

## **COMMUNITY CONTAINMENT**

### **NC Department of Health and Human Services, Division of Public Health**

#### **Introduction**

Pandemic influenza is a unique public health emergency and community disaster. While the next pandemic is inevitable, uncertainty about its severity is high. There may be little warning, but most experts agree that there will be one to six months between identification of a pandemic virus and widespread outbreaks in the United States. Outbreaks will occur simultaneously and serially, with individual communities affected for six to eight weeks or longer.

Pandemic influenza has the potential of affecting all elements of society. A large number of cases will add burden to hospitals and other health care systems already stressed with the normal day to day crises. Mortality is usually markedly increased, and age-specific mortality may be higher among younger healthier persons than with seasonal flu.. Health and medical personnel as well as other infrastructure workers, i.e. law enforcement, fire, public works, will not be immune, and if age-specific mortality is higher among these groups then effects on our communities could be staggering.

#### **General Assumptions**

- It is impossible to predict an accurate impact. Using the 1918 pandemic as a model with a 35% attack rate, the result in North Carolina could be:
  - 1.6 million doctor visits
  - 290,000 hospitalizations
  - 65,300 deaths
- No sector of business, society or government in North Carolina will be un-affected by a pandemic of influenza.
- Standard practices such as quenching will be undertaken during the initial phases of the pandemic but may prove to be inadequate.
- Systems to deliver acute medical care may become overwhelmed
- Counties and local health departments (LHDs) will rely on state guidance, leadership and resources to continue critical functions. In turn the state will rely on guidance, leadership and resources from the federal government.
- There will be three levels of activities: those directly related to pandemic response, those related to continuity of critical functions and those related to further supporting critical functions through the re-allocation of unused resources.
- Plans and response will need to be adaptable and flexible in order to deliver the best possible outcomes. Pandemic-specific plans and response should be based on vetted, established practice to the extent possible. In North Carolina, all hazards plans are the basis for ALL emergency response. Pandemic influenza planning is one component of that planning; therefore, pandemic influenza plans are not stand alone documents but rely heavily on other plans and procedures.
- As plans and response adapt to the specific challenges of the pandemic, cross training and just-in-time training for critical functions will need to be identified, developed and conducted.

- NC will rely on activation of the State Emergency Operations Plan with its Incident Management System and activation of the Emergency Operations Center at the appropriate level. A Pandemic Flu Appendix is currently being prepared.

## Community Containment Goals

Containment measures can be used to either completely stop transmission of a pandemic virus, or they may be implemented in an attempt to slow the spread of pandemic influenza.

The goals of community containment interventions include:

- delay spread of disease and occurrence of outbreaks in communities
- decrease clinical attack rate in affected communities
- distribute the number of cases that do occur over a longer interval

Containment measures can include both the use of pharmaceutical interventions such as vaccination and antiviral administration (if available) and nonpharmaceutical interventions (NPIs) such as isolation and quarantine of individuals, social distancing, and infection control measures.

<b>Social Distancing Measures (Contact Interventions)</b>	<b>Infection Control Measures (Transmission Interventions)</b>
<ul style="list-style-type: none"> <li>• School and child care dismissal</li> <li>• Alteration of workplace practices (telecommuting, scheduling) to allow greater social distance between workers</li> <li>• Cancellation of public gatherings and other activities that bring people together</li> </ul>	<ul style="list-style-type: none"> <li>• Isolation of infected persons away from others</li> <li>• Quarantine of exposed persons away from others</li> <li>• Use of masks (both to prevent spread as well as exposure)</li> <li>• Cough etiquette</li> <li>• Hand hygiene</li> </ul>

Because no vaccine against a novel influenza strain will be available initially, and, it is likely that both vaccine and antivirals will be in short supply, other methods of community containment such as non-pharmaceutical interventions (NPIs) are an integral part of community containment planning. Containment measures can be directed at individuals, as in the case of isolation and quarantine, or they can be applied to entire communities in the case of social distancing strategies.

## Isolation and Treatment of Ill Persons

### Overview of Isolation and Quarantine

To contain the spread of a contagious illness, public health authorities rely on many strategies. Two of these strategies are isolation and quarantine. Both are common practices in public health, and both aim to control exposure to infected or potentially infected persons. Both may be undertaken voluntarily or compelled by public health authorities. The two strategies differ in that isolation applies to persons who are known to have an illness, and quarantine applies to those who have been exposed to an illness but who may or may not become ill.

### ISOLATION: FOR PEOPLE WHO ARE ILL

Isolation refers to the separation of persons who have a specific infectious illness from those who are healthy and the restriction of their movement to stop the spread of that illness. Isolation allows for the focused delivery of specialized health care to people who are ill, and it protects healthy people from getting sick. People in isolation may be cared for in their homes, in hospitals, or in designated healthcare facilities. Isolation is a standard procedure used in hospitals today for patients with tuberculosis (TB) and certain other infectious diseases. In most cases, isolation is voluntary; however,

many levels of government (federal, state, and local) have basic authority to compel isolation of sick people to protect the public.

