

# Pandemic Influenza Plan – Community Mitigation

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## INTRODUCTION

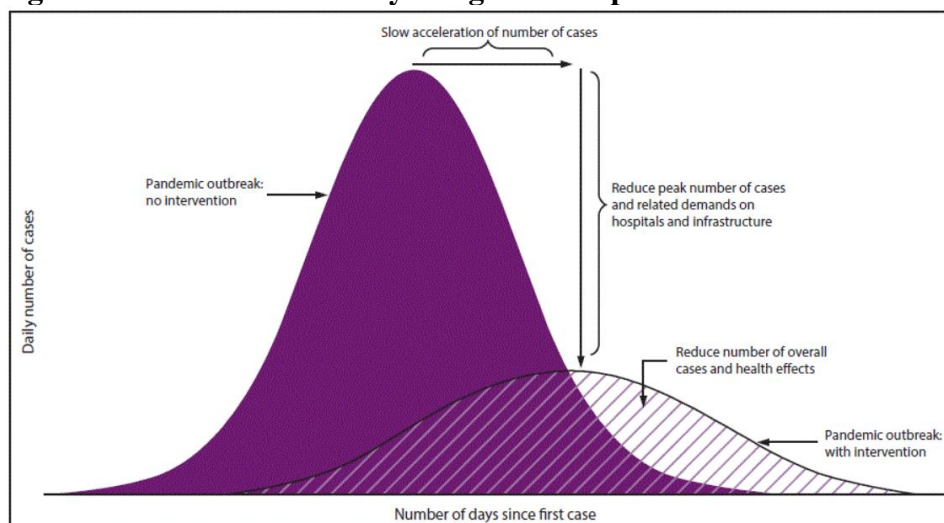
Community mitigation aims to slow the spread of a novel influenza virus in communities through the use of nonpharmaceutical interventions (NPIs) and through travel and border health measures. Community mitigation measures and other non-pharmaceutical interventions are designed to limit the spread of influenza in the community or within certain high-risk populations and settings. In the absence of medications or vaccines during early stages of pandemic, community mitigation measures are the first line of defense against highly transmissible infectious diseases. These interventions are especially important during an influenza pandemic before safe and effective countermeasures, vaccines and antiviral drugs, become available, or if the virus is not susceptible to available antiviral drugs. The early use of NPIs that are strategically targeted, layered, and implemented in a coordinated manner across neighboring jurisdictions and tailored to pandemic severity is a critical component of a comprehensive strategy to reduce community disease transmission and mitigate illness and death during a pandemic. Because mitigation strategies call for specific actions by individuals, families, businesses and other employers and organizations, the planning and preparedness for NPI implementation is complex and requires participation by all levels of government and all segments of society. Pre-pandemic planning, along with community engagement, is an essential component of pandemic preparedness.

This chapter discusses Missouri’s community containment measures during pandemic influenza based on the review of the latest scientific evidence and lessons learned from the 2009 H1N1 pandemic response and in concordance with CDC guidelines.

## NPI OBJECTIVES

- Reduced spread of infectious disease
- Reduced load for health care facilities
- Reduced morbidity and mortality

**Figure 1. Goals of community mitigation for pandemic influenza**



**Source:** CDC. Interim pre-pandemic planning guidance: community strategy for pandemic influenza mitigation in the United States—early, targeted, layered use of nonpharmaceutical interventions. Atlanta, GA: US Department of Health and Human Services, CDC; 2007.

## **NPI Implementation**

NPIs that should be practiced by all people at all times, the so-called "everyday preventive actions", are particularly important during a pandemic. Community-level NPIs may be added during pandemics to help reduce social contacts between people in schools, workplaces, and community settings. When a pandemic begins, public health authorities need to decide on an appropriate set of NPIs for implementation. The range of NPIs which will be used in Missouri during the influenza pandemic is shown in Figure 2. The especially difficult decision is how and when to implement community-level NPIs that are needed but are more disruptive for the communities. In Missouri, these decisions will be made by state and local health officials with guidance from CDC (according to pandemic severity and potential efficacy) but tailored to the specific conditions in respective jurisdictions. A variety of multiple factors will be considered before implementing NPIs during the influenza pandemic (See Attachment A.).

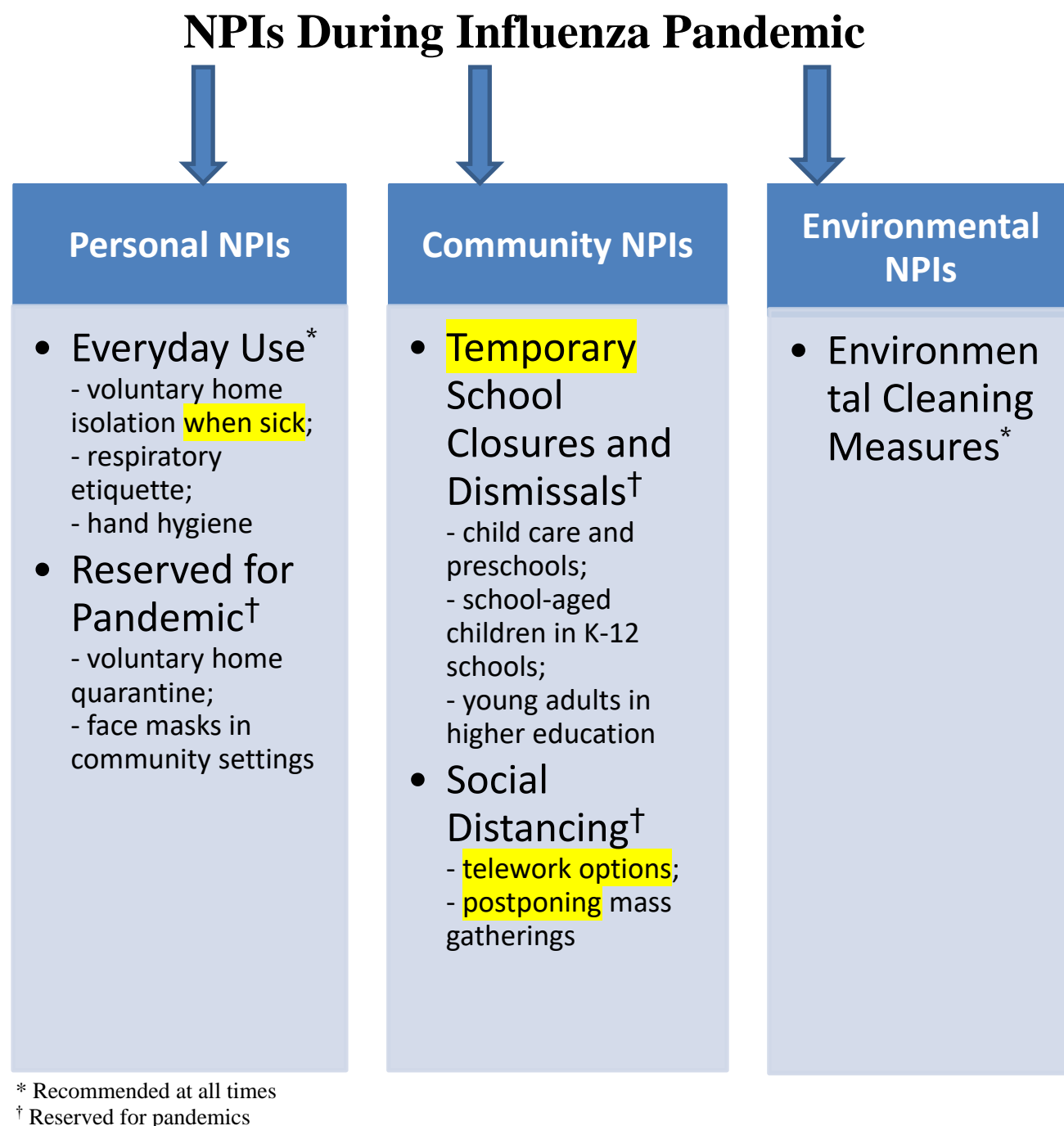
The Missouri Department of Health and Senior Services (DHSS) and the local public health departments (LPHAs) will use certain influenza surveillance indicators to help decide when to consider implementing NPIs, such as school closures and dismissals and other social distancing measures in schools, workplaces, and public settings during an influenza pandemic (See Table 1). Depending on the availability and capacity of their public health resources, selection of influenza surveillance indicators will likely differ among LPHAs.

