing basis HCPHES, as co-facilitator of the Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infections Respiratory Diseases (Committee), will review federal guidance defining priority populations to receive antivirals for therapy and, where indicated, prophylaxis during a pandemic event before antivirals and/or a well-matched pandemic vaccine is available to all citizens in sufficient quantities. Draft Committee recommendations for prioritizing populations to receive antivirals in the Houston/Harris County community are presented in Appendix A of this document.
2. HCPHES will determine and maintain local estimates of the number of persons within each priority population, revising the estimates on an annual basis. These estimates are included in Appendix A.
3. HCPHES will coordinate among area hospitals to ensure that plans are in place to provide antiviral therapy.
4. HCPHES will collaborate with HDHHS and other area jurisdictions to coordinate plans for the provision of antiviral therapy.

B. Pandemic Alert Period

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

C. Pandemic Period

1. HCPHES will communicate with the regional TDSHS office regarding the availability and, if applicable, the delivery of antivirals through the Strategic National Stockpile. HCPHES will provide TDSHS with an estimated number of persons within each priority population as well as the population as a whole.
2. HCPHES will coordinate with TDSHS and area treatment centers to ensure that antivirals are appropriately allocated among treatment centers.
3. HCPHES will collaborate with HDHHS and other area jurisdictions to coordinate efforts to provide antiviral therapy.
4. HCPHES will evaluate antiviral delivery and administration procedures and modify plans as necessary.

D. Post-Pandemic Period

1. HCPHES will discontinue and demobilize antiviral administration, ensuring that supplies are inventoried and returned as appropriate
2. HCPHES will evaluate antiviral delivery and administration procedures and modify plans as necessary

Use of Vaccine

Vaccine will serve as one preventive strategy during an influenza pandemic. Unlike annual production of pre-pandemic influenza vaccine, wherein strains are selected in the spring and vaccine is manufactured and delivered during the summer to be used during the fall and winter influenza season, a pandemic strain could be detected at any time. Because current manufacturing procedures require four to eight months before large amounts of vaccine are available for distribution, there could be a large gap between identification of a pandemic strain and availability of the pandemic vaccine. Further, once the pandemic vaccine becomes available, production capacity may allow for just 1-2% of the population being vaccinated per week. Therefore it is necessary to plan for the allocation of pandemic vaccine based on priority population groups.

According to the *HHS Pandemic Influenza Plan*, the federal government will collaborate with states to work with the pharmaceutical industry to acquire appropriate pandemic vaccine. Distribution of vaccines to health departments and providers will occur through private sector vaccine distributors or directly through the vaccine manufacturer. Further, only stockpiled vaccine would be distributed directly by the federal government.⁷

A. Interpandemic Period

1. HCPHES will initiate and/or continue activities to enhance annual influenza vaccination coverage levels in traditional high-risk groups, particularly subgroups in which coverage

⁷ *HHS Pandemic Influenza Plan*, Supplement 6, page 6.

levels are low. Activities will be carried out prior to the beginning of the traditional influenza season each year and will include:

