WHO/CDS/NTD/DCE/2006.2

Pandemic influenza preparedness and mitigation in refugee and displaced populations

WHO guidelines for humanitarian agencies

Programme on Disease Control in Humanitarian Emergencies
Communicable Diseases Cluster

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This document will be used to develop a training manual for health coordinators and clinical workers in refugee and displaced settings. This document will be updated as additional information becomes available.

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1. Rationale

An influenza pandemic occurs when a new influenza virus appears against which the human population has limited or no immunity, resulting in several, simultaneous epidemics worldwide with the potential for considerable morbidity and mortality. With the increase in global transport and communications, as well as urbanization and overcrowded conditions, epidemics caused by the new influenza virus are likely to quickly take hold around the world. The impact of a novel pandemic influenza virus on refugee and displaced populations is expected to be severe. Risk factors for increased morbidity and mortality of pandemic influenza in these populations include:

- overcrowding, particularly in camp settings;
- poor access to basic health-care services that will be accentuated by a pandemic;
- limited or no access to hospitals for supportive care;
- high prevalence of malnutrition;
- high incidence/prevalence of other communicable diseases, e.g. acute respiratory illnesses, malaria, human immunodeficiency virus (HIV);
- logistic challenges resulting from often remote locations or ongoing active conflict;
- lack of adequate surveillance/early warning systems to detect cases or clusters;
- poor links to national disease surveillance systems;
- possible exclusion from national influenza preparedness and response activities;
- lack of trained and equipped staff to investigate cases/clusters detected.

In addition, WHO and the United Nations (UN) have encouraged each country to create a national pandemic preparedness plan (PPP). These national plans, developed by government ministries including health and agriculture, may not sufficiently take refugee and displaced populations into account. This is particularly of concern in countries where health-care programmes for these populations are implemented by humanitarian agencies, often under coordination of UN organizations. This gap could leave these populations more vulnerable to a pandemic.

Target audience
These practical field-based guidelines are intended for use by humanitarian agencies, e.g. nongovernmental organizations (NGOs), UN organizations coordinating these services, and donor agencies providing financial support for these populations. They also target ministry of health staff working with refugee and displaced populations at local and national level. These guidelines are intended not only for camp settings but also for open settings with displaced populations living dispersed among local communities.

WHO recommends that each agency should develop a locally-relevant PPP which specifically addresses the current capacity and anticipated needs on the ground. Where possible **these PPPs should be linked to existing national pandemic preparedness plans.** This PPP should allow a systematic sequence of actions in preparation for and response to a pandemic. Where there is no national PPP in place, the organization should work closely with the relevant authorities to formulate practical strategies for addressing the threat of pandemic influenza.

Structure of the document
This document provides background information on pandemic influenza, describes WHO pandemic phases and strategies to deal with a pandemic according to phase, and outlines preparedness activities needed during the pre-pandemic period. The remainder of the document will focus on response *during* an influenza pandemic.

Key principles

1. Although influenza pandemics are recurring and well-documented phenomena, it is not possible to predict the onset of the next pandemic.
2. Pandemic preparedness efforts, though targeting a future event, can strengthen public health systems and improve health-care worker safety now.
3. Known public health measures taken by individuals and communities, such as social distancing, respiratory etiquette and hand hygiene, are currently the most feasible measures available to reduce or delay disease (morbidity) and death (mortality) caused by pandemic influenza.
4. Pandemic preparedness efforts should not divert existing health-care resources from humanitarian programmes.
5. The primary goal of pandemic preparedness is to mitigate the local impact of a pandemic.
6. Containment of an emerging pandemic strain, once detected, is a separate activity that will be coordinated by WHO and implemented through and with national governments.
7. A system of triage and prioritization must be in place for each health-care setting to maximize impact and to focus efforts on the most effective interventions in the event of a pandemic.

2. Background

2.1 A novel influenza virus: how could it cause a pandemic?

Annual outbreaks of seasonal human influenza are caused by minor changes in the surface proteins that enable these viruses to evade the immunity that humans have developed after previous infections with the viruses, or in response to vaccinations. Seasonal human influenza is responsible for an estimated 250 000 deaths every year. When a major change in surface proteins occurs spontaneously, a new subtype can emerge that has not previously circulated in humans, and to which no one will have full immunity. If this new virus also has the capacity to spread efficiently and in a sustained manner from person to person, an influenza pandemic can occur.

(a) 2.1.1 Avian influenza outbreaks in birds

Avian influenza, or "bird flu", is a contagious disease of animals caused by viruses that normally infect only birds and, less commonly, pigs. Avian influenza viruses have, on rare occasions, crossed the species barrier to infect humans. In domestic poultry, infection with avian influenza viruses causes two main forms of disease, distinguished by low and high extremes of virulence. The so-called "low pathogenic" form commonly causes only mild symptoms and may easily go undetected. The highly pathogenic form spreads rapidly through poultry flocks, causes disease affecting multiple internal organs and has a mortality that can approach 100%, often within 48 hours.

To date, all outbreaks of the highly pathogenic form of avian influenza have been caused by viruses of the H5 and H7 subtypes. Avian influenza viruses may have been transferred from farm to farm by the movement of live birds, people (especially when shoes and other clothing are contaminated) and contaminated vehicles, equipment, feed and cages. The outbreaks of highly pathogenic avian influenza that began in South-East Asia in mid-2003 and have now spread through Europe are the largest and most severe on record. The first case in Africa was confirmed in poultry farms in northern Nigeria in February 2006.

(b) 2.1.2 Avian influenza outbreaks in humans

At present, H5N1 avian influenza remains largely a disease of birds. The virus does not easily cross from birds to infect humans: despite the infection of tens of millions of poultry over large geographical areas for more than two years, fewer than 200 human cases have been laboratory confirmed as of 7 April 2006. However, of all influenza viruses that circulate in birds, the H5N1 virus is of greatest current concern for human health for two main reasons. First, the H5N1 virus has caused by far the greatest number of human cases of very severe disease and the greatest number of deaths. Second, there is a risk that the H5N1 virus – if given enough opportunities – will develop the characteristics required to start another influenza pandemic. The virus has met all prerequisites for the start of a pandemic bar one: an ability to spread efficiently and sustainably among humans. Altogether, more than half of the laboratory-confirmed cases have been fatal, though the incidence of mild or asymptomatic infections is unclear. H5N1 avian influenza in humans is still a rare disease, but a severe one that must be closely watched and studied, particularly because of the potential of this virus to evolve in ways that could start a pandemic.

2.2 Epidemiology of human influenza viruses

Transmission. The transmission of human influenza viruses occurs largely through exposure to large-particle (>5 μm) respiratory droplets at distances of 1 m and through direct contact. The transmission of influenza viruses through small-particle aerosols (< 5 μm) at distances over 1 m has not been clearly demonstrated.

- Large-droplet respiratory transmission is common among close contacts (within 1 m) and likely to account for the majority of transmission.
- Hand-to-mouth transmission may occur after touching an influenza virus-contaminated object or surface. This mechanism of transmission is important, but secondary to large droplet respiratory transmission. Hand to eye transmission may also be possible but has not been conclusively demonstrated.

Incubation period. The incubation period for seasonal human influenza is around 2 to 3 days. The incubation period for a novel pandemic virus is as yet unknown. However, current data for H5N1 avian influenza infection indicate an incubation period ranging from 2 to 8 days and possibly as long as 17 days.

Infectious period. In adults, the infectious period of seasonal human influenza is approximately 5 days from the onset of illness. The infectious period in children may be 10 days or more.

A small proportion of patients may be infectious just before symptoms appear.

Attack rates. Available data from previous pandemics and from seasonal human influenza studies suggest an attack rate of 15–35%, with rates of severe illness (requiring hospitalization) of 1–2%. Attack rates can be expected to be higher in densely populated camps, as crowding can facilitate transmission of the influenza virus.

Rate of secondary bacterial infection. To date, pneumonias occurring in humans infected with avian influenza H5N1 have been primarily viral. However, data from military training camps during the 1918 pandemic indicated secondary bacterial infection rates of 50% or more. The potential role of malnutrition and coinfection with other pathogens (HIV, malaria, etc.) on the clinical picture is unclear. WHO will update the clinical epidemiology as available. In this document, an estimate of a 25% secondary bacterial infection rate among cases is hypothesized.

Cleaning and disinfection. Seasonal human influenza viruses are inactivated by alcohol and by chlorine. Cleaning of environmental surfaces with soap and water may reduce viral load.

Close contact with a case is defined as:

- intimate contact (within 1 m),
- providing care,
- living in the same household,
- direct contact with respiratory secretions (saliva droplets of a suspected case, coughing or sneezing), body fluids and/or excretions (e.g. faeces).

2.3 Consequences of an influenza pandemic

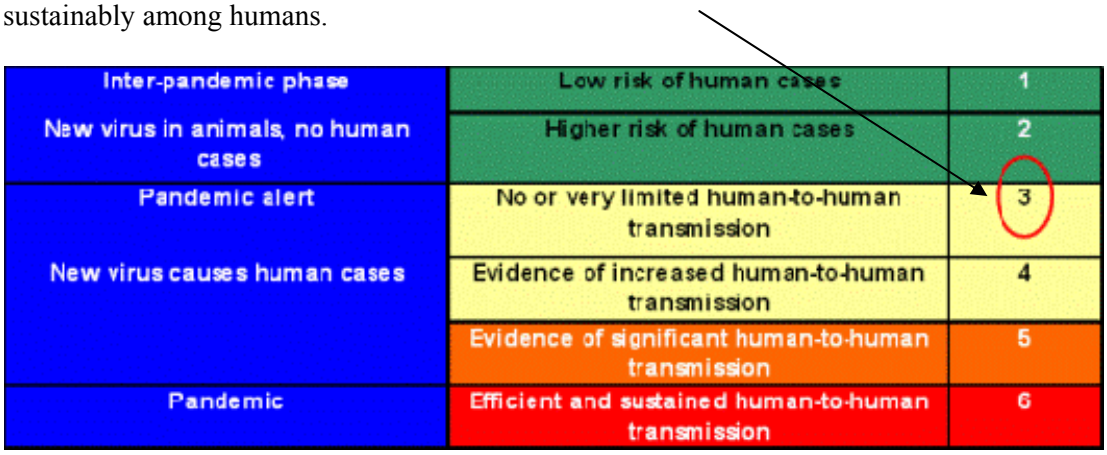
In the past, new strains have generated pandemics causing high death rates and great social disruption. In the 20th century, the greatest influenza pandemic occurred in 1918–1919 and caused an estimated 40–50 million deaths worldwide. Although health care has improved in the past decades, WHO is predicting that today a pandemic could result in 2–7.4 million deaths globally. **Overcrowding, malnutrition, and poor access to health-care services in some settings are likely to lead to higher morbidity and mortality rates among refugee and displaced populations.**

