Interim planning considerations for mass gatherings in the context of pandemic (H1N1) 2009 influenza

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Introduction

Mass gatherings[1] are highly visible events with the potential for serious public health and political consequences if they are not planned and managed carefully. There is ample documentation that mass gatherings can amplify and spread infectious diseases. Respiratory infections, including influenza, have been frequently associated with mass gatherings.[2] Such infections can be transmitted during the mass gathering, during transit to and from the event, and in participants' home communities upon their return.

Planners of mass gatherings face special challenges during a global influenza pandemic.[3,4,5,6] The purpose of this document is to outline key planning considerations for organizers of mass gatherings in the context of pandemic (H1N1) 2009 influenza. It should be used in conjunction with WHO's *Communicable disease alert and response for mass gatherings*.[7]

This document was prepared during September – October 2009 by WHO staff. It was reviewed by WHO's Virtual Interdisciplinary Advisory Group on Mass Gatherings. It is based on currently available information about pandemic (H1N1) 2009 influenza. As the pandemic situation evolves and additional information becomes available, it may be necessary to revise the document. Review of the document is planned in the first quarter of 2010.

Key information about pandemic (H1N1) 2009 influenza

Since the initial reports of pandemic (H1N1) 2009 influenza in the spring of 2009, the virus has spread worldwide. Cases have been reported from essentially all countries and territories.

Information about the epidemiological, clinical, and virological features of pandemic (H1N1) 2009 influenza have become available based on countries' experience. This improved understanding can assist organizers of mass gatherings and national authorities in assessing and managing the potential risks associated with such events. A brief synopsis of key findings through October 2009 follows.[8]

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1 Mass gatherings refer to more than a specified number of persons (as few as 1000 or upwards of 25,000 persons) at a specific location for a specific purpose for a defined period of time.

2 Rashid H et al. Pandemic influenza: mass gatherings and mass infections. *Lancet* 2008;8:526–7.

3 Memish ZA et al. *Establishing public health security for mass gatherings and pandemic influenza A (H1N1) preparations for Haj in the kingdom of Saudi Arabia, 2009*. Submitted for publication.

4 Loncarevic G et al. Public health preparedness for two mass gathering events in the context of pandemic influenza (H1N1) 2009 – Serbia, July 2009. *Euro Surveill*. 2009;14(31):pii=19296. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19296.

5 Gutiérrez I, et al. Community transmission of influenza A (H1N1)v virus at a rock festival in Belgium, 2–5 July 2009. *Euro Surveill*. 2009;14(31):pii=19294. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19294.

6 Public Health Agency of Canada. Public health guidance for the prevention and management of influenza-like-illness (ILI), including the Pandemic (H1N1) 2009 Influenza virus, related to mass gatherings. Available online: http://www.phac-aspc.gc.ca/alert-alerte/h1n1/phg-ldp-eng.php.

7 http://www.who.int/csr/mass_gathering/en/index.html.

8 These findings are based on the experience of a limited number of countries and may not be generalized to all countries due to differences in the age structure of the population, the prevalence of medical or other conditions that increase the risk for severe disease, access to care, hospital admission practices, and capacity for response at national and local levels.

Key epidemiological features

- Younger (5 to 49 years) rather than older (>65 years) age groups are most affected by the pandemic (H1N1) 2009 influenza virus.
- Human-to-human transmission appears to be similar to seasonal influenza viruses occurring primarily through close unprotected contact with large respiratory droplets.
- The incubation period (time between infection and onset of symptoms) appears to be approximately 2–3 days, but could range up to 7 days.
- Secondary attack rates of influenza-like illness (ILI) in households and other closed settings typically range between 7% and 13%; however, lower and higher rates have been reported.