### **QUARANTINE: FOR PEOPLE WHO HAVE BEEN EXPOSED BUT ARE NOT ILL**

Quarantine refers to the separation and restriction of movement of persons who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious. Quarantine of exposed persons is a public health strategy like isolation, in that it is intended to stop the spread of infectious disease. Quarantine is medically very effective in protecting the public from disease. *CDC Fact Sheet on Isolation and Quarantine January 20, 2004*

### **Major Points on Isolation and Quarantine for Pandemic Influenza**

- Health care providers, hospitals and LHDs will detect and diagnose presumptive and confirmed pandemic influenza illnesses through surveillance using case definitions and laboratory methods provided by DPH. See Part NC Plan Part B, Surveillance and related Appendices as well as Appendices P1,2 and 3. Updated case definitions will be provided as they evolve. (<http://www.epi.state.nc.us/epi/gcdc/pandemic.html> )
- The Centers for Disease Control and Prevention (CDC), through its Division of Global Migration and Quarantine, is empowered to detain, medically examine, or conditionally release persons suspected of carrying certain communicable diseases.
  - Novel influenza with pandemic potential was added to the list of federally quarantinable diseases in April 2005.
- States generally have authority to declare and enforce quarantine within their borders; authority varies widely from state to state.
  - North Carolina made novel influenza virus infection in humans a reportable condition in 2006.
- Isolation and quarantine are medically very effective in protecting the public from some diseases, but that may not be true for influenza; some of the challenges include:
  - Short generation period for influenza virus
  - Influenza virus can be transmitted by asymptomatic individuals
  - Viral shedding and hence transmission can occur before the onset of symptoms
- Isolation and quarantine of individuals will be most feasible during Pandemic Alert Phases and early in Pandemic Phase 6/USG Stage 4 and early Stage 5, with only a small number of cases occurring in NC.
- Community-wide containment measures to encourage social distancing such as snow-days may be used later in Pandemic Phase 6/USG Stage 5 when the number of cases exceeds public health capacity to conduct isolation and quarantine effectively.

### **Community-based Strategies for Pandemic Influenza**

Whereas isolation and contact management strategies such as active monitoring are directed to individuals, broader community containment measures may be applied to groups of persons or to communities during outbreaks characterized by extensive transmission. These interventions range from measures to increase social distance among community members (e.g., cancellation of public gatherings, implementation of snow days) to community-wide quarantine.

**Communicating Community containment strategies with Health Care Sector and the public** (see also Part G and Appendices G-1, 2 and 3: Communication).

#### **Health Care Sector Community Containment Information:**

Upon the direction of the State Health Director,

- The State Department of Health and Human Services Public Affairs Office will disseminate information to health care providers including hospitals using plans outline in Part G and its appendices. Information will include existing HHS messages and updated messages as they become available during actual events. Existing Messages include advice for providers to give persons affected but not seriously ill to remain at home and avoid adding to a potential surge in demand for care at acute care settings unless unable to conduct home care.

- DPH will also provide health care providers and local health departments with case definitions, triage guidance, public health reporting, case definitions and recommendations for care and patient education about home care using NC Pandemic Plan (Appendices P-1, -2 and -3 (Clinical Algorithm for Detection and Management of Suspected Cases of Avian Influenza H5N1 in Travelers, Reporting of a Suspect Case of Avian Influenza H5N1 Worksheet and Clinical Considerations in Pandemic Influenza from the Academy of Family Physicians (<http://www.epi.state.nc.us/epi/gcdc/pandemic.html>))
- DPH will provide information on strategies for testing and test availability.
- Patient information sheets will be made available through the Public Health Information Officers at the state and local levels.
- Local health departments will be advised to mobilize Medical Reserve Corps volunteers to assist with triage, home health care and Alternate Treatment locations in accordance with local plans.
- Coordination of information and operations will occur through the Operations Section of the Public Health Coordinating Center (PHCC)

**Public Sector Information**

Part G of the State Pandemic Influenza Plan details coordination of messages and use of multiple media channels to provide information to health care providers including hospitals, local and state government officials. DPH Public Affairs Office (PAO) will use Part G, its related appendices as well as updated information from CDC to provide information to the public as well. These messages will include information such as advice when to seek medical care, staying home from mass gatherings and links to American Red Cross pandemic influenza home care guidance.

State Public Health Public Information Officers will also provide access to community containment information through the NC DHHS CARE-LINE which offers both telephone and internet access:

- 1-800-662-7030 , 919-855-4400 (Voice, Spanish)
- 1-877-452-2514 or 919-733-4851 (TTY Dedicated)
- [care.line@ncmail.net](mailto:care.line@ncmail.net)

The Care Line and other call centers will also provide information about specific pandemic illness descriptions, when and how to seek emergency and non-emergency care to further enable social distancing and community containment. Such information includes recommendations for avoiding exposing others through use of voluntary isolation and quarantine, respiratory etiquette and social distancing. The CARE-LINE is staffed with employees of DHHS and additional staff and volunteers will be recruited from other DHHS agencies not directly responding to the pandemic. Just-in-time training materials will be developed for these additional call takers. In March 2008, the CARE-LINE will expand its operation to 24 and 7.