Preparedness plans should anticipate and address the following scenarios. If an influenza pandemic occurs:

- Once a fully contagious virus emerges, its **global spread** is considered inevitable. The pandemics of the previous century encircled the globe in 6–9 months. Given the speed and volume of international air travel today, the virus could spread more rapidly, possibly reaching all continents in less than 3 months.
- Because most people will have no immunity to the pandemic virus, **widespread illness** will likely result.
- **Health facilities will be overwhelmed** not only by large numbers of people who suddenly fall ill but also by the "worried well" who seek health care.
- **Large numbers of deaths may occur** and will be determined by the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations and the effectiveness of preventive measures.
- High rates of illness and worker absenteeism are expected, and these will contribute to **social and economic disruption**. Social disruption may be greatest when rates of absenteeism **impair health and other essential services**, such as power, transportation and communications.
- **Antiviral medications** decrease the duration of virus excretion and severity of illness with seasonal influenza. However, global availability of antiviral agents is insufficient and it is unknown whether they will be effective against pandemic influenza caused by a novel human strain.
- **Pandemic vaccines** will be used to prevent disease. However, vaccine production may take 2–6 months as it can commence only once a novel pandemic virus is characterized. Quantities of vaccine will also be insufficient to cover the global population.
- The effect of influenza on individual communities will be relatively prolonged when compared with other outbreaks, as it is expected that **outbreaks will reoccur**. Past pandemics have spread globally in two and sometimes three waves and, in the 1918-1919 pandemic, the second waves were more severe in mortality. Not all parts of the world or of a single country are expected to be severely affected at the same time.
- A pandemic may worsen **local and regional security** because of the economic impact and depletion of local water and food supplies. There is a need for protection of refugees and internally displaced persons (IDPs) in the event of insecurity. Local communities should be included in preparedness activities to minimize disparities with refugees/IDPs.

3. WHO phases for pandemic influenza

WHO phases are designed as a system for informing the world of the seriousness of the threat of pandemic influenza and to facilitate pandemic planning. The world was in phase 3 as of early 2006: a new influenza virus subtype causing disease in humans, but not as yet spreading efficiently and sustainably among humans.



WHO pandemic phases and planning goals

NEW PHASES	PUBLIC HEALTH GOALS
Inter-pandemic period **Phase 1.** No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.	Strengthen influenza pandemic preparedness at the global, regional, national and sub-national levels.
Phase 2. No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.	Minimize the risk of transmission to humans; detect and report such transmission rapidly if it occurs.
Pandemic alert period **Phase 3.** Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	Ensure rapid characterization of the new virus subtype and early detection, notification and response to additional cases.
Phase 4. Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine development.
Phase 5. Larger cluster(s) but human-to human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).	Maximize efforts to contain or delay spread, to possibly avert a pandemic and to gain time to implement pandemic response measures.
Pandemic period **Phase 6.** Pandemic: increased and sustained transmission in the general population.	Minimize the impact of the pandemic.

Actions taken during phase 6 will differ in affected versus non-affected areas.

4. Pandemic preparedness and mitigation: the role of humanitarian agencies

WHO currently promotes five key strategic actions to address pandemic influenza:

Reduce human exposure to H5N1

- Humanitarian agencies should aim to reduce human exposure to avian influenza A/H5N1 by informing communities of risks of exposure to sick or dead animals (particularly poultry/birds) and risk avoidance.
- Agencies should support such efforts through integration of these activities into other field programmes such as agriculture, livelihoods, food security, water and sanitation.

Strengthen the early warning system

- Humanitarian agencies should facilitate the early detection, notification and early response to the initial suspected cases/clusters in humans of H5N1 avian influenza or a novel pandemic influenza virus with reporting to relevant authorities and WHO.

Intensify rapid containment operations

- Humanitarian agencies should facilitate rapid containment operations under coordination of the ministry of health (MoH) and WHO in the event of human-to-human transmission of cases/clusters in humans of H5N1 avian influenza or a novel pandemic influenza virus.

Build capacity to cope with a pandemic

- The focus of pandemic preparedness efforts should be directed towards this objective. Preparedness planning to build capacity to cope with an influenza pandemic aims to:
    - Minimize the impact of pandemic influenza by implementing public health measures to reduce morbidity and mortality.
    - Implement previously-developed communication plans, health education messages and social mobilization activities to improve compliance with recommended public health measures.
    - Minimize social disruption.
    - Minimize shortages of essential services such as health care and access to food, safe water, sanitation and protection.

Coordinate global science and accelerate vaccine development and expansion of production capacity

- Humanitarian agencies, in coordination with national or local public health authorities, may be requested to collect and transport samples from suspected cases to appropriate laboratories for virus characterization. WHO would provide the necessary technical and operational assistance with the relevant MoH.

The objective of pandemic preparedness planning by humanitarian agencies is to enable better recognition and management of an influenza pandemic.

- Health planning should prioritize the reduction of transmission of the pandemic virus, thereby reducing morbidity and mortality.
- Planning goals should ensure maintenance of essential services and minimization of social disruption during an influenza pandemic.
- Prioritization of countries/regions in the consolidated appeals process or CAP (see glossary of terms) should occur as these populations will be the most vulnerable in the event of a pandemic.
- Planning goals should also consider potential disparities between the care provided to refugees and displaced populations and that provided to the surrounding communities.
- Strengthening of partnerships with governments is necessary to ensure the coordination of activities between agencies and with local communities.

5. Preparedness during the pandemic alert period (WHO Phases 3–5)

5.1 General measures

Key general preparedness measures must be undertaken during the pandemic alert period to prepare for the pandemic. Annex 1 provides a checklist with more detail on pandemic preparedness in refugee and displaced settings. However, the key general steps are summarized below. Specific measures related to health-care facilities are detailed under pandemic mitigation in section 6.

1. Coordination

Coordination with national and local authorities, including emergency services if present, and WHO and UN coordination mechanisms (e.g. UNSIC and OCHA), is crucial in ensuring

- consistency with national preparedness and response activities;
- rapid two-way flow of information between authorities, WHO, agencies and health facilities;
- consistency in risk communication messages being disseminated;
- movement of specimens and referral of patients if necessary.
- communication mechanisms must be set up in advance to serve these purposes.

2. Identify critical functions and surge capacity

The pandemic alert period must be used to identify critical functions that will need to continue during the pandemic (for at least 6–8 weeks) and those who will perform them (and identify non-essential functions that will be temporarily halted). The operational capacity of humanitarian agencies will diminish due to staff illness (at least 30%) and absences and, therefore, identifying first- and second-line staff (particularly national staff and community volunteers) will be critical to ensure continuation of essential services.

3. Ensure stockpile of food, water, fuel, gas, oil for cooking, vehicles, generators

A sufficient stockpile will be needed for the population, staff and their families to keep essential functions running for the period of the pandemic. A buffer stock must also be kept so that others seeking care who are not normally served by the agency are not excluded.

4. Security for population, health-care facility and staff

Security for the population and agency staff is crucial. Mass panic due to widespread illness, perceived differences in treatment of one group vs. another, or exclusion of some groups from distribution of available resources may lead to clashes. Open access to care, early social mobilization and transparency in risk communication may help to minimize this.

5. Travel restrictions

Decisions regarding phase changes will be made by WHO; further advice on travel restrictions will be issued concurrently.

It is important that agencies have agreements in place for the deferral of non-essential travel during phases 4–5. Although general travel restrictions are not recommended by WHO in phase 6, it is likely that governments may impose such restrictions, and this must be taken into account in advance.

5.2 Early warning surveillance and response

Objectives

Early warning surveillance is intended for detection of initial cases of *avian influenza A/H5N1 or other influenza viruses of pandemic potential* in humans, when human-to-human transmission is not efficient and not sustained (i.e. WHO phases 3–5).

1. **Application of simplified case definitions** at community and health-care facility levels will promote:
   – Early detection of initial cases/clusters or deaths, during the *pandemic alert* period (WHO phases 3–5) caused by avian influenza H5N1 or other influenza viruses of pandemic potential.
2. **An outbreak coordination team (OCT)** should be organized by the lead health agency in advance, and will be necessary in the pandemic alert period for the initial case/cluster investigation and implementation of containment measures (see section 5.2.2). The OCT will also be needed during the pandemic for coordination of essential services, implementation of public health measures, managing public health information and limiting social disruption.

5.2.1 Sample case definition

The following case definition can be used to identify suspected cases, and can be included in the ongoing disease surveillance system. The detection of a cluster which meets the below definition should be reported immediately to the OCT. This definition is intended for use only in the pandemic alert period (WHO phases 3–5). Case definitions can be expected to change as the pandemic evolves.

CLUSTER of 3 or more people with onsets of illness within 7 to 10 days of each other, and within a defined geographical area:

WITH

Unexplained[1] moderate-to-severe acute respiratory illness[2] (or who died of an unexplained acute respiratory illness)

[1] Unexplained: clinical, epidemiological, or laboratory evaluation does not determine a cause or etiological agent, such as a routine community-acquired pneumonia.
[2] Moderate-to-severe respiratory illness: lower respiratory tract illness (temperature > 38ºC, cough, shortness of breath or difficulty breathing with or without evidence, clinical or radiological, of pneumonia).

AND a history of one or more of the following:

Travel to or residence in an area affected by avian influenza outbreaks in birds or other animals **or**

Direct contact with dead or sick birds or other animals in an affected area **or**

Close contact with an H5N1 patient (living or deceased) or a person with unexplained severe acute respiratory illness **or**

A possible occupational exposure, including employment as an animal culler, veterinarian, laboratory worker or health-care worker.

However, any cluster of deaths from respiratory disease of unexplained cause should result in immediate reporting, regardless of contact history.

Features that may differ from normal seasonal human influenza include:

- unusual distribution by age group (e.g., younger age group, previously healthy);
- severe illness in adults in the absence of chronic disease;
- disease affecting health-care workers.