**Table 1. Possible NPI surveillance indicators for an influenza pandemic in Missouri**

<b>Key Influenza Indicator</b>	<b>Data Source</b>	<b>Measure of Influenza Activity</b>
<b>Indicators of spread or level of influenza activity</b>		
% of patient visits to health care providers for influenza like illness (ILI)	CDC Outpatient ILI Surveillance Network (ILINet)	Current ILI level in relation to most recent national and region-specific baseline levels, with CDC providing baseline values for the 10 HHS surveillance regions and for the United States as a whole <a href="https://www.cdc.gov/fluview/overview/?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/overview.htm">https://www.cdc.gov/fluview/overview/?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/overview.htm</a>
ILI activity: % of outpatient visits for ILI in a state (minimal to high)	Missouri Outpatient ILI Surveillance Network (ILINet) <a href="https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php">https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php</a>  Additional: Flu Near You <a href="https://flunearyou.org/">https://flunearyou.org/</a>	Current ILI level in Missouri compared to the baseline levels calculated based on the historical data
Geographic spread of influenza in a state (none to widespread)	Missouri Weekly Influenza Report	Estimated weekly levels of geographic spread (local, regional, or widespread) of influenza activity in Missouri at <a href="https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php">https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php</a>  <a href="https://www.cdc.gov/fluview/overview/?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/overview.htm">https://www.cdc.gov/fluview/overview/?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/overview.htm</a>
Percentage of respiratory specimens that test positive for influenza viruses in the United States	U.S. World Health Organization (WHO) collaborating laboratories and National Respiratory and Enteric Virus Surveillance System laboratories  Missouri Weekly Influenza Report	National and regional percentage of respiratory specimens testing positive for influenza viruses <a href="https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm">https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm</a>  <a href="https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php">https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php</a>
Absenteeism rates due to ILI in child care facilities, K–12 schools, or colleges and universities	ILI surveillance in child care facilities, K–12 schools, or colleges and universities	Increased absenteeism rates due to ILI in child care facilities, K-12 schools, or universities  Increases in laboratory-confirmed influenza cases among students, teachers, and staff members Laboratory-confirmed outbreaks of influenza in child care facilities, K–12 schools, or colleges and universities
<b>Indicators of clinical severity of influenza</b>		
Influenza-associated hospitalizations	Influenza Hospitalization Surveillance Network (FluSurv-NET) Missouri Weekly Influenza Report	<a href="https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm">https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_Aref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm</a>  Patients Hospitalized with Influenza from Participating Missouri Hospitals <a href="https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php">https://health.mo.gov/living/healthconditions/diseases/communicable/influenza/dashboard.php</a>
% of deaths attributed to pneumonia and influenza	National Center for Health Statistics mortality surveillance system	% of death certificates indicating pneumonia and influenza compared with a seasonal baseline and epidemic threshold value calculated for each week at

		<a href="https://www.cdc.gov/fluview/?CDC_AAref_Val=https://www.cdc.gov/flu/weekly/index.htm">https://www.cdc.gov/fluview/?CDC_AAref_Val=https://www.cdc.gov/flu/weekly/index.htm</a>
Influenza-associated death among persons aged < 18 years	Influenza-Associated Pediatric Mortality Surveillance System	Any laboratory-confirmed influenza-associated deaths in children, all of which are reported through this system <a href="https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_AAref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm">https://www.cdc.gov/fluview/overview/fluview-interactive.html?CDC_AAref_Val=https://www.cdc.gov/flu/weekly/FluViewInteractive.htm</a>

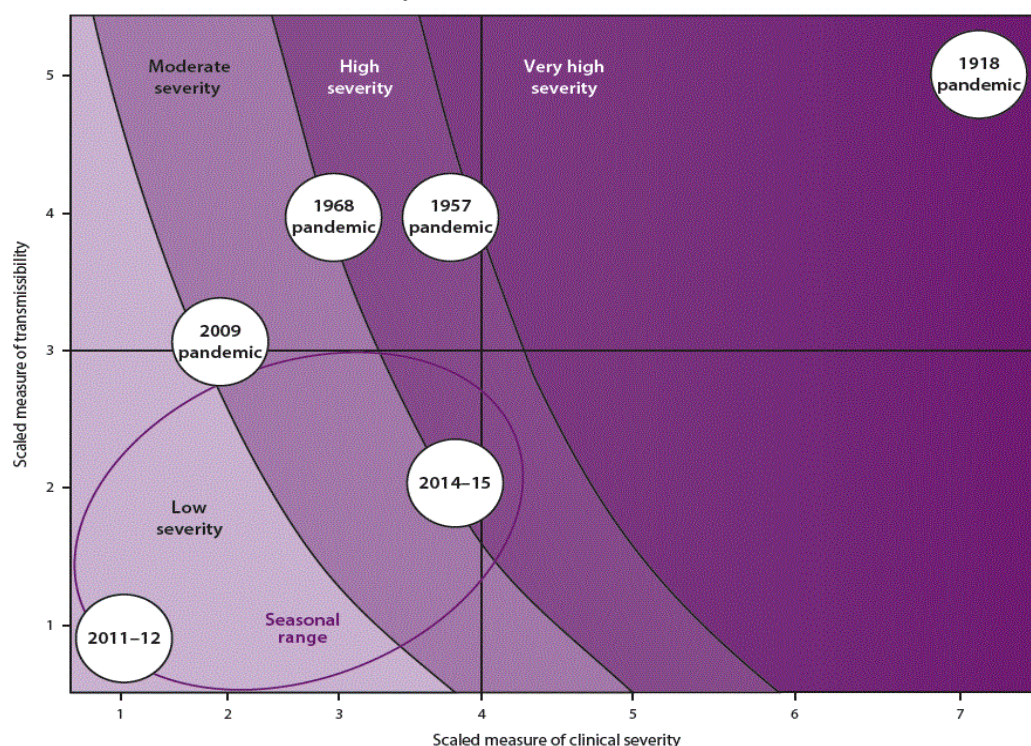
**Figure 2. NPIs for personal and community preparedness**

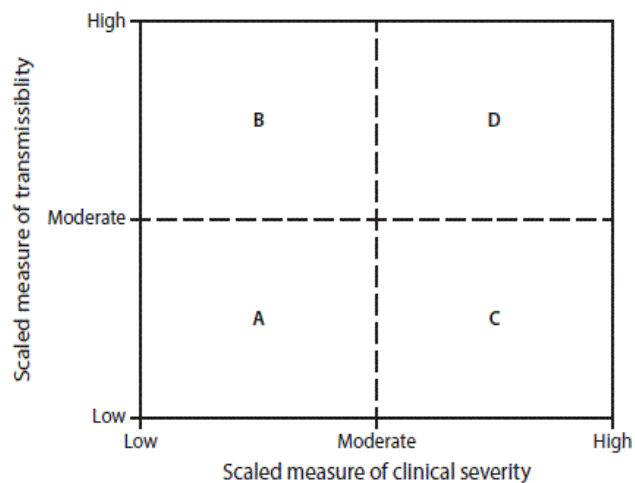


When CDC’s Influenza Risk Assessment Tool (IRAT) indicates emergence of a novel influenza virus that can spread easily and efficiently and cause a pandemic, CDC and partners will gauge its projected impact in order to recommend response. During the initial stages of a pandemic, CDC will use the Pandemic Severity Assessment Framework (PSAF). The CDC will use PSAF scores of viral transmissibility and clinical severity to place the pandemic within one of four assessment “quadrants” (See Figure 3.):

- Quadrant A: Severity and transmissibility similar to an annual influenza season
- Quadrant B: Severity similar to an annual influenza season; transmissibility greater than an annual influenza season
- Quadrant C: Severity greater than an annual influenza season; transmissibility similar to an annual influenza season
- Quadrant D: Severity and transmissibility greater than an annual influenza season

**Figure 3. U.S. Department of Health and Human Services pandemic planning scenarios based on the Pandemic Severity Assessment Framework**





The PSAF tool will be used to prepare an **initial assessment** of pandemic severity that provides early guidance on use of NPIs. On the basis of the ***initial assessment***, CDC will recommend that affected United States jurisdictions respond in accordance with one of the four Pre-pandemic Planning Scenarios (See Attachment B.).

These Scenarios are intended to provide state and local public health authorities with templates for rapid mobilization, including rapid selection of appropriate NPIs. Each scenario aligns with one of the four assessment quadrants. These planning scenarios are designed to facilitate state and local pre-pandemic planning for NPI implementation according to pandemic severity (as classified by PSAF) (See Table 2.). Scenario-based recommendations for NPI selection and use are provided in Table 2, in the context of an overall community mitigation strategy that also may include vaccines and antiviral medications (if available).



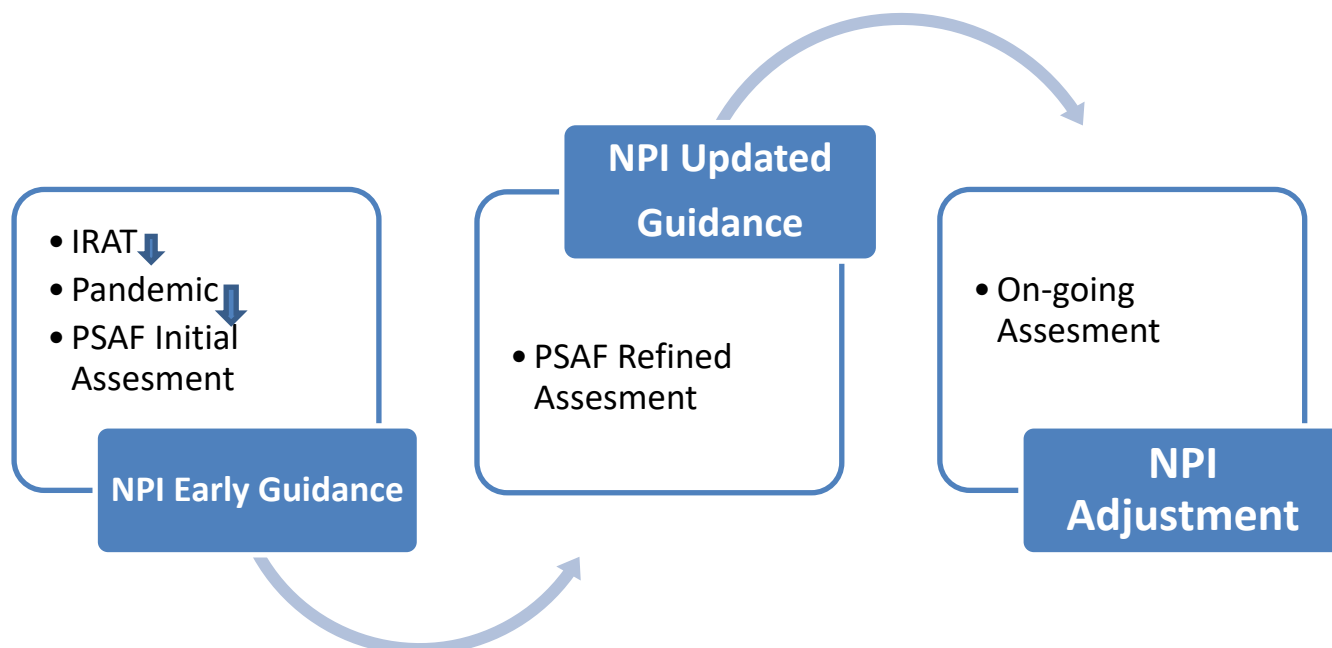
**Table 2. Recommended NPIs for influenza pandemics, by setting and pandemic severity**