Although health communication and other community containment interventions are designed to prevent transmission by limiting social interactions and preventing inadvertent exposures, less stringent actions will be easier to implement on a large scale. For example, DPH may use the snow day approach where community members will be told to stay home as they would during a major snowstorm. Schools will dismiss students, childcare providers will close, work sites will be restricted to increase social distance, large public gatherings will be cancelled, and public transportation will halt or scale back.

Implementation of snow days requires fewer resources to activate and maintain community-level quarantine. In addition, as snow days are a familiar concept in most communities, implementation can occur more quickly. Implementation of community-wide legally enforced quarantine, on the other hand, can be resource intensive, requiring mechanisms for enforcement and provision of necessities. Snow days and other measures to increase social distance are therefore the preferred community-level responses, with quarantine reserved for situations in which less drastic measures have not been successful in containing an outbreak.

Local health directors and local governmental agencies will also use other relevant plan sections regarding community containment, including behavioral health, refugee and vulnerable populations and business continuity of operations planning to assure community containment strategies reach all parts of society.

Use of local, regional and statewide surveillance data from NC DETECT, Sentinel Surveillance and State Laboratory for Public Health virologic results will inform decision making about timing of community containment measures in various local and regional areas in order to minimize disruption related to community wide interventions.

During the pandemic alert period, delivery of messages to the public on concepts of social distancing, snow days including the concepts of school and business closures, and self-isolation will occur. This will allow familiarization and buy-in of community control measures prior to pandemic activity in the community. The State Health Director will be responsible for advising the governor, through the State Emergency Response Team (SERT), of the need for community control measures such as school closures and cancellation of mass gatherings.

## Mask Use

The use of masks (not particulate respirators) in community settings by asymptomatic individuals is not a proven public health control measure; however, individuals may choose to wear masks to augment other strategies such as hand hygiene and avoidance of public gatherings. It is likely that evidence supporting use of masks by the general public will not be sufficient to make recommendations for asymptomatic individuals.

Key points from the **Interim Public Health Guidance for the Use of Facemasks and Respirators in Non-Occupational Community Settings during an Influenza Pandemic** released in May of 2007:

- **Avoid the source:** Whenever possible, rather than relying on the use of masks or respirators, close contact and crowded conditions should be avoided during an influenza pandemic.
- **Contain the source:** Facemasks should be considered for use by individuals who enter crowded settings, both to protect their nose and mouth from other people's coughs and to reduce the wearers' likelihood of coughing on others; the time spent in crowded settings should be as short as possible.
- **Prevent and limit exposures:** Respirators should be considered for use by individuals for whom close contact with an infectious person is unavoidable. This can include selected individuals who must care for a sick person (e.g., family member with a respiratory infection) at home.

Additional points include:

- Mask use by symptomatic individuals would likely have some benefit and is recommended for sick individuals being cared for in the home if they must venture out
- Asymptomatic persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings.
- Supply issues should be considered so that mask use in communities does not limit availability for healthcare settings where the importance and effectiveness of mask use has been documented.
- Mask use may be most important for persons who are at high risk for complications of influenza and those who are unable to avoid close contact with others or must travel for essential reasons such as seeking medical care.
- Mask use may also be of some benefit to household members caring for a pandemic influenza patient in the home; especially when the care will involve close contact (within 3 feet of patient). It may be advisable for the patient to wear a surgical mask as well during these interactions and also any time they need to leave the house.
- Public education should be provided on how to use and dispose of masks appropriately. This education should emphasize that mask use is not a substitute for social distance or other personal protection measures.
  - It should be emphasized that use of a mask is only one component of personal protection during a pandemic; mask use should not take the place of other important interventions such as hand hygiene and avoidance of large gatherings.
  - Disease transmission can still occur in the context of improper mask use. For example, if a mask does not fit properly or the user does not take it off and dispose of it with the appropriate precautions, influenza transmission can occur. This is true regardless of the type of mask used (surgical mask versus a respirator [N-95]).
- Persons who use masks should practice hand hygiene, particularly before putting a mask on and after removing it.

Mask use within healthcare facilities and by individuals caring for symptomatic persons is discussed in **Part F: Infection Control and Preparedness in Healthcare Facilities** of the NC Pandemic Influenza Plan. Instructions on the proper use and removal of masks as well as the type of mask / respirator to be worn can be found in the CDC's *Interim Guidance on Planning for the Use of Surgical Masks and Respirators in Healthcare Settings during an Influenza Pandemic (October 2006)*.