Animal surveillance

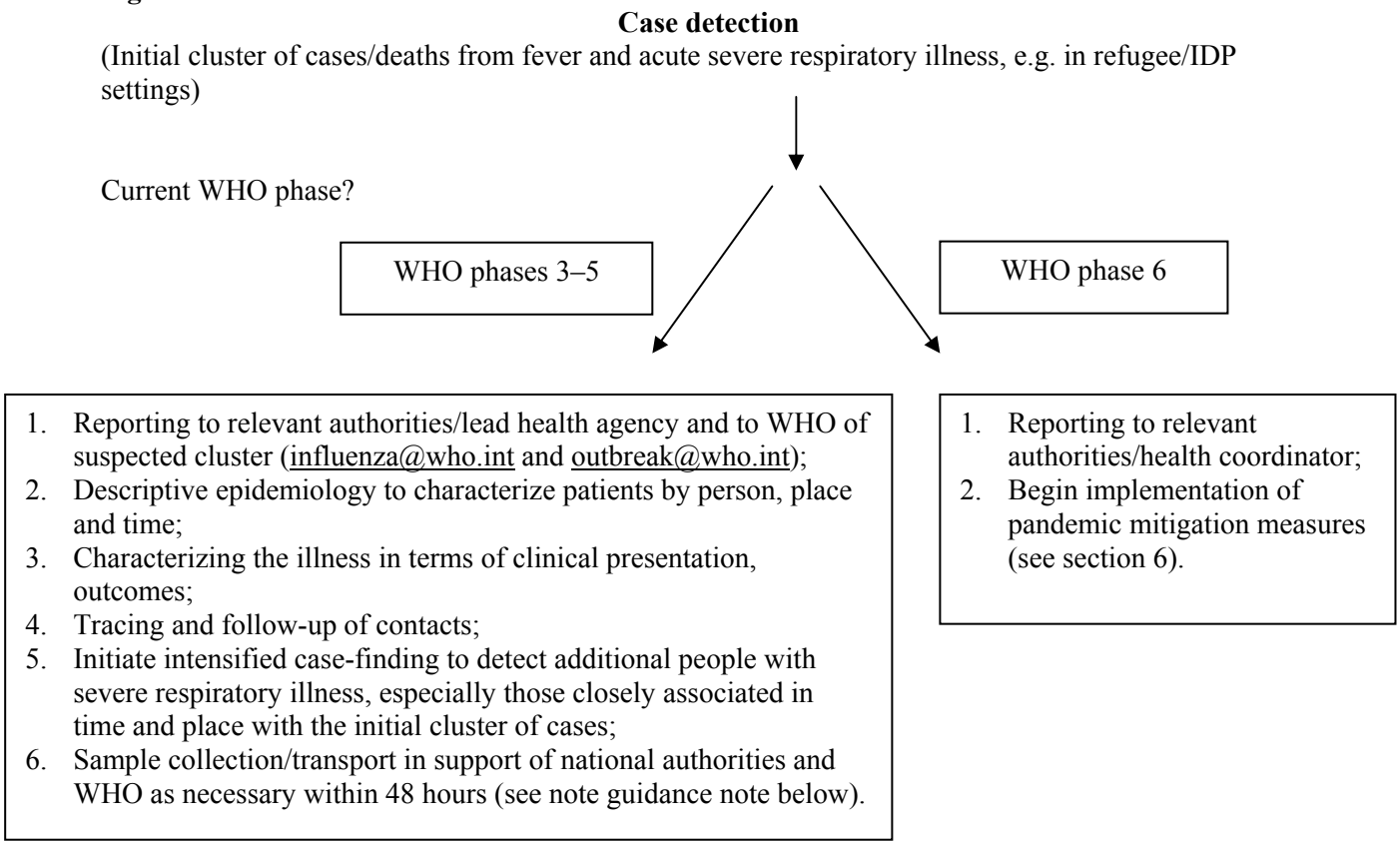
This document focus on human cases only. However, communities should be sensitized to report any flock of sick or dead birds or animals to the national authorities.

5.2.2 Response to detection of initial suspected cases

The WHO containment strategy. If there is timely detection of cases suspected of having been transmitted from human to human during WHO phases 3–5, WHO may attempt containment activities to control or delay the spread of the virus. Modelling studies have indicated that a rapid response to initial cases using antivirals, isolation and quarantine may allow at least a delay in the spread of the virus. This delay could allow more time for production of vaccine and for other control measures to be put in place. A containment strategy of this sort has never been attempted, and the obstacles to its successful implementation are formidable. Details are outlined in the document *WHO pandemic influenza draft protocol for rapid response and containment* (see Annex 8).

The most important role of humanitarian agencies in the containment strategy is early detection. If cases suspicious for avian influenza H5N1 or other influenza outbreaks of pandemic potential are detected during WHO phases 3–5, certain steps are immediately required. See Figure 1 for summary steps.

Figure 1.



GUIDANCE NOTE ON SPECIMEN COLLECTION, STORAGE AND TRANSPORT

1. The aim of sample collection is to isolate the virus itself.
2. Collection of specimens for testing is highly specialized.
3. Nasopharyngeal and throat sampling of tonsils and posterior pharynx with a Dacron swab is recommended.
4. Full PPE, including particulate respirator mask (e.g. fit-tested NIOSH-certified N95, EU FFP2 or equivalent), gown, gloves, and eye protection should be worn.
5. For isolation of the virus, storage and transport should be at –70 degrees C, which requires dry ice, a specialized shipping container, and a specialized shipping protocol.
6. Sampling, packing, shipping and testing of specimens should be arranged in liaison with national laboratories, the MoH and WHO.
7. Contact influenza@who.int for specific details.

During phases 3–5, and upon receipt of notification and relevant information, WHO, supported by its regional and country offices and by the relevant national authorities, will carry out an initial assessment under its containment strategy. This may be followed by diagnostic confirmation, needs assessment, ongoing communication and implementation of initial control measures.

INITIAL CONTROL MEASURES

1. Isolation of clinical cases of moderate-to-severe respiratory disease and other patients under investigation in respiratory isolation rooms.
2. Identification and voluntary home quarantine of asymptomatic close contacts and daily monitoring for symptom onset.
3. Administration of antiviral drugs for the treatment of cases and, if domestic supplies permit, for the targeted prophylaxis of close contacts.
4. Strict infection control and the use of personal protective equipment in health-care facilities caring for cases during the delivery of health care.
5. Social mobilization for risk communication for health education, with intensive promotion of hand and cough hygiene.
6. Domestic cleaning, using household cleaning products, to reduce transmission via fomites (infectious respiratory secretions on surfaces).

5.3 Social mobilization for risk communication and health education

Objectives

1. **To reinforce universal hygiene behaviours**.

   Cough/respiratory etiquette and hand hygiene will be crucial in limiting transmission during a pandemic, and will also prevent transmission of a variety of waterborne and respiratory illnesses now. See Annex 2A for sample health education messages.

2. **To reduce human exposure to avian influenza A/H5N1** by informing communities of risks of exposure and risk avoidance. These messages are relevant primarily in the pandemic alert period, and will be less important during the pandemic.

   - Avoid exposure/practices that expose people to infected/dead animals and the environments/surfaces that have had contact with infected/dead animals.
   - Avoid exposure to contaminated food
     - Properly cooked eggs and poultry meat are safe to consume.
     - Food preparation surfaces should be cleaned. Soap and water are sufficient.

Key behavioural interventions for reducing animal-to-animal and animal-to-human transmission (H5N1)

- **Report**
  - Report unusual sickness/death among poultry, wild birds and other animals immediately to the authorities.
  - Report and seek treatment immediately if you have fever after contact with sick birds.
- **Separate**
  - Separate poultry: (i) new stock kept apart for 2 weeks; (ii) from wild birds; (iii) from each other by species; (iv) from living areas; (v) from children.
  - Burn and/or bury dead birds safely.
- **Wash**
  - Wash hands with running water and soap (or ash if soap not available) often, especially after touching birds and before and after food preparation;
  - Clean clothes, footwear, vehicles and cages with soap or disinfectant.
- **Cook**
  - Handle, prepare and consume poultry safely.

5.4 Planning social mobilization

Planning can lay the groundwork for rapid communication in a time of crisis.

- Understand the sociocultural, economic and political context of the camp setting.
- Plan early with local authorities and communities.
- Build on previous mass social mobilization campaigns that have worked in the past.
- Identify a handful of realistic and measurable behaviours.
- Identify communication objectives (and develop messages) to help achieve these behaviours.
- Set out a social mobilization plan with stakeholders, with clear coordination mechanisms.
- Implement a blend of communication interventions.
- Monitor and evaluate the results.

(ii) Five key action areas for effective social mobilization and communication*

1. **Political and administrative mobilization/advocacy:** put the health risk and required behavioural interventions on the public agenda. Mobilize the publicly-expressed support of decision-makers and managers in the public and private sectors.
2. **Community mobilization:** include participatory research, meetings, school activities, traditional media, music, song and dance, road shows, community drama, leaflets, posters, pamphlets, videos and home visits.
3. **Sustained appropriate advertising:** via available media, engaging and reminding people to review the merits of the recommended behaviour vis-à-vis the "cost" of carrying it out.
4. **Interpersonal communication/counselling**: allow for careful listening to people's concerns and address them.
5. **Point-of-service promotion:** emphasize easily accessible and readily available outbreak response and treatment services.

* based on the WHO Communication for behavioural impact (COMBI) methodology

See Annex 2B for key social mobilization activities during the pandemic alert period.

More detailed social mobilization guidelines emanating from the WHO/FAO/UNICEF meeting on *behavioural interventions for avian influenza risk reduction, 14–16 March 2006,* can be found at http://www.who.int/csr/disease/influenza/en/index.html.

5.5 Health facility planning

Health facility planning should consider the following areas:

- Conferral with national health authorities regarding national strategy for treatment of pandemic influenza.
    - Referral of severely ill (from any cause) patients will likely be very difficult due to travel restrictions and should be minimized.

- Assessment of existing inpatient treatment capacity with regard to staff and facilities.
- Preparation for rapid increase in demand for services during pandemic, specifically regarding:

    - Surge capacity of health-care workers (national and international):
      – anticipation of absenteeism among staff;
      – anticipation of sick staff;
      – availability of additional staff as needed, including trusted community members/volunteers and the recovered ill.

    - Infection control infrastructure, including isolation facilities, protocols (see Annexes 3 and 4):
      – Identification of completely separate building or structure, e.g. school, for use as temporary respiratory health-care facility.
      – Creation of separate waiting areas for patients with fever/respiratory illness.
      – Creation of a respiratory isolation ward for inpatients.
      – Mechanisms to increase distancing between beds
      – Assessment of inventory of existing personal protective equipment (PPE), with standard protocols for use.
      – Training of health-care workers.

    - Preparation of treatment protocols for influenza, and review with staff as needed.