Setting	Pandemic severity		
	Low to moderate severity (mild to moderate pandemic)	High severity (severe pandemic)	Very high severity (very severe to extreme pandemic†)
All	CDC recommends voluntary home isolation of ill persons, respiratory etiquette, hand hygiene, and routine cleaning of frequently touched surfaces and objects. <sup>§</sup>	CDC recommends voluntary home isolation of ill persons, respiratory etiquette, hand hygiene, and routine cleaning of frequently touched surfaces and objects.	CDC recommends voluntary home isolation of ill persons, respiratory etiquette, hand hygiene, and routine cleaning of frequently touched surfaces and objects.
Residences	CDC generally does not recommend voluntary home quarantine of exposed household members.	CDC might recommend voluntary home quarantine of exposed household members in areas where novel influenza virus circulates.	CDC might recommend voluntary home quarantine of exposed household members in areas where novel influenza virus circulates.
	CDC generally does not recommend use of face masks by ill persons.	CDC might recommend use of face masks by ill persons when crowded community settings cannot be avoided.	CDC might recommend use of face masks by ill persons when crowded community settings cannot be avoided.
Child care facilities, schools for grades K–12, and colleges and universities	CDC might recommend selective school dismissals in facilities serving children at high risk for severe influenza complications.	CDC might recommend temporary preemptive, coordinated dismissals of child care facilities and schools. <sup>¶</sup>	CDC might recommend temporary preemptive, coordinated dismissals of child care facilities and schools.
		If schools remain open, CDC might recommend social distancing measures. <sup>**</sup>	If schools remain open, CDC might recommend social distancing measures.
Workplaces	CDC generally does not recommend social distancing measures.	CDC might recommend social distancing measures. <sup>††</sup>	CDC might recommend social distancing measures.
Mass gatherings <sup>§§</sup>	CDC generally does not recommend modifications, postponements, or cancellations.	CDC might recommend modifications, postponements, or cancellations.	CDC might recommend modifications, postponements, or cancellations.

The initial assessment will necessarily involve a high degree of uncertainty because it will be based on limited data. Once sufficient data becomes available—which could take 4-8 weeks or longer, depending on the characteristics and capacity of the local surveillance systems where pandemic cases are first reported—CDC will prepare a refined and more robust assessment of pandemic severity, based on PSAF scores that use the clinical and epidemiologic measures.

On the basis of the *refined assessment*, CDC will issue new NPI guidance that is tailored more precisely to the specific pandemic situation. This guidance will address the selection, triggers, timing, and duration of NPIs and take into account the availability (or projected availability) of vaccines and antiviral medications. As the pandemic progresses—and more data become available—CDC will continue to update assessments of pandemic severity and revise its NPI recommendations accordingly (See Figure 4.).

**Figure 4. NPI Implementation**



## NON-PHARMACEUTICAL MITIGATION MEASURES

### I. Personal NPIs

#### A. Personal Protective Measures for Everyday Use

1. **Voluntary Home Isolation of Ill Persons:** Most persons infected with an influenza virus might become infectious one day before the onset of symptoms and remain infectious up to 5-7 days after becoming ill. However, studies found that infants and immunocompromised persons might shed influenza viruses for prolonged periods (up to 21 days and a mean of 19 days, respectively). Voluntary home isolation prevents an ill person from infecting other people outside of their household. Persons with influenza should stay home for at least 24 hours after a fever or signs of a fever (chills, sweating, and feeling warm or flushed) are gone, except to obtain medical care or other necessities. To ensure that the fever is gone, temperature should be measured in the absence of medication that lowers fever (e.g. acetaminophen or ibuprofen). In addition to fever, common influenza symptoms include cough or chest discomfort, muscle or body aches, headache, and fatigue. Persons also might experience sneezing, a runny or stuffy nose, sore throat, vomiting, and diarrhea.
2. **Respiratory Etiquette:** The preponderance of evidence points to the influenza virus being transmitted by contact and via large droplets. Respiratory etiquette reduces the dispersion of droplets contaminated with influenza virus being propelled through the air by coughing or sneezing. Persons should 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.



Touching the eyes, nose, and mouth should be avoided to help slow the spread of influenza.

3. **Hand Hygiene:** Hand hygiene reduces the transmission of influenza viruses that occurs when one person touches another (e.g., with a contaminated hand). Contamination also can occur through self-inoculation via fomite transmission (indirect contact transmission) when persons touch a contaminated surface and then touch their nose with a contaminated hand. Influenza viruses can live and potentially infect other people for up to 48 hours after being left behind on a surface. Influenza viruses can remain viable on human hands for 3-5 minutes. Persons should perform regular and thorough hand washing with soap and water (or use alcohol-based hand sanitizers containing at least 60% ethanol or isopropanol when soap and water are not available).

## **B. Personal Protective Measures Reserved for Pandemics**

1. **Voluntary Home Quarantine of Exposed Household Members:** Voluntary home quarantine of non-ill household members of persons with influenza (also called self-quarantine or household quarantine) helps prevent disease spread from households to schools, workplaces, and other households because those household members have been exposed to the influenza virus. Exposed household members of symptomatic persons (with confirmed or probable pandemic influenza) should stay home for up to three days (the estimated incubation period for seasonal influenza) starting from their initial contact with the ill person. If they become ill, they should practice voluntary home isolation. For certain exposed household members (e.g., those at high risk for influenza complications or with severe immune deficiencies), guidelines should be consulted regarding the prophylactic use of antiviral medications.
2. **Use of Face Masks in Community Settings when Ill:** Face masks (disposable surgical, medical, or dental procedure masks) provide a physical barrier that prevents the transmission of influenza viruses from an ill person to a well person by blocking large-particle respiratory droplets propelled by coughing or sneezing. They also might be worn by ill persons during pandemics to prevent spread of influenza to household members and others in the community.

The use of face masks by well persons in community settings is not routinely recommended due to lack of strong supporting evidence, however use of face masks by well persons might be beneficial if unusually high viral transmissibility is detected and in certain other situations (e.g., when persons at high risk for influenza complications cannot avoid crowded settings or parents are caring for ill children at home). Face mask use by well persons also might reduce self-inoculation (e.g., touching one's own mucous membranes with the hand after touching a contaminated surface). Recent meta-analysis of randomized controlled studies for prevention of influenza showed that use of N95 respirators compared with surgical masks is not associated with a lower risk of laboratory-confirmed influenza. Study suggests that N95 respirators should not be recommended for general public and nonhigh-risk medical staff those are not in close contact with influenza patients or suspected patients.

**Recommendations:**

- **Voluntary home isolation** of ill persons (staying home when ill) year-round and especially during annual influenza seasons and influenza pandemics.
- **Respiratory etiquette and hand hygiene** in all community settings, including homes, child care facilities, schools, workplaces, and other places where people gather, year-round and especially during annual influenza seasons and influenza pandemics.
- **Voluntary home quarantine** of exposed household members as a personal protective measure during severe, very severe, or extreme influenza pandemics in combination with other personal protective measures such as respiratory etiquette and hand hygiene.
- If a member of the household is symptomatic with confirmed or probable pandemic influenza, then all members of the household should stay home for up to 3 days (the estimated incubation period for seasonal influenza) starting from their initial contact with the ill person, to monitor for influenza symptoms.
- **Use of face masks by ill persons:** CDC might recommend the use of face masks by ill persons as a source control measure during severe influenza pandemics when crowded community settings cannot be avoided (e.g., when adults and children with influenza symptoms seek medical attention) or when ill persons are in close contact with others (e.g., when symptomatic persons share common spaces with other household members or symptomatic postpartum women care for and nurse their infants). Some evidence indicates that face mask use by ill persons might protect others from infection.
- **Use of face masks by well persons** not routinely recommended in the home or other community settings as a means of avoiding infection during influenza pandemics except under special, high-risk circumstances ([https://www.cdc.gov/flu/hcp/infection-control/mask-guidance.html?CDC\\_AAref\\_Val=https://www.cdc.gov/flu/professionals/infectioncontrol/maskguidance.htm](https://www.cdc.gov/flu/hcp/infection-control/mask-guidance.html?CDC_AAref_Val=https://www.cdc.gov/flu/professionals/infectioncontrol/maskguidance.htm)).