## Threshold Determinants (Triggers) for the Implementation of Community Containment Measures

Threshold determinants for when to advise social distancing measures such as school closures and cancellation of mass gatherings have been outlined in the *Interim Pre-pandemic Planning Guidance: Strategy for Pandemic Influenza Mitigation in the United States* (released 2/1/07). NCDPH will follow thresholds outlined in this plan to determine when to recommend isolation and quarantine of individuals, households and groups, closures of schools and businesses, cancellation of large gatherings, and other social distancing measures. Potential triggers are described below in Table 1. Triggers are described with both epidemiological as well as feasibility concerns noted. It is not possible to fully delineate triggers at this time and triggers described remain somewhat crude; planners are advised to keep this limitation in mind and realize that other triggers for NPIs may become apparent early in a pandemic or during subsequent waves. Consistent implementation across affected areas may reduce disruption. Some triggers could be useful to help planning partners anticipation of triggering fuller NPI implementation. The Pandemic Severity Index described in these guidelines and outlined below will be the basis for recommending these measures. This index is based primarily on case fatality ratio (Figure 1). NC DPH will recommend specific mitigation strategies based on the Pandemic Severity Index (Figure 2).

Implementation of these strategies will occur after clusters of ILI are detected in North Carolina. Surveillance for ILI clusters will be conducted using the NC Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT). Syndromic surveillance for ILI is currently being conducted in the majority of hospital emergency departments (EDs) across the state. NC DPH collects and analyzes ED data for ILI trends with NC DETECT on a daily basis. Additional information on influenza surveillance in NC can be found in **Part B: Surveillance** of the North Carolina Pandemic Influenza Plan.

Laboratory confirmation of a novel influenza virus will be carried out at the State Laboratory of Public Health or one of the three regional public health laboratories. Laboratory testing with real-time polymerase chain reaction for novel influenza viruses or initial pandemic influenza cases will be available 24/7 at all of these facilities. More information on laboratory testing for influenza (including novel and pandemic influenza) can be found in **Part H: Laboratory** of the North Carolina Pandemic Influenza Plan. Recall also that rapid testing **is not recommended** for novel flu virus infections due to sensitivity concerns.

Table 1. Potential Triggers for Implementation of Non-Pharmaceutical Interventions (NPIs) with rationale

NPI Trigger	Rationale
1. 2 non-epi-linked confirmed cases in an area	Suggestive of pandemic spread within an area. At this point spread beyond actual confirmed cases is likely and interventions may slow further spread.
2. Fatality in confirmed case of novel flu virus infection	Suggestive of severity and in response to public concerns. This trigger is dependent on nature of case-fatality, e.g. death in a child who thought to acquire infection at school or childcare.
3. Increasing ILI in sentinel and ED surveillance systems	Suggestive of acceleration of pandemic wave. This crude measure may precede other measures and be useful in a more severe pandemic.
4. A two-to-four (or other multiplier) fold increase in ILI in	Suggestive of more precise measurement of acceleration.

sentinel and ED surveillance	More precise metrics could be useful during less severe pandemics.
5. ILI increase in sentinel and ED surveillance systems over a pre-determined threshold, e.g. 10% of all visits	Suggestive of growing surge in medical system.
Overwhelmed public health resources for ring-control	Ring control efforts may precede other efforts in areas with sufficient resources.

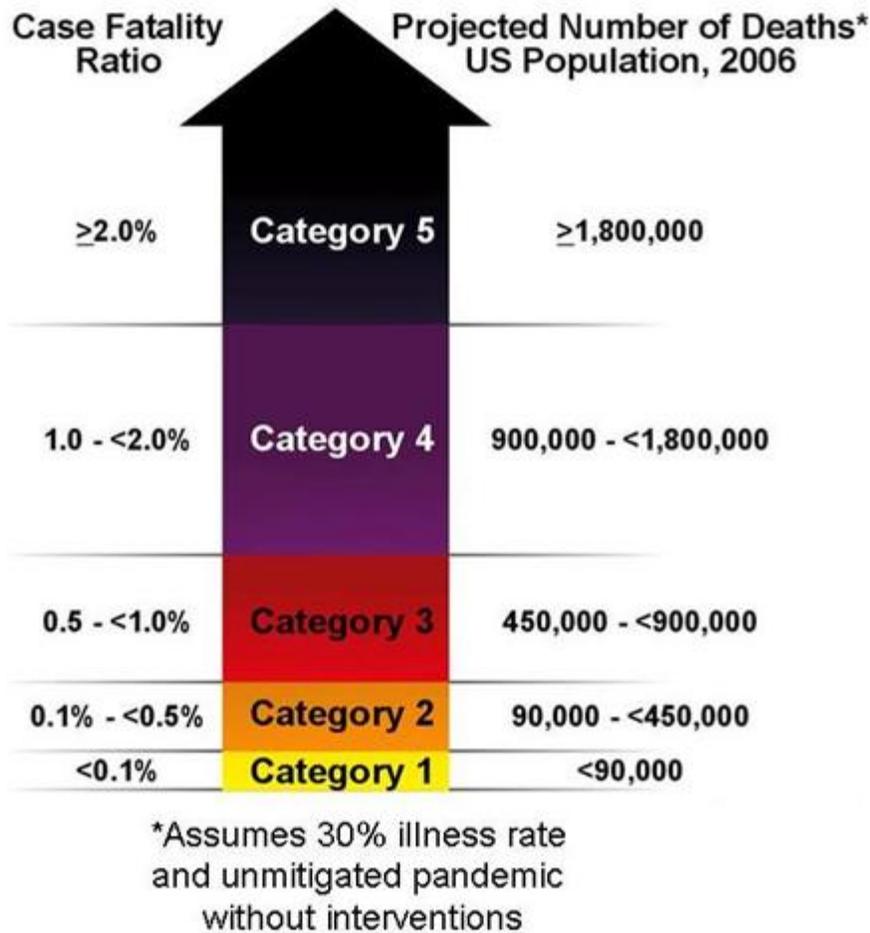


Figure 1

from the *Interim Pre-pandemic Planning Guidance: Strategy for Pandemic Influenza Mitigation in the United States*

