APPENDIX 4
TO ANNEX H
HEALTH & MEDICAL SERVICES

PANDEMIC INFLUENZA RESPONSE PLAN

COLLIN COUNTY, TEXAS
PANDEMIC INFLUENZA RESPONSE PLAN

This plan is hereby approved for implementation and supersedes all previous editions.

______________________________________________  ________________
Candy Blair, Director of Health Care Services  Date

______________________________________________  ________________
Arifia Nishat, MD, Health Authority  Date

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Sadia Siddiqui, MD, Health Authority  Date

______________________________________________  ________________
Jason Browning, Fire Marshall/Emergency Manager  Date
### RECORD OF CHANGES

### APPENDIX 4 TO ANNEX H

### PANDEMIC INFLUENZA RESPONSE PLAN

<table>
<thead>
<tr>
<th>Change #</th>
<th>Date of Change</th>
<th>Entered By</th>
<th>Changes Made</th>
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<td>1</td>
<td>3/14/2007</td>
<td>Eileen Prentice</td>
<td>Review, minor edits</td>
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<td>2</td>
<td>1/11/2008</td>
<td>Eileen Prentice</td>
<td>Extensive re-write</td>
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<tr>
<td>3</td>
<td>4/21/2009</td>
<td>Melanie Warriner</td>
<td>Review, minor edits</td>
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<td>4</td>
<td>4/29/2010</td>
<td>Melanie DeBord</td>
<td>Review, added definitions</td>
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<tr>
<td>5</td>
<td>3/11/2011</td>
<td>Caitlin Bouschor</td>
<td>Extensive re-write, new guidance</td>
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<td>6</td>
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<td>Lacie Reitmeyer</td>
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<td>Greg Huffman</td>
<td>Review</td>
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<td>9</td>
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<td>Taylor Burton</td>
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<td>10</td>
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<td>Meredith Nurge</td>
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APPENDIX 4 TO ANNEX H

PANDEMIC INFLUENZA RESPONSE PLAN

I. AUTHORITY

A. Texas Administrative Code, Title 25. Health Services, Chapter 97. Communicable Diseases

B. Texas Health and Safety Code, Title 2. Health, Chapter 81. Communicable Diseases

C. Collin County Emergency Management Basic Plan, Annex H, Health and Medical Services

II. PURPOSE

A. The purpose of the pandemic influenza plan is to outline local roles and responsibilities, operational concepts, and procedures to detect and report transmission of novel influenza viruses, assist state and federal partners in rapid characterization of the virus, accomplish coordinated public health and medical response, and contain the virus, minimizing spread and impact of highly transmissible pandemic influenza.

B. It is widely understood that influenza pandemics in the past have been devastating, leading to millions of deaths worldwide. Pre-pandemic planning is essential if influenza pandemic-related morbidity, mortality, and social disruption are to be minimized.

III. EXPLANATION OF TERMS

A. Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>ACF</td>
<td>Alternative Care Facility</td>
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<tr>
<td>CCHCS</td>
<td>Collin County Health Care Services</td>
</tr>
<tr>
<td>CCME</td>
<td>Collin County Medical Examiner</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>DHHS</td>
<td>United States Department of Health and Human Services</td>
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<tr>
<td>DSHS</td>
<td>Texas Department of State Health Services</td>
</tr>
<tr>
<td>EMC</td>
<td>Emergency Management Coordinator</td>
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<tr>
<td>EMS</td>
<td>Emergency Medical Services</td>
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<tr>
<td>EOC</td>
<td>Emergency Operations Center</td>
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<tr>
<td>FDA</td>
<td>United States Food and Drug Administration</td>
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<tr>
<td>ICS</td>
<td>Incident Command System</td>
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<tr>
<td>IDCU</td>
<td>Infectious Disease Control Unit, DSHS</td>
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<tr>
<td>ILI</td>
<td>Influenza-like Illness</td>
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<tr>
<td>LHA</td>
<td>Local Heath Authority</td>
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</table>
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B. Definitions

1. **Alternative care facility (ACF)**. Facilities not currently providing health services that will be established by government or private entities to provide health care services and augment surge capacity on a temporary basis.

2. **Antiviral medication**. Medication that may prevent or inhibit the growth and reproduction of viruses and is used to treat or prevent disease in those exposed or at risk of exposure.

3. **Characterization**. Identification of the strain of an influenza virus.

4. **Confirmed case (pandemic influenza)**. Refers to a laboratory-confirmed influenza A virus in a person with clinical illness which has been sub-typed and is different than currently and recently circulating seasonal influenza.

5. **Contact**. A person who has been exposed to an influenza case in some way during the infectious period.

   a. **Close contact**. Persons within approximately 6 feet or within the room or care area of a confirmed or probable novel influenza A case patient for a prolonged period of time, or with direct contact with infectious secretions while the case patient was likely to be infectious (beginning 1 day prior to illness onset and continuing until resolution of illness).

6. **Critical infrastructure**. Sectors that fulfill one or more of the following criteria: directly support reduction in deaths and hospitalizations, provide critical functions to support the healthcare sector and other emergency services, and/or supply basic necessities and services critical to the support of healthcare, emergency services, or life.

   a. Public safety employees (firefighters, police, correctional facility staff, dispatchers) are critical to the maintenance of social functioning and order. They contribute to pandemic response by maintaining order at vaccination clinics and responding to medical emergencies.

   b. Utility service employees (water, power, and sewage management) provide essential services to the healthcare system and prevent additional illnesses resulting from unsanitary conditions from lack of these services.
c. Transportation workers maintain critical supplies of food, water, fuel, and medical equipment and provide public transportation which is essential for provision of medical care and transportation of healthcare workers and ill persons.

d. Information technology services are critical for essential system maintenance required for accessing and delivering medical care and providing support to all other critical infrastructure.

e. Mortuary services are responsible for the processing and disposal of the deceased which will be substantially impacted due to increased numbers of deaths.

7. **Endemic.** A disease that is continually present in a community or region.

8. **Epidemiologic linkage.** A patient who has had contact with one or more persons who either have or had the disease and where the agent’s transmission by usual modes is plausible. A case may be considered confirmed if at least one case in the transmission chain is laboratory confirmed.

9. **Exposure.** Exposure will be defined at the time of the outbreak and will reflect incubation period and infectious dose; criteria may include travel to an affected area.

10. **Healthcare workers/essential health care support staff.** Healthcare workers with direct patient contact (including acute-care hospitals, long-term care facilities, skilled nursing facilities, urgent care centers, physician’s offices, clinics, home care, blood collection centers, and EMS) and persons working in essential healthcare support services (e.g., dietary, housekeeping, admissions, blood collection center staff, etc.). Healthcare workers in public health with direct patient contact, including those who may administer vaccine or distribute influenza antiviral medications, and their essential public health support staff are also included.

11. **Influenza.** Also known as flu, is an acute viral disease of the respiratory tract characterized by fever, headache, tiredness (may be extreme), dry cough, sore throat, nasal congestion, and/or body aches; nausea and vomiting are also commonly reported among children.

12. **Influenza-like illness (ILI).** Defined as respiratory illness with fever >100°F AND cough and/or sore throat in the absence of a known cause other than influenza.

13. **Isolation.** Separation and limitation of movement of persons who are ill or suspected (e.g., physician’s diagnosis, symptoms) of being ill for the purpose of preventing disease transmission to others.

14. **Novel influenza strain.** A newly identified virus that requires close monitoring to determine whether it is capable of pandemic spread. These may include avian/animal influenza strains that can infect humans, or new or re-emergent human viruses. Novel subtypes include, but are not limited to H2, H5, H7, and H9. H1 and H3 subtypes originating from non-human species or
genetic re-assortment between animal and human viruses are also novel subtypes. Novel subtypes will be detected through methods used for currently circulating human influenza surveillance.

15. **Pandemic influenza.** Worldwide outbreak of a novel influenza virus against which the human population has no pre-existing immunity causing sudden, pervasive illness with the potential for substantial impact causing increased morbidity and mortality, significant social disruption, and severe economic costs. Four influenza pandemics have occurred in the last century: “Spanish flu” (1918), “Asian influenza” (1957), “Hong Kong influenza” (1968), and “H1N1” (2009).

16. **Probable case.** Case meeting clinical criteria and epidemiologically linked to a confirmed case, but for which no laboratory testing for influenza infection has been performed.

17. **Public health disaster.** A disaster declaration by the Governor after determination by the Commissioner of Health that there exists an immediate threat from a communicable disease that:
   a. poses a high risk of death or serious disability to a large number of people, and
   b. creates a substantial public exposure risk because of the disease’s high contagion level or transmission method.

18. **Quarantine.** Limitation of personal freedom and movement in society of individuals who have been exposed to pandemic influenza, other respiratory virus, or any contagious illness.

19. **Subtype.** Identification of influenza A viruses according to the Hemagglutinin (H) and neuraminidase (N) components of the virus, such as H1N1 or H3N2.

20. **Syndromic.** Based on clinical signs and symptoms.

21. **Suspected case.** Case meeting the most recent epidemiologic and clinical criteria for influenza pending laboratory confirmation. Any case of human infection with an influenza A virus that is different from currently circulating human influenza H1 and H3 viruses is classified as a suspected case until the confirmation process is complete.

## IV. SITUATION AND ASSUMPTIONS

The following situation and assumptions are based on the U.S Department of Health and Human Services’ Pandemic Influenza Plan and how it applies to local jurisdictions.

### A. Situation

1. Influenza is a highly contagious respiratory virus responsible for annual epidemics globally. Influenza A is known to continually undergo antigenic drift, a gradual change in viral genes, which is responsible for annual changes in influenza vaccine. Antigenic shifts are sudden
genetic changes resulting in novel influenza A viruses, which are almost always followed by pandemics.

2. Pandemic influenza strains differ in severity and transmissibility which will cause the effect on the impacted population to vary greatly.

3. Pandemic influenza prevention and control hinges on surveillance of the genetic characteristics of circulating viruses, effective control measures, and community education and cooperation.

4. Risk groups for severe and fatal infections cannot be predicted with certainty. During annual fall and winter influenza seasons, infants and the elderly, people with certain chronic illnesses, people with morbid obesity, and pregnant women are usually at higher risk of complications from influenza infections than other groups. In contrast, in the 1918 pandemic, deaths were notably evident among young, previously healthy adults; in 2009, elderly people were disproportionately spared severe illness and death.

5. The seasonality of a pandemic cannot be predicted with certainty. With seasonal influenza, peak disease usually occurs during December through March in the United States. During the 2009 A(H1N1) pandemic, the first cases were identified in April, and widespread U.S. community outbreaks first began in August, with illness peaking in October 2009, months earlier than is routinely seen with seasonal influenza.

6. Delays in availability of vaccines and shortages of antiviral drugs are likely, particularly early in the pandemic.

7. Emergency responders, medical providers, and special needs caregivers who are affected by emergency situations may experience stress, anxiety, and display other physical and psychological symptoms that may adversely impact on their daily lives. In some cases, disaster mental health services may be needed during response operations.

B. Assumptions

1. Immunity to the novel pandemic influenza subtype will vary based on the strain of the virus, but most people will likely be susceptible, depending on whether a similar strain has circulated in previous seasons.

2. The clinical disease attack rate could range from 20% to 30% of the overall population. Illness rates will likely vary by age groups (and other epidemiologic characteristics) and could create selective pressures on segments of the community, such as long-term care facilities or schools.

3. Seasonal influenza vaccination may or may not offer some level of protection against a novel pandemic influenza strain.

4. Of those who become ill with influenza, up to 50 percent will seek outpatient medical care.
5. The number of hospitalizations and deaths will depend on the severity of the disease and the success of steps to mitigate its transmission. Estimates of the number of hospitalizations could differ by a factor of 10 between more and less severe pandemic influenza scenarios.