**II. Community NPIs**

Statewide consistency regarding the use of social distancing measures and school closures and dismissals in the event of an influenza pandemic is important for maintaining social stability, protecting public health and minimizing economic impact.

Based on the situational assessment, Missouri DHSS may promote following community NPIs consistent with recent CDC recommendations:

- **Temporary school closures and dismissals** of child care facilities, K–12 schools, and institutions of higher education,
- **Social distancing measures** in schools, workplaces, and mass gatherings

**A. School closures and dismissals:** School systems represent an important element in pandemic influenza preparedness for several reasons, particularly since children easily transmit infectious diseases to one another due to their close proximity and their general

lack of awareness and compliance with basic hygienic measures. Until a vaccine became available, students, teachers and staff would be highly susceptible to a novel virus. Therefore, in a pandemic, long-term and widespread absenteeism may occur due to the lack of immunity. This type of absenteeism occurs on a smaller basis annually due to seasonal influenza outbreaks. However, in a pandemic the impact would be much greater and the longer duration of the outbreak would create unique challenges.

As public health research shows, preemptive, coordinated school and child care dismissals, and closures and dismissals at higher education institutions can be implemented for several reasons:

- Children have higher influenza attack rates than adults and are infectious for a longer period than adults
- Influenza transmission is common in schools and contributes to school absenteeism and parental absenteeism from work
- The presence of school-aged children in a household is a risk factor for influenza virus infection in families
- Social contact and mixing patterns among school-aged children differ substantially depending on the grade and school level, during various periods of the school day, between weekdays and weekends, and between regular school terms and holiday breaks
- Physical floor plans and intergrade activities (e.g., cafeteria size and lunch breaks) also can affect in-school social mixing
- Schoolchildren can introduce the influenza virus into a community, leading to increased rates of illness among their household or community contacts.
- Influenza outbreaks on college and university campuses typically have high attack rates (44%–73%) and cause substantial morbidity.

Preventing the spread of disease in educational settings among children and young adults reduces the risk for infection for these age groups and slows virus transmission in the community. Depending on the severity of the pandemic, these measures might range from everyday preventive actions to preemptive, coordinated school closures and dismissals. *A school closure means closing a school and sending all the students and staff members home, whereas during a school dismissal, a school might stay open for staff members while the children stay home.* **Preemptive school dismissals** can be used to disrupt transmission of influenza before many students and staff members become ill. **Coordinated dismissals** refer to the simultaneous or sequential closing of schools in a jurisdiction. Thus, preemptive, coordinated school closures and dismissals can be used early during an influenza pandemic to prevent virus transmission in schools and surrounding communities by reducing close contact among children in child care centers and preschools, school-aged children and teens in K–12 schools, and young adults in institutions of higher education.

During a dismissal, the school facilities are kept open, which allows teachers to develop and deliver lessons and materials, thus maintaining continuity of teaching and learning, and allows other staff members to continue to provide services and help with additional response efforts. School closures and dismissals might be coupled with social distancing measures (e.g., cancelling sporting events and other mass gatherings) to reduce out-of-school social contact among children when schools are closed.

Components of the strategy might include preemptive, coordinated school closures and dismissals implemented during the earliest stages of a pandemic, before many students and staff members become ill. Preemptive, coordinated dismissals can be implemented by the following facilities: **child care** facilities, **K–12 schools**, and institutions of **higher education**.

Implementation of preemptive, coordinated school closures and dismissals during an evolving influenza pandemic has several public health objectives, according to the CDC:

- To gain time for an initial assessment of transmissibility and clinical severity of the pandemic virus in the very early stage of its circulation in humans (closures for up to 2 weeks)
- To slow down the spread of the pandemic virus in areas that are beginning to experience local outbreaks and thereby allow time for the local health care system to prepare additional resources for responding to increased demand for health care services (closures up to 6 weeks)
- To allow time for pandemic vaccine production and distribution (closures up to 6 months)

Other types of school closures and dismissals which might be implemented in Missouri are **selective** and **reactive**. These interventions do not slow disease spread in the community, and they are not considered NPIs.

1. **Selective school closures and dismissals:** These might be implemented by schools that serve students at high risk for complications from infection with influenza especially when transmission rates are high. For example, a school that serves children with certain medical conditions or pregnant teens might decide to close while other schools in the area remain open. In addition, some communities or early childhood programs might consider closing child care facilities to help decrease the spread of influenza among children aged <5 years. Selective dismissals are intended to protect persons at high risk for influenza rather than to help reduce virus transmission within the community.
2. **Reactive school closures and dismissals:** These might be implemented when many students and staff members are ill and not attending school or when many students and staff members are arriving at school ill and being sent home. For example, a child care center might close because it is unable to operate under these conditions. Reactive dismissals, which might occur during outbreaks of seasonal influenza and during pandemics, are unlikely to affect virus transmission because they typically take place after considerable, if not widespread, transmission has already occurred in the community.

Preemptive, coordinated school closures and dismissals are most likely to be implemented in Missouri when an influenza pandemic is **severe**, **very severe**, or **extreme**. Secondary consequences include missed work and loss of income for parents who stay home from work to care for their children and missed opportunities to vaccinate school-aged children rapidly unless other mechanisms are considered. While it may be necessary to eventually close schools, the goal of every Missouri community should be to keep schools open and safe whenever feasible. If closures are anticipated, it is important

that the negative impacts of the closures on society, students, and staff be minimized by pre-planning for such an event. Communication structures must be enhanced and triggers for both closing and opening schools must be understood.

### **Recommendations:**

In accord with the conclusions of the U.S. Community Preventive Services Task Force (<https://www.thecommunityguide.org/findings/emergency-preparedness-and-response-school-dismissals-reduce-transmission-pandemic-influenza>), CDC might recommend the use of **preemptive, coordinated school closures and dismissals** during **severe, very severe, or extreme** influenza pandemics.

**The task force found insufficient evidence to recommend for or against preemptive, coordinated school dismissals during a mild or moderate influenza pandemic.** In these instances, **jurisdictions** should make decisions that balance local benefits and potential harms.

For additional information about the school policies in Missouri, please, refer to the overview of Missouri school policies in Attachment C.

## **B. Social Distancing Measures**

Social distancing measures can reduce influenza virus transmission by decreasing the frequency and duration of social contact among persons of all ages. Social distancing measures that reduce opportunities for person-to-person virus transmission can help delay the spread and slow the exponential growth of a pandemic. Social distancing measures can be implemented in diverse community settings, such as schools, workplaces, and public places where people gather. The choice of social distancing measure depends on the severity of the pandemic. It is important to implement social distancing measures simultaneously in places where persons gather. Multiple social distancing measures can be implemented simultaneously.

There are several reasons why social distancing is an important strategy:

- Children have higher influenza attack rates than adults, and influenza transmission is common in schools.
- More than half of all United States adults are in the workforce, and workers often share office space and equipment and have frequent face-to-face contact. Influenza attack rates in working-age adults might be as high as 15.5% during a single influenza season.
- Major group events (concerts, festivals, and sporting events, etc.) bring people into close contact for extended periods. An infected traveler attending a mass gathering might introduce influenza to a previously unaffected area, and a person who becomes infected at the event can further spread the infection after returning home. Even when a circulating virus has a relatively low basic reproductive rate ( $R_0$ ), intensely crowded settings might lead to high secondary attack rates.

Examples of practical measures that might reduce face-to-face contact in community settings:

- If schools remain open during a pandemic, divide school classes into smaller groups of students and rearrange desks so students are spaced at least 3 feet from each other in a classroom.
- Offer telecommuting and replace in-person meetings in the workplace with video or telephone conferences.
- Modify, postpone, or cancel mass gatherings.

#### **Recommendations:**

CDC might recommend the simultaneous use of multiple social distancing measures to help reduce the spread of influenza in community settings (e.g., schools, workplaces, and mass gatherings) during severe, very severe, or extreme influenza pandemics while minimizing the secondary consequences of the measures. Social distancing measures include the following:

- Increasing the distance to at least three feet between persons when possible. This applies to apparently healthy persons without symptoms. In the event of a very severe or extreme pandemic, this recommended minimal distance between people might be increased.
- Persons in community settings who show symptoms consistent with influenza and who might be infected with (probable) pandemic influenza should be separated from well persons as soon as practical, be sent home, and practice voluntary home isolation.

### **III. Environmental NPIs**

Even though only a portion of influenza cases acquire infection through contact transmission (i.e., hand transfer of virus from contaminated objects to the eyes, nose, or mouth), this mode of transmission is a recognized route of influenza spread. Environmental surface cleaning measures can help eliminate influenza viruses from frequently touched surfaces and objects, such as tables, door knobs, toys, desks, and computer keyboards, and thus might reduce the spread of influenza viruses. These measures involve cleaning surfaces with detergent-based cleaners or disinfectants that have been registered with the U.S. Environmental Protection Agency (EPA).

Environmental surface cleaning measures can be used for prevention of seasonal influenza and in all pandemic severity scenarios.

#### **Recommendations:**

CDC recommends environmental surface cleaning measures in all settings, including homes, child care facilities, schools, and workplaces, to remove influenza viruses from frequently touched surfaces and objects.