    - Stockpiling of:
      – soap and disinfectants;
      – antibiotics, intravenous (IV) fluids, other supportive treatments;
      – PPE (masks, gloves, etc);
      – tents for additional isolation areas as needed;
      – health education materials.
      See Annex 6 for a PPE checklist.

    - Protocols and prioritization strategy for vaccine and antiviral medications use, if available (see sections 5.6.3 – 5.6.5 and Annex 7);

    - Management of dead bodies (see section 6.6.6).

5.6 Protection of staff

Rigorous attention to standard precautions is required to reduce the opportunities for transmission in the health-care setting.
Mechanisms for procuring (and/or stockpiling) antibiotics, PPE, antivirals and vaccines (when/if available) should be considered, with protocols and prioritization for their use.

Priority recipients, after patients, will include those involved with direct clinical contact with patients and those staff required to maintain essential functions.
Source control (i.e. the ill person) is primary, as this can prevent opportunities for transmission.

A referral strategy for treatment of ill health-care workers should be in place addressing when, where and how staff referral would be implemented.

(c) 5.6.1 Surgical and procedure masks

Use of masks should be prioritized to ensure that those at highest risk of exposure have access to available protection. Surgical masks (usually with tie-ons) or procedure masks (usually with ear loops) are equally effective. A scarf should be used to cover the nose and mouth if no mask is available. Priorities are as follows:

- Patients suspected of influenza should use masks or scarves to cover nose and mouth at all times. This can minimize the potential source of infection.
- Health-care workers with direct close contact with patients should wear a tightly fitting surgical or procedure mask (or scarf if masks unavailable) and face shield. Face shields are not necessary if not directly attending patients.
- Particulate respirators (e.g. fit-tested NIOSH-certified N95, EU FFP2 or equivalent masks) should be reserved for health-care workers performing aerosol-generating procedures such as endotracheal intubation, nebulizer treatment, suctioning, or taking throat or nasopharyngeal swabs.
- Masks should be changed when leaving isolation areas, or when wet or visibly soiled. After removing or changing masks, hand hygiene should be performed.
- Other essential staff without direct patient care responsibilities can wear surgical or procedure masks if sufficient supplies are available. These should be changed every 4 hours, or when wet or visibly soiled.
- Staff who are not working in health facilities do not need to change masks as often, and stockpiling two per day may be sufficient.

(d) 5.6.2 Prioritization for use of masks among staff

Group	Rationale
1. Health-care workers	• Health-care workers are the highest risk group for infection, in particular, those in direct close contact with patients. • Health-care workers, if infected, can transmit illness to vulnerable patients. • Health-care staff provide essential care for the sick that can reduce morbidity and mortality.
2. Essential staff • **Security guards, food preparers, water handlers**	• To maintain essential services.

(e) 5.6.3 Antibiotics and antivirals

Antibiotics. Consideration should be given towards stockpiling antibiotics sufficient to treat pneumonia in **10%** of total staff and dependents. (Attack rate estimated 15–35%, risk of secondary bacterial pneumonia estimated 25%.)

Antivirals. If feasible and where quantities are available, agencies should stockpile sufficient oseltamivir to provide for treatment and prophylaxis of staff. The stockpile amounts can be increased as resources allow and based upon specific agency considerations.
The order of priority for use in staff should be:

- treatment of sick individuals,
- post-exposure prophylaxis,
- pre-exposure prophylaxis for 6 weeks.

See Annex 7 for antiviral use and dosages.

(f) 5.6.4 Vaccines

- Seasonal human influenza vaccine is currently recommended annually for all staff to protect against seasonal human influenza.
- An H5N1 prototype vaccine could become available for selected use in the future, but is not currently available.
- A pandemic vaccine may also be available, but is not likely to be available before 6 months from the time that the pandemic virus emerges.

(g) 5.6.5 Prioritization for use of antivirals and vaccine among staff

Group	Rationale
1. Health-care workers	• **Health-care workers are the highest risk group for infection.** • Health-care workers, if infected, can transmit illness to vulnerable patients. • Health-care staff provide essential care for the sick that can reduce morbidity and mortality.
2. Essential staff • **Security guards, food preparers, water handlers**	• To maintain essential services.

(h) 5.6.6 Management of ill staff

- Staff with direct patient contact should monitor their own temperature twice daily and report to hospital authorities any febrile event.
- Staff who are unwell should not be involved in direct patient care.
- If available, offer post-exposure prophylaxis with oseltamivir (see Annex 7).
- A staff member who has fever (> 38 ºC) and who has direct patient care should stop working and should ideally be immediately treated with oseltamivir (see Annex 7).
- Other staff who fall ill and who do not have direct patient care should wear a simple surgical or procedure mask in order to limit the spread of the virus. They should stop working and be treated as other patients.

(i) 5.6.7 Referrals

- Standard operating procedures should be developed for the transportation, admission and management of ill staff.
- Local medical facilities should be identified for care of ill staff.
- Medical evacuation (including for international staff) may not be feasible due to travel restrictions imposed by governments, but should be considered to meet the health-care needs of the individual.

(j) 5.6.8 Evacuation/repatriation of international staff

- Each agency is responsible for formulating an evacuation policy for international staff. Agencies should also consider the impact of potential evacuation of international staff on overall capacity. Preparedness measures should necessarily emphasize the primary role of national staff in pandemic mitigation efforts.

6. Pandemic mitigation: minimizing impact during the pandemic (WHO phase 6)

6.1 Key measures

Known **public health measures** taken by individuals and communities, such as **social distancing**, **respiratory etiquette and hand hygiene**, are the most feasible measures currently available to reduce or delay disease (morbidity) and death (mortality) caused by pandemic influenza.

Antivirals decrease the duration of virus excretion and severity of illness with seasonal influenza. However, global availability of antiviral agents is insufficient and it is unknown whether they will be effective against pandemic influenza caused by a novel human strain.
Pandemic vaccines may be used to prevent disease. However, vaccine production could take 2–6 months as it can commence only once a novel pandemic virus is characterized. Quantities of vaccine will also be insufficient to cover the global population.

Once a pandemic has started, i.e. there is increasing and sustained transmission in the general population of even one country:

- Eventual worldwide spread is considered virtually inevitable, and the public health response would focus on reducing impact and delaying spread through the implementation of non-pharmacological measures.
- Evidence and experience suggest that aggressive interventions to isolate patients and quarantine contacts, even if they are the first patients detected in a community, would probably be ineffective, not a good use of limited health resources and socially disruptive.
- In the setting of increased and sustained transmission in the general population, ill people should be advised to remain at home, as soon as symptoms develop.
- Measures to increase social distance should be considered in affected communities, depending on the epidemiology of transmission, severity of disease (case-fatality ratio) and risk groups affected.
- Hand hygiene and respiratory etiquette should be routine for all and strongly encouraged in public health messages.
- WHO has recommended that mask use by the public should be based on risk, including frequency of exposure and closeness of contact with potentially infectious people; routine mask use in public places should be permitted but is not expected to have an impact.
- Household surfaces likely to have been contaminated by infectious secretions should be cleaned with soap and water.

6.2 Maintenance of essential services

Critical functions

- Critical functions (and who performs them) that will continue during the pandemic should have been identified in the pandemic alert phase.

These include:

- delivery of food and safe water;
- ensuring security for the population and staff;
- ensuring fuel/other supplies to allow cooking, functioning of generators, etc.
- ensuring communication with external networks and agencies;
- provision of essential health services;
- supplying essential materials such as soap and essential medicines/supplies.

6.3 Surveillance

The introduction of pandemic influenza into crowded refugee and displaced settings can be expected to spread quickly.

During pandemic transmission of a novel influenza virus, impact mitigation activities will take precedence over surveillance activities.

However, some surveillance functions will be important:

1. **Detecting the <u>initial</u> cases** of suspected pandemic influenza in a particular community will be a key function of the surveillance system.
    - The initial suspected cases should be reported to the relevant public health authorities and WHO. Confirmatory testing will be at the discretion of the national authorities/WHO.

2. **Monitoring the spread of cases**
    - Case definitions can be expected to change as the pandemic evolves; surveillance itself will be of limited value during peak transmission.
    - Cases and deaths of suspected influenza should be counted as long as practicable, using aggregate data if necessary.
    - Final estimates of mortality may rely on census data.

3. **Monitoring availability of health care and other essential services**

6.4 Social mobilization for risk communication and health education

There are two main objectives for social mobilization for risk communication and health education during the ***pandemic*** period.

1. **To inform the public about pandemic influenza risk and risk avoidance**

    - All health-care workers, caregivers and patients should be provided with information, in the local language, regarding the illness and symptoms, mode of transmission, treatment and possible consequences.
    - Community leaders and traditional healers have a crucial role to play as messengers, particularly among populations with low literacy levels.
    - Ill people should be encouraged to institute hand hygiene and respiratory etiquette and to restrict contact with others.

2. **To institute universal hygiene behaviours and social distancing measures** in order to minimize risk of disease transmission.
    - Preventive hand hygiene and cough/respiratory etiquette measures should be reinforced.
    - Advice should be provided on social distancing behaviours and their purpose.

Because crowding is a major risk factor for influenza transmission, efforts to relieve overcrowding and minimize gatherings of people should be undertaken.

GUIDANCE NOTE ON SOCIAL DISTANCING

1. Gatherings offer an opportunity for transmission and should be discouraged, e.g. schools may need to be closed, sporting events deferred, mourners at funerals could reduce transmission by wearing masks/scarves, etc.

2. Food and water distribution should be decentralized as much as possible. Delivery of goods and services to the place of residence, if possible, is optimal. One designated healthy member of a household could be assigned to water/food collection.

3. Population movements should generally be discouraged:
    – halt movement to and from transit camps;
    – movement of symptomatic patients and staff should be avoided.

4. Essential health-care services, including therapeutic feeding centres, must be continued. However, measures to increase space between patients and beds should be implemented.

See Annex 2A for sample health education messages.
See Annex 2B for key social mobilization activities during pandemic period.

6.5 Infection control in the health-care facility and at home

6.5.1 Key infection control principles

There are two main principles in limiting spread of infection:

1. **To maximize physical separation between patients.**
2. **To implement standard and droplet precautions in the health-care facility**

These include:

- Hand hygiene (hand washing or hand rub).
- Use of PPE when contact with a patient (including when handling blood, body substances, excretions and secretions from a patient) is anticipated, as per standard precautions. A minimum requirement should be the protection of eyes, nose and mouth by means of surgical or procedure masks and face shields.
- Appropriate handling of patient care equipment and soiled linen.
- Prevention of needle stick/sharp injuries.
- Environmental cleaning and spills management.
- Appropriate handling of waste.
- Thorough cleaning of surfaces likely to be contaminated by infectious secretions.