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
<b>Home</b>			
<b>Voluntary isolation</b> of ill at home (adults and children), combine with use of antiviral treatment as available and indicated	Recommend †§	Recommend †§	Recommend †§
<b>Voluntary quarantine</b> of household members in homes with ill persons† (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider **	Recommend **
<b>School</b>			
<b>Child social distancing</b>			
-dismissal of students from schools and school based activities, and closure of child care programs	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
-reduce out-of school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
<b>Workplace / Community</b>			
<b>Adult social distancing</b>			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
-modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Figure 2

from the *Interim Pre-pandemic Planning Guidance: Strategy for Pandemic Influenza Mitigation in the United States*

### Community Containment Planning by Pandemic Phase

#### Interpandemic Phases 1 & 2

- Identify potential isolation and quarantine facilities that may be necessary if novel influenza virus infection is suspected in a traveler on a conveyance
- LHDs that have ports in their counties will address issues surrounding recognition of a case of novel / pandemic influenza on a conveyance; this should include all international airports and seaports as well as counties which serve as major ports of entry from other states. More information on travel issues can be found in **Part J: Travel-related Planning** of the North Carolina Pandemic Influenza Plan.
- Review legal authority for isolation, quarantine and other broader community containment measures
- Review plans for disseminating public information regarding containment measures
  - The Public Affairs Office of the NC Department of Health and Human Services (NC PAO) will use its toll-free hotline, **CARE-LINE** to disseminate information regarding pandemic influenza. **CARE-LINE** staff have been trained in handling ILI and pandemic influenza questions. As the situation changes, staff will receive updated training. The **CARE-LINE** is accessible to people with hearing problems and people who speak Spanish.
    - Develop just-in-time training materials for additional staff and volunteers

- NC PAO has developed and distributed a number of educational materials, including posters, brochures and various fact sheets to prepare the public for a pandemic.

**Pandemic Alert Phases 3-5**

- Emphasize individual level containment measures
- NC PAO will disseminate information about individual infection control measures such as
  - Handwashing
  - Cough etiquette
  - Mask use by ill persons
- Any individual suspected of novel influenza virus infection will be isolated at home or in hospital if medically necessary until infection is ruled out or the potential for a pandemic (person to person transmission) has been eliminated (Appendices L-2 and -3 of NC Pandemic Flu Plan provide sample forms for use by Local Health Directors)
  - A clinical algorithm as well as a screening tool have been developed (**Appendix P-1 and P-2** of NC Pandemic Influenza Plan) to assist healthcare providers and local health officials in the diagnosis of novel influenza infection in humans
- Close contacts of an individual suspected of novel influenza infection will be quarantined until infection is ruled out or the potential for a pandemic (person to person transmission) has been eliminated
  - Close contacts will include fellow passengers if the ill individual was determined to be contagious while on conveyance
    - Fellow passengers may be quarantined at the port of entry if case is identified during travel
    - Home quarantine may be another option if the suspect case is identified one day after travel
    - “Pharmaceutical quarantine” may be utilized if resources are not accessible for a quarantine that limits mobility. Pharmaceutical quarantine means giving all contacts prophylactic anti-influenza medications, PPE, education and strong recommendation to limit mobility and exposure to others. Follow-up with individuals’ local public health authorities is prudent if resources are not overwhelmed.
- NC DPH and LHDs will collaborate with NC Emergency Management at the state and local level to ensure that individuals who are isolated or quarantined have adequate resources available to them during the period of isolation or quarantine
- For the initial small cases or clusters of cases, as part of a quenching strategy, the state stockpile of antivirals will be used for treatment of ill individuals in isolation. The stockpile may also be used for targeted prophylaxis of close contacts in quarantine if it is deemed necessary during Pandemic Alert Phases
  - LHDs, with assistance from the Public Health Regional Surveillance Teams (PHRSTs), will monitor individuals in isolation and quarantine
    - A standardized form for capturing demographic information as well as a symptom log for individuals in quarantine will be provided to the LHDs for this monitoring by NC DPH
  - LHDs, with assistance from PHRSTs, will ensure that ill individuals receive antivirals within 48 hours of symptom onset to the extent possible
  - Delivery of antivirals to provide prophylaxis to close contacts in quarantine will also be carried out by LHD staff with additional assistance from PHRSTs if necessary
  - Information will be monitored and collected by the Surveillance Team of the Operations Section of the Public Health Coordination Center.
- Based on recommendations, guidelines and gubernatorial orders, local government agencies will cancel and close mass gatherings.
  - It is anticipated that at the phase where these decisions are being considered, the State Emergency Response Team will be activated above routine operations. DPH, in its role as a member of the SERT will advise the Governor on community containment measures and the development of guidelines and orders.