Additional guidance is available from CDC:

- For health care facilities  
([https://www.cdc.gov/hicpac/pdf/guidelines/eic\\_in\\_HCF\\_03.pdf](https://www.cdc.gov/hicpac/pdf/guidelines/eic_in_HCF_03.pdf))



## IV. Additional NPI Recommendations

### A. Colleges and Universities

- Ensure continuity of essential operations according to the developed pandemic flu plan.
- Inform students about plans and procedures for providing and completing course work.
- Plan to provide ongoing assignments by regular mail, e-mail, internet links, telephone, teleconferencing, or calling into a recorded message at the university.
- Develop a list of students' mailing addresses, telephone/cell numbers, and e-mail addresses.
- Encourage faculty to develop distance-learning instructional materials.
- Ensure access to college/university healthcare staff.
- Develop a plan for accommodating students who remain on campus during an influenza pandemic.
- Plan to inform families that students may be dismissed during a pandemic.
- Educate students on why they are being dismissed and the importance of not congregating in the community, about the influenza spread, and the differences between seasonal and pandemic influenza.
- Develop communication plans for advising employees, staff, and families of the resumption of programs and activities.
- Develop the procedures, activities, and services needed to restore the learning environment.

### B. Workplace Policies

One of the primary needs during a pandemic will be to maintain essential governmental, community and business continuity. It is possible that 30 percent of the workforce may be absent due to illness and it may be difficult to maintain adequate staffing for many important functions. Many essential services may be disrupted if large numbers of public health, law enforcement, first responders, health care, communications, transportation and public utility personnel are not able to carry out critical functions due to illness. It is, therefore, extremely important that continuity of service plans be in place to minimize the impact. For additional pandemic influenza resources related to businesses visit <http://health.mo.gov/emergencies/panflu/panbusiness.php>.

### C. Faith-based Organizations

- Review pandemic flu plan with employees.
- Develop a way to communicate with your employees and volunteer staff during an emergency to provide information and updates.
- Where appropriate, align public health messages and recommendations with your organization's values and beliefs. Encourage staying at home when ill as well as the use of proper cough and sneeze etiquette and hand hygiene.
- Consider potential financial deficits due to emergencies when planning budgets.
- Develop collaborative efforts with other faith-based organizations to keep your organizations running.
- Develop plans for alternatives to mass gatherings, such as video and email messages, mailed newsletters, and pre-recorded messages.

- Identify activities, rituals, and traditions that may need to be temporarily suspended or modified during a pandemic.
- Identify people who are vulnerable and may need assistance in your community.
- Designate people from your organization to be responsible to check on specific vulnerable people or families in your community who may need assistance.
- Determine ways your facility might be used during a pandemic, such as a temporary care facility or a distribution site for providing meals, supplies, or medicine.
- Identify and meet with local emergency responders, health departments, and healthcare organizations to learn about their planning and educate them about your organization's planning.

#### **D. Return to the Workplace or to School**

In order to decrease the chance of spreading pandemic influenza to others, people who have been diagnosed with pandemic influenza by a health care provider **or** who believe that they have pandemic influenza based on symptoms of illness should follow the following guidelines to determine when it is safe to go back to work.

- 1. Stay home and away from others** as much as possible to protect others from the infection. The duration of time to stay home will depend upon the circumstances and guidance will be provided by CDC specific to the epidemiology of the circulating pandemic virus. Studies show you are most contagious and likely to spread influenza virus to others for up to 10 days after your first symptoms appeared and for up to 48 hours after your fever has ended. It is important to remember that the epidemiology of a new pandemic virus could be different, and that this knowledge will become available to the public as pandemic unfolds. Study of the pandemic H1N1 virus showed that the median shedding duration from fever onset by real-time reverse transcriptase polymerase chain reaction (rRT-PCR) was 6 days (range, 1–13) and 5 days (range, 1–7) by culture. Following fever resolution, the virus was isolated for a median of 2 days (range, 0–5). Overall, shedding duration in children and adults were similar to seasonal influenza viruses. However, because shedding is not completely resolved after fever, CDC recommendations indicate that patients should be reminded about their potential to spread influenza and to follow recommended hand and cough hygiene recommendations. Studies are needed to better understand the relationship between detectable shedding and infectiousness.
- 2. If you are immunosuppressed, consult with your health care provider** for guidance on when you may return to your workplace or school and on possible treatment with antiviral medications. Being immunosuppressed means your body's immune system may be weaker than normal. For example, from cancer or cancer treatment, organ or bone marrow transplants, HIV/AIDS or from treatment with drugs such as steroids. Studies show that an immunosuppressed person who is infected with influenza may be able to transmit virus for a longer time than a person who is not immunosuppressed.

3. **If you were or are taking antiviral medications for treatment of influenza, consult with your health care provider as to when to return to your workplace or school.** Antivirals for influenza are prescription drugs such as oseltamivir (Tamiflu®) and zanamivir (Relenza®). Specific guidance as to when a person can return to work or school will be provided by CDC based on the epidemiology of the circulating pandemic virus.

## **E. Public Transportation**

Public transportation systems that bring many people together in close proximity to one another provides an excellent opportunity to transmit infectious agents. It is essential at all times that vehicles be kept clean and sanitized to protect the public and transportation workers. In a pandemic, this becomes even more important. In planning for a pandemic, owners and operators of public transportation should make sure that policies and procedures for the appropriate cleaning/sanitizing of surfaces which come into contact with passengers, as well as prevention strategies for both workers and the public regarding handwashing, respiratory hygiene and other infection prevention strategies are in place. These policies and procedures should be consistent with state and local guidance and be based on the most current scientific information available. Since most public transportation is locally owned and operated, this information can best be obtained from LPHAs.

The following guidelines can be utilized to assist owners and operators of public transportation to develop policies and procedures for reducing the risk of infection while operating or riding in a public transportation vehicle:

### **1. Training and Education**

- Transportation personnel should be provided training and education regarding how influenza virus is transmitted and the appropriate precautions to take to reduce the risk to themselves and the public. This information can be found in the first section of this document where handwashing, respiratory hygiene and other infection prevention measures are discussed. They should also receive training regarding proper cleaning/sanitizing products and methodologies. They should be aware of the signs and symptoms of influenza infection and recognize the need to stay home when they are ill during the pandemic.
- Public education advisories and public education materials should be provided which outline proper procedures to protect themselves and others from exposure to influenza. Samples of materials that can be used for these purposes can be obtained from LPHAs or found at the DHSS website at <https://health.mo.gov/emergencies/panflu/pangen.php>. LPHAs should also provide current local information to make sure the information is applicable to the current situation.

## **F. International Travel**

DHSS will develop and implement travel recommendations based on assessment of risks to travelers and/or current CDC international travel guidelines.

## **G. Education of the Public**

Community preparedness can best be accomplished when the public is well informed about the dangers of pandemic influenza and the benefits of the containment measures. To this end, DHSS has developed a website (<http://health.mo.gov/emergencies/panflu/pangen.php>) where information and educational tools regarding all aspects of pandemic influenza can be found. In addition, educational booklets, DVDs, posters, signs and PowerPoint presentations have been widely disseminated throughout the state through LPHAs, schools, faith-based organizations, businesses and government agencies. Many of these tools are being used presently to assist communities in local planning. Their use will be expanded in pre-pandemic phases and throughout a pandemic as appropriate.

LPHAs will be responsible for educating the public when cases of pandemic influenza arise in their communities and they will monitor compliance with prevention strategies such as voluntary isolation and quarantine along with infection control strategies such as handwashing and respiratory hygiene in order to determine where further education is necessary. Contact tracing early in a pandemic will be done by LPHAs until no longer practical. The decisions regarding whether to perform contact tracing and how to manage the patients will be made on a case by case basis and will be made by LPHAs and/or DHSS. With limited personnel and the short incubation period of influenza, the feasibility of conducting contact tracing will be limited in most communities. Further information about pandemic influenza surveillance can be found in the Pandemic Influenza Surveillance annex.

Educating the public regarding voluntary isolation and quarantine will include information regarding the risk of disease development, protection of others and the duration of isolation or quarantine. In order for these measures to be effective, LPHAs, and communities in general, are being instructed to support persons in isolation or quarantine by developing local systems to assure that food, water, supplies and medicines are available to those who are homebound. Special considerations must be given to children and those with special needs.

## **V. Conclusion**

As demonstrated by 2009 pandemic influenza, NPIs can be a critical component of pandemic influenza mitigation. Even though pandemic vaccines remain the main tool in reducing the risk of pandemic influenza and in controlling the spread of a virus, vaccines might not be widely available for up to 6 months after the emergence of a pandemic due to current vaccine production technology. The 2009 H1N1 pandemic also has shown that antiviral medications might be prioritized for treatment but not used for widespread chemoprophylaxis because of concerns about antiviral resistance and limited stockpiles of antiviral medications.

Due to the above mentioned factors, NPIs might be the only prevention tools readily available for persons and communities to help slow transmission of an influenza virus during the initial stages of a pandemic. However, individual NPIs might be only partially effective in limiting community transmission when implemented alone. Thus, the most efficient implementation involves early, targeted, and layered use of multiple NPIs in Missouri. Some community-level NPIs that potentially have the greatest epidemiologic effects on pandemic influenza virus transmission in communities, especially school closures and dismissals, also

are most likely to be associated with unwanted consequences. Therefore, pre-pandemic planning, including engaging communities in planning activities well ahead of the next pandemic, is critical to enable appropriate local decision-making during the early stages of a pandemic.