Aerosol-generating procedures will require use of full PPE - gowns, gloves, face shields and particulate respirators (e.g. fit-tested NIOSH-certified N95, EU FFP2 or equivalent masks). Such procedures include endotracheal intubation, nebulizer treatment, suctioning, or taking throat or nasopharyngeal swabs.

GUIDANCE NOTE ON PERSONAL PROTECTIVE EQUIPMENT

1. Where resources are limited and a choice has to made to purchase PPE, masks, if properly worn, are likely to be the most effective intervention.
2. Health-care workers with direct close contact with patients should wear a tightly fitting surgical or procedure mask (or scarf if masks unavailable) and face shield. Face shields are not necessary if not directly attending patients.
3. Any respiratory aerosol-generating procedures as described above must NOT be performed without full PPE (including particulate respirators).
4. Masks (particulate respirators, surgical or procedure) should be thrown away when leaving isolation wards, OR every 4 hours or when wet or visibly soiled. After removing or changing masks, hand hygiene should be performed.
5. Other essential staff without direct patient care responsibilities should wear surgical or procedure masks and need to change masks every 4 hours, or when wet or visibly soiled.
6. Gloves should be worn if contact with blood and body fluids is anticipated, but are not a substitute for hand hygiene.
7. Gloves do not provide full protection against hand contamination and hand hygiene should be performed immediately after glove removal.
8. PPE items must be disposed of after each use.

See Annex 3 for instructions on removal/disposal of PPE and Annex 6 for sample stockpile calculations and available masks.

Guidance note on hand hygiene/hand washing

1. Hand hygiene is the single most important measure to prevent the spread of infection within a health-care facility. Ensuring an adequate supply of soap and water for washing is crucial.
2. Hands should be cleaned by washing with soap and water for 20 seconds before rinsing or by means of hand rubbing with an alcohol-based preparation until hands dry (see Annex 3).

6.5.2 In the health-care facility

Outpatient departments should expect large numbers of influenza patients. Separation of patients to limit potential transmission will be necessary. Annex 4 provides a sample configuration of a respiratory health-care facility.

The following measures should be in place:

- A separate waiting facility, "respiratory waiting room" or "respiratory clinic" for patients with suspected influenza (acute respiratory illness).
- A pre-agreed triage mechanism such that patients with acute respiratory illnesses attending outpatient facilities can be directed to the respiratory clinic without contact with other patients.
- Spatial separation between respiratory clinic and other waiting areas and between patients in the respiratory clinic.
- A separate respiratory clinic that can be expanded quickly if there is a surge of patients.
- Surgical or procedure masks or scarves for all patients in the respiratory clinic.
- Encouragement of respiratory hygiene/cough etiquette at all times.
- Access to soap/towels, alcohol hand rub, masks (or scarves) and gloves.
- Hand washing facilities, with adequate water (see Annex 3 for hand wash/hand rub procedure).
- PPE disposal mechanisms.
- Patient flow mechanisms in place, to ensure:
    - discharged patients have minimal contact with other patients on their way out;
    - patients being admitted to isolation facility can be moved without access to other general wards.

SUGGESTED TRIAGE CASE DEFINITIONS
(for screening to determine if access to respiratory clinic is appropriate)

Triage definition: fever ≥38 °C + acute onset of cough or shortness of breath.

Action: give patients surgical or procedure masks and put in the separate "respiratory" waiting area for assessment.

- Although a large proportion of patients may be dealt with at the outpatient level during the pandemic, hospitalization will still be required for severely ill patients.
- A separate structure for inpatient treatment is necessary, and a respiratory **isolation ward** (housed in a school or tent if necessary) for treatment of severe cases should be identified in advance.

The following measures should be in place:

- Capacity for rapid expansion of the respiratory isolation ward or an overflow area if there is a surge of severely ill patients.
- Minimal number of entries and exits to the respiratory isolation ward.
- 8 hour shift limit for health-care workers on duty in the respiratory isolation ward.
- Suspension of elective and non-essential medical services.
- Continuation of essential medical services.

If a very large surge in cases occurs, special isolation wards may not be practicable and health facilities should be arranged to:

- ensure as much spatial separation between patients as possible (at least 1m);
- ensure head to toe alignment if space restrictions.

Annex 3 provides further detailed infection control procedures in a respiratory isolation ward.

6.5.3 At home

The patient should:

- Follow respiratory hygiene/cough etiquette (see sample health education messages in Annex 2A).
- Ensure proper hand hygiene.
- Avoid close contact with uninfected people until the end of the infectious period.

The caregiver should:

- Be advised to take proper precautions (hand hygiene and respiratory etiquette measures, and use and disposal of masks, if available, and with proper training). Use of masks at the household level may be difficult as appropriate disposal bags must be provided and incineration arranged. See Annex 3 for removal and disposal of masks and section 6.5.4 for waste management.
- Avoid close contact with uninfected people.
- Wash clothes and bed linen that have been in contact with patients' respiratory secretions or stools. Running water and soap should be used for washing, and hands should be washed thoroughly afterwards with soap and water. Dry clothes/bed linen in the sun.

Additionally, households should be provided with:

- Information for family members regarding adequate hygiene measures (see Annex 2A), steps to take after exposure, etc. This could include pamphlets or other material with key health education massages in local language.
- Community leaders and traditional healers can play a crucial role as information providers, especially in populations with low literacy levels.

6.5.4 Waste management

- All waste generated in the care of influenza patients should be disposed of in suitable containers or bags.
- All waste from a room/area containing influenza patients is treated as clinical (infectious) waste.
- Incineration is the preferred method of waste disposal.

6.6 Clinical management

The objectives of the management of infectious cases are to provide supportive health care and to minimize transmission. Given limited resources, it will be necessary to triage patients for treatment during a pandemic to maximize the impact of available treatment capacity.

Patients will likely be managed in two distinct settings: in the health-care facility and at home.

6.6.1 Treatment in the health-care facility

- Admission criteria may change depending on bed availability but should be reserved for those most likely to benefit from treatment.
- A caregiver, preferably an available family member, should be identified if possible to manage care of the ill patient in the home (or tent) if the patient is being discharged.
- Health facilities should anticipate a very high demand for treatment with supportive care, and should plan accordingly. Based on current estimates, agencies should anticipate that up to 4–5% of the population may require hospitalization in a refugee or IDP setting.

Ensure:

- Availability of criteria for admission and discharge (these are likely to change depending on treatment capacity).
- Confinement in a respiratory isolation ward of patients admitted with suspected pandemic influenza (see Annex 4).
- Availability of case management protocols.
- Referral protocol, if feasible.
- Adherence to standard and droplet precautions (see Annex 3).

Inpatient treatment in many refugee and IDP settings should include:

- Treatment of dehydration with IV or oral rehydration.
- Supplemental oxygen therapy (if available) for hypoxia.
- Antibiotic (oral and parenteral) treatment of secondary bacterial infections (see guidance note below)
- Non-aspirin antipyretics for pain and fever as needed.
- Nutritional supplementation as needed.

Note: in HIV-infected individuals, a distinction between opportunistic pneumonia and secondary pneumonia from pandemic influenza may be difficult.

If **antiviral medications** are available for use, protocols and instructions for prophylaxis and/or treatment should be made generally available. If only limited quantities are available, a strategy for prioritization of use must be in place according to national protocol.

See Annex 7 for guidance on antiviral use and dosages.

Guidance note on therapeutic feeding centres for the malnourished

Malnutrition may be a major problem in many refugee and displaced settings. Therapeutic feeding for severely malnourished populations must continue throughout the pandemic. Supplementary feeding can be continued by advance collection of food.

Therapeutic feeding centres must contain a separate isolation area for patients with suspected influenza and severe malnutrition.

To minimize case-load, mechanisms to institute "home-based" therapeutic feeding could be instituted for malnourished children without other severe medical illness, using therapeutic feeding centre protocols.

Guidance note on antibiotics

The majority of pneumonias associated with H5N1 have been primary viral pneumonias. A viral pneumonia is likely especially if pneumonia is clinically suspected <72 hours from symptom onset. However, pandemic transmission of a novel influenza strain is also likely to be associated with secondary bacterial pneumonias. It is advisable to stockpile or identify sources for rapid procurement of antibiotics to treat community-acquired pneumonias caused by common pathogens such as *Haemophilus influenzae* or *Streptococcus pneumoniae.* Antibiotics recommended in this case include amoxicillin, macrolides such as erythromycin, and cefalosporins.

- As influenza may be complicated by secondary bacterial infection of the lungs, antibiotics could be life-saving if a secondary bacterial infection develops.
- The goal of providing rapid outpatient antibiotic treatment is to reduce the number of cases of severe secondary bacterial infection requiring treatment in a hospital facility.

This information will be updated as more information is available.

6.6.2 Treatment at home

- During a pandemic, extremely high numbers of patients presenting to the health-care facility will necessitate home treatment for large numbers of infected patients.
- Trusted community leaders should be identified in advance for crowd control at the health-care facility and to address concerns among health-seeking refugees/IDPs and their caregivers.
- Ill people should be encouraged (through health messaging) to institute respiratory hygiene/cough etiquette and restrict contact with others as much as possible.
- Home confinement of ill people in crowded refugee/IDP settings may not be practicable. However, restricting contact with others should be encouraged.

If a patient has been discharged home from the health-care facility:

- Adequate supervision within the household of the ill person should be ensured.
- Instructions must be provided on the use of antibiotics (if necessary) for bacterial complications of influenza when prescribed.
- General support and advice should be given on the use of antipyretics (acetylsalicylic acid should be avoided in children), oral fluids, nutrition and bed rest.
- Instructions for further care in case of deterioration (if capacity exists) should be given (i.e. when there are symptoms of severe illness or dehydration as outlined in IMCI).
- Proper hand hygiene and respiratory etiquette must be promoted for patients and caregivers.
- Patients and caregivers should be trained to wear and dispose of masks during the infectious period of the patient, if supplies are available. Where supplies are limited, it is more important that the patient wears the mask than the caregiver.

6.6.3 Kits for home caregivers

A kit of materials needed for home (or tent) care of these patients should be prepared in advance. This can facilitate a consistent approach to homecare for patients who have been discharged from the health-care facility, or for patients who choose to remain at home. The kit also can be given in advance to encourage public health measures to decrease or delay transmission in the community. Proper usage of the kits should be thoroughly explained in advance by community health workers.

Suggested materials for inclusion in the homecare kit:

- surgical or procedure masks for patients and caregivers, if sufficient quantities available;
- instructions for use (and cleaning) of scarf if masks unavailable;
- soap (and ensure provision of water);
- health education messages in picture or other format appropriate to setting.