**Early Pandemic Phase 6 (with minimal or no cases in NC)**

- Continue to emphasize individual level containment
- Begin public information campaign regarding community-level containment strategies via **CARE-LINE** and other sources
  - Discuss Pandemic Severity Index and categorize current pandemic if case-fatality information available
  - Describe specific intervention strategies that will be used based on the Pandemic Severity Index
  - Describe measures for home care and self-isolation (More detailed information home care and self-isolation below)
  - Encourage individuals with questions to utilize hotline numbers such as the **CARE-LINE**
  - Coordinate communication planning with the health care system to provide hotline numbers to advise individuals about home care and when to seek help
  - Provide information on completing and replenishing family disaster preparedness planning.
  - Provide dismissal information to schools and childcare centers with information on continuity of essential services
- Any individual suspected of pandemic influenza virus infection identified through active or enhanced surveillance will be isolated by Local Health authorities at home (or in the hospital if medically necessary) for at least one incubation period (likely 2-4 days, possibly up to 10 days).
  - A clinical algorithm as well as a screening tool will be modified to reflect updated case definition for pandemic influenza diagnosis and will be distributed to medical care providers
  - SLPH and regional public health labs will be activated to receive specimens from suspect cases to confirm initial cases of pandemic influenza in NC
- Close contacts of an individual suspected of pandemic influenza infection identified through interview of infected persons, referral from official public health partner agencies (e.g. other state or local health departments), will be quarantined by Local Health authorities.
- Individuals isolated or quarantined by Local Health authorities will have access to medical care and other resources needed to fulfill their activities of daily living.
  - Standard interview forms and line lists will be utilized until specific case forms are developed
- Provide infection control and care guidance for persons isolated or quarantined at home using American Red Cross materials (available at: [www.redcross.org/news/ds/panflu/index.html](http://www.redcross.org/news/ds/panflu/index.html)).
- NC DPH and LHDs will collaborate with NC Emergency Management at the state and local level to ensure that individuals who are isolated or quarantined have adequate resources available to them during the period of isolation or quarantine
- A state stockpile of antivirals will be used for treatment and targeted prophylaxis of individuals in isolation and quarantine during the early Pandemic Phase with initial cases in NC
  - LHDs will monitor individuals in isolation and quarantine, as well as deliver antivirals to these individuals
- Based on recommendations, guidelines and gubernatorial orders, local government agencies will cancel and close mass gatherings.
  - It is anticipated that at the phase where these decisions are being considered, the State Emergency Response Team will be activated above routine operations. DPH, in its role as a member of the SERT will advise the Governor on community containment measures and the development of guidelines and orders.

**Pandemic Phase 6 (widespread pandemic activity in NC)**

- Emphasize community containment measures such as social distancing
- Continue public information campaign to provide information on isolation and quarantine, childcare, school dismissal, and social distancing measures based on the known Pandemic Severity Index
  - More detailed information on childcare and school closures below
  - More detailed information on workplace and community social distancing below

- Authority for cancellation of large gatherings that lie with the Governor is outlined in GS 166A. Other officials with authority may also choose to exercise it, e.g. school boards, superintendents, Local Health Directors, other local elected officials. For more information on legal authority pertaining to an influenza pandemic can be found in **Part L: Legal Authority** of the NC Pandemic Influenza Plan; a draft template of an emergency order closing schools and canceling large gatherings can be found in Appendix L-4. Existing Incident Management Command and Control structure guidelines will be followed to manage these activities, see NC Pandemic Influenza Plan Part A and Appendices A1-4.
- Voluntary isolation and quarantine will continue to be recommended; however, at this phase LHDs will not be able to monitor all individuals in isolation or quarantine.
- While unable to provide individual monitoring, LHDs will identify individuals in need of isolation through ED and sentinel surveillance. LHDs will recommend voluntary quarantine for such individuals as well as any others identified through other means.
- LHDs and DPH will offer support to hotlines to answer questions for individuals on infection control, home care, when to seek medical care, etc. See American Red Cross guidance at: [www.redcross.org/news/ds/panflu/index.html](http://www.redcross.org/news/ds/panflu/index.html)
- LHDs, DPH and Office of Emergency Medical Services (OEMS) will coordinate with hospitals to disseminate information regarding availability of alternate-care facilities in their jurisdictions
- SLPH and the regional public health labs will suspend testing on pandemic influenza cases except in special situations, which includes (but is not limited to):
  - Individuals who developed pandemic influenza symptoms despite prophylaxis (antiviral prophylaxis or vaccine administration)
  - Pandemic influenza deaths in certain populations
- In an effort to define the end of a pandemic wave, laboratory testing may increase when fewer ILI cases are noted through sentinel and ED surveillance
- Based on recommendations, guidelines and gubernatorial orders, local government agencies will cancel and close mass gatherings.
  - It is anticipated that at the phase where these decisions are being considered, the State Emergency Response Team will be activated above routine operations. DPH, in its role as a member of the SERT will advise the Governor on community containment measures and the development of guidelines and orders.