In preparing strategies discussed in this Community Mitigation plan, many individuals, agencies and organizations from the public and private sectors were consulted. Examples include: large and small businesses, faith-based organizations, law enforcement, emergency response, education experts, government agencies, LPHAs, mental health, home health, hospitals, long-term care, media (including television, radio, newsprint and magazines), laboratorians, public representatives, legal authorities, legislators and others. In developing the school policies, the Missouri Department of Homeland Security's School Safety Subcommittee, which is comprised of representatives from 26 school-focused organizations, participated in and approved the policies. These groups included the Missouri Department of Secondary and Elementary Education (DESE), Missouri School Board Association (MSBA), Missouri Association of School Nurses (MASN), School Administrators, Parent Teacher's Association and other key leaders in the education sector. DHSS brought together leaders from the business community from all over Missouri to assist in developing practical guidelines for businesses large and small.

Special pandemic planning booklets were developed and disseminated to small and medium businesses with limited resources. A business toolkit to supplement the planning booklet was developed to assist small to medium businesses in developing pandemic plans. These tools were placed on the DHSS website for downloading. Campaigns have been launched to make sure this information is widely disseminated to the state's partners. The products that have been developed to educate the community, businesses and others have been placed on the DHSS web site at <http://health.mo.gov/emergencies/panflu/pangen.php>. These products include toolkits, PowerPoint presentations, DVDs, booklets, pamphlets, posters and other written materials.

Further updates of these guidelines will be developed and issued by the DHSS when significant new information and evidence emerges about the effectiveness and feasibility of NPIs in mitigating the impact of pandemic influenza.

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**Factors to Consider Before Implementing Non-pharmaceutical Interventions  
During an Influenza Pandemic**

<b>Planning Factors</b>	<b>Planning Goals</b>	<b>Activities</b>
Ethical considerations	<ul style="list-style-type: none"> <li>• Community engagement in prepandemic planning</li> <li>• Equitable distribution of public health resources during a pandemic</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting public input into NPI planning</li> <li>• Ensuring that NPIs benefit all groups within a community</li> <li>• Carefully considering and justifying any restrictions on individual freedom needed to implement NPIs (e.g., voluntary home quarantine of exposed household members)</li> </ul>
Feasibility of NPI implementation	<ul style="list-style-type: none"> <li>• Minimal interruption of regular programs and activities</li> <li>• Selection of NPIs that are practical to implement within each community</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying practical obstacles to NPI implementation and considering ways to overcome them. Examples include the following:               <ul style="list-style-type: none"> <li>○ Educational issues (e.g., missed educational opportunities or loss of free or subsidized school meals because of school dismissals)</li> <li>○ Financial issues (e.g., workers who cannot afford to stay home when they are ill or to care for an ill family member because they do not have paid sick leave)</li> <li>○ Legal issues (e.g., local jurisdictions that do not have the legal authority to close schools or cancel mass gatherings for public health reasons)</li> <li>○ Workplace issues (e.g., access to clean water, soap, or hand sanitizer and flexible workplace policies or arrangements)</li> </ul> </li> </ul>
Activation triggers, layering, and duration of NPIs	<ul style="list-style-type: none"> <li>• Optimal implementation of NPIs during a pandemic</li> </ul>	<ul style="list-style-type: none"> <li>• Maximizing the effectiveness of NPIs by taking the following actions:               <ul style="list-style-type: none"> <li>○ Identifying activation triggers to ensure early implementation of NPIs before explosive growth of the pandemic</li> <li>○ Planning for simultaneous use of multiple NPIs because each NPI is only partially effective</li> <li>○ Planning for long-term duration of school dismissals and social distancing measures</li> </ul> </li> </ul>

Planning Factors	Planning Goals	Activities
<p>Selecting NPIs for groups at risk for severe influenza complications and for those with limited access to care and services</p>	<ul style="list-style-type: none"> <li>• Protection of persons most at risk for severe illness or death during a pandemic</li> <li>• Protection of persons who might need additional assistance during a pandemic response, including persons with disabilities and other access and functional needs</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying strategies for implementing NPIs among groups at high risk for severe influenza-related complications, including the following: <ul style="list-style-type: none"> <li>○ Pregnant women</li> <li>○ Persons aged &lt;5 yrs and ≥65 yrs</li> <li>○ Persons with underlying chronic diseases</li> <li>○ Persons in institutions</li> </ul> </li> <li>• Identifying strategies for implementing NPIs among groups who might experience barriers to or difficulties with accessing or receiving medical care and services, including the following: <ul style="list-style-type: none"> <li>○ Persons who are culturally, geographically, or socially isolated or economically disadvantaged</li> <li>○ Persons with physical disabilities, limitations, or impairments</li> <li>○ Persons with low incomes, single-parent families, and residents of public housing</li> <li>○ Persons who live in medically underserved communities</li> </ul> </li> </ul>
<p>Public acceptance of NPIs</p>	<ul style="list-style-type: none"> <li>• Active participation in NPI implementation during a pandemic</li> </ul>	<ul style="list-style-type: none"> <li>• Promoting public understanding that individual action is essential for effective implementation of NPIs in every pandemic scenario. In many scenarios, both personal and community NPIs might be recommended. NPI recommendations might change as new knowledge is gained.</li> <li>• Identifying key personnel to disseminate emergency information (e.g., alerts, warnings, and notifications) and establishing communication channels that enable members of the public to ask questions and express concerns (e.g., call centers or social media sites)</li> <li>• Ensuring that school dismissals and other NPIs are acceptable to the community during a pandemic</li> <li>• Coordinating with local partners to support households complying with voluntary home quarantine (e.g., providing necessary food and supplies)</li> <li>• Identifying strategies for mitigating the secondary consequences of school dismissals and other social distancing measures (e.g., modifications or cancellations of mass gatherings)</li> <li>• Minimizing intervention fatigue* during a pandemic</li> </ul>

Planning Factors	Planning Goals	Activities
Balancing public health benefits and social costs	<ul style="list-style-type: none"> <li>• Maximization of NPI public health benefits and minimization of social and economic costs during a pandemic</li> </ul>	<ul style="list-style-type: none"> <li>• Estimating economic and social costs of NPIs and their secondary (unintended or unwanted) consequences</li> <li>• Balancing those costs against public health benefits, with reference to different prepandemic planning scenarios</li> <li>• Identifying strategies for reducing the cost of NPI implementation</li> </ul>
Monitoring and evaluation of NPIs	<ul style="list-style-type: none"> <li>• Ongoing guidance during a pandemic on optimal NPI implementation, maintenance, and discontinuation</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying ways to monitor and evaluate the following: <ul style="list-style-type: none"> <li>○ Degree of transmission and severity of the evolving pandemic</li> <li>○ Type and degree of NPI implementation</li> <li>○ Level of compliance with NPI measures and the emergence of intervention fatigue</li> <li>○ Effectiveness of NPIs in mitigating pandemic impact</li> <li>○ Secondary consequences of NPIs and the effectiveness of strategies to mitigate them</li> </ul> </li> </ul>

**Source:** Adapted from: Barrios LC, Koonin LM, Kohl KS, Cetron M. Selecting nonpharmaceutical strategies to minimize influenza spread: the 2009 influenza A (H1N1) pandemic and beyond. Public Health Rep 2012;127:565–71.

## Prepandemic influenza planning scenarios to guide implementation of non-pharmaceutical interventions, by severity of pandemic and the Pandemic Severity Assessment Framework quadrant