6.6.4 Home visits by health workers

- It is expected that home medical visits by trained staff or community health workers will not be feasible with the anticipated case-loads and potentially limited availability of healthy staff.
- Mechanisms, however, should be in place for reinforcement of health education messages in the community.

6.6.5 Management of dead bodies

- Specific plans for the respectful and culturally appropriate disposal of the deceased should be made.
- A contingency plan should be in place to handle increased numbers of dead bodies.
- A site for burials should be identified in advance.
- Body handlers and burial teams and their remuneration should also be identified.
- Standard precautions must be followed when caring for the deceased patient.
- The body should be wrapped as culturally appropriate and leaking of body fluids should be avoided.
- Transfer to the mortuary or burial site should occur as soon as possible after death.
- There is no risk to the burial team if infection control procedures are followed (see Annex 3).
- The burial team should be provided with heavy-duty reusable boots and gloves.
- If the family of the patient wishes to view the body or participate in the burial process, they may be allowed to do so. However, the number of people should be limited as much as possible and should observe standard and droplet precautions.

Annex 1:

Pandemic preparedness planning checklist for humanitarian agencies

GENERAL MEASURES	
Coordination with local and national authorities	Identify agency focal point for pandemic preparedness activities at local level. Review country pandemic planning and response plan. Ensure links with MoH, WHO and UN country coordination mechanisms, e.g. OCHA, UNSIC for: • information flow • consistency of risk communication/health education messages • movement of specimens/diagnostic material, referral of patients.
Identify critical functions	Identification of critical functions that will need to continue during the pandemic (6–8 weeks) and those who will perform them (and identify non-essential functions that will be temporarily halted).
Ensure stockpile of food, water, fuel, gas, oil for cooking, vehicles, generators	Ensure sufficient stockpile for population, all staff and their families. Consider 2-month stockpile and add 50% buffer stock for other populations seeking aid (i.e. 3 months).
Communications	Ensure communications means throughout pandemic phase without physical movement to other areas.
Security for population, health-care facility (HCF) and staff	Ensure security at HCF to maintain triage and isolation. Ensure security of medications. Ensure security of staff. Ensure access to services by local communities not usually served.
Travel restrictions during pandemic phases 4–5	*Decisions regarding phase changes will be made by WHO; further advice on travel restrictions will be issued concurrently.* Ensure agreements in place for the deferral of non-essential travel. Information/advice to travellers entering affected area on risks and risk avoidance (public health information). Defer non-essential international travel to affected areas.
Travellers to your area during pandemic	General travel restrictions are not recommended during the pandemic period. Ensure mechanism in place to provide information/advice to travellers entering affected area on risks and risk avoidance (public health information) when the pandemic occurs.

PROTECTION OF STAFF	
Identification of essential staff	• Prioritization for PPE use, vaccines, and antivirals (if available).
Management of ill staff	• Protocols for management of ill staff. • Strategy for referral/evacuation if necessary.
Repatriation/evacuation	• Protocol for evacuation of international staff.
Vaccination Seasonal influenza vaccine H5N1 prototype vaccine (when available) Pandemic vaccine	• Vaccinate all essential staff with seasonal influenza vaccine. • An H5N1 prototype vaccine (if and when available) according to prioritization protocol. • Pandemic vaccine (if and when available) according to prioritization protocol.
Personal protective equipment (PPE)	• Ensure prioritization protocol for PPE use. • Ensure masks available at least for all staff working in HCFs.
Stockpiling	• Antibiotics for secondary pneumonia, paracetamol and antivirals (if available). • Ensure protocol for use.

TRAINING OF STAFF	
Training of trainers Training for direct health-care workers/community health workers	• Risks and risk avoidance • Public health information on hygiene behaviour • Surveillance case definition • Infection control procedures • Triage case definition and management of patients • General admission criteria (dependant on treatment capacity) • Respiratory HCF procedures and patient flow • PPE use (when, method of placement, removal and disposal) • Clinical management • Management of waste/linen/dead bodies • Fever monitoring, symptom reporting • Information management and reporting

SOCIAL MOBILIZATION FOR RISK COMMUNICATION AND HEALTH EDUCATION	
Public health information	• Health education to community on universal hygiene behaviour (hand washing and respiratory etiquette); cleaning of potentially contaminated surfaces; washing of clothes/bedlinen and drying in sun. • Information to community on current risks and risk avoidance. • Information to health-care workers and staff on risks and risk avoidance. • Ensure two-way communication with other health facilities/agencies/MoH ongoing during pandemic
Soap stockpile and distribution	• Ensure sufficient soap for each individual for hand washing and cleaning and clothes washing purposes for a period of 2 months. Add 50% buffer stock.
Community alert surveillance	• Ensure reporting by community leaders and community health workers of clusters of people with severe respiratory illness or deaths (phases 3–5) to health-care workers, authorities or camp managers as appropriate
Social distancing measures	• Plan for minimizing congregation at water and food distribution areas. • Ensure effective communication mechanisms with community for the future postponement or minimization of large gatherings (sporting events, schooling, funerals).
Management of dead bodies in the community	• Identify burial areas in advance. • Identify staff for burials. • Train body handlers on appropriate corpse management.
PPE	• Ensure surgical or procedure masks available for providers for essential services such as health-care workers, and food and water handlers. • Ensure protocol for use/disposal.

SURVEILLANCE	

Surveillance and response during pandemic alert period (WHO phases 3–5)	• Application of simplified case definitions at community and HCF levels to promote:
	  o Early detection of cases/clusters or deaths caused by avian influenza H5N1 or other influenza viruses of pandemic potential;
	• An outbreak coordination team (OCT) should be organized to oversee:
	  o Case/cluster investigation, rapid reporting to health coordinator and authorities/WHO and sample collection/transport in response to H5N1 avian influenza or other outbreaks of pandemic potential outbreaks in humans, in support of national authorities and WHO as necessary.
	  o Isolation of patients (and close contacts) while case investigation ongoing.
	  o Infection control in HCF and use of PPE.
	  o Communication to public of risk and risk avoidance and implementation of universal hygiene behaviours.

Surveillance during pandemic (WHO phase 6)	• Early detection of initial cases of a novel pandemic virus strain in refugee and displaced settings once a pandemic starts (WHO phase 6). • An OCT will be required for coordination of essential services, implementation of public health measures, managing public health information and limiting social disruption. • Monitor the spread of cases. • Monitor availability of health care and other essential services. • Assess facility capacity. • Assess essential services and non-essential services that could be postponed for 2 months, e.g. elective surgery. • Plan for surge capacity for large number of patients. • Anticipate need for staff to perform multiple roles.

INFECTION CONTROL	
Procedures	• Reinforce infection control procedures for all staff (phase 3 onwards).
Soap/alcohol hand rub	• Ensure soap/towels and alcohol hand rub in HCFs. Order for 50% increase in current usage.
PPE (masks, gloves)	• PPE protocol for staff and patients at OPD and IPD.
Respiratory HCF organization	• Identify separate facility for admitted influenza patients • Triage definition in place for initial screening of patients • Ensure as much spatial separation between patients as possible • Criteria for admission (dependant on capacity) • Protocol for entry/exit of staff, visitors, support staff. • PPE use and disposal protocol for staff and patients. • Protocol for cooking for and supply of food to patients • Protocol for cleaning of equipment, linen used by patients. • Criteria for discharge of patients (dependant on capacity)
HCF overflow	• Ensure overflow area if large numbers of patients • Maximize spatial separation between patients

CLINICAL MANAGEMENT	
Management of sick individuals with suspected influenza (Admission, treatment, and discharge protocols should be flexible, as criteria will likely change depending on treatment capacity)	• Triage case definition in place • Triage and separation of people with respiratory symptoms from those without • Surgical or procedure masks to be worn by all patients seeking care in respiratory HCF • Admission protocol to respiratory HCF • PPE use (when, method of placement, removal and disposal) • Separation of severely ill • Case management protocol • Patient discharge protocol • Surgical or procedure masks to patients
Management of contacts of patients	• Self-health monitoring and reporting if ill • Defer travel to unaffected areas
Waste disposal	• Plan for increased waste caused by increased turnover at HCF
Mortuary	• Plan for increased numbers of deaths • Assess/identify site for burials • Identify body handlers and burial team • Access to PPE, knowledge of standard precautions
Referrals	• Protocol for referrals (if feasible) • Plan referral mechanism in coordination with authorities/other HCFs
Transport/vehicles	• Protocol for disinfection of contaminated surfaces after transporting sick individuals or contacts
Treatment stockpiles	• Essential medicines/supplies for usual diseases • Antibiotics oral and IV for secondary pneumonia • Paracetamol • IV fluids/infusion materials

Annex 2a:
Sample health education messages during a pandemic

Influenza, commonly known as "the flu", is a viral infection of the respiratory tract. It is a highly infectious disease that may spread very quickly from person to person.

Respiratory illnesses such as influenza are spread by:

- coughing or sneezing;
- unclean hands.

Symptoms appear suddenly, beginning with headache and generally feeling unwell, followed by:

- fever (>38 °C), dry cough, shortness of breath, difficulty breathing;

You may also experience:

- muscle aches and pains; tiredness; sore throat; chills.

1. HAND WASHING PREVENTS THE SPREAD OF INFECTION

- Wash hands with soap and clean water carefully and often – this will kill the virus.
- In particular, wash hands after coughing or sneezing; before and after food preparation (also clean food preparation surfaces and utensils with soap and clean water); before and after feeding children; after using latrines; and after bathing or cleaning children.

2. SIMPLE RESPIRATORY HYGIENE/COUGH ETIQUETTE PREVENTS THE SPREAD OF INFECTION

- Make sure you cover your mouth with a paper towel or your upper sleeve when coughing or sneezing. Dispose of the used paper towel once in the waste. Do not cough or sneeze into your hands as this will spread the disease when you touch other surfaces or people.
- Always wash hands after coughing or sneezing.
- Be careful when coughing and sneezing when around other people. It may be best to avoid contact with individuals at risk (small children or those with underlying or chronic illnesses such as immune-suppression or lung disease) until your respiratory symptoms have resolved.
- Ask people to use a paper towel (or scarf) and to cover their nose and mouth when coughing or sneezing.