6. Persons who become ill may shed virus and can transmit infection for up to one day before the onset of symptoms. Viral shedding and the risk of transmission will be greatest during the first two days of illness. Persons who are ill may shed the virus up to five days after onset of illness. Children usually shed the greatest amount of virus and therefore are likely to pose the greatest risk for transmission.

7. On average, one infected person will transmit infection to approximately two other people.

8. During a pandemic, infection in a localized area can last about six to eight weeks. At least two pandemic disease waves will occur. Following the pandemic, the newly circulating virus is likely to become a regularly occurring seasonal influenza.

9. If the pandemic is characterized by severe disease, it will have the potential to disrupt national and community infrastructures (including health care, transportation, commerce, utilities, and public safety) due to widespread illness, absenteeism, and death among workers and their families, as well as concern about ongoing exposure to the virus.

10. Hospitals, long-term care facilities, ambulatory care facilities, pharmacies, and other medical facilities will be overwhelmed and will be unable to operate normally due to staffing concerns resulting from personal or family exposures.

11. Over the course of the pandemic, up to 50 percent of the workforce may be absent due to illness, caretaking responsibilities, fear of contagion, and loss of public transportation or public health control measures. Local government and private industries must plan for the continuation of critical community infrastructure and services due to employee absenteeism.

12. State, and possibly federal, assistance may be available, upon request, to supplement local health and medical resources. However, being a widespread event, it may be difficult to obtain mutual aid from typical sources.

13. Table 1 provides estimates of illness, outpatient medical care, hospitalizations, intensive care unit care, and deaths for moderate, severe, and very severe influenza pandemics. These estimates are based on scenarios that are unmitigated, meaning that they do not account for public health interventions that would likely be implemented during a pandemic. For comparison, the 2014–2015 season was at the high end of severity for seasonal influenza, with an estimated 974,206 hospitalizations, due to a significantly drifted influenza A(H3N2) virus for which the vaccine was not effective (U.S. Department of Health and Human Services, 2017).
Table 1. Estimated Illness, Types of Medical Care, and Deaths from a Moderate to Very Severe Influenza Pandemic

<table>
<thead>
<tr>
<th>Pandemic Severity (based on multiple factors)</th>
<th>Transmissibility (% of US population with clinical illness)</th>
<th>Illness</th>
<th>Outpatient medical care</th>
<th>Hospitalization</th>
<th>ICU care</th>
<th>Deaths</th>
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<tr>
<td>Moderate</td>
<td>20%</td>
<td>64,000,000</td>
<td>32,000,000</td>
<td>800,000</td>
<td>160,000</td>
<td>48,000</td>
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<tr>
<td></td>
<td>30%</td>
<td>96,000,000</td>
<td>48,000,000</td>
<td>1,200,000</td>
<td>240,000</td>
<td>72,000</td>
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<tr>
<td>Severe</td>
<td>20%</td>
<td>64,000,000</td>
<td>32,000,000</td>
<td>3,800,000</td>
<td>1,200,000</td>
<td>510,000</td>
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<tr>
<td></td>
<td>30%</td>
<td>96,000,000</td>
<td>48,000,000</td>
<td>5,800,000</td>
<td>1,700,000</td>
<td>770,000</td>
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<tr>
<td>Very Severe</td>
<td>20%</td>
<td>64,000,000</td>
<td>32,000,000</td>
<td>7,700,000</td>
<td>2,300,000</td>
<td>1,300,000</td>
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<tr>
<td></td>
<td>30%</td>
<td>96,000,000</td>
<td>48,000,000</td>
<td>11,500,000</td>
<td>3,500,000</td>
<td>1,930,000</td>
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</table>

b 2015 US Population estimate used for calculation.

V. CONCEPT OF OPERATIONS

A. General

1. CCHCS, in conjunction with DSHS, has the primary responsibility for determining the type, scope, and public health impact of the situation; implementing control and prevention measures; and initiating epidemiologic investigation.

2. Pandemic influenza will span multiple jurisdictions and regions and require a comprehensive emergency response strategy.

3. The DHHS Pandemic Influenza Plan specifies that sustained human-to-human transmission anywhere in the world will be the triggering event to initiate a response by the United States.

4. The WHO, CDC, and/or FDA are responsible for vaccine development. Vaccine formulation and production could require 3-6 months prior to becoming widely available.

5. The DSHS laboratory is the confirmatory agency in Texas.

6. Disease control will rely upon all available means including both pharmaceutical and non-pharmaceutical interventions.
B. Disease Surveillance

1. Seasonal Influenza

   a. Seasonal influenza data is routinely collected or received from:
      i. Hospitals
      ii. School districts
      iii. Long-term care facilities
      iv. Private physicians
      v. Child care centers

   b. Influenza reporting by the above entities to Collin County Health Care Services is optional.

   c. Seasonal influenza situational awareness is enhanced through surveillance activities, DSHS weekly flu reports, and CDC Morbidity and Mortality Weekly Reports, as well as any conference calls held by DSHS or the CDC.

   d. Syndromic surveillance systems are monitored for ILI numbers based on fever with respiratory symptoms.

   e. Viral specimens are collected routinely throughout the year and submitted to DSHS laboratory for characterization. Hospital infection control personnel, school nurses, and private physician offices are encouraged to submit specimens.

   f. The Collin County Medical Examiner’s (CCME) office is a key surveillance partner in determining excess influenza mortality. CCME communicates with CCHCS’ epidemiology team regarding abnormal influenza death rates.
      i. If a disease outbreak results in a large number of fatalities, the Local Health Authority in collaboration with CCME may activate Annex H, Mass Fatality Incident Plan.

   g. Updates are distributed to key stakeholders
      i. CCHCS distributes information and updates as appropriate to local hospitals and community physicians.
      ii. The Collin County Public Information Officer distributes information and updates to the general public.
2. **Pandemic Influenza**
   
a. Actions regarding surveillance, specimen collection, and inter-agency information sharing will be similar to seasonal influenza.

b. Reporting of confirmed and suspected cases of a novel influenza is required in accordance with Texas Administrative Code Chapter 97.

c. Active surveillance may be used when responding to a newly identified novel influenza strain.

**C. Non-pharmaceutical Interventions**

1. Non-pharmaceutical interventions are critical for pandemic influenza containment.

2. The use of non-pharmaceutical interventions has three major goals:
   
a. minimize disease exposure,

b. disrupt disease transmission, and

c. reduce the total number of cases, thus reducing morbidity and mortality.

3. The timing of non-pharmaceutical intervention initiation is critical for effectiveness. Early implementation may result in social hardship and public fatigue. Late implementation may result in lowered public health benefit.

4. The effectiveness of non-pharmaceutical interventions depends on viral transmission characteristics.

5. CCHCS will follow guidance from CDC and DSHS regarding appropriate non-pharmaceutical intervention strategies.
   
a. Interim guidelines include:

   i. Whenever possible, rather than relying on the use of masks or respirators, close contact and crowded conditions should be avoided during an influenza pandemic.

   ii. Facemask use should be considered when entering crowded settings, for both protection of nose and mouth from other people’s coughs and reduction of coughing on others; time spent in crowded settings should be as short as possible.
iii. Respirator use should be considered by individuals for whom close contact with an infectious person is unavoidable, including selected individuals who must care for a sick person at home.

6. Non-pharmaceutical interventions can be combined with prophylactic use of antiviral medications, provided that sufficient quantities of effective medications exist and distribution is feasible.

7. Types of non-pharmaceutical interventions:
   a. Hygiene
      i. Hand hygiene: Perform regular and thorough hand washing with soap and water or use alcohol-based hand sanitizers containing at least 60% alcohol when soap and water are not available. Touching the eyes, nose, and mouth should be avoided.
      ii. Respiratory etiquette: Cover coughs and sneezes, preferably with a tissue, and then dispose of tissues and disinfect hands immediately after a cough or sneeze, or (if a tissue is not available) cough or sneeze into a shirt sleeve.

b. Precautionary protective behaviors
   i. This includes the use of PPE such as face masks

c. External decontamination such as the disinfection of contaminated surfaces

d. Social distancing
   i. Consists of interventions to minimize contact between individuals, such as:
      1) School or child care closures,
      2) work closures/alteration of schedules, and/or
      3) restrictions on public gatherings and mass transportation.
   ii. The majority of disease transmission will likely occur in the school, home, and workplace.
   iii. Disruption of person-to-person transmission offers opportunities to suppress epidemic spread.
   iv. Consideration must be given to the duration of implementation, economic impacts, and socioeconomic disparities.
v. Child social distancing

1) Schools, in particular, serve as amplification points of seasonal epidemics, and children play a significant role in introducing and transmitting influenza within households.

2) School and childcare exclusion policies should be followed.

3) Student dismissal from schools and/or school-based activities and childcare program closure coupled with children community social distancing may achieve social contact reduction.

4) Recommendations for school closures will be made in coordination with DSHS and local school superintendents.

vi. Adult social distancing

1) Large public gathering cancellation and alteration of workplace environments and schedules (i.e., staggered schedules) can decrease social density.

2) Employers will be encouraged to preserve a healthy workplace to the greatest extent possible without disrupting essential services and enable leave policies that align incentives and facilitate adherence with the non-pharmaceutical interventions.

   a) Employers may encourage and allow staff members to work from home, if necessary and as required by the Local Health Authority.

   b) Employers may choose to implement body temperature checks for employees, primarily those working in healthcare, to ensure staff members are not sick before they begin their shift/enter the facility.

3) Universities and private schools should consider allowing students to study from home and develop alternative study methods that could be utilized during a pandemic. Public schools of all grades should also consider this guidance, however it is understood that the infrastructure is not existent for home study in most cases.

e. Isolation and quarantine

   i. The LHA will give recommendations and directives regarding isolation and quarantine measures.

   ii. Isolation and quarantine procedures should not be utilized if transmission is widespread.
iii. Detailed information on isolation and quarantine is located in the Annex H, Appendix 6, Isolation and Quarantine to the Basic Plan.

iv. Isolation

1) Separation of ill persons from those that are well

2) May occur in a healthcare setting, home, or dedicated facility depending on illness severity and/or current healthcare infrastructure capacity.

3) Those not involved in primary care should be relocated, if possible, to minimize contact.

4) Ill individuals and household members need clear, concise information about home care for an ill individual and when and where to seek medical care. Special consideration should be made for persons living alone, as they may be unable to care for themselves.

5) If not contraindicated, patient should wear a mask during contact with non-infected persons.

6) Voluntary
   a) Ill individuals not requiring hospitalization will be requested to remain at home voluntarily for the infectious period after symptom onset.
   b) Voluntary home isolation of the ill is predicated on the assumption that many individuals who are not critically ill can and will need to be cared for in the home.
   c) Employers will be asked to support the recommendation that ill employees stay home.

v. Quarantine

1) May be utilized to restrict the movement of those known to have been exposed to confirmed and probable cases but who are not currently symptomatic.

2) Work quarantine may be implemented for healthcare workers or essential personnel; individuals will travel between work and home with daily symptom monitoring.

3) No specific precautions are needed for household members if the quarantined individual remains asymptomatic.
4) Voluntary

a) Members of households with ill individuals may be recommended to stay home for an incubation period following household member symptom onset.

b) If other family members become ill during this period, individuals may be recommended to extend the voluntary home quarantine for another incubation period from the time that the last family member becomes ill.

f. Public education

i. Pre-event public education regarding health hazard avoidance, antiviral/vaccine priorities and distribution, social distancing, and personal preparedness is a critical component to the pandemic response.

ii. Travel advisories and precautions prior to the pandemic period may contribute to transmission reduction.

iii. Effective event communication will help maintain public awareness, avoid social disruption and panic, and provide information on evolving pandemic response activities.