## Home Care / Self-isolation

Home care will be the predominant mode of care for most people infected with influenza. During the Pandemic Alert Phases, individuals should discuss with their health care provider specific recommendations for both vaccination and the use of antivirals.

Public Information Officers will coordinate through local and state agency resources referral to resources available to assist individuals and families with preparing for an influenza pandemic. A *Personal Planning Checklist* and a *Pandemic Influenza Planning: Guide for Individuals and Families* can be found at the US DHHS website for pandemic influenza at <http://www.pandemicflu.gov>. The American Red Cross also provides guidance for home care: [www.redcross.org/news/ds/panflu/index.html](http://www.redcross.org/news/ds/panflu/index.html)

Once pandemic activity is confirmed in North Carolina, the DHHS Public Affairs Office will distribute this handout and other material with similar information widely to the public through a variety of channels; the material will also include the established numbers for the **CARE-LINE**, Governor's Hotline or other established hotlines for the public to call.

Coordination with hospitals to also disseminate this information will also occur. The Office of Emergency Medical Services (OEMS) can communicate public health driven guidance through the State Medical Asset Resource Tracking

Tool (SMARTT) to all hospitals. Hospital public information officers will coordinate with local public health to deliver information via numerous public communication avenues.

## **Pandemic Influenza Containment in Childcare Facilities and Schools**

Several models to look at various community containment measures have shown potential benefit for childcare and school dismissal. Previous experience from past seasonal influenza epidemics also support this as a key strategy to mitigate the impact of a pandemic including:

- Childcare and school-aged children have been shown to be the key to introducing influenza to household members
- Children appear to be more susceptible to influenza and more infectious than adults, and to shed virus longer and have more difficulty practicing respiratory etiquette.
- Nationwide school closure in Israel during an influenza epidemic resulted in decreases in doctor visits as well as emergency room visits

Information for schools, pre-schools and child care facilities regarding planning for a pandemic can be found at the federal government's pandemic influenza website. The NC DPH has collaborated closely with the Division of Public Instruction (NC DPI) to ensure that educators are aware of these resources and are incorporating this federal guidance into their planning for a pandemic.

School planners can also use CDC guidance (Seasonal Flu Information for Schools & Childcare Providers), available at <http://www.cdc.gov/flu/school/index.htm>. Childcare providers can also use CDC guidance (Preventing the Spread of Influenza (the Flu) in Child Care Settings: Guidance for Administrators, Care Providers, and Other Staff) available at [www.cdc.gov/flu/professionals/infectioncontrol/childcaresettings.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/childcaresettings.htm)

Note that both of these guidance documents emphasize infection control measures, including at-home care and isolation of children and staff with ILI.

Key messages from this interim guidance are applicable to both seasonal influenza as well as pandemic influenza and include:

- **Remind children and school and childcare staff to clean their hands, and make sure they have the supplies to do so.**
  - Frequent hand washing with soap and water will help protect children and staff from viruses. Wash hands for 15-20 seconds (long enough to sing the "Happy Birthday" or "A-B-C" song twice.) Alcohol-based hand rubs may be used as an alternative if soap and water are not easily available. Children and staff should be advised to rub their hands thoroughly until dry. Work with the facility's janitorial staff to ensure that restrooms are stocked with soap and paper towels or working hand dryers. Work with providers and teachers to have a supply of alcohol-based hand-rub in each classroom.
- **Remind children and staff to cover noses and mouths when coughing or sneezing, and have tissues readily available.**
  - Advise children and staff to cover their noses and mouths with a tissue when coughing or sneezing, and to dispose of used tissues in appropriate waste receptacles. Make sure that tissues are available in all areas, including classrooms and common areas, such as libraries or lunchrooms. If hands become contaminated with respiratory secretions while coughing or sneezing, perform hand hygiene as soon as possible.
- **Encourage sick children and staff to stay at home.**
  - Sick children and staff should stay home from childcare or school until they have been without fever for 24 hours to help prevent spreading illness to others.

**Decisions regarding school dismissal**

During a pandemic, the presence of overlapping authorities will necessitate close communication and coordination between elected leaders, state officials, the local health director, and local school administrators to ensure decisions and response actions are clear and consistent. There are two NC state statutes that give both the state and local health directors and the State Board of Education the authority to dismiss schools. The NC State Health Director and local health directors are empowered to exercise quarantine and isolation authority which could include the prerogative to dismiss schools, GS 130A-145. Additional authority includes GS 115C-84.2, subsection ©, the school calendar law, which states “During any period of emergency in any section of the State where emergency conditions make it necessary, the State Board of Education may order general, and if necessary, extended recesses or adjournment of the public schools.”