Severity of pandemic and PSAF quadrant	Implications of clinical severity and transmissibility in this scenario*	Possible no. of hospitalizations and deaths if unmitigated, <sup>†</sup> by age group			Historical experience
		Age groups (yrs)	No. of hospitalizations	No. of deaths	
Low to moderate severity (mild to moderate pandemic) PSAF quadrant: A	<ul style="list-style-type: none"> <li>Clinical severity and transmissibility similar to the range seen during annual influenza seasons.</li> <li>Estimated overall attack and case-fatality rates: 18% and 0.03%, respectively. Rates of severe outcomes are greater among younger persons than during influenza seasons.</li> </ul>	<b>All ages</b> 0–18 18–64 ≥65	<b>340,000</b> 50,000 135,000 155,000	<b>17,000</b> 1,000 6,000 10,000	<b>2009 pandemic</b> <ul style="list-style-type: none"> <li>First detected in North America, the 2009 H1N1 pandemic quickly spread to all continents. In the United States, persons at high risk for severe complications included pregnant women and those with neuromuscular disease, lung disease, morbid obesity, and other chronic conditions.</li> <li>An estimated 43–89 million people in the United States became ill with H1N1 from April 2009 through April 2010, and approximately 12,000 people died.<sup>§</sup> A total of 87% of deaths were among persons aged ≤65 yrs, with a mean age of 43 yrs.<sup>¶</sup> During typical influenza seasons, 80%–90% of deaths are among persons aged ≥65 yrs, and the mean age of influenza-related deaths is approximately 76 yrs.<sup>**</sup></li> </ul>
Moderate to high severity (moderate to severe pandemic) PSAF quadrant: B	<ul style="list-style-type: none"> <li>Clinical severity similar to the range seen during annual influenza seasons. Transmissibility greater than during influenza seasons.</li> <li>Estimated overall attack and case-fatality rates: 22% and 0.05%, respectively. Rates of severe outcomes are greater than during influenza seasons, especially among younger persons.</li> </ul>	<b>All ages</b> 0–18 18–64 ≥65	<b>550,000</b> 80,000 220,000 250,000	<b>35,000</b> 2,500 12,000 20,000	<b>1968 pandemic</b> <ul style="list-style-type: none"> <li>First detected in Hong Kong in July 1968, a new influenza virus (H3N2) spread worldwide.</li> <li>The first cases in the United States were detected in September 1968. The 1968 influenza pandemic resulted in approximately 30,000 deaths in the United States, with approximately half among those aged ≥65 yrs.<sup>††,§§</sup></li> </ul>
High severity (severe pandemic) PSAF quadrant: B	<ul style="list-style-type: none"> <li>Clinical severity similar to the range seen during annual influenza seasons. Transmissibility greater than during influenza seasons.</li> <li>Estimated overall attack and case-fatality rates: 28% and 0.1%, respectively. Rates of severe outcomes are greater than during influenza seasons.</li> </ul>	<b>All ages</b> 0–18 18–64 ≥65	<b>1,100,000</b> 150,000 450,000 500,000	<b>86,000</b> 6,000 30,000 50,000	<b>1957 pandemic</b> <ul style="list-style-type: none"> <li>A new influenza virus, H2N2 (the Asian strain), emerged in China in February 1957 and spread to approximately 20 countries, including the United States, by June 1957.</li> <li>An estimated 25% of the U.S. population became ill with the new pandemic virus strain. U.S. infection rates were highest among school-aged children and adults aged ≤40 yrs, with most (64%) of the approximately 70,000 deaths occurring among older adults.<sup>††,§§,¶¶</sup></li> </ul>
Very high severity (very severe to extreme pandemic) PSAF quadrant: D	<ul style="list-style-type: none"> <li>Both clinical severity and transmissibility are greater than during annual influenza seasons.</li> <li>Estimated overall attack and case-fatality rates: 30% and 1.5%, respectively. Rates of severe outcomes are greater than during influenza seasons, especially among young adults.</li> </ul>	<b>All ages</b> 0–18 18–64 ≥65	<b>7,500,000</b> 1,000,000 3,000,000 3,400,000	<b>1,400,000</b> 100,000 500,000 800,000	<b>1918 pandemic</b> <ul style="list-style-type: none"> <li>The 1918 pandemic resulted in death for 2%–3% of those infected, a case-fatality rate that was much greater than the rate during an average influenza season. The pandemic virus was easily transmitted.</li> <li>Approximately one fourth of the U.S. population became ill, and approximately 500,000 died; 99% of deaths occurred in persons aged ≤65 yrs.<sup>††,***</sup></li> </ul>

**Abbreviation:** PSAF = Pandemic Severity Assessment Framework.

\* Based on PSAF (Source: Reed C, Biggerstaff M, Finelli L, et al. Novel framework for assessing epidemiologic effects of influenza epidemics and pandemics. *Emerg Infect Dis* 2013;19:85–91).

† Point estimates for hospitalizations and deaths, by age group, are based on the estimated overall attack and case-fatality rates provided in the second column (clinical severity and transmissibility). Age-specific point estimates of hospitalizations and deaths are based on U.S. Census 2010 population data.

§ Source: Shrestha SS, Swerdlow DL, Borse RH, et al. Estimating the burden of 2009 pandemic influenza A (H1N1) in the United States (April 2009–April 2010). *Clin Infect Dis* 2011;52(Suppl 1):S75–S82.

¶ Source: Fowlkes AL, Arguin P, Biggerstaff MS, et al. Epidemiology of 2009 pandemic influenza A (H1N1) deaths in the United States, April–July 2009. *Clin Infect Dis* 2011;52(Suppl 1):S60–S68.

\*\* Source: Viboud C, Miller M, Olson DR, Osterholm M, Simonsen L. Preliminary estimates of mortality and years of life lost associated with the 2009 A/H1N1 pandemic in the U.S. and comparison with past influenza seasons. *PLoS Currents* 2010;2:RRN1153.

†† Source: Simonsen L, Clarke MJ, Schonberger LB, Arden NH, Cox NJ, Fukuda K. Pandemic versus epidemic influenza mortality: a pattern of changing age distribution. *J Infect Dis* 1998;178:53–60.

§§ Source: Cox NJ, Subbarao K. Global epidemiology of influenza: past and present. *Annu Rev Med* 2000;51:407–21.

¶¶ Source: Henderson DA, Courtney B, Inglesby TV, Toner E, Nuzzo JB. Public health and medical responses to the 1957–58 influenza pandemic. *Biosecure Bioterror* 2009;7:265–73.

\*\*\* Source: Collins SD. Age and sex incidence of influenza and pneumonia morbidity and mortality in the epidemic of 1928–29 with comparative data for the epidemic of 1918–19. *Public Health Rep* 1931;46:1909–37.



## Overview of Missouri School Policies

The policies outlined below should be integrated as part of the school district's overall crisis plan. Besides being effective in an influenza pandemic, the same policies will be helpful in averting many other crises. School districts can take steps prior to a pandemic that will reduce the spread of all communicable diseases. The first step is education. Students, staff and community need to understand how infectious diseases are transmitted. The second step is training. Along with being taught how disease is transmitted, staff and students must be taught techniques to reduce the chance of transmission, such as proper handwashing, how to cover a cough or sneeze, standard precautions, the importance of annual flu vaccinations, etc. Educational materials and tools for this purpose have been developed and can be found the DHSS website at <https://health.mo.gov/emergencies/panflu/pangen.php>. Staff and students must be encouraged to stay home when they, or other members of the household, are ill with flu-like symptoms, and maintenance staff must be taught how to properly clean and disinfect.

These policies also cover what the school district should do in case prevention methods fail. Most districts are prepared to deal with short-term school closures. However, in the case of a pandemic, schools may be closed for months at a time. School districts have to be prepared so that they can continue to communicate with staff, students and the community and deliver education and other services to students.

In addition, school districts must also be prepared for the psychological impact of a pandemic. People may be fearful but those who have been educated will be less so. Fears will be abated and tensions eased if the students, staff and the community know the district has a plan. The period after a pandemic is also important. School districts must be prepared to deal with the return of grieving students and staff. Many children receive their only meals, or only hot meals, at school. In the case of a long-term school closure, these students may not have enough to eat. This policy encourages school districts to explore the possibility of continuing food service in some manner. It may require bulk purchasing and storage of certain supplies and may not be possible for some school districts. There is a booklet "Assuring Food Supplies During an Influenza Pandemic or Other Hazard: A Guide for Community Leaders" located at: <http://health.mo.gov/emergencies/panflu/pdf/foodprogrambooklet.pdf>, and another resource available at: <http://health.mo.gov/emergencies/panflu/pdf/panflubusiness toolkit.pdf>.

The following information is provided to assist Missouri school districts in planning for an influenza pandemic.

### A. Pandemic Influenza School Closure Policies

Goal: To keep schools open and safe whenever possible.

#### School Closure Trigger Points

- Student absenteeism - when it is not economically prudent to keep the school open.
- Teacher/staff absenteeism - when the number of staff available to supervise and instruct students drops below what is necessary to maintain a safe learning environment.
- To protect the public health and safety - when advised to close by state or local public health/safety authorities.

Prior to considering whether to close, it is important that every school district be prepared in advance to deal with these adverse consequences.

## **B. Authority to Close Schools**

- The School Superintendent would have authority to close and/or open school for absenteeism due to School Closure Trigger Points as noted above.
- In Missouri, local public health agencies (LPHAs) would have the authority to close and/or open schools in their counties for the purpose of protecting the public health as noted in the safety trigger points above.

Schools may be closed to all staff and students or just students. If schools are closed only to students, staff members are expected to work regular schedules or use appropriate leave.

The superintendent may cancel all activities on district property by outside groups even if some schools in the district remain open. When a school is closed, activities scheduled at that school, including use by community groups, will be canceled. Activities held at another location that involve students and staff from a closed school may cancel at the discretion of the building principal in consultation with local health authorities and the school nurse.

Schools will be reopened by the superintendent but in cases where schools were closed by DHSS or an LPHA, only the director of DHSS, his/her designee, or the LPHA may authorize the reopening of schools. Schools will be reopened only when the situation that caused the schools to be closed has sufficiently abated.

## **C. Recommendations for School Closings**

- School closings for the purpose of protecting the public health and safety will be directed by LPHAs and local school authorities. However, in a pandemic where closures would affect multiple jurisdictions, the director of DHSS will direct the closures.
- School closings for student or teacher absenteeism should occur as necessary and the LPHA and school authorities will direct the closings.
- As stated in the information above, the effectiveness of closing schools to slow pandemic still requires further study and depends on multitude of factors. Schools should follow closure recommendations based on specific circumstances of a particular type of the pandemic virus. School districts should have plans in place to:
  - Close schools as necessary as well as plans for reopening them.
  - Recognize trigger points for closing and opening schools.
  - Understand lines of authority in the community/state for closing and opening schools.