- Evaluating and implementing epidemic control strategies, e.g. recommendations from TDSHS, CDC and the Baylor Influenza Research Center
 - Disseminating educational materials to area health care providers, including a summary of the most current influenza vaccine recommendations, suggested strategies for reaching at-risk populations and a list of resources to help promote and deliver influenza vaccine to patients
 - Providing education to area hospital staff about the importance of vaccinating healthcare workers and patients with high-risk medical conditions
 - Providing education to area nursing home and assisted living facility staff about the importance of vaccinating persons over the age of 65
 - Recommending that all healthy schoolchildren over age 5 receive the appropriate influenza vaccine and working with area pediatricians and school nurses to operationalize this recommendation
 - Recommending that all persons responsible for community safety and security receive annual influenza vaccination, including emergency medical personnel, police and firefighters
 - Utilizing traditional and non-traditional communications channels to educate the general public about the importance of annual influenza vaccination
 - Maintaining current information about influenza and influenza vaccination on the HCPHES website. Information will be targeted to the healthcare community and to the general public
 - Educating corporate partners about the importance of a vaccinated workforce
 - Advocating to state and federal partners the development of a standardized method to track and report vaccine shipments from private companies to local entities in order to quickly assess distribution during a vaccine shortage
 - Maintaining counts of critical infrastructure personnel in Harris County.
2. HCPHES will initiate and/or continue activities to enhance pneumococcal vaccination coverage levels in traditional high-risk groups to reduce the incidence and severity of secondary bacterial pneumonia. Such activities will occur in concert with the activities described in the bullets above.
 3. On an ongoing basis HCPHES, as co-facilitator of the Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infectious Respiratory Diseases (Committee), will review federal guidance defining priority populations to receive vaccine for prophylaxis during a pandemic before vaccine is widely available to all citizens. Draft Committee recommendations for prioritizing populations to receive vaccine in the Houston/Harris County community are presented in Appendix B of this document.
 4. HCPHES will determine and maintain local estimates of the number of persons within each priority population, revising the estimates on an annual basis. These estimates are included in Appendix B.
 5. HCPHES will collaborate with HDHHS, other area jurisdictions and area providers to coordinate plans for mass vaccination efforts.

6. HCPHES will review and update the methodology within its *Mass Vaccination Plan* for providing vaccination during a pandemic in the event of a severe or moderately severe vaccine shortage.
7. HCPHES will review and update its *Mass Vaccination Plan* to ensure that it addresses issues relevant to the provision of influenza vaccine. This plan includes information relevant to providing vaccination to the general public once vaccine becomes widely available, including:
 - Sites to use as mass vaccination clinics
 - Staffing needs and duties
 - Protocols for proper storage of vaccine
 - Protocols for vaccine clinic operations
 - Supplies needed for vaccine clinic operations
 - Model clinic flow design
 - Strategies to reach hard-to-reach populations
8. HCPHES will identify and maintain information about local sources of supplies needed for administering vaccine.
9. HCPHES will ensure that appropriate legal authorities are in place that will allow for the implementation of measures relevant to mass vaccination activities during a pandemic.

B. Pandemic Alert Period

1. HCPHES will review and modify its *Mass Vaccination Plan* as needed to account for updates received regarding the novel virus. Such updates may include recommended target groups and projected vaccine supply.
2. HCPHES will assess its human resources and logistics capabilities to ensure that appropriate staff and supplies are available to begin vaccination activities, if necessary.
3. HCPHES will make a formal request to TDSHS for pre-pandemic vaccine using critical infrastructure personnel estimates.

C. Pandemic Period

1. HCPHES will communicate with the regional TDSHS office regarding the availability and delivery of vaccine. HCPHES will provide TDSHS with an estimated number of persons within each priority population.
2. HCPHES will collaborate with HDHHS, other area jurisdictions and area providers to coordinate mass vaccination efforts.
3. Prior to widespread vaccine availability, HCPHES will provide vaccine as it is available to priority groups, utilizing the methodology described in the *Mass Vaccination Plan*.
4. Upon widespread vaccine availability, HCPHES will fully activate mass vaccination activities according to the *Mass Vaccination Plan*.
5. HCPHES will participate in the adverse reactions reporting system. HCPHES will provide persons receiving vaccine with information about reporting such reactions to the Department. HCPHES will then report any knowledge of reactions to the CDC Vaccine Adverse Event Reporting System (VAERS).

D. Post-Pandemic

1. Following the *Mass Vaccination Plan*, HCPHES will discontinue and demobilize mass vaccination activities, ensuring that supplies are inventoried and returned as appropriate.
2. HCPHES will evaluate vaccine delivery and administration procedures and modify plans as necessary.

DRAFT

VI. Emergency Response: Health Systems and Critical Infrastructure

While Harris County'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.