3. LIMITING MOVEMENT PREVENTS THE SPREAD OF INFECTION

- The virus can spread very quickly from person to person. Protect yourself and others by avoiding public places and gatherings.
- Stay in the camp because if you get sick, appropriate treatment is available.
- Stay away from others if you are sick.
- Avoid contact with secretions of people who have respiratory illnesses.
- If you are a caregiver, protect yourself when caring for sick people. Cover your nose and mouth when caring for the sick person, and wash your hands with soap and water after every visit. Also, if you are caregiver, avoid contact with people who are not ill for the length of time the patient is infectious (as instructed by the health-care worker).

Annex 2b:

Proposed social mobilization activities for different pandemic phases*

Phases	Public education and social mobilization actions
Pandemic alert period	*"Watch out!"* and then when phase 4 begins: *"We're here to help".*
Phase 3. Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	• Map risk behaviours among target groups e.g. backyard farmers, poultry workers, children. Gather "word on the street" survey data, other research data (meetings, focus groups, etc.). • Develop consensual recommendations by experts and first responders. Build trust by providing full, factual and transparent information about the national and global threat and response to communities. Strengthen public education and social mobilization alliances and networks including local NGOs, Red Cross/Crescent societies, trade associations, schools. • Strengthen community surveillance and appropriate health-seeking behaviour. • Develop messages and test messages for subsequent phases. • Increase general public understanding of risk. • Prepare public for the possibility of an adverse event. Educate health-care workers, teachers, community leaders, politicians. • Encourage recognition and diagnosis of symptoms and early treatment.
Phase 4. Small cluster(s) with limited human-to-human transmission but spread is highly localized. **Phase 5.** Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).	• Use tested messages targeting rural or highly urban communities. Convey empathy, reassurance, and reduce emotional turmoil. Reduce stigma, discrimination and isolation associated with affected patients, families, communities. • Ensure understanding of personal response activities (how/where to get more information, e.g. home care). • Address fear of shortages of antivirals and vaccines.
Pandemic period	*"We'll get through this"*
Phase 6. Pandemic: increased and sustained transmission in general population.	• Gather more accurate data concerning public perception of ongoing risks. • Promote understanding of background factors and issues. • Promote broad-based support and cooperation with response and recovery efforts. • Ensure feedback mechanisms are in place to assess input from affected publics and correction of any misunderstandings/rumours. • Maintain understanding of personal response activities (how/where to get more information, e.g. home care).
Post-pandemic period	*"This is what happened"* and then: *"How did we do?"*
Return to inter-pandemic period.	• Facilitate broad-based, honest and open dialogue with community and resolution of issues regarding cause, blame, responsibility and adequacy of response. • Improve public understanding of new risks as well as new risk avoidance behaviours and response procedures. • Evaluate and assess responses, including public education and social mobilization effectiveness. • Document, formalize and communicate lessons learnt. • Determine specific actions to improve public education and social mobilization capability.

*WMC (2006) Adapted from: Reynolds B, Seeger MW (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10:43–55.

Annex 3:

Infection control procedures

Rationale

Standard and droplet precautions should be the minimum level of precautions to be used in all health-care facilities when providing care for patients with acute febrile respiratory illness.

- Personal protective equipment (PPE) is used as part of infection control precautions to provide the appropriate level of protection.
- Isolation rooms reduce the risk of transmission of infection from the source patient to others by reducing direct or indirect contact transmission.
- Limiting contact between infected and uninfected people, such as nonessential health-care workers and visitors, will reduce the risk of transmission to susceptible individuals.

Standard precautions

1. Hand washing and antisepsis (hand hygiene).
2. Use of additional PPE when handling blood, body substances, excretions and secretions.
3. Appropriate handling of patient care equipment and soiled linen.
4. Prevention of needle stick/sharp injuries.
5. Environmental cleaning and spills management.
6. Appropriate handling of waste.

Additional transmission precautions for influenza (droplet precautions)

- Transmission via large droplets requires close contact (within 1 m) between the source patient and the susceptible individual.
- Droplets (because of their large size) do not remain suspended in air and travel only short distances (1 m or less).
- Droplet precautions require the use of a *standard surgical or procedure* mask within 1 m of the patient.
- Health-care workers with direct close contact with patients should wear a tightly fitting surgical or procedure mask (or scarf if masks unavailable) and face shield. Face shields are not necessary if not directly attending patients.
- Particulate respirators (e.g. fit-tested NIOSH-certified N95, EU FFP2 or equivalent masks) should be reserved for health-care workers performing aerosol-generating procedures such as endotracheal intubation, nebulizer treatment, suctioning, taking throat or nasopharyngeal swabs.
- Masks should be thrown away when leaving isolation wards, OR every 4 hours or when wet or visibly soiled. After removing or changing masks, hand hygiene should be performed.

Isolation ward management

Patient isolation

- Patients should be kept separately in designated multi-bed rooms or wards.
- Distance between beds should be more than 1 m and beds should preferably be separated by a physical barrier (e.g. partition).
- Doors should be kept closed at all times.
- A surgical or procedure mask should be worn by all patients when in contact with any staff/visitors.
- Movement and transport of the patient from the room should be limited to essential purposes only. If transport is necessary, minimize dispersal of droplet nuclei by masking the patient.

- Protocols for visitation by close relatives should be in place and surgical or procedure masks made available for their use.
- Isolation wards should have clinical equipment (e.g. sphygmomanometer, thermometer) dedicated to their exclusive use if possible. If not, disinfection with alcohol-based disinfectant should be carried out between patient.
- Patient examination must be minimized to such that will alter treatment only.

Entry to/exit from isolation ward

- Minimize contact between health-care workers and patients as much as possible.
- Only clinical workers who have been educated about influenza should enter the room.
- Ensure that anyone who enters the ward wears appropriate PPE.
- Wear clean, non-sterile gloves and gown (plastic apron if gown is permeable) when entering the room if contact with the patient's blood, body fluids/secretions is anticipated.

Entering the isolation ward

- Collect all equipment needed.
- PPE should be put on (and removed) outside of the isolation room.
- Enter the room and shut the door.

Leaving the isolation ward

- Remove PPE in the correct order:
- Remove gown (or apron) (place in biohazard plastic bag).
- Remove gloves (peel from hand and discard into biohazard plastic bag).
- Use alcohol-based hand rub or wash hands.
- Remove face shield – by grasping elastic behind ears or ties – do not touch front of face shield – and place in biohazard plastic bag.
- Remove mask – by grasping elastic behind ears or ties – do not touch front of mask – and placing in biohazard plastic bag.
- Wash hands again.

Hand hygiene

- ***Each individual entering the isolation ward must perform hand hygiene***
    - before and after patient contacts
    - after removing gloves
    - in case of suspicion of hand contamination after removing gloves, e.g. while undressing
    - after leaving the isolation room
- ***Routine hand antisepsis is performed either***
    - by using preferably an alcoholic hand-rub solution if hands are not visibly soiled.
    - or washing hands with running water and soap, using a single-use clean towel for drying each time.
- ***Ensure that hand-eye contact is not made (e.g. wiping of sweat) as transmission can occur via conjunctival mucosa***

Cleaning/waste disposal

- Alcohol-based hand rub or hand washing facility should be located within and outside the isolation ward.
- Sterile items should be disposable where possible. Reusable items should be placed in a plastic bag and then into another plastic bag.
- The patient's/patients' room must be cleaned each day – including all horizontal surfaces.
- Cleaning equipment must be cleaned after each use. Mop-heads should be laundered in hot water (at least 70°C). If hot water not available, soak mop-heads in 0.5% chlorine solution for approximately 15 minutes after washing.

- Used linen should be placed in a linen bag inside the room and then into another bag outside the room. Take immediately to laundry collection area – treat as per normal soiled/contaminated linen.
- All waste should be discarded into clinical waste bag inside the room. When waste is to be collected for disposal, place in another bag outside the room and then treat as "normal" clinical/contaminated/infectious waste.

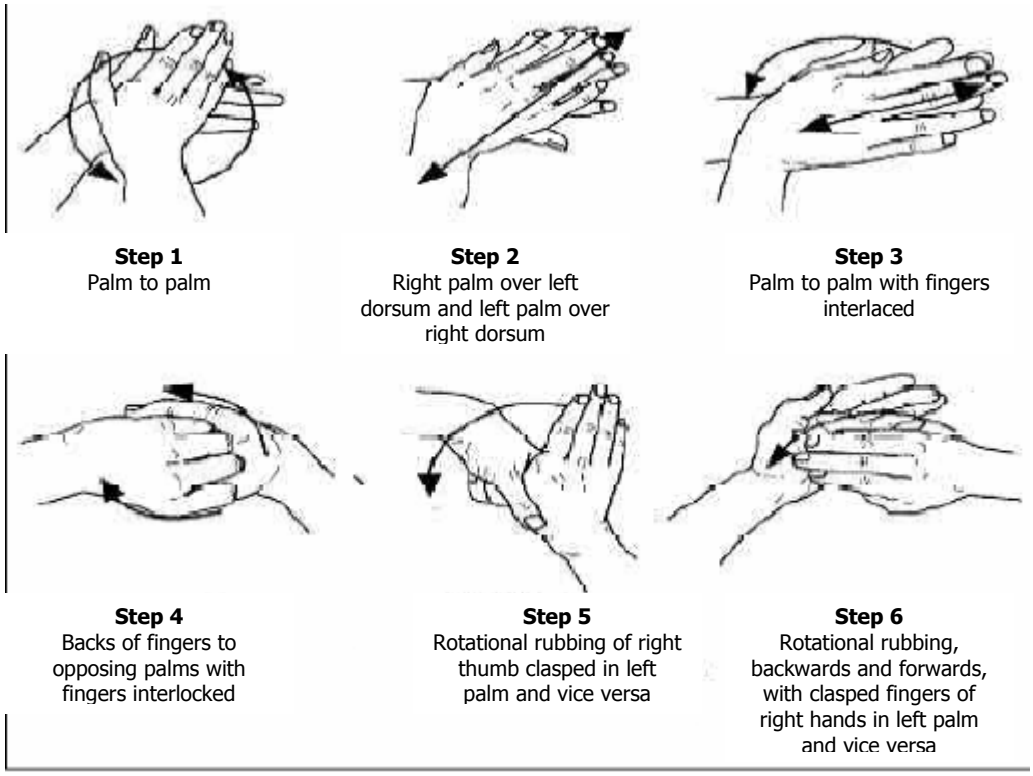
Discharging the patient

- The infection control precautions should be implemented for:
  - 7 days after resolution of fever for adults (aged >12 years);
  - 21 days after onset of illness for children (aged <12 years).
- The patient and family should be given appropriate health education messages.
- Thorough cleaning and disinfection of the room is required after discharge.

Standard hand wash/hand rub procedure

Aqueous formulations/soap. Wet hands and wrists, apply 3 ml of the formulation/soap and wash hands using the following procedure for a minimum of 20 seconds. Then rinse hands and dry thoroughly.