## **D. School Surveillance and Reporting**

In a pandemic, enhanced surveillance of influenza cases is imperative to track the disease and to assist in making mitigation decisions.

Notice of school closing, reopening or cancellation of activities will be publicized through local media, the school district's web site and the school district's information line.

In Missouri, the school superintendent or designee is charged with monitoring reportable diseases in schools and reporting to public health authorities in accordance with the law. See 19 CSR 20-20.020 (8).

During a school closing, the school nurse will be responsible for compiling data relating to the health of individuals. The nurse will be responsible for appointing and training a staff member to receive and compile this health information in situations where the nurse is unavailable. If possible, another nurse will be selected before any non-medical personnel are used. Other staff members will be involved as necessary to monitor the health and academic progress of students and other staff members.

- <https://www2.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/planning-guide.pdf>
- <https://www2.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/basic.pdf>

## **E. School Restrictions**

If incidences of contagious disease are high, the school nurse or designee may recommend that the superintendent impose appropriate social distancing rules, such as limiting or prohibiting individuals who are not students, staff and contractors providing services to the district from being in district facilities.

- Child Care and Preschool Pandemic Influenza Planning: [https://www.aap.org/en/patient-care/influenza/early-education-and-child-care-influenza-resources/?srsltid=AfmBOoqEP9BDcrWluEVQevy1hfCfPQBBithP9yheNmZq-xyE73\\_PksC](https://www.aap.org/en/patient-care/influenza/early-education-and-child-care-influenza-resources/?srsltid=AfmBOoqEP9BDcrWluEVQevy1hfCfPQBBithP9yheNmZq-xyE73_PksC)
- School District (K-12) Pandemic Influenza Planning Checklist: <https://stacks.cdc.gov/view/cdc/46463>
- Emergency Planning: Influenza Outbreak: <https://stacks.cdc.gov/view/cdc/46456>  
<https://www.cdc.gov/orr/school-preparedness/infection-prevention/planning.html>
- Pandemic Flu: A Planning Guide for Educators: <https://www2.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/planning-guide.pdf>
- Legal Preparedness for School Closures in Response to Pandemic Influenza and Other Emergencies (Center for Law and the Public's Health at Georgetown & Johns Hopkins Universities)
- Ready in 3: Schools <http://health.mo.gov/emergencies/readyin3/schools.php>

## **F. School Communications**

In an emergency such as a pandemic, information will generally flow from DHSS to the Commissioner and/or the Deputy Commissioner of DESE who are responsible for coordinating the state agency response. It would then be disseminated to superintendents, who would share with principals and then to school nurses. However, this chain may differ slightly in some communities (not all have school nurses on site) and will depend upon local plans. In Post-Secondary Schools (PSS) the information would flow from DHSS to the Commissioner to the Public Information Officer (PIO) and out to the individual PSS contacts.

DESE and the Missouri Department of Higher Education will communicate information at all levels of a pandemic, including recovery, using their respective PIO or Commissioner for both media relations and communicating with their constituents.

The superintendent or designee will develop a communication system for the exchange of information between the school district and staff, students, parents and others when schools are closed. The system will be used to monitor the health of students and staff, deliver instruction and support services and to provide health and other appropriate information.

The system will include a variety of methods such as internet, digital answering machines, e-mail, traditional mail, fax, etc. and designate individuals responsible for receiving and compiling information received. Each school district relies on their local resources for notifying parents of dismissal from classes or child care, communication during dismissal and re-opening. Smaller school districts may use phone trees or other methods of communication. Each school district is responsible for having such a system in place.

In an emergency, DESE will communicate with local educational authorities through blanket e-mails to superintendents, the DESE web site, and follow-up e-mails to supervisors. Redundancy is accomplished through the Missouri Alert Network, phone trees, and media (radio, TV, newspapers).

## **G. Continuity of Education**

In the case of a school closing due to a declared pandemic, every effort will be made to continue instruction through alternative methods. In case contemporaneous instruction is not possible, instructional staff will prepare a grade level or subject area supplemental unit of studies that students and parents can implement with minimal assistance from staff. District administration in cooperation with instructional staff will oversee the development and collection of these units and determine an appropriate delivery system. In the case of a long-term school closing, the school board may waive local graduation requirements.

Continuity of education planning is primarily a local responsibility, and activation of continuity of education plans will vary by school because their size and assets differ. The triggers for activating these specific plans should be contained in the all-hazards emergency plan of the individual schools. DESE will assist in delivering educational content that would be provided to students across the age spectrum primarily through the technological resources described here.

Using technological resources DESE has developed several initiatives, which will assist in providing continuity in education during an emergency such as a pandemic. Two current examples of these initiatives include the “Virtual School Initiative” and “SuccessLink”. A description of each is provided below:

### **1. Virtual School Initiative**

Missouri was the 25th state to implement the virtual public school system by the state board of education. The virtual public school offers instruction in a virtual setting using technology, intranet, and/or internet methods of communication. Any student, kindergarten through grade twelve, who resides in Missouri, is eligible to use this system regardless of the student’s physical location. In a pandemic, this system would be well suited to reach large numbers of homebound children and provide a system that would help to ensure the continuity of education.

### **2. SuccessLink**

This is a valuable resource for Missouri educators. Funded through DESE and other public and private funds, SuccessLink disseminates and promotes the best teaching ideas throughout Missouri. Teaching activities and exemplary programs are recognized and shared freely throughout the state.

The SuccessLink web site has a database filled with lessons written by Missouri teachers. Lessons are searchable by subject/grade, Show Me Standards, Grade Level Expectations and keywords. Lessons are performance-based, aligned to state standards and most have an assessment component.

Many other valuable programs are offered through SuccessLink. These include Proven Practices for Student Success, SuccessLink Technology Initiatives, SuccessLink Curriculum Initiatives, Missouri Teacher Mentoring Blog Community and [www.moteachingjobs.com](http://www.moteachingjobs.com). Special Education training will be provided through the same networks with the assistance of the special education division.

PSS will utilize online interactive lessons through a variety of sites, as well as through their website. Educational content for PSS will depend upon local resources and will be coordinated by individual schools.

#### **H. School Confidentiality**

Staff health information will be kept confidential and only released in accordance with school board policy and law. Student health information will be shared with state and local public health officials in accordance with the Family Educational Rights and Privacy Act (FERPA) and state law. School districts may provide individually identifiable student information to local or state public health authorities in conjunction with reporting a Category 1 disease under the health and safety emergency exception of FERPA. Individually identifiable student information received from any source, including state and local public health authorities, will be maintained and disclosed in accordance with FERPA and school board policy.

#### **I. School Maintenance**

The superintendent or designee will develop a cleaning/disinfecting checklist according to guidance from DHSS and the U.S. Department of Health and Human Services (HHS) to be completed by staff responsible for building maintenance. DHSS recommends that school authorities mandate staff or contracted janitorial services follow this guidance to best protect health in the school.

## **J. School Materials and Supplies**

Handwashing conveniences will be available to students, staff and visitors to school district facilities. The superintendent will ensure that each district facility is equipped with adequate cleaning and Environmental Protection Agency (EPA) approved disinfecting materials and that each bathroom in the school district is equipped with soap, hot water and a system to dry hands. Waterless hand sanitizer may be used as a substitute only when it is impractical to provide soap and hot water.

The superintendent will investigate whether the school district can continue to provide meals to students on free and reduced lunch programs when schools are closed. To determine if such a program is practically and financially feasible, the superintendent will consult with food service personnel regarding purchasing supplies, facility staff to determine storage options and local emergency planners to develop a preparation and delivery system.

## **K. School Staff Leave**

Staff members who are ill or have members of their household ill with pandemic influenza are encouraged to stay home to promote healing and reduce the risk of infecting others. In the case of school closure due to a pandemic or other significant health event, the school board may provide additional paid leave to staff members based on the length of the closure and the financial condition of the school district. However, staff members who are not ill may only use available leave in accordance with school board policy.

## **L. School Board Meetings**

The school board president and superintendent will establish alternative methods for holding meetings that do not require face-to-face contact. Any method must be implemented in accordance with the Missouri Sunshine Law.

## **M. School Counseling**

In the case of a pandemic, students and staff will face illness and death of friends and family. School district counselors, school social workers, and school psychologists must be prepared to provide support to students and staff when schools reopen after a pandemic. In addition, counselors must develop support programs that can be accessed while schools are closed. These programs will be part of the overall emergency plan and be developed in conjunction with the communication system used to monitor the health of students and staff and deliver instruction and support services.

## **N. Emergency Use of School Facilities**

In the case of an influenza pandemic or other health event, the school district's facilities may be used as staging areas, shelters or to otherwise serve the community in accordance with school board policy and law. The superintendent will maintain an accurate inventory of property that may be useful in an emergency situation including, but not limited to, medical supplies, food, water, ice, vehicles, tools, communication devices, generators, building materials, cleaning supplies and bedding. The use of K-12 facilities for emergencies is governed at the local level. DESE can provide contact phone numbers and information for groups who are interested. The use of PSS facilities during an emergency is also controlled locally.



## **O. DESE and PSS Coordination**

In a pandemic, the persons responsible for coordinating the pandemic influenza response and the person the Governor would contact are:

- DESE - Commissioner of Education and/or the Deputy Commissioner,
- PSS - Representative that serves on the state level pandemic planning team is the Director of Administration and/or the Office Service Assistant.