Local education agencies (LEAs) are working closely with LHDs in planning for school dismissal. Decisions about dismissing school due to increased influenza activity will be made in consultation with local and state health departments. While the rationale for school and childcare dismissal is to reduce the impact of a pandemic, implementation of such measures must come ahead of substantial acceleration of a pandemic wave. If not well-timed or maintained sufficiently, such measures may not work. It is also important to note that during influenza pandemic it may be necessary to dismiss schools for administrative reasons (insufficient staff to meet the instructional and safety needs of students).

No data exists for recommending illness thresholds or rates of change in number of illnesses that should lead to consideration of dismissing or reopening schools; however, public schools in North Carolina are being asked to report absenteeism rates above 10% on a weekly basis from November through April during Pandemic Phases 1-3. This weekly report is sent to LHDs as well as the NC DPI. A subset of sentinel public schools will be asked to report school absenteeism rates more frequent in Pandemic Phases 4 & 5 as well as the beginning of Pandemic Phase 6. The human resources department for each LEA will activate tracking of absenteeism for school and central staff, and report trends.

**Workplace and Community Social Distancing**

Notification plans from state and LHD PIOs consistently recommend that ill persons stay home and not go to work or school while ill with pandemic influenza, and to also provide home care messages (see above). These are general broadcast messages that are used during seasonal influenza as well. It will be important to repeat these same messages during a pandemic so persons involved in specific sectors of society realize the need to limit exposing others. For workers able to utilize telecommuting, tools to support such efforts are recommended. Other means of increasing social distance at work include staggering shifts so fewer people are present in a workplace at any given time, adopting changes to routine practices such as telephone conference calls vs. in-person meetings, and increasing space between in-person meeting attendees. Workplace planners are encouraged to learn about the principles of influenza transmission and assess their normal operations for opportunities to adapt while continuing to meet operational goals.

- NOTE: Business continuity of operations plans must consistently recommend ill workers remain home rather than come to work and risk exposing other workers.

NC DPH has worked with NCEM and the governor’s office to advance pandemic influenza continuity of operation plans (COOP) throughout state agencies as well as with agencies’ non-governmental partners. This work gained momentum with an Executive Order that all state executive level agencies formulate pandemic influenza COOPs. All state level agencies had completed Pan Flu COOP plans and had conducted at a minimum 1 exercise by August 2007.

LHD plans have brought together pandemic influenza planning teams that include community partners and leaders. LHD plans must address continuity of operations (COOP) for both the LHD as well as the county infrastructure and for businesses.

Business plans will emphasize the support of social distancing recommendations as well as workplace safety and health guidance to assist employees with an influenza pandemic.

- Businesses can utilize expertise such as the, NC State Small Business and Technology Development Center and the Retail Merchant Association Pandemic Flu Planning Tool Kits. In addition, NC DPH Speakers Bureau provides information on pandemic influenza, business operations impacts during a pandemic and recommendations on health and safety during a pandemic.

Distribution of informational materials for workplace and community, coordinated by the NC PAO and several trade organizations include:

- Business Continuity Checklists (based on the [www.pandemicflu.gov](http://www.pandemicflu.gov) checklist) to all LHDs and many private sector business partners.
- Checklists available on the internet site for pandemic influenza (<http://www.ncdhhs.gov/panflu/index.htm>)
- Update of the websites to include new information such as the *Guidance on Preparing Workplaces for an Influenza Pandemic*, developed by the Department of Labor's Occupational Safety and Health Administration (OSHA) in coordination with the US Department of Health and Human Services
- The North Carolina Small Business and Technology Development Center has begun development of COOP planning templates and tools, including education about pandemic influenza and the need for social distancing.
- The North Carolina Retail Merchants Association produced pandemic influenza COOP guide for retailers in the state. This guide, currently in distribution, describes the need for social distancing among other features of pandemic influenza impacts and intervention

Government officials may elect to use their powers to close certain establishments during a pandemic if other means to prevent exposure are insufficient. As a member of the State Emergency Response Team (SERT), NC DPH will provide guidance and expertise as requested regarding these decisions at the state level and Local Health Directors will do so at the local government level.

## Ports of Entry

Charlotte Douglas International Airport and Raleigh Durham International Airport have developed and implemented plans that provide for the screening of passengers with suspected communicable diseases including pandemic influenza. These plans contain communications protocols, identification of authorities for isolating and quarantining individuals, locations for passengers to stay while screening is occurring and methods, staff, protocols for screening individuals. These plans have been developed in conjunction with the CDC Quarantine Station in Atlanta.

## Conclusions

Current evidence for community containment strategies is limited. Isolation and quarantine of individuals will have limited use during widespread outbreaks of pandemic influenza in North Carolina, but will be utilized during Pandemic Alert Phases as well as early in Pandemic Phase 6 with only a few cases detected in NC. Threshold determinants for the timing of different community containment measures have been outlined in the *Interim Pre-pandemic Planning Guidance: Strategy for Pandemic Influenza Mitigation in the United States*. Key strategies will include voluntary isolation and quarantine and social distancing measures such as childcare and school dismissal and potential workplace closures. Collaboration with schools, childcare facilities, businesses and communities is ongoing and will continue throughout all phases of pandemic to ensure preparedness across all sectors of society.