D. Pharmaceutical Interventions

1. Limited resources

a. It is unlikely that a vaccine will be available when a pandemic begins.

b. Antiviral medication quantities will likely be insufficient and may not be effective.

2. Priority groups

a. Available countermeasures will be prioritized according to guidance from DSHS and the CDC.

b. Current DHHS vaccine priority group recommendations can be found in Attachment E.

3. Antiviral medications

a. Antivirals may be used to:

i. treat those known to be infected,
ii. disrupt transmission among close contacts, and/or

iii. provide prophylaxis to those who may have been exposed to reduce their susceptibility to the disease (e.g. long-term care facility residents).

b. The most recent dosing and administration guidelines will be used at the time of the event.

4. Vaccine

a. The federal government will facilitate the shipment of vaccine from the manufacturer to state and/or local entities.

b. Collin County will coordinate the tracking of vaccine recipients and provide population vaccine coverage information to State authorities as requested.

5. Countywide mass distribution of vaccine or antivirals will be executed as detailed in Annex H, Appendix 2, SNS Distribution to the Basic plan as well as through a vaccine push to pharmacies and private health care providers in Collin County.

E. Alternative Care Facilities (ACF)

1. If required, mass medical care will be accomplished through coordination of state, local, and private agencies.

2. An influenza pandemic will place a substantial burden on in- and out-patient health care services. Illness and absenteeism among health care workers will further strain the ability to provide quality care.

3. ACFs could serve as a component in augmenting the surge capacity of hospitals.

4. ACFs may function as primary triage sites, providing limited supportive care (e.g. oral hydration or IV fluids), offering alternative isolation locations to influenza patients, and/or serving as recovery clinics to assist in expediting patient discharge from hospitals.

5. Tele-medicine may be an option if local physicians are overwhelmed or if disease communicability to healthcare staff is a concern.

F. Communications

1. Goals

a. Provide effective communication to all stakeholders.
Appendix 4 to Annex H

b. Provide accurate, consistent, and comprehensive information including case definitions, treatment options, infection control measures, and reporting requirements.

c. Instill and maintain public confidence in the County’s systems and abilities to respond to and manage pandemic influenza.

d. Ensure an efficient mechanism for managing information between Collin County, health system partners, and response agencies.

e. Contribute to maintaining order, minimizing public panic and fear, and facilitating public compliance by providing accurate, rapid, and complete information.

2. Information communication will be carried out according to Annex I (Public Information) to the Basic Plan.

3. Pre-event strategies

   a. Efforts should focus on pandemic influenza and personal preparedness

   b. Utilize traditional and nontraditional communications channels to educate and encourage annual influenza vaccination

   c. Increase education efforts detailing maintenance of good health habits

   d. Coordinate with adjacent jurisdictions to develop shared messages and educational materials

   e. Develop vulnerable population communications strategies

4. Pandemic strategies

   a. Develop messages to ensure timely and accurate information regarding:

      i. Basic influenza information, high-risk groups, and steps that should be taken to protect against infection

      ii. Symptoms that should prompt the seeking of medical assistance

      iii. Treatment options for infected individuals

      iv. Availability of vaccines/antiviral medications and priority group rationale

      v. Instructions for receiving medications at mass vaccination sites
vi. Disease control and containment strategies that are being implemented

vii. Status of outbreak in the community

b. Provide updates and regular media briefings

c. Actively conduct outreach to underserved populations in cooperation with community organizations

d. Monitor media reports and public inquiries to identify emerging issues, rumors, and misperceptions and respond accordingly

G. Activities by Phases of Emergency Management

1. Mitigation

a. Inventory existing medical and specimen shipping supplies

b. Coordinate response plans with area jurisdictions and healthcare providers

c. Participate in hospital planning meetings and encourage influenza reporting

d. Test existing redundant communication systems

e. Encourage participation in U.S. Outpatient Influenza-like Illness Sentinel Provider Network and reporting of positive Influenza A and B rapid flu tests done at private medical facilities and physician offices

f. Investigate off season occurrences of Influenza A and sites of increased morbidity and mortality associated with influenza or ILI


g. Submit surveillance cultures as requested by DSHS

h. Encourage annual influenza vaccination for the general public and all health care providers

i. Host mass vaccination clinics and exercises as resources allow

j. Provide respiratory hygiene and personal protection education to the general public

2. Preparedness

a. Have emergency plans accessible and initiate review

b. Ensure contact information is accurate for medical stakeholders
c. Initiate purchase of supplies (masks, hand sanitizer, disposable thermometers)

d. Educate citizens about personal protective strategies and population level interventions that may be initiated

e. Share relevant medical and outbreak information with healthcare providers

f. Investigate suspected influenza among residents with travel history to affected areas

3. Response

a. Secure purchase orders for needed supplies for influenza identification, prevention, containment, disinfection, and treatment

b. Utilize enhanced surveillance

c. Establish phone bank and/or informational link on the County website for public information

d. Administer vaccine or antivirals, as available, according to DSHS recommendations

e. Report amount of vaccine or antivirals utilized to DSHS, as requested

f. Report, as requested by DSHS, age-specific attack rates, morbidity, and mortality

g. Assist DSHS in determining vaccine efficacy

h. Maintain heightened surveillance activities

i. Perform community containment activities

4. Recovery

a. The incident will transition from a response operation to recovery once the epidemiology curve is consistently decreasing.

b. Obtain all critical documents, information, and paperwork

c. Conduct after-action review of response activities

d. Evaluate responses and outcomes to initial pandemic waves to determine best practices; prepare for additional waves

e. Advise the public when the emergency situation has been terminated
f. Restock supplies, if necessary

VI. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. Organization

1. Collin County’s normal emergency organization, described in Section VI and Attachment 3 of the Basic Plan shall coordinate pandemic influenza response efforts.

2. The organization of command operations will be in accordance with standard ICS /NIMS organizational principles.

B. Assignment of Responsibilities

1. The County Judge will:

   a. Establish general policy guidance for emergency operations

   b. Approve emergency public information to be released to the public through the news media or other means

   c. Direct activation of the EOC

   d. Coordinate efforts and request assistance from other local governments or the State when necessary

2. The EMC will:

   a. Serve as a staff advisor to the County Judge on emergency management matters and keep the County governing body apprised of preparedness status and emergency management needs

   b. Manage the EOC, develop procedures for its operation, and activate the EOC when required

   c. Serve as the principal County liaison with other EOCs and EMCs; local, state and federal government officials; and appropriate private and public organizations

   d. Develop and execute strategies, programs, training programs, exercises, and communication materials to maintain Collin County’s emergency preparedness as well as coordinate local planning and preparedness activities

   e. Develop and maintain MOUs
f. Coordinate countermeasure distribution, as needed

3. CCHCS will:
   a. Assist with planning and development of pandemic influenza response procedures
   b. Promote community preparedness activities to minimize the effect of yearly epidemics and establish linkages (community service organizations, medical providers, hospitals, critical infrastructure) for service provision during a pandemic
   c. Carry out disease surveillance, investigation, and control measures
   d. Provide updated information to medical providers and hospitals as appropriate

4. The LHA will:
   a. Oversee disease and syndromic surveillance
   b. Oversee and coordinate disease investigation with appropriate local, state, and federal authorities
   c. Provide direction on the use of disease control measures
   d. Provide isolation and quarantine orders as appropriate

5. The County Sheriff will:
   a. Be responsible, along with designated personnel from local law enforcement, fire, EMS, public works, and communications, for coordinating and deploying all support resources through the EOC.
   b. Maintain law and order during emergency situations
   c. Provide security for key facilities
   d. Carry out traffic and crowd control where needed
   e. Manage the local warning system (Annex A)
   f. Manage local emergency communications network (Annex B)
6. The PIO will:
   a. Disseminate public information and health education to the media and stakeholders
   b. Be responsible for developing official press statements and managing the operations of the Press Briefing Room
   c. Develop and implement a public notification plan

7. The County Purchasing Officer will:
   a. Be responsible for coordinating all logistical resources through the EOC

8. The County Auditor will:
   a. Be responsible for coordinating all financial resources with the EOC
   b. Document resources used during an event for reimbursement purposes

### VII. DIRECTION AND CONTROL

#### A. General

1. The Collin County Judge shall, pursuant to NIMS, provide general guidance for disaster response and recovery operations.

2. The EMC will provide overall response activity direction to all involved departments.

3. The LHA may impose control measures on individuals, property, common carriers, and conveyances.

4. During emergency operations, department heads retain administrative and policy control over their employees and equipment and will carry out mission assignments as directed by the EMC.

5. If Collin County’s resources are insufficient or inappropriate to deal with an emergency situation, it may request assistance from other jurisdictions, organized volunteer groups, and/or the state or federal government.

#### B. Line of Succession

1. See Annex H, Health and Medical Services
Appendix 4 to Annex H

VIII. READINESS LEVELS

A. Level IV – Normal Conditions

1. See mitigation and preparedness activities in Section V.G.1 and V.G.2

B. Level III – Increased Readiness

1. Review plans and procedures and update if needed
2. Monitor the situation
3. Alert key personnel
4. Check readiness of equipment, supplies, and facilities; correct deficiencies
5. Ensure volunteer source lists are current and accurate
6. Review external agreements

C. Level II – High Readiness

1. Monitor the situation
2. Consider activation of the EOC for increased situation monitoring and pre-planning
3. Alert personnel for possible emergency duty
4. Issue public information and provide warnings
5. Alert external resources covered by ILAs, MOUs, and MAAs
6. Pre-stage assets, where appropriate

D. Level I – Maximum Readiness

1. Activate the EOC to increase situation monitoring, planning, and resource management
2. Coordinate with federal, state, and local jurisdictions, health care service providers, and private partners to control pandemic spread

IX. ADMINISTRATION AND SUPPORT

A. Administration

1. Administration of this plan will be the responsibility of the EMC and LHA.

B. Reports

1. Initial Emergency Report: An Initial Emergency Report should be prepared and disseminated for major emergencies and disasters where state assistance may be required. This short report is designed to provide basic information about an emergency situation. This form is located in Annex N, Direction and Control.
2. Situation Report: For major emergencies and disasters where emergency response operations continue over an extended period, a Situation Report should be prepared and disseminated daily. This report is designed to keep the Disaster District, other jurisdictions providing resource support for emergency operations, and jurisdictions that may be affected by the emergency situation informed about the current status of operations. This form is located in Annex N, Direction and Control.

C. Maintenance and Preservation of Records

1. Maintenance of Records. All records generated during an emergency will be collected and stored in an orderly manner so a record of events is preserved for use in determining response costs, settling claims, and updating emergency plans and procedures.

2. Documentation of Costs. All departments and agencies will maintain records of personnel and equipment used and supplies expended during emergency response operations as a basis for possible cost recovery from a responsible party or insurer or possible reimbursement of expenses by the state or federal government.

3. Preservation of Records. Vital records should be protected from the effects of disaster to the maximum extent feasible. Should records be damaged during an emergency situation, professional assistance in preserving and restoring those records should be obtained as soon as possible.

D. Training and Exercises

1. CCEM and/or CCHCS will oversee pandemic influenza related training, exercise(s), and evaluation(s).

2. Public health emergency response call down rosters are reviewed for accuracy and tested quarterly.

E. Resources

1. A listing of resources can found in Attachment B, Collin County Resources and in Annex M, Resource Management, to the Basic Plan.

F. Post Incident Review

1. For large-scale incidents, the EMC shall organize and conduct a review of emergency operations in accordance with the guidance provided in Section IX.F of the Basic Plan. The purpose of this review is to identify needed improvements in this plan, procedures, facilities, and equipment.
X. PLAN DEVELOPMENT AND MAINTENANCE

A. CCEM and CCHCS are responsible for developing and maintaining this plan. Recommended changes to this appendix should be forwarded as needs become apparent.