Key clinical considerations[9]

- Most persons experience an uncomplicated ILI, with full recovery within a week, even without medical treatment.
- The most commonly reported symptoms include cough, fever, sore throat, muscle aches, malaise and headache. Some patients experience gastrointestinal symptoms (nausea, vomiting and/or diarrhoea). In some instances, sore throat and cough can precede fever.
- A small minority of patients develop severe illness, principally severe progressive pneumonia. Risk factors for severe disease are similar to those identified for complications from seasonal influenza.[10]
- Women who are pregnant may be four to five times more likely to develop severe disease compared to non-pregnant persons.
- Minority groups and indigenous populations appear to be disproportionately affected by severe disease but the reasons are not fully understood.
- Approximately 1% to 10% of persons with clinical illness require hospitalization.
- Children <5 years have rates of hospitalization at least two to three times higher than other age groups.
- Approximately 10% to 30% of hospitalized patients require intensive care.Prompt treatment with antiviral drugs, namely oseltamivir or zanamivir, reduces the severity of illness and improves the rate of survival.[11] WHO has published recommendations for antiviral therapy for patients who meet treatment criteria.[12]
- The availability and coverage of pandemic (H1N1) 2009 influenza vaccines will vary greatly and many countries will have little or no access to this primary prevention measure.

Key virological considerations

The vast majority of pandemic (H1N1) 2009 influenza viruses are susceptible to oseltamivir and zanamivir; only sporadic incidents of resistance to oseltamivir have been reported.[11]

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[9] http://www.who.int/csr/disease/swineflu/notes/h1n1_clinical_features_20091016/en/index.html.

[10] Persons at increased risk for severe disease from pandemic H1N1 2009 include children <2 years, persons >65 years, pregnant women, persons of any age with chronic pulmonary, cardiac, renal, and/or liver disease; persons with certain neurological conditions, hemoglobinopathies, primary or secondary immunosuppression, and children receiving chronic aspirin therapy.

[11] http://www.who.int/csr/disease/swineflu/notes/h1n1_antiviral_use_20090925/en/index.html.

[12] http://www.who.int/csr/resources/publications/swineflu/h1n1_use_antivirals_20090820/en/print.html.

Risk assessment

The decision to proceed with a mass gathering or to restrict, modify, postpone, or cancel the event should be based on a thorough risk assessment. Event planners should undertake such an assessment in partnership with local and national public health authorities. The risk assessment should take into account available information about pandemic (H1N1) 2009 influenza at global, national, and local levels.

As part of the risk assessment, some factors may be of particular relevance such as:

- **Influenza activity**: The level of pandemic influenza activity circulating in the community where the mass gathering is to be held should be considered. However, it is difficult to predict the level of activity and which strains of influenza will be circulating very far in advance. WHO provides weekly updates of pandemic activity.[13]
- **Period of time over which the mass gathering will take place**: If the duration of the mass gathering is more than the typical incubation period for pandemic (H1N1) 2009 influenza (2–3 days), then the majority of event-associated cases would be expected to occur while the mass gathering is underway. In contrast, if the duration of the event is shorter, most cases would likely occur after the event as people travel and return to their home communities.
- **Age of participants**: Since younger age groups appear to be more affected, mass gathering comprised principally of children and young adults may be associated with increased transmission compared with those comprised of older age groups.
- **Occurrence of severe disease and health care capacity**: Although severe disease is uncommon, treatment of these patients is challenging and resource intensive with emergency departments and intensive care units experiencing a disproportionate burden.

WHO's *Communicable disease alert and response for mass gatherings*[7] can be consulted for a detailed discussion on the general principles and elements of risk assessment and management.

Planning and coordination

If the decision is made to proceed with a mass gathering, planning should consider measures to:

- detect and monitor event-related pandemic influenza
- reduce spread of the pandemic virus
- manage and treat ill persons
- disseminate relevant public health messages

There are limited, published experiential data specific to planning and executing a mass gathering during the current pandemic.[3–5] As part of the planning process, event organizers should work closely with local and national public health authorities. In addition, assistance can be sought from experts in emergency preparedness and management, infectious diseases, public health practice, migration and border control, logistics, risk communications, social mobilization, and others, as deemed appropriate.[3]

In response to the pandemic, many countries have enacted command and control and cross-government and cross-agency coordination structures. Organizers should consult with government officials regarding how event–related planning and management may fit into these overarching structures.

[13] http://www.who.int/csr/disease/swineflu/en/index.html.