A. Interpandemic Period

1. HCPHES OPHP will work with area hospitals to ensure that policies, plans and protocols for pandemic influenza are developed and maintained. Key policies will include those regarding reporting to HCPHES and those regarding infection control procedures.
2. HCPHES will collaborate with such partners as HCOHS&EM and the HMMRS/CMOC to develop and maintain an inventory of the following resources:
 - Hospital and long-term care bed capacity
 - Intensive care unit capacity
 - Ventilators
 - Personal protective equipment
 - Specimen collection and 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/faith services
3. In collaboration with HCOHS&EM, HCPHES will develop and maintain a list of personnel whose absence would pose a serious threat to public safety or would significantly interfere with pandemic response activities
4. Using inputs from A.1 and A.2, HCPHES will estimate the impact of pandemic influenza on healthcare services and critical infrastructure within Harris County. HCPHES will utilize the CDC Flu Surge program to derive these estimates

B. Pandemic Alert Period

1. Through HAN-Houston, HCPHES Epidemiology will regularly provide updated information about the epidemiology and spread of the novel virus to the local healthcare community, including emergency medical providers and hospitals
2. Through HAN-Houston, HCPHES Epidemiology will recommend that emergency medical providers and hospitals activate severe respiratory illness protocols and provide guidance about the appropriate use of personal protective equipment
3. HCPHES OPHP will establish regular communication with HCOHS&EM, providing updated information about the epidemiology of the novel virus

C. Pandemic Period

1. In accordance with Harris County Basic Plan, Annex H, HCOHS&EM will activate a local Emergency Operations Center (EOC) to manage the needs of health, medical and essential service agencies during the pandemic. HCPHES will designate a liaison to the EOC to communicate timely and accurate information about the epidemiology of the pandemic
2. HCPHES will continually review information about the epidemiology of the pandemic. Based on this data HCPHES will develop and provide the EOC with protective action recommendations for the health, medical and essential services sectors

D. Post-Pandemic Period

1. HCPHES will participate in recovery and demobilization efforts in coordination with the EOC
2. HCPHES will provide HCOHS&EM with an assessment of the impact, response and control of the public health response during the pandemic

VII. Communicating with the Public

Communicating information to the public about pandemic influenza will be carried out according to policies and procedures described in the HCPHES *Crisis and Emergency Risk Communication Plan*. This document details the means, organization and process by which HCPHES will provide information and instructions to the public before, during and after a public health threat or emergency such as pandemic influenza.

The unique nature of a pandemic requires crisis and risk communications planning. Guided by its *Communication Plan*, HCPHES OPI will develop messages to ensure that the public receives timely and accurate information about the following during a pandemic event:

- Basic information about influenza, high-risk populations and recommended preventive practices
- The epidemiology of the pandemic
- The symptoms that should prompt seeking medical assistance
- The availability of vaccines and antivirals and the rationale for providing medication to priority groups during vaccine and antiviral shortages
- Instructions for receiving vaccine and antivirals at mass vaccination sites
- Directives for community level containment activities
- Explanations of concepts such as isolation and quarantine

The *Crisis and Emergency Risk Communication Plan* is maintained by the HCPHES OPI.

APPENDIX A: RECOMMENDED PRIORITY GROUPS FOR ANTIVIRAL MEDICATION TREATMENT FOR PERSONS ILL WITH PANDEMIC INFLUENZA, HOUSTON/HARRIS COUNTY

Appendix A outlines draft recommendations prepared by the *Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infectious Respiratory Diseases*, for priority populations for the receipt of antiviral medication treatment during a pandemic event in Houston/Harris County. These recommendations refer to antiviral *treatment* only. The table includes estimates of the number of persons within Harris County for each priority population for antiviral treatment. These estimates were derived from estimates for priority groups in the *HHS Pandemic Influenza Plan* for the U.S. population. The proportion of each priority group compared to the U.S. population was applied to the Harris County population (using 2000 Census data). Note: These estimates assume that Harris County has the same proportion of healthcare workers and will have the same proportion of ill persons as the rest of the nation.