B. This plan will be reviewed annually, updated in accordance with the schedule outlined in Section X of the Basic Plan, and reviewed based on assessments, trainings, and exercises.

C. Departments and agencies assigned responsibilities in this appendix are responsible for developing and maintaining SOPs covering those responsibilities.

XI. REFERENCES


Attachments

Attachment A ..................................................... Suspect Highly Pathogenic Avian Influenza Flow Chart
Attachment B ..................................................... Projected Pandemic Influenza Impact in Collin County
Attachment C .......................................................... WHO Pandemic Phases
Attachment D .......................................................... Pandemic Severity Assessment Framework
Attachment E .......................................................... Guidance on Allocating and Targeting Pandemic Influenza Vaccine
Attachment F .......................................................... Influenza Public Education Materials
Clinical presentation: Fever ≥ 100°F AND cough and/or sore throat without other diagnosis.

OR

Clinical presentation: Hospitalized patients with radiographically confirmed pneumonia or severe respiratory illness without other diagnosis.

AND

Epidemiological: Travel to a country with confirmed H5N1 cases in the past 10 days.

AND

Epidemiological: Close contact with live or dead poultry, wild birds, or a known or suspected human case of H5N1 in one of the aforementioned countries within 10 days of symptom onset.

If possible, collect specimen (nasopharyngeal swab preferred) and submit as regular flu specimen to DSHS lab. Do not need to contact IDCU staff prior to sending.

Strongly advised to collect specimens - nasopharyngeal swab, throat swab, and blood. Must contact IDCU staff prior to sending specimens.
ATTACHMENT B
PROJECTED PANDEMIC INFLUENZA IMPACT IN COLLIN COUNTY

Utilizing the U.S. Department of Health and Human Services’ Pandemic Influenza Plan data, the following impact can be projected for Collin County using the July 2019 population from the U.S. Census. The table below indicates the number of individuals who would become ill and need medical care in the event of moderate, severe, and very severe pandemic influenza with a County population of 1,005,146. This data is for a scenario where no public health interventions are implemented during a pandemic. Public health mitigation actions would reduce the below impacts in Collin County.

<table>
<thead>
<tr>
<th>Pandemic Severity</th>
<th>Transmissibility (% of population with illness)</th>
<th>Illness</th>
<th>Outpatient Medical Care</th>
<th>Hospitalization</th>
<th>ICU Care</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>20%</td>
<td>201,030</td>
<td>100,520</td>
<td>2,510</td>
<td>500</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>301,540</td>
<td>150,770</td>
<td>3,770</td>
<td>750</td>
<td>225</td>
</tr>
<tr>
<td>Severe</td>
<td>20%</td>
<td>201,030</td>
<td>100,520</td>
<td>11,920</td>
<td>3,700</td>
<td>1,590</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>301,540</td>
<td>150,770</td>
<td>18,210</td>
<td>5,280</td>
<td>2,380</td>
</tr>
<tr>
<td>Very Severe</td>
<td>20%</td>
<td>201,030</td>
<td>100,520</td>
<td>24,190</td>
<td>7,020</td>
<td>3,930</td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td>301,540</td>
<td>150,770</td>
<td>36,120</td>
<td>10,840</td>
<td>5,960</td>
</tr>
</tbody>
</table>
ATTACHMENT C
WHO PANDEMIC PHASES

The WHO pandemic phases were developed in 1999 and revised in 2005. The phases are applicable to the entire world and provide a global framework to aid countries in pandemic preparedness and response planning. In this revision, WHO has retained the use of a six-phased approach for easy incorporation of new recommendations and approaches into existing national preparedness and response plans. The grouping and description of pandemic phases have been revised to make them easier to understand, more precise, and based upon observable phenomena. Phases 1-3 correlate with preparedness, including capacity development and response planning activities, while Phases 4-6 clearly signal the need for response and mitigation efforts. Furthermore, periods after the first pandemic wave are elaborated to facilitate post pandemic recovery activities.

Definition of the phases

In nature, influenza viruses circulate continuously among animals, especially birds. Even though such viruses might theoretically develop into pandemic viruses, in Phase 1 no viruses circulating among animals have been reported to cause infections in humans.

In Phase 2, an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans, and is therefore considered a potential pandemic threat.

In Phase 3, an animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. However, limited transmission under such restricted circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.

Phase 4 is characterized by verified human-to-human transmission of an animal or human-animal influenza reassortant virus able to cause “community-level outbreaks”. The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk of a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.

Phase 5 is characterized by human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.
**Phase 6**, the pandemic phase, is characterized by community level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is under way.

During the post-peak period, pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels. The post-peak period signifies that pandemic activity appears to be decreasing; however, it is uncertain if additional waves will occur and countries will need to be prepared for a second wave.

Previous pandemics have been characterized by waves of activity spread over months. Once the level of disease activity drops, a critical communications task will be to balance this information with the possibility of another wave. Pandemic waves can be separated by months and an immediate “at-ease” signal may be premature.

In the post-pandemic period, influenza disease activity will have returned to levels normally seen for seasonal influenza. It is expected that the pandemic virus will behave as a seasonal influenza A virus. At this stage, it is important to maintain surveillance and update pandemic preparedness and response plans accordingly. An intensive phase of recovery and evaluation may be required.

This phased approach is intended to help countries and other stakeholders to anticipate when certain situations will require decisions and decide at which point main actions should be implemented. As in the 2005 guidance, each of the phases applies worldwide once announced. However, individual countries will be affected at different times. In addition to the globally announced pandemic phase, countries may want to make further national distinctions based upon their specific situations. For example, countries may wish to consider whether the potential pandemic virus is causing disease within their own borders, in neighboring countries, or countries in close proximity.

**Phase changes**

It is important to stress that the phases were not developed as an epidemiological prediction, but to provide guidance to countries on the implementation of activities. While later phases may loosely correlate with increasing levels of pandemic risk, this risk in the first three phases is simply unknown. It is therefore possible to have situations which pose an increased pandemic risk, but do not result in a pandemic.

Alternatively, although global influenza surveillance and monitoring systems are much improved, it is also possible that the first outbreaks of a pandemic will not be detected or recognized. For example, if symptoms are mild and not very specific, an influenza virus with pandemic potential may attain relatively widespread circulation before being detected; thus, the global phase may jump from Phase 3 to Phases 5 or 6. If the rapid containment operations are successful, Phase 4 may revert back to Phase 3.

When making a change to the global phase, WHO will carefully consider whether the criteria for a new phase have been met. This decision will be based upon all credible information from global surveillance and from other organizations (World Health Organization, 2009).
### WHO Pandemic Phase Descriptions and Main Action By Phase

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>ESTIMATED PROBABILITY OF PANDEMIC</th>
<th>DESCRIPTION</th>
<th>MAIN ACTIONS IN AFFECTED COUNTRIES</th>
<th>MAIN ACTIONS IN NOT-YET-AFFECTED COUNTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHASE 2</td>
<td>Uncertain</td>
<td>No animal influenza virus circulating among animals has been reported to cause infection in humans.</td>
<td>Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.</td>
<td></td>
</tr>
<tr>
<td>PHASE 3</td>
<td>Uncertain</td>
<td>An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHASE 4</td>
<td>Medium to high</td>
<td>An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.</td>
<td>Rapid containment.</td>
<td>Readiness for pandemic response.</td>
</tr>
<tr>
<td>PHASE 5</td>
<td>High to certain</td>
<td>Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHASE 6</td>
<td>Pandemic in progress</td>
<td>The same identified virus has caused sustained community-level outbreaks in at least two countries in one WHO region.</td>
<td>Pandemic response: each country to implement actions as called for in their national plans.</td>
<td>Readiness for imminent response.</td>
</tr>
</tbody>
</table>

#### POST-PEAK PERIOD

Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.

#### POSSIBLE NEW WAVE

Levels of influenza activity in most countries with adequate surveillance is rising again.

#### POST-PANDEMIC PERIOD

Levels of influenza have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.
When a novel influenza virus has emerged and circulates in human populations with efficient and sustained transmission, the public health impact posed by the pandemic can begin to be assessed. The PSAF uses information available from surveillance, investigations, initial case series, and other sources to help predict how severe the impact of the pandemic will be compared with past seasonal and pandemic experiences. Although the IRAT focuses on the risk of emergence and potential for impact before a pandemic begins, the PSAF focuses instead on epidemiologic parameters of transmissibility and severity after the virus emerges with efficient and sustained transmission in humans. The PSAF can be used early in a pandemic, with assessments repeated as information evolves, but determination of an initial assessment requires a sufficient number of human cases and clusters of illness to be identified and characterized. Depending on the number of cases, size of clusters, and the geographic locations of outbreaks, the trigger for using PSAF is likely to occur during the early initiation interval when a pandemic is beginning. The PSAF can be updated regularly as the pandemic progresses.

The PSAF is based on transmissibility and clinical severity parameters and uses different scales for 1) initial assessments and 2) more refined assessments when more data become available. The initial assessment, performed early in the outbreak when there might be uncertainty about viral characteristics resulting from limited epidemiologic data, uses a dichotomous scale of low-to-moderate versus moderate-to-high transmissibility and severity. The refined assessment, performed when more reliable data are available, uses a 5-point scale for transmissibility and a 7-point scale for clinical severity. After available data are assessed on these scales, the overall results are plotted as a two-dimensional chart, with the measures of transmissibility along the y-axis and the measures of severity along the x-axis. The PSAF results can be compared with referent points, such as previous pandemics or particularly severe influenza seasons (U.S. Department of Health and Human Services, 2017).
Two-dimensional chart used to plot results of assessment using the Pandemic Severity Assessment Framework

Scaled measure of transmissibility

Scaled measure of clinical severity

ATTACHMENT E
GUIDANCE ON ALLOCATING AND TARGETING PANDEMIC INFLUENZA VACCINE
Introduction

Effective allocation of pandemic influenza vaccine will play a critical role in preventing influenza and reducing its effects on health and society when a pandemic arrives. The specific type of influenza that causes a pandemic will not be known until it occurs. Developing a new vaccine in response will take several months and pandemic vaccine may not be available when cases first occur in the United States. Moreover, once vaccine production begins, it will not be possible to make enough new vaccine to protect everyone in the early stages of a pandemic.

The U.S. Government is taking steps to minimize the need to make vaccine allocation decisions by supporting efforts to increase domestic influenza vaccine production capacity. Significant funding is being provided to develop new vaccine technologies that allow production of enough pandemic influenza vaccine for any person in the United States who wants to be vaccinated within six months of a pandemic declaration. Until this goal is met, Federal, State, local and tribal governments, communities, and the private sector will need guidance on who should be vaccinated earlier during the pandemic to best protect our people, communities, and country.

Issues to consider in drafting guidance on pandemic influenza vaccination are different and more complex than in developing recommendations for annual vaccination against seasonal influenza. In contrast with seasonal influenza, during a pandemic nobody in the population is likely to have immunity to the virus, many more people will become ill, and rates of severe illness, complications and death are likely to be much higher and more widely distributed throughout the population. The greater frequency and severity of disease will increase the burden on health care providers and institutions and may disrupt critical products and services in health care and other sectors. National and homeland security could be threatened if illness among military and other critical personnel reduces their capabilities. Because the needs that must be addressed by pandemic vaccination differ from seasonal influenza vaccination, the guidance on vaccination differs as well.

This guidance is intended to provide strong advice to support planning an effective and consistent pandemic response by States and communities. Nevertheless, it is important that plans are flexible as the guidance may be modified based on the status of vaccine technology, the characteristics of pandemic illness, and risk groups for severe disease – factors that will remain unknown until a pandemic actually occurs.