Detection and monitoring of event-related pandemic influenza

Detection and monitoring of event-related pandemic influenza should be considered in the context of surveillance schemes that are already in place for pandemic influenza and if new or enhanced surveillance is deemed necessary. Cases of event-related pandemic influenza likely will occur not only in the country where the mass gathering is held, but in the home communities of participants after the event. However, depending on how widespread pandemic activity is in these communities it may be difficult to distinguish between event-related and non-related cases of pandemic influenza.

WHO's *Communicable disease alert and response for mass gatherings*[7] includes a detailed discussion on communicable disease surveillance before, during, and after a mass gathering. In addition, WHO has published advice regarding surveillance for pandemic influenza.[14]

Specific issues for event organizers to consider in consultation with public health authorities in the host country include:

- The role of diagnostic testing for pandemic (H1N1) 2009 influenza in view of available laboratory capacity (i.e. trained personnel and test kits) for real-time transcription polymerase chain reaction (RT-PCR) testing[15] and the limitations of rapid influenza antigen tests.[16] If ILI occurs among participants at the mass gathering it will be important to document the cause. However, it will not be practical nor necessary to laboratory confirm all cases of ILI and clinically-based diagnosis will need to be adopted.
- Mechanisms to enhance detection of event-related cases such as surveillance of persons who become ill and are treated at on-site medical clinics/facilities or staff working at the event (e.g. health-care workers, security staff, and mobile response teams).
- The time period to undertake event-related surveillance in view of the duration of the event and the epidemiological characteristics of the pandemic virus.

[14] http://www.who.int/csr/resources/publications/swineflu/interim_guidance/en/index.html.

[15] http://www.who.int/csr/resources/publications/swineflu/WHO_Diagnostic_RecommendationsH1N1_20090521.pdf.

[16] CDC. Performance of Rapid Influenza Diagnostic Tests During Two School Outbreaks of 2009 Pandemic Influenza A (H1N1) Virus Infection. Connecticut, 2009. *MMWR* 2009;58:1029–1032.

Reducing event-related transmission of pandemic influenza

The basic general principles for reducing transmission of pandemic influenza are applicable to a mass gathering. However, organizers should work with public health authorities to optimize their implementation depending on the type and setting of the mass gathering, as well as logistical and feasibility considerations.

a. Stay away from the event when ill

WHO has previously advised that persons who feel unwell (i.e. have a high fever, cough, and/or sore throat) should stay at home and keep away from work, school, or crowds until symptoms resolve.[17,18] **This is one of the most important measures to reduce transmission of pandemic influenza during a mass gathering and applies to participants as well as staff**. Active screening or monitoring of participants and staff for ILI is not a practical consideration in view of the large number of participants. The success of this measure is linked to adequate knowledge of the signs and symptoms of pandemic influenza.

b. Promote hand hygiene and respiratory etiquette

Promoting appropriate hand hygiene[19] and respiratory etiquette[17,18] in mass gathering venues requires informational materials that reach a range of age groups and varying reading and educational levels. In addition, soap and water or alcohol hand-sanitizers and tissues should be easily accessible in all common areas, and especially in mass gathering medical treatment sites. The benefits of wearing masks have not been established in community settings, especially in open areas.[20]

c. Isolate persons who become ill while at the mass gathering

Organizers should plan for the likelihood of persons becoming ill with fever and other typical symptoms of influenza during a mass gathering. Establishing isolation areas in on-site medical treatment clinics/facilities where such persons can be initially assessed and triaged should be considered. Persons who are ill can be provided with a mask to help contain respiratory droplets generated from coughing and sneezing. The isolation area should be equipped with the necessary supplies to facilitate hand hygiene and respiratory etiquette. In addition, medical staff attending persons who are ill should wear a mask, then dispose of it immediately after contact and cleanse hands thoroughly afterwards.[20]

d. Maintain self-isolation and avoid travel while ill

Persons who are ill, but who do not require hospitalization should be advised to self-isolate and to not return to the mass gathering until 24 hours after resolution of their symptoms or 7 days