Priority	Group	Estimates
A1	Hospitalized patients with influenza	120,836
A2	Healthcare workers with direct patient contact, care or response functions: <ul style="list-style-type: none"> Physicians, nurses and other healthcare providers in ambulatory and/or acute patient care settings Emergency medical services personnel Public health 	111,169
A3	Critical community emergency providers, including: <ul style="list-style-type: none"> Law enforcement, firefighters and mortuary services workers Public health workers with planned pandemic response roles Key government officials and essential personnel responsible for the continuity of emergency operations 	39,876
A4	Essential infrastructure service workers, such as: <ul style="list-style-type: none"> Public utility workers responsible for maintenance of critical functions, such as clean water, energy, solid waste and sewage system functioning Workers responsible for transporting and distributing water, fuel and food Telecommunications/IT for essential network operations and maintenance Public information/emergency communications, including those utilizing multiple languages 	108,818
B1	Highest-risk outpatients; outpatients more susceptible to severe illness or death from influenza: <ul style="list-style-type: none"> Pregnant women Immunosuppressed persons Persons with lung or heart disease Persons >64 years of age with one or more Advisory Committee on Immunization Practices (ACIP) - defined chronic disease ⁸ Persons aged 6 months to 64 years with two or more ACIP-defined chronic diseases Persons hospitalized in the prior year with pneumonia, influenza or other high-risk condition 	30,209
B2	Increased-risk outpatients; outpatients potentially more susceptible to severe illness or death from influenza: <ul style="list-style-type: none"> Persons ≥65 years of age with no ACIP-defined chronic disease or other high-risk condition Persons aged 6 months to 64 years with one or more ACIP-defined chronic disease	1,033,144

APPENDIX B: RECOMMENDED PRIORITY GROUPS FOR VACCINATION FOR PANDEMIC INFLUENZA, HOUSTON/HARRIS COUNTY

Appendix B outlines draft recommendations by the *Houston/Harris County Committee on Medical Standards of Care for Pandemic Influenza and Highly Infectious Respiratory Diseases* for priority groups for the receipt of vaccination for pandemic influenza during a pandemic influenza event in Houston/Harris County. The prioritization of vaccination during a pandemic event is based on the assumption that the supply of vaccine will be limited. These estimates were derived from estimates for priority groups in the *HHS Pandemic Influenza Plan* for the U.S. population. The proportion of each priority group compared to the U.S. population was applied to the Harris County population (using 2000 Census data). Note: These estimates assume that Harris County has the same proportion of healthcare workers and will have the same proportion of ill persons as the rest of the nation.

Priority		Group	Estimates
A. Infrastructure	A1. Healthcare	Healthcare workers with direct patient contact, care or response functions: <ul style="list-style-type: none"> • Physicians, nurses and other healthcare providers in ambulatory or acute care settings • Emergency medical services • Public health 	108,752
	A2. Emergency	Critical community emergency providers, including: <ul style="list-style-type: none"> • Law enforcement, firefighters and mortuary services workers • Public health workers with planned pandemic response roles • Key government officials and essential personnel responsible for the continuity of emergency operations 	7,867
	A3. Services	Essential infrastructure service workers, such as: <ul style="list-style-type: none"> • Public utility workers responsible for maintenance of critical functions, such as clean water, energy, solid waste and sewage system functioning • Workers responsible for transporting and distributing water, fuel and food • Telecommunications/IT for essential network operations and maintenance • Public information/emergency communications, including those utilizing multiple languages 	102,710