Vaccination will be only one of several tools that can be used to fight the spread of influenza when a pandemic emerges. Additional approaches include non-pharmaceutical public health measures in communities, businesses, and households to reduce and slow the spread of infection; using antiviral medications for treatment and prevention; using facemasks and respirators in appropriate settings; and washing hands and covering coughs and sneezes. These strategies will be the initial mainstay of a pandemic response before vaccine is available and continue to have important effects throughout a pandemic. Guidance around vaccine use is meant to be applied in conjunction with and in the context of these other pandemic response efforts. More information about pandemic planning and response measures is provided at www.pandemicflu.gov.
How the Guidance was Developed

The Federal Government developed this guidance through a rigorous and collaborative process that included input from all interested parties. Hearing opinions from persons and organizations with a wide variety of interests and concerns is the best way to ensure that allocation of vaccine in the early stages of a pandemic is fair and provides the best chance for our country to emerge from a pandemic with minimal levels of illness, death, and disruption to our society and economy.

This guidance was drafted by a Federal interagency working group whose members represent all sectors of the government. The guidance is firmly rooted in the most up-to-date scientific information available, and directly considers the values of our society and the ethical issues involved in planning a phased approach to pandemic vaccination. Information considered by the working group included rigorous scientific assessments of pandemics and pandemic vaccines, national and homeland security issues, essential community services and the infrastructures and workforces critical to maintaining them, and the perspectives of state and local public health and homeland security experts. Historical analysis of the influenza pandemics of 1918, 1957, and 1968 and their effects provided valuable insights to this guidance. Ethical considerations presented by an ethicist who served on the working group and by academic ethicists also were important to the working group process and deliberations.

Meetings with the public and stakeholders, including businesses and community organizations, provided key input on public values and priorities. Participants discussed and rated the importance of potential vaccination program objectives based on a severe pandemic scenario. Notably, each of the meetings came to the same conclusions about which program objectives are most important (outlined in the next section).

A formal decision-analysis process also was undertaken that considered the objectives of a pandemic vaccination program and the degree to which protecting population groups (defined by their occupation, age, and health status) contributed to meeting those objectives. Based on this process, groups that ranked highest were front-line public health responders, essential health care workers, emergency medical service providers, and law enforcement personnel. Among the general population groups, infants and toddlers ranked highest.

For additional information on the guidance development process, please refer to Appendix A.

Draft Guidance on Allocating and Targeting Pandemic Influenza Vaccine

Goals and Objectives

The goal of the pandemic influenza vaccination program is to vaccinate all persons in the United States who choose to be vaccinated.

It is recognized that vaccine supply to meet this goal will likely not be available all at once, but rather, be produced at a rate that depends on both vaccine characteristics (antigen required) and manufacturing capacity. Given that influenza vaccine supply will increase incrementally as vaccine is produced during a pandemic, allocation decisions will have to be made. Such decisions should be based on publicly articulated and discussed program objectives and principles. The overarching objectives guiding vaccine allocation and use during a pandemic are to reduce the impact of the pandemic on health and minimize disruption to society and the economy.

One of the most important findings of the working group analysis, and the strongest communication from the public and stakeholder meetings, was that there is no single, overriding objective for pandemic
vaccination and no single target group to protect at the exclusion of others. Rather, there are several important objectives and, thus, vaccine should be allocated simultaneously to several groups. Each of the meetings came to the same conclusions about which program objectives are most important:

- Protecting those who are essential to the pandemic response and provide care for persons who are ill,
- Protecting those who maintain essential community services,
- Protecting children, and
- Protecting workers who are at greater risk of infection due to their job.

In addition to these, working group discussions highlighted the important Federal objective of maintaining homeland and national security.

General Principles and Guidance on Pandemic Vaccination

- The need to target vaccine to maintain security, health care, and essential services will depend on how severe the pandemic is, as rates of absenteeism and the ability to supply essential products and services will differ for more and less severe pandemics. As a result, groups targeted for earlier vaccination will differ by pandemic severity.

- Allocation of pandemic vaccines to States will be in proportion to the State's population.

- States should follow the national guidance to ensure fairness and uniformity across the United States and decrease confusion. Within the parameters of the guidance, a small proportion of each State's vaccine allocation may be maintained at the State level for distribution based on the specific needs of that jurisdiction.

- In past pandemics, groups at increased risk for serious illness and death have differed by age and health status. Specifically, during the 1918 pandemic previously healthy, young adults were a high-risk group. Because the high-risk groups in the next pandemic are not known, planners should consider how the guidance might be modified for this and other pandemic scenarios. At the time of the pandemic, national leaders will obtain advice from scientific and public health experts to determine whether the guidance should be modified based on the characteristics of the emerging pandemic.

- Guidance on pandemic vaccine allocation and targeting will be re-assessed periodically before a pandemic occurs to consider the new scientific advances, changes in vaccine production capacity, and advances in other medical and public health response measures.

Framework for Targeting Pandemic Influenza Vaccine

Guidance for targeting vaccination was developed in a structure that defines target groups in four broad categories that correspond with the objectives of a pandemic vaccination program — to protect people who: 1) maintain homeland and national security, 2) provide health care and community support services, 3) maintain critical infrastructure, and 4) are in the general population.

Each category includes specific target groups that are defined based on their occupation or, for the general population, by their age and health status. Every person in the United States is included in one or more of these groups. Target groups are vaccinated in tiers, with all groups in a tier vaccinated simultaneously unless vaccine supply is so limited that sub-prioritization is needed. Reflecting public values and
the need to address multiple important objectives with the pandemic vaccination program, each of the top tiers includes target groups from all four categories for a severe pandemic.

Finally, groups in vaccination tiers differ depending on pandemic severity, as threats to security, society, and the economy will be less in less severe pandemics. The Pandemic Severity Index (PSI) defines categories of pandemic severity based on the proportion of individuals with pandemic illness who die (the “case fatality rate”). Pandemic severity will be determined soon after its initial outbreak based on surveillance of cases and their outcomes before large areas of the world are affected. Government organizations will use the PSI to determine how best to implement responses such as vaccination and community strategies to reduce disease transmission. For a diagram and additional information on the PSI, please refer to Appendix B.

**Guidance Framework At-A-Glance**

**Target Groups** – People targeted for vaccination defined by a common occupation, type of service, age group, or risk level.

**Categories** – Pandemic vaccination target groups are clustered into four broad categories (homeland and national security, health care and community support services, critical infrastructures, and the general population). These four categories together cover the entire population.

**Tiers** – Across categories, vaccine will be allocated and administered according to tiers where all groups designated for vaccination within a tier have equal priority for vaccination. Groups within tiers vary depending on pandemic severity.

*Defining who is included in each target group*

Everyone in the United States is included in at least one vaccination target group. People who are not included in an occupational group will be vaccinated as part of the general population based on their age and health status. When a person is included in more than one target group, they will be vaccinated in the highest tier group in which they are included.

Occupationally defined vaccination target groups (those defined in the Homeland and National Security, Health Care and Community Support Services, and Critical Infrastructure categories) include only persons who are critical for providing essential services during a pandemic, not the entire workforce. Preliminary identification of critical functions was partly based on an analysis of critical sectors and workforces conducted by the U.S. Department of Homeland Security’s National Infrastructure Advisory Council (NIAC) (www.dhs.gov/niac), along with input from Federal agencies. Further work is being undertaken to more specifically define critical occupations whose members should receive early vaccination and to provide guidelines to employers on the proportion of their workforce that may be prioritized for vaccination. Because a pandemic differs from other national emergencies in the threats it poses and the duration over which it will affect our nation and communities, target groups within each sector may be different from those defined in other emergency response planning.
It should be noted that members of occupational target groups are defined by the functions persons within that target group are anticipated to perform during the pandemic outbreak; it does not distinguish among staff performing these duties as part of their usual functions, those being reassigned to perform the function as a new response role, or those performing the function as a volunteer. It should also be noted that vaccine does not replace, but adds to other measures taken to protect the workforce and general population.

The primary objective of vaccinating persons in critical infrastructure sectors is not to reduce absenteeism generally through an incremental reduction in pandemic illness afforded by vaccination. Rather, vaccination is targeted to protect workers with critical skills, experience, or licensure status whose absence would create bottlenecks or collapse of critical functions, and to protect workers who are at especially high occupational risk. Other pandemic response strategies (e.g., engineering controls in workplaces, changing work practices to reduce close contact with others, use of personal protective equipment such as facemasks, good handwashing, etc.), and worker education are likely to have greater overall effects in decreasing absenteeism.

For additional information on the definition of groups in each category, the rationales for how groups are ordered, and the estimated size of the target population, please refer to Appendix C.

**Guidance for Prioritizing Pandemic Vaccination**

National guidance for prioritizing pandemic influenza vaccination is provided in Table 1. In general, all groups designated for vaccination within a tier have equal priority for vaccination. Vaccine allocation within a tier will be proportional to the populations of the targeted groups, though changes in this allocation scheme at the time of the pandemic may occur based on vaccine supply, the impacts of the pandemic, and the specific needs identified at that time.

Vaccination priorities are tailored to pandemic severity in order to best achieve national pandemic response goals and objectives. Pandemics are defined as “severe” (PSI categories 4 or 5), “moderate” (PSI category 3), and “less severe” (PSI categories 1 and 2). Figure 1 illustrates pandemic vaccination tiers and target groups for a severe pandemic.
Table 1. Vaccination target groups, estimated populations, and tiers for severe, moderate and less severe pandemics as defined by the Pandemic Severity Index (PSI). Persons in occupational groups not specifically targeted for vaccination in Moderate and Less Severe pandemics are targeted according to their age and health status in the general population.

<table>
<thead>
<tr>
<th>Category</th>
<th>Target Group</th>
<th>Estimated Number*</th>
<th>Severe</th>
<th>Moderate</th>
<th>Less severe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homeland and national security</strong></td>
<td>Deployed and mission critical personnel</td>
<td>700,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Essential support &amp; sustainment personnel</td>
<td>650,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intelligence services</td>
<td>150,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Border protection personnel</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>National Guard personnel</td>
<td>500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other domestic national security personnel</td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other active duty &amp; essential support</td>
<td>1,500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Health care and community support services</strong></td>
<td>Public health personnel</td>
<td>300,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inpatient health care providers</td>
<td>3,200,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outpatient and home health providers</td>
<td>2,500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health care providers in LTCFs</td>
<td>1,600,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community support &amp; emergency management</td>
<td>600,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pharmacists</td>
<td>150,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mortuary services personnel</td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other important health care personnel</td>
<td>300,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Critical infrastructure</strong></td>
<td>Emergency services sector personnel</td>
<td>2,000,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EMS, law enforcement and fire services)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mfrs of pandemic vaccine &amp; antivirals</td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communications/IT, Electricity, Nuclear, Oil &amp; Gas, and Water sector personnel</td>
<td>2,150,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Financial clearing &amp; settlement personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Critical operational &amp; regulatory government personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Banking &amp; Finance, Chemical, Food &amp; Agriculture, Pharmaceutical, Postal &amp; Shipping, and Transportation sector personnel</td>
<td>3,400,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other critical government personnel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General population</strong></td>
<td>Pregnant women</td>
<td>3,100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infants &amp; toddlers 6–35 mo old</td>
<td>10,300,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Household contacts of infants &lt; 6 mo</td>
<td>4,300,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children 3–18 yrs with high risk condition</td>
<td>6,500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Children 3–18 yrs without high risk</td>
<td>58,500,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Persons 19–64 with high risk condition</td>
<td>36,000,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Persons &gt;65 yrs old</td>
<td>38,000,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Healthy adults 19–64 yrs old</td>
<td>123,350,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Estimates rounded to closest 50,000. Occupational target group population sizes may change as plans are developed further for implementation of the pandemic vaccination program.