APPENDIX B continues on next page

APPENDIX B CONT'D: RECOMMENDED PRIORITY GROUPS FOR VACCINATION FOR PANDEMIC INFLUENZA, HOUSTON/HARRIS COUNTY

Priority		Group	Estimates
B. High Risk	B1. Risk for Transmission	<p>Persons with a high risk of transmitting influenza:</p> <ul style="list-style-type: none"> • Children aged 6 months to 17 years • Household contacts of: <ul style="list-style-type: none"> ○ Pregnant women ○ Infants <6 months of age ○ Immunosuppressed persons • Healthcare workers employed in nursing homes 	129,294
	B2. Risk for Morbidity and Mortality	<p>Persons more susceptible to severe illness or death from influenza:</p> <ul style="list-style-type: none"> • Pregnant women • Immunosuppressed persons • Persons with lung or heart disease • Persons >64 years of age with one or more Advisory Committee on Immunization Practices (ACIP)-defined chronic disease • Persons aged 18-64 years with two or more ACIP-defined chronic diseases⁹ • Persons hospitalized in the prior year with pneumonia, influenza or other high-risk condition 	31,224
C. Moderate Risk		<p>Persons potentially more susceptible to severe illness or death from influenza:</p> <ul style="list-style-type: none"> • Persons ≥65 years of age with no ACIP-defined chronic disease or other high-risk condition • Persons 18-64 years with one or more ACIP-defined chronic disease 	714,138
D. Lower Risk		General population; persons not covered in the categories above	2,166,099

APPENDIX C: CONSIDERATIONS FOR AVIAN INFLUENZA

Background

Avian influenza viruses are endemic worldwide and are frequently associated with disease in domestic poultry. Not all strains cause disease and the ones that do can vary from low to high pathogenicity. The virus frequently mutates and can change from a low to a high pathogenic strain. The virus can also develop the ability to infect reservoirs and mammals, such as cats, raccoons, and humans. Whereas, wild waterfowl are the primary natural reservoirs of avian influenza viruses, other potential reservoirs exist.

Potential Reservoirs	What is currently known or unknown
Raccoons	<ul style="list-style-type: none"> • The respiratory tract of raccoons contains a similar distribution and abundance of avian and human influenza receptors to what is found in human respiratory tracts. • Wild waterfowl and raccoons come into contact naturally in their habitat. Raccoons can contract the AI virus from their food and environment. • The possibility of co-infection of raccoons with multiple AI virus types, genetic reassortment of the viruses, and creation of new virus strains exists. • Risk of transmission of AI virus from raccoons to humans and other animals is unknown.
Pigs	<ul style="list-style-type: none"> • Pigs are susceptible to LP and HP avian influenza viruses. • Natural infections of AIV appear to be rare in pigs. • Only the H1N1 AIV has become established in pigs. • There is circumstantial evidence that avian influenza virus genes may persist in pigs after reassortment with one or more swine influenza viruses. • Humans as well as pigs have receptors for both avian and human influenza viruses: AI viruses do not have to go through the pig to be transmitted to humans or go through reassortment. • There is no evidence that pigs play a role in the transmission of H5N1 or other wholly avian viruses to humans.
Cats	<ul style="list-style-type: none"> • Sporadic fatal disease due to natural transmission H5N1 to cats has been reported. • Feeding on infected birds is the most likely route of transmission of AIV to cats. • Viral infectious dose determine the clinical outcome of H5N1 in cats. • Diseased cats excrete AIV from the respiratory and gastrointestinal tracts. • Asymptomatic cats shed only minimal amounts of virus. • Cats can be effectively protected by vaccination against lethal H5N1 challenge infection. • There have not been any reported cases of H5N1 infected cats transmitting disease to humans. • Cats have the potential to play a role in the adaptation of AIV to mammals, thus increasing pandemic potential of the virus. • Vaccination of infected cats leads to a considerable decrease in virus shedding from cats.

Since the virus is usually found in fowl, the Texas Animal Health Commission (TAHC) and United States Department of Agriculture (USDA) are responsible for surveillance and control in the state of Texas. Depending on the size of the response necessary and the pathogenicity of the virus strain, local and state governments may not have enough resources to handle all of the operations and activities involved in control of the disease. Therefore, the command structure will involve multiple jurisdictions and agencies, and the federal government will need to provide assistance from the outset to help stop the spread of the disease.

There are many things to consider when working with avian influenza. The virus may be extremely difficult to isolate and control, especially if it moves into wild birds or mammals. Once the virus is identified, a “hot zone” will be identified by TAHC/USDA and all of the domestic fowl in this area will have to be identified, depopulated and disposed of properly. There will be a considerable amount of emotional stress for owners, responders and communities and all of the owners will expect reimbursement for the animals.

A more thorough discussion of the state’s response is contained in the TAHC *Foreign and Emerging Animal Diseases Response Plan*, Appendix 3 to Annex O. However, at this time the priorities in this Plan are centered on stopping the spread of the disease in animals and the economic implications, not the human health risks and the possibility for virus mutation.

The lead agencies for responding to an avian influenza event will be TAHC and USDA. The TAHC Plan assigns responsibility for human health and investigating the zoonotic potential of the virus to TDSHS.

HCPHES Response to the Identification of Avian Influenza in the Animal Population

If avian influenza were identified among the animal population within Harris County, HCPHES will undertake the following activities:

- The HCPHES Veterinary Public Health Division may be asked to work with TAHC to identify and collect fowl populations in the hot zone
- The Epidemiology Section will work closely with TDSHS to monitor persons who have had contact with the infected birds for any sign of respiratory illness
- The HCPHES Veterinary Public Health will prepare information for distribution to area veterinarians describing the outbreak, discussing the clinical signs and encouraging local practitioners to report any suspect cases

APPENDIX D: HEALTHCARE SYSTEM GUIDANCE

The following is excerpted from the U.S. Department of Health and Human Services' *Pandemic Influenza Plan*, Supplement 3, *Healthcare Planning*, November 2005

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

HCPHES 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 *Healthcare Planning* supplement from the national plan.

The goal of the *Healthcare Planning* supplement 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 supplement, which can be accessed at <http://www.hhs.gov/pandemicflu/plan/pdf/S03.pdf>, contains information to aid in the development of a comprehensive pandemic influenza preparedness and response plan. The following excerpt outlines the responsibilities of healthcare facilities:

Interpandemic and Pandemic Alert Periods:

- Develop planning and decision-making structures for responding to pandemic influenza
- Develop written plans that address: disease surveillance, hospital communications, education and training, triage and clinical evaluation, facility access, occupational health, use and administration of vaccines and antiviral drugs, surge capacity, supply chain and access to critical inventory needs and mortuary issues.
- Participate in pandemic influenza response exercises and drills, and incorporate lessons learned into response plans.

Pandemic Period (if an influenza epidemic begins in another country):

- Heighten institutional surveillance for influenza and prepare to activate institutional pandemic influenza plans, as necessary.

Pandemic Period (if an influenza epidemic begins in or enters the United States):

- Activate institutional pandemic influenza plans.
- Identify and isolate all potential patients with pandemic influenza.
 - Implement infection control practices to prevent influenza transmission
 - Ensure rapid and frequent communication within healthcare facilities and between healthcare facilities and health departments
- Implement surge capacity plans to sustain healthcare delivery.

DRAFT

APPENDIX E: CONTACT INFORMATION

Contact to HCPHES is available 24 hours a day, 7 days a week by calling 713-439-6000 during office hours (8:00 am-5:00 pm, Monday through Friday) or 713-755-5000 after hours.

DRAFT

APPENDIX F: ACRONYMS

CDC	Centers for Disease Control and Prevention
CHS	Community Health Services Division
EOC	Emergency Operations Center
HAN	Health Alert Network
HAN-Houston	Houston Area Health Alert Network
HCPHES	Harris County Public Health and Environmental Services
HDHHS	City of Houston Department of Health and Human Services
HMMRS	Houston Metropolitan Medical Response System
ILI	Influenza-Like Illness
NIMS	National Incident Management System
OHS&EM	Harris County Office of Homeland Security and Emergency Management
OPHP	Office of Public Health Preparedness
OPI	Office of Public Information
OPP	Office of Policy and Planning
RODS	Retail Over-the-Counter Drug Sales System
TAHC	Texas Animal Health System
TDSHS	Texas Department of State Health Services
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