**Persons not targeted for vaccination in an occupational group would be vaccinated as part of the General Population based on their age and health status.
Figure 1. Vaccination tiers and target groups for a severe pandemic. This figure illustrates how vaccination is administered by tiers until the entire U.S. population has had the opportunity to be vaccinated, and how tiers integrate target groups across the four categories balancing vaccine allocation to occupation-ally defined groups and the general population.
Vaccination Tier 1 at All Pandemic Severities

Tier 1 includes the highest priority groups identified in each of the four categories (Table 1). Unlike other tiers where the groups that are targeted differ with severity of the pandemic, Tier 1 is the same across all pandemic severities. This is because for the occupationally defined groups in this tier, maintaining effectiveness is critical, burdens are likely to be markedly increased in any pandemic, and the risk of occupational exposure and infection is high because of contact with ill persons, living conditions, or geographic location. It should be noted that during the 1918 pandemic, more American soldiers died of illness than in combat during the First World War.

Targeting vaccination in Tier 1 to groups that serve important societal needs is balanced by including in this tier pregnant women and infants, who are at high risk of dying during a pandemic. Protecting pregnant women and infants is in keeping with priorities expressed by public and stakeholder groups and is an efficient use of vaccine because a pregnant woman may pass on protection to her newborn and because infants between 6 and 35 months old may need a smaller vaccine dose compared with older persons.

Potential sub-prioritization of Tier 1

Vaccine may be in extremely short supply through the first wave of a pandemic and even longer. Particularly in a severe pandemic, it may be necessary to sub-prioritize vaccination of groups included in Tier 1 by stratifying within and between target groups (Table 2). For example, hospital-based health care providers are separated into “front-line” providers – those essential for maintaining emergency departments and intensive care units and providing medical and nursing care on inpatient wards – and other inpatient health care providers who would receive vaccine later in Tier 1. This proposed ranking of groups within Tier 1 balances allocation to achieve multiple pandemic response goals and protects persons who are at highest occupational risk of becoming infected.

Table 2. Sub-prioritization of vaccination among Tier 1 target groups for situations where vaccine supply is very limited.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Group</th>
<th>Rationale</th>
<th>Estimated Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front-line inpatient and hospital-based health care workers (persons essential for maintaining function in emergency departments, intensive care units, and other front-line medical and nursing staff)</td>
<td>Critical role in providing care for the sickest persons; highest risk of exposure and occupational infection</td>
<td>1,000,000</td>
</tr>
<tr>
<td>2</td>
<td>Deployed and mission-critical personnel</td>
<td>Essential role in national and homeland security; high risk due to living conditions and possibly geographic location</td>
<td>700,000</td>
</tr>
<tr>
<td>Tier</td>
<td>Category</td>
<td>Description</td>
<td>Count</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>-------------</td>
<td>-------</td>
</tr>
<tr>
<td>3</td>
<td>Front-line Emergency Medical Service personnel (those providing patient assessment, triage, and transport).</td>
<td>Provide critical medical care including procedures such as intubation that increase risk of aerosol exposure and occupational infection</td>
<td>800,000</td>
</tr>
<tr>
<td>4</td>
<td>Front-line outpatient health care providers (physicians, nurses, respiratory therapy; includes public health personnel who provide outpatient care for underserved groups)</td>
<td>Effective outpatient care is critical to decrease the burden on hospitals; high risk of exposure and occupational infection</td>
<td>1,000,000</td>
</tr>
<tr>
<td>5</td>
<td>Front-line fire and law enforcement personnel</td>
<td>Essential to public order and safety; less substantial and more predictable risk of exposure.</td>
<td>1,000,000</td>
</tr>
<tr>
<td>6</td>
<td>Pregnant women and infants 6-11 months old</td>
<td>High-risk documented in prior pandemics and annually; reflects public values to protect children; vaccination of a pregnant woman also will protect the infant; infants 6-11 months old are at high-risk and antiviral drugs are not FDA-approved for children &lt;1 year old</td>
<td>5,150,000*</td>
</tr>
<tr>
<td>7</td>
<td>Others in Tier 1 (includes Tier 1 health care workers not vaccinated previously in hospitals, outpatient settings, home health, long-term care facilities, and public health; emergency service providers; manufacturers of pandemic vaccine, antiviral drugs, and other key pandemic response materials; and children 12-35 months old)</td>
<td>Includes persons in critical settings who have less exposure and toddlers who are less at risk of severe disease or death than younger infants and who are able to receive antiviral treatment based on FDA approval of antiviral drugs</td>
<td>14,100,000**</td>
</tr>
</tbody>
</table>

*Because infants would be expected to receive one-half a regular vaccine dose, the number of adult vaccine dose-equivalents for this group would be about 4,125,000

**Toddlers 12 – 35 months old may receive a lower vaccine dose; thus, the number of adult vaccine dose-equivalents for this group may be less.
Vaccination Tier 2 through 5 by Pandemic Severity

In contrast with Tier 1, target groups included in Tiers 2 through 5 will be different depending on pandemic severity (see Table 1). When vaccination has been completed for all five tiers, at any pandemic severity, everyone in the United States will have had the chance to be vaccinated.

Guidance for severe pandemics (PSI 4 or 5)

Tier 2 targets groups in the Homeland and National Security category that are critical to maintaining our country’s safety. Critical community support service personnel are prioritized because they are needed to assist in a community pandemic response and support vulnerable populations such as the elderly, persons living alone, and families complying with voluntary quarantine when a family member is ill (recommended as part of the community mitigation strategy). Pharmacists and mortuary services personnel also are targeted because of the critical services they provide and the potential for exposure to ill persons. Critical infrastructures targeted in Tier 2 are those that provide “just in time services” (i.e., products like electricity and natural gas that cannot be stored), are relied on by all other infrastructures for their essential operations, and contribute to public health and safety. The highest risk children – those who have underlying medical conditions that increase their risk of complications or death from influenza infections – also are included in this tier.

Tier 3 includes the remaining target groups that protect homeland and national security, provide health care, and maintain critical infrastructures. Critical Infrastructure sectors targeted in Tier 3 are those that provide essential products and services where there generally is greater “redundancy” in infrastructure (e.g., there are many bakeries, dairies, gas stations) or personnel (e.g., there are many truck drivers); or where burden is likely to decrease in a pandemic (e.g., less demand for mass transit, postal, and shipping services). Many businesses in these sectors can take other measures to protect employees, such as using alternate work schedules, teleworking, and reducing in-person meetings and other contacts in the workplace. In the general population, children without high-risk medical conditions are targeted in this tier.

Tiers 4 and 5 are focused on groups in the general population that have not yet been vaccinated. Whereas persons aged 19 to 64 years who have underlying medical conditions and elderly persons 65 years old or older are targeted in Tier 4, in situations of limited vaccine supply, the 19 to 64 year old group should be targeted first. The rationale for targeting younger persons is that the effectiveness of seasonal and candidate pandemic influenza vaccines is less among elderly persons because of age-related decreases in immune function. Thus, when vaccine supply is limited, targeting high-risk adults before the elderly makes best use of the supply that is available. Other strategies, including hygiene and public health measures to reduce the risk of infection, and treatment with antiviral medications are effective options to protect the elderly. Healthy adults would be targeted in Tier 5.

In some pandemic scenarios, prioritizing younger adults before those who are older may be appropriate. During the 1918 pandemic, the risk of death among young, previously healthy adults was similar or greater than that among the elderly. In a severe pandemic, targeting younger adults first also may have several advantages: working age adults contribute more to maintenance of societal functions and economic well-being; they provide most care for children; and they have a higher risk of infection because of their greater number of contacts at work and in the family. Based on these considerations, most of the participants in the public engagement sessions suggested vaccinating younger adults before the elderly. However, given the much higher risk of severe illness and death experienced by older adults in two of the previous three pandemics and for seasonal influenza infection, the working group recommends that plans target older adults before younger healthy adults. Nevertheless, pandemic planners should consider developing and exercising alternate plans to be prepared for either situation.
Guidance for moderate pandemics (PSI 3)

Moderate pandemics also pose threats to maintaining security, providing healthcare and community support services, and to critical infrastructures. While target groups in Tier 1 are the same as for severe pandemics, in later tiers, general population groups assume greater priority.

Target groups in Tier 2 for homeland and national security, health care and community support services, and critical infrastructure are the same as for a severe pandemic (Table 1). However, for moderate pandemics this tier includes all children 3 to 18 years old, as well as household contacts of young infants. Because of the large population of children, if vaccine supply is limited, children with medical conditions that increase their risk of severe illness should be vaccinated before those without such conditions.

Tier 3 includes the remaining target groups that protect homeland and national security, and provide healthcare and community support. Vaccination is not targeted to critical infrastructure personnel in the remaining sectors because a moderate pandemic poses less risk to maintenance of important functions among infrastructures where there is more redundancy of functions and personnel. Therefore, people who would have been targeted in Tier 3 in this category for a severe pandemic would be vaccinated as part of the general population based on their age and health status. Tier 3 also includes persons aged 19 to 64 years who are at higher risk of severe illness due to underlying medical conditions and persons 65 years old and older. Similar to the situation for severe pandemics, if vaccine supply is limited, the high-risk adults should be targeted before the elderly because of the greater vaccine effectiveness in the former group. Healthy adults are included in Tier 4.

Guidance for less severe pandemics (PSI 1 or 2)

Less severe pandemics pose less threat to delivery of health care, community support, and other essential services and products. While target groups in Tier 1 are the same as for severe pandemics, in later vaccination tiers, general population groups assume greater priority. Historical analysis of the 1957 and 1968 pandemics in the United States indicates that health care and essential services were effectively maintained. Because of this, after Tier 1, occupational groups in the health care and community support services and critical infrastructure categories are not specifically prioritized and workers in these groups would be vaccinated based on their age and health status as part of the general population.

Tier 2 includes groups that protect homeland and national security given the overriding importance of protecting our country’s security (Table 2). In contrast with more severe pandemics where children are vaccinated before other general population groups, in less severe pandemics, guidance for priority vaccination follows recommendations for annual influenza vaccination as defined by the Advisory Committee for Immunization Practices. The rationale is that a PSI Category 1 pandemic may be little different than a bad annual influenza outbreak. Thus, Tier 2 includes household contacts of infants less than 6 months old and persons with medical conditions that increase their risk for influenza complications, and persons aged 65 years and older.

Tier 3 includes healthy children and Tier 4 includes healthy adults, who comprise the remainder of the population.
Next Steps and What States and Communities Can Do

This guidance is the result of careful and rigorous consideration of scientific data, historical analyses, ethical issues, and comments from government agencies, key stakeholders at the national, State, and local/community levels, and members of the general public. The development of vaccine prioritization guidance, however, is only one step toward planning and implementing an effective pandemic vaccination program. Strategies for how persons in occupationallly defined target groups should be identified and how their priority can be verified at the time of vaccination must be developed. State, local, and tribal planners also must plan for allocation and distribution of vaccine to sites where it will be administered, vaccination clinic procedures, and programs to monitor coverage and potential adverse events. Strategies and materials also must be developed for employers and the public to clearly communicate the vaccine targeting strategy and support its implementation.
Appendix A

Additional Information on the Draft Guidance Development Process

This guidance was developed by a Federal interagency working group whose members represent all sectors of our government. The guidelines are firmly rooted in the most up-to-date scientific information available, balanced with the values of our society and the ethical issues involved in planning a phased approach to pandemic vaccination.

In a series of weekly meetings over a three month period, working group members were informed on the science of pandemics and pandemic vaccine, including the effects of past pandemics; risk groups for severe influenza illness and death; influenza vaccine production, timing, and capacity; vaccine effectiveness in various population groups; potential indirect effects of vaccination on preventing the spread of disease in communities (“herd immunity”); and potential strategies and impacts for other pandemic response measures. Representatives from the U.S. Department of Defense and the U.S. Department of Homeland Security (DHS) presented to the working group on critical issues for national and homeland security. State and local public health and homeland security officials presented perspectives on community needs. Planners from Canada and the United Kingdom described their vaccine allocation plans. The group reviewed and discussed recommendations from Federal advisory committees, including preliminary guidance on vaccine prioritization that was developed jointly by the U.S. Department of Health and Human Services’ Advisory Committee on Immunization Practices (ACIP) and National Vaccine Advisory Committee (NVAC) in 2005, and findings on critical infrastructures and workforces from an analysis by DHS’s National Infrastructure Advisory Council (NIAC).

Input from Stakeholders and the Public

Public and stakeholder input into development of the guidance was obtained in public engagement and stakeholder meetings and from over 200 written comments submitted in response to a Request for Information issued in December 2006. Public engagement and stakeholder meetings focused on discussion of the goals and objectives of pandemic vaccination and their importance. Participants in all-day sessions heard background presentations on pandemics and pandemic vaccination, took part in small group discussions of potential vaccination program goals and objectives as well as the values underlying them, and rated each on a scale from “extremely important” to “unimportant” based on a severe pandemic scenario. Stakeholders and the public identified the same four vaccination program objectives as most important in all of the meetings:

• Protect persons critical to the pandemic response and who provide care for persons with pandemic illness,
• Protect persons who provide essential community services,
• Protect persons who are at high risk of infection because of their occupation, and
• Protect children.

Other objectives that were considered important included protecting homeland and national security, indirectly protecting persons who cannot be vaccinated, protecting persons at high risk of severe illness and death, protecting those who have essential economic functions, protecting persons guarding our borders, and targeting vaccine to persons among whom it is most likely to be effective.
Decision Analysis

The working group undertook a rigorous decision analysis as part of the process to develop draft guidance. In this analysis, working group members rated the importance of each of 10 potential vaccination program objectives for a severe pandemic. For vaccination program objectives relating to occupational function and risk, working group members independently rated 57 population groups on the degree to which they met each of the objectives. Separately, influenza experts at the U.S. Centers for Disease Control and Prevention (CDC) and in academia independently rated groups with respect to science-based objectives, such as vaccine effectiveness and risk of severe or fatal influenza illness. Weighted scores were totaled across the ten objectives for each group, and groups were ranked in four categories: homeland and national security, health care and community support services, critical infrastructure, and general population. The process was then replicated based on rating of vaccination program objectives for moderate and less severe pandemics.

Groups with the highest overall scores, regardless of pandemic severity, included front-line public health responders, essential health care workers, emergency medical service providers, and law enforcement personnel. Among the general population groups, infants and toddlers ranked highest.

Ethical Considerations

Underlying the working group’s deliberations was a strong consideration of the ethical issues involved in allocating vaccine when supply is limited. An ethicist from the National Institutes of Health who participated as a member of the working group and academic ethicists discussed ethical frameworks and their application to decision making on vaccine allocation. Vaccinating some people earlier than others to minimize health and societal impacts of a pandemic was considered ethically appropriate. Other important principles that were considered were: fairness and equity (recognizing that all persons have equal value, and providing equal opportunity for vaccination among all persons in a priority group); reciprocity, defined as protecting persons who assume increased risk of becoming infected because of their jobs; and flexibility to assure that vaccine priorities are optimally tailored to the severity of the pandemic and the groups at greatest risk of severe infection and death.

A second ethical focus was the importance of developing guidance through an open and transparent process with multiple opportunities and avenues for input from the public and stakeholders. Public engagement meetings were held in Las Cruces, New Mexico, and Long Island, New York, and included a diverse group of participants. In addition, stakeholders participated at a meeting in Washington D.C. that included representatives from private sector businesses and community organizations. The working group is committed to maintaining an ethical process as comments on the draft guidance are sought through a variety of forums and media.

Vetting the draft guidance with the public and stakeholders

Draft guidance developed through the process described above was posted for public comment in the Federal Register and on the Federal government’s pandemic influenza website (www.pandemicflu.gov) in October 2007. In addition, input was obtained in two public engagement and a stakeholders meeting, and in a three day web-dialogue. The approach to the public and stakeholder meetings was similar to that used in developing the guidance but the small group discussions focused on the proposed vaccine prioritization recommendations and participants were asked what they thought should be changed. Participants then voted on proposed changes using a scale ranging from “strongly agree” to “strongly disagree.” Process for the web-dialogue was similar with discussions conducted electronically including over 400 participants who interacted with interagency working group members and other government
experts. Information from these meetings and comments in response to the Federal Register and website notice were shared with the working group and all proposed changes were considered. Modifications were made both in the specific priority group recommendations as well as in the general guidance based on public and stakeholder comments.
Pandemic Severity Index

Priority groups for receipt of vaccine early in a pandemic may differ with the severity of the pandemic, as defined by the Pandemic Severity Index (PSI). The PSI defines five categories of pandemic severity based on the proportion of persons with pandemic illness who die (the “case fatality rate”). The severity of a pandemic will be determined soon after its initial outbreak by surveillance of cases and their outcomes before large areas of the world are affected. Government entities will use the PSI to guide implementation of response measures, including vaccination and community strategies to mitigate disease transmission.

Matching the targeting and intensity of intervention to the severity of a pandemic maximizes the public health benefit and avoids adverse consequences. Data on case fatality rates early in the course of the next pandemic will be collected during outbreak investigations of initial clusters of human cases, and public health officials may make use of existing influenza surveillance systems once widespread transmission starts. Other measures of pandemic severity may be assessed and highest risk populations for severe illness and death will be identified. For more information on the PSI, please go to http://www.pandemicflu.gov/plan/community/commitigation.html#IV.

**Figure.** Pandemic Severity Index categories based on case fatality rates of pandemic illness. Note that the projected number of U.S. deaths refers to a pandemic in which no response measures are undertaken. Health impacts in the context of an effective response would be much less.

---

### Pandemic Severity Index

<table>
<thead>
<tr>
<th>Case Fatality Ratio</th>
<th>Projected Number of Deaths*</th>
<th>US Population, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0%</td>
<td>Category 5</td>
<td>1,800,000</td>
</tr>
<tr>
<td>1.0 - &lt;2.0%</td>
<td>Category 4</td>
<td>900,000 - &lt;1,800,000</td>
</tr>
<tr>
<td>0.5 - &lt;1.0%</td>
<td>Category 3</td>
<td>450,000 - &lt;900,000</td>
</tr>
<tr>
<td>0.1% - &lt;0.5%</td>
<td>Category 2</td>
<td>90,000 - &lt;450,000</td>
</tr>
<tr>
<td>&lt;0.1%</td>
<td>Category 1</td>
<td>&lt;90,000</td>
</tr>
</tbody>
</table>

*Based on 30% illness Rate
Appendix C

Description and Rationale for Groups Targeted for Pandemic Vaccination

Defining targeted groups in four categories – Homeland and National Security, Health Care and Community Support Services, Critical Infrastructure, and General Population – highlights the multiple, important objectives of a pandemic vaccination program and the U.S. Government’s commitment to address different needs simultaneously as the program is implemented.

Defining target groups in categories also highlights potential differences in program implementation between categories. For example, vaccine for homeland and national security groups may be allocated to the Departments of Defense, Homeland Security, and other agencies and administered by military healthcare personnel or occupational health providers. Healthcare providers may be vaccinated in their workplaces. Large companies, particularly those operating in several States, may have the capacity to coordinate the vaccination program for their workers. Vaccination of first responders, critical workers at municipal utilities, and the general population will be managed by State and local health departments.

The Tables below provide further definition of target groups for pandemic vaccination, the estimated size of the group, and a brief description of the working group’s rationale for prioritizing that group. Note that persons in occupational groups are only those who are critical to maintaining essential functions. Work is ongoing to further assess and hone definitions and population sizes for these groups.

Table 1. Target groups in Homeland and National Security.¹

<table>
<thead>
<tr>
<th>Tier (severe pandemic)</th>
<th>Group</th>
<th>Definition</th>
<th>Estimated Group Size</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deployed and mission critical personnel</td>
<td>Military forces and other mission critical personnel not limited to active duty military or USG employees. Includes some diplomatic and intelligence service personnel, and public and private sector functions identified by Federal agencies as unique and critical to national security</td>
<td>700,000</td>
<td>Critical to protect national security; unable to tolerate projected pandemic personnel loss and fulfill mission; potential greater risk of infection due to geographic location and crowded living or working conditions</td>
</tr>
<tr>
<td>2</td>
<td>Essential support and sustainment personnel</td>
<td>Military and other essential personnel needed to support and sustain deployed forces</td>
<td>650,000</td>
<td>Maintaining function is essential to mission success for deployed personnel; risk of infection may be less from geographical location and living conditions</td>
</tr>
<tr>
<td>Group</td>
<td>Description</td>
<td>Estimated Number</td>
<td>Key Points</td>
<td></td>
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</tr>
<tr>
<td>2 Intelligence services</td>
<td>Critical personnel in the intelligence community serving at domestic and international posts</td>
<td>150,000</td>
<td>Essential to homeland and national security; opportunities for social distancing limited because of inability to telework due to need for secure facilities; some personnel may be at increased risk based on geographical location</td>
<td></td>
</tr>
<tr>
<td>2 Border protection personnel</td>
<td>Critical personnel in agencies providing U.S. border security, including but not limited to Customs and Border Protection, Border Patrol, Immigration and Customs Enforcement, Transportation Security Administration, and Coast Guard personnel</td>
<td>100,000</td>
<td>Essential to homeland security; in close contact with many potentially infected persons throughout a pandemic; limited ability to apply social distancing strategies</td>
<td></td>
</tr>
<tr>
<td>2 National Guard personnel</td>
<td>National Guard personnel not included above who are likely to be activated to maintain public order during a pandemic or to support pandemic response services or critical infrastructure</td>
<td>500,000</td>
<td>Likely to be activated in a pandemic to support critical response or community functions; may be at increased risk of exposure and infection based on mission</td>
<td></td>
</tr>
<tr>
<td>2 Other domestic national security personnel</td>
<td>Includes other groups that are essential to national security such as guards at nuclear facilities</td>
<td>50,000</td>
<td>Essential to national and homeland security</td>
<td></td>
</tr>
<tr>
<td>3 Remaining active duty military and essential support personnel</td>
<td>Active duty personnel not included in higher priority groups and essential support personnel</td>
<td>1.5 million</td>
<td>Important to national and homeland security</td>
<td></td>
</tr>
</tbody>
</table>

1 Estimates of group size from Department of Defense, Department of Homeland Security, and from working group representatives from other Federal agencies
Table 3. Target groups in Critical Infrastructure

<table>
<thead>
<tr>
<th>Tier (severe pandemic)</th>
<th>Group</th>
<th>Definition</th>
<th>Estimated Group Size</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergency services personnel – EMS, fire, law enforcement, and corrections</td>
<td>Includes groups supporting emergency response and public safety. EMS personnel include those who are fire department-based, hospital-based or private; fire fighters include professionals and volunteers; law enforcement includes local police, sheriff’s officers, and State troopers; and corrections officers include those at prisons and jails</td>
<td>2 million</td>
<td>Provide critical public safety and emergency response services; contribute to pandemic response activities by maintaining public order and contributing to medical care services; increased occupational risk for emergency medical services due to exposure to persons with pandemic illness</td>
</tr>
<tr>
<td>1</td>
<td>Manufacturers of pandemic vaccine and antiviral drugs,</td>
<td>Includes critical personnel required for ongoing production of pandemic medical countermeasures to support a pandemic response</td>
<td>50,000</td>
<td>Reducing pandemic health impacts requires production of pandemic vaccine and antiviral drugs</td>
</tr>
<tr>
<td>2</td>
<td>Communications/IT, Electricity, Nuclear, Oil &amp; Gas, and Water sector personnel, and Financial clearing and settlement personnel</td>
<td>Personnel who are critical to support essential services provided by the defined sectors</td>
<td>1.75 million</td>
<td>These sectors provide products and services that generally cannot be stored, are required for community health and safety, and are essential to the functioning of other critical infrastructure sectors</td>
</tr>
<tr>
<td>2</td>
<td>Critical government personnel – operational and regulatory functions</td>
<td>Federal, State, local, and tribal government employees and contractors who perform critical regulatory or operational functions required for essential operations of other CI sectors</td>
<td>400,000</td>
<td>Government personnel are critical for implementing and monitoring components of the pandemic response, and performing regulatory or operational functions essential to critical infrastructures that protect public health and safety and preserve security</td>
</tr>
<tr>
<td>3</td>
<td>Banking &amp; Finance, Chemical, Food &amp; Agriculture, Pharmaceutical, Postal &amp; Shipping, and Transportation sector personnel</td>
<td>Personnel who are critical to support essential services provided by the defined sectors</td>
<td>3.0 million</td>
<td>These sectors provide essential products and services; however compared with Tier 2 sectors, products can more likely be stored, facilities and personnel are more fungible and better able to maintain essential functions with high absenteeism, and other strategies can be implemented to protect workers</td>
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<tr>
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</tr>
<tr>
<td>3</td>
<td>Other critical government personnel</td>
<td>Federal, State, local and tribal government employees and contractors who perform important government functions included in agency continuity-of-operations plans</td>
<td>400,000</td>
<td>Continuity of key government functions is important to support communities and critical infrastructures</td>
</tr>
</tbody>
</table>

\(^3\) Group sizes for critical infrastructure sectors are estimated as 25% of the workforce in Tier 2 sectors and 7.5% of the workforce in Tier 3 sectors. These estimates track generally with estimates from the NIAC report, The Prioritization of Critical Infrastructure for a Pandemic Outbreak in the United States (www.dhs.gov/niac) and with estimates provided by the Department of Homeland Security. Estimates for Federal, State, local, and tribal government personnel are 5% of workers in Tier 2 and 5% in Tier 3.
Table 4. Target groups in the General Population

<table>
<thead>
<tr>
<th>Tier (severe pandemic)</th>
<th>Group</th>
<th>Definition</th>
<th>Estimated Group Size</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pregnant women</td>
<td>Women at any stage of pregnancy</td>
<td>3.1 million</td>
<td>Pregnant women are at high risk of severe complications or death from pandemic influenza due to immunological, circulatory, and respiratory changes that occur during pregnancy; vaccinating the pregnant woman also may protect newborn infants due to passive transfer of maternal antibodies</td>
</tr>
<tr>
<td>1</td>
<td>Infants and toddlers, 6 – 35 months old</td>
<td>Infants and toddlers in the specified age group</td>
<td>10.3 million</td>
<td>Persons in this age group are at high risk of severe complications or death from pandemic influenza; vaccination may require a lower dose than used to protect older children and adults; antiviral medications are not approved for use in children &lt;1 year old; public values prioritize children highest among groups defined by age and disease status</td>
</tr>
<tr>
<td>2</td>
<td>Household contacts of infants under 6 months old</td>
<td>Household contacts of infants under 6 months old</td>
<td>4.3 million</td>
<td>Infants under 6 months old cannot be directly protected by vaccination and influenza antiviral drugs are not approved for this age group; therefore, protecting young infants by vaccinating household contacts is the best option; public values prioritize children highest among groups defined by age and disease status</td>
</tr>
<tr>
<td>2</td>
<td>Children 3 – 18 years old with a high-risk medical condition</td>
<td>Children in the specified age group with a chronic medical condition that increases their risk of severe influenza disease, including heart and lung diseases, metabolic disease, renal disease, and neuromuscular diseases that may compromise respiratory function, as defined by ACIP recommendations for seasonal influenza vaccination</td>
<td>6.5 million</td>
<td>Children with these conditions are at increased risk of severe complications or death from influenza disease; public values prioritize children highest among groups defined by age and disease status</td>
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</tr>
<tr>
<td>3</td>
<td>Children 3 – 18 years old without a high risk medical condition</td>
<td>Children in the specified age group not included in above</td>
<td>58.5 million</td>
<td>Public values prioritize children highest among groups defined by age and disease status; vaccinating children may reduce transmission of pandemic influenza to household contacts and in communities; if children are protected by vaccine, schools can re-open mitigating secondary adverse consequences of closing schools</td>
</tr>
<tr>
<td>4</td>
<td>High-risk persons 19 – 64 years old</td>
<td>Adults in the specified age group with a chronic medical condition that increases their risk of severe influenza disease, including heart and lung diseases, metabolic disease, renal disease, and neuromuscular diseases that may compromise respiratory function, as defined by ACIP recommendations for seasonal influenza vaccination</td>
<td>36 million</td>
<td>Adults with these conditions are at high-risk of severe complications or death from pandemic influenza</td>
</tr>
<tr>
<td>4</td>
<td>Persons over 65 years old</td>
<td>Elderly adults in the specified age group</td>
<td>38 million</td>
<td>Persons in this group are at high-risk of severe complications or death from pandemic influenza</td>
</tr>
<tr>
<td>5</td>
<td>Healthy adults, 19 – 64 years old</td>
<td>Adults in the specified age group not included above</td>
<td>123.4 million</td>
<td>Persons in this group lack age, health condition, and occupational rationales for priority pandemic vaccination</td>
</tr>
</tbody>
</table>
Estimates of group size based on the U.S. census from 2000 extrapolated to 2006 (http://www.census.gov/ipc/www/usinterim-proj). The target group “Healthy adults 19 – 64 yrs old” does not include persons defined by occupation and pregnant women who are included in other target groups.
### ATTACHMENT F

**INFLUENZA PUBLIC EDUCATION MATERIALS**
You play an important role in protecting yourself, your family, and friends from flu. Flu spreads easily from person to person. It spreads mainly through droplets that come from a sick person's nose and mouth when they cough, sneeze, or talk. These droplets can travel up to 6 feet and land in the noses and mouths of people nearby or be inhaled into the lungs. It also can spread when you touch surfaces or objects that have flu germs on them and then touch your nose or mouth. Plan to stay home if you’re sick. By practicing healthy habits, you will be doing your part to help prevent the spread of flu.

<table>
<thead>
<tr>
<th>Take these actions to help slow the spread of flu:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Get vaccinated.</strong></td>
</tr>
<tr>
<td><strong>Stay home if you’re sick.</strong></td>
</tr>
<tr>
<td>– Keep your distance (6 feet or more) from others at home or if you have to leave (to visit the doctor’s office).</td>
</tr>
<tr>
<td>– If you have a fever, stay home for at least 24 hours after your fever is gone without using medicine that lowers fever.</td>
</tr>
<tr>
<td><strong>Cover your coughs and sneezes.</strong></td>
</tr>
<tr>
<td>– Cover your nose and mouth with a tissue.</td>
</tr>
<tr>
<td>– Throw away used tissue when you're done.</td>
</tr>
<tr>
<td>– Use your sleeve or elbow if you don’t have a tissue.</td>
</tr>
<tr>
<td>– Wash or sanitize your hands.</td>
</tr>
<tr>
<td><strong>Wash your hands often.</strong></td>
</tr>
<tr>
<td>– Wash with soap and water for at least 20 seconds (the time it takes to hum the “Happy Birthday” song twice).</td>
</tr>
<tr>
<td>– Use hand sanitizer with at least 60% alcohol if you don’t have soap and water.</td>
</tr>
<tr>
<td>– Wash your hands before touching your eyes, nose, or mouth.</td>
</tr>
<tr>
<td><strong>Clean frequently touched surfaces and objects.</strong></td>
</tr>
<tr>
<td>– Use soap and water, a bleach and water solution, or products with a label that says “EPA-approved” to clean items, such as handrails and doorknobs.</td>
</tr>
<tr>
<td>– Always follow the directions on product labels.</td>
</tr>
</tbody>
</table>
Protect Yourself from Flu at a Large Public Event

Event attendees:
You can protect your health and the health of others while attending a public event. Flu can spread quickly when lots of people are close together for a long time. Plan to stay home if you’re sick. By practicing healthy habits, you will be doing your part to help prevent the spread of flu.

Take these actions to help keep yourself and others well:

- **Get vaccinated.**
- **Stay home if you’re sick.**
  - Keep your distance (6 feet or more) from others at home or if you have to leave (to visit the doctor’s office).
  - If you have a fever, stay home for at least 24 hours after your fever is gone without using medicine that lowers fever.
- **Cover your nose and mouth with a tissue when you cough or sneeze.**
  - Throw away dirty tissues.
  - Use your sleeve or elbow if you don’t have a tissue.
  - Wash or sanitize your hands afterwards.
- **Wash your hands often.**
  - Wash with soap and water for at least 20 seconds (the time it takes to hum the “Happy Birthday” song twice).
  - Use hand sanitizer with at least 60% alcohol if you don’t have soap and water.
- **Try not to touch surfaces and objects that are used and shared often.**
- **Try to keep your distance from people who are sick.**
  - Limit actions like shaking hands, hugging, and kissing your fellow event attendees.

www.cdc.gov/npi   1-800-CDC-INFO (232-4636)   www.cdc.gov/info
TTY:888-232-6348
Protect Your Children and Others from Flu During the School Year

Parents and guardians:
You can protect the health of your children by teaching them to practice healthy habits during the school year. When children get sick with flu, they may be able to spread it to others for a longer period of time than adults. Plan to keep your children home if they’re sick. By practicing healthy habits, you and your family will be doing your part to help prevent the spread of flu.

Take these actions to help keep your family well:

Get your family vaccinated.

Plan to keep them home if they’re sick.
- If your children get sick at school, make plans to pick them up as soon as possible.
- Keep your children home for at least 24 hours after their fever is gone without using medicine that lowers fever.

Make sure they cover their nose and mouth with a tissue when they cough or sneeze.
- Throw away dirty tissues.
- Use their sleeve or elbow if they don’t have a tissue.
- Wash or sanitize their hands.

Teach them to wash their hands often at home and at school.
- Wash with soap and water for at least 20 seconds (the time it takes to hum the “Happy Birthday” song twice).
- Provide hand sanitizer with at least 60% alcohol in case they don’t have soap and water.

Clean frequently touched surfaces and objects.
- Use soap and water, a bleach and water solution, or products with a label that says “EPA-approved” to clean items, such as toys and TV remotes.
- Always follow the directions on product labels.
Protect Yourself and Your Students from Flu During the School Year

Teachers:
You can protect yourself and your students by practicing and promoting healthy habits during the school year. Because you and your students are in close contact for much of the day, schools can become places where flu quickly spreads. Plan to stay home if you have flu-like symptoms. Encourage your students to go home and stay home while they’re sick. By practicing healthy habits, you and your students will be doing your part to help prevent the spread of flu.

Practice and promote these actions to help keep yourself and your students well:

- **Get vaccinated.**
- **Stay home if you’re sick.**
  - If your student gets sick at school, ask their parent or guardian to pick them up and take them home.
  - Encourage your student to stay home for at least 24 hours after their fever is gone without using medicine that lowers fever.
- **Cover your nose and mouth with a tissue when you cough or sneeze.**
  - Throw away dirty tissues.
  - Use your sleeve or elbow if you don’t have a tissue.
  - Wash or sanitize your hands.
- **Wash your hands often at school.**
  - Wash with soap and water for at least 20 seconds (the time it takes to hum the “Happy Birthday” song twice).
  - Use hand sanitizer with at least 60% alcohol if you don’t have soap and water.
- **Clean frequently touched surfaces and objects in the classroom.**
  - Use soap and water, a bleach and water solution, or products with a label that says “EPA-approved” to clean items, such as computer keyboards and desks.
  - Always follow the directions on product labels.