Alcohol-based hand rub: apply 3 ml of the formulation using the same procedure. Hand rubbing should last until hands are dry.

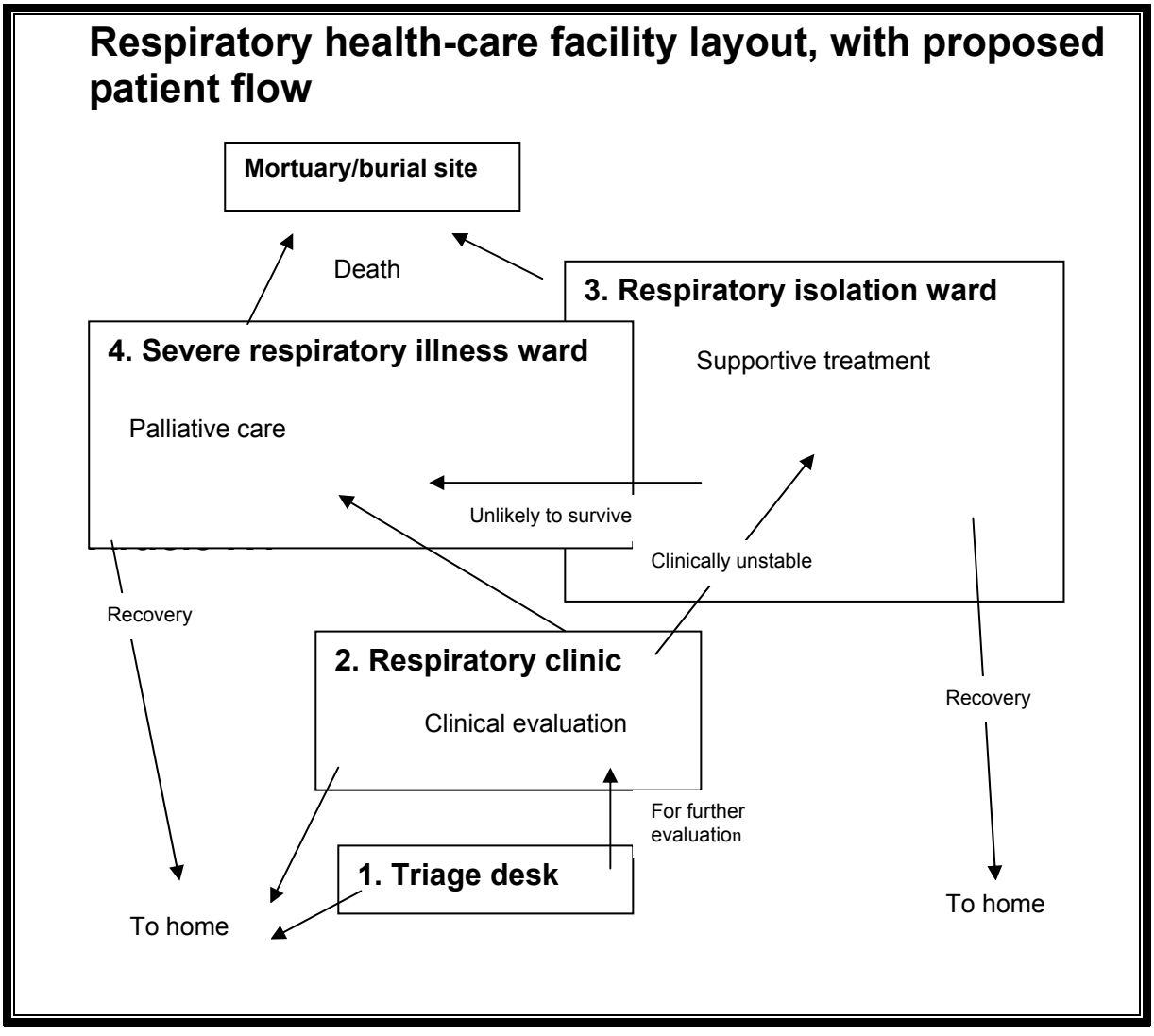


Annex 4

Sample configuration: respiratory health-care facility

The schematic presentation below represents a sample configuration to be used for guidance when planning a respiratory health-care facility (HCF) layout and associated patient flow during a pandemic. The following principles should be observed:

- The function of a HCF will need to change to adapt to the increased flow of patients during a pandemic.
- A separate respiratory facility is ideal, e.g. a series of tents can be erected for this purpose.
- Treatment efforts should be focused on those most likely to survive, i.e. triage.
- A pre-agreed protocol for triage should be in place; this should allow a strict separation of infected and non-infected patients, while more efficiently distributing scarce resources.
- Movement between areas within the HCF is based on clinical determinations made by providers on the scene.
- All staff and patients should wear masks or scarves at all times.



The respiratory HCF should have four separate areas:

1. **Triage desk** – To determine need for further evaluation/treatment.
    - Triage definition: fever ≥38 °C + acute onset of cough or shortness of breath.
    - Those meeting the triage definition should be given surgical or procedure masks and taken to respiratory clinic for further assessment.

2. **Respiratory clinic** – To further evaluate those with fever and acute respiratory illness
    - Those clinically stable should be discharged home.
    - Those clinically unstable should be admitted to the respiratory isolation ward for further treatment.
    - Severely ill patients (imminent death likely) should go immediately to the severe respiratory illness ward.

3. **Respiratory isolation ward** – To provide supportive care (fluid resuscitation, antibiotic treatment, etc.) to those patients likely to benefit sufficiently to allow recovery.

4. **Severe respiratory illness ward** – To provide a place for palliative care.

Annex 5

Disinfectants active against human influenza virus for use in health-care facilities

Disinfectants	Recommended use	Precautions
Sodium hypochlorite: 1000 parts per million of available chlorine, usually achieved by a 1-in-5 dilution of hospital-grade bleach	Disinfection of material contaminated with blood and body fluids	Should be used in well-ventilated areas Protective clothing required while handling and using undiluted Do not mix with strong acids to avoid release of chlorine gas Corrosive to metals
Granular chlorine: e.g. Det-Sol 5000 or Diversol, to be diluted as per manufacturer's instructions	May be used in place of liquid bleach if this is unavailable	Same as above
Alcohol: e.g. Isopropyl 70%, ethyl alcohol 60%	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used	Flammable, toxic, to be used in well-ventilated areas, avoid inhalation Keep away from heat sources, electrical equipment, flames, hot surfaces Allow it to dry completely, particularly when using diathermy, as this can cause diathermy burns

Annex 6:

Sample calculations for prepositioning of supplies

Sample Population = **10 000**

- **Potential attack rate** estimated at 15–35% in normal populations. This figure may be much higher in crowded settings with malnourished populations, e.g. 50%. The pandemic may last from 6 weeks to 18 months. The number of symptomatic patients over the pandemic period = 1500–3500.

- **Outpatient visits.** Experience to date would suggest very large numbers of "worried well" will present for care, though impossible to quantify. Assume all symptomatic patients seek health care (1500–3500), plus unknown large number of "worried well" = 3000–5000 seeking health care.

- **Inpatient admissions.** Severely ill, requiring hospitalization (1–2%) = 100–200 (in vulnerable populations this may be up to 4–5%) = 400–500.

- **Secondary bacterial infections** estimated at 25%. With estimated 1500–3500 real cases = 375–875.

Summary of key indices	**Numbers expected in sample population of 10 000**
Potential attack rate	1500–3500
Outpatient visits	3000–5000
Inpatient admissions	400–500
Secondary bacterial infections	375–875

1. Supply checklist for prepositioning

1. Masks – surgical or procedure masks
2. Masks – particulate respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks)
3. Gloves – latex, examination gloves, single use, non-sterile for clinical use (sizes: S, M, L)
4. Protective eyewear if possible (face shield)
5. Hand washing soap or hand disinfectant/alcohol-based gels
6. Gowns (plastic apron, disposable)
7. Biohazard plastic bags for used personal protective equipment
8. Sharps boxes
9. Disinfectants for health-care setting (see Annex 5)
10. Rubber gloves and boots (reusable) for environmental cleaning and burial teams
11. Stretchers for burial teams
12. Antiviral medications (Oseltamivir 75 mg, see below)
13. Antibiotic medications (see below)
14. Intravenous fluids/cannulae/giving sets (see below)

Example of supply costs

Description	Unit	Approx cost (US$/unit)
Protective equipment		
1. Procedure masks	Box of 50	7.25
2. Hand wash, alcoholic, antiseptic and skin protection solution	Bottle	4.00
3. Latex gloves, size S, M or L, box of 50 pairs, non-sterile, disposable (ex: examination gloves)	Box	2.25
4. Plastic aprons, disposable, standard size	Box	Variable
5. Rubbish plastic bag, roll of 100 pieces	Roll	3.00
6. Rubber gloves, acid-resistant, reusable, sizes 7, 8, 9	pairs	4.00
7. Rubber boots, reusable, different sizes	pairs	10.00

2. Approximate calculation of mask requirements

Sample population = 10 000

- Anticipate 3000–5000 seeking health-care over the course of the pandemic
- Anticipate 500 inpatient admissions

- Masks for patients presenting for evaluation = 3000–5000.

- Masks for inpatients = number of inpatients estimated at 400–500, one mask per day, x +/– 7 days = 2800–3500.

- Masks for health-care workers (HCWs):
  - 4 mask changes per day x number of health staff x duration (in days) of pandemic (? 90–180 days) (+ 50% buffer stock).
  - = 540–1080 masks per HCW.

- Masks for other potentially exposed staff, such as food and water handlers, cleaners, security guards:
  - 2 mask changes per day x number of staff x duration of pandemic (? 90–180 days) (+ 50% buffer stock).
  - = 270–540 masks per non-HCW staff.

Summary of key indices	Numbers expected for sample population of 10 000
Masks for patients	3000–5000
Masks for inpatients	2800–3500
Masks per HCW	540–1080
Masks per other potentially-exposed staff	270–540

3. Examples of particulate respirators

Particulate respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks) are filtering face pieces designed to protect the wearer from respiratory aerosols expelled by others, regardless of particle size. Examples of acceptable disposable particulate respirators in various parts of the world include:

- U.S. NIOSH-certified N95 (95%), N99 (99%), N100 (99.7%)
- Australia/New Zealand: P2 (94%), P3 (99.95%)
- China: II (95%), I (99%)
- Japan: 2nd class (95%), 3rd class (99.9%)
- Korea: 1st class (94%), Special (99.95%)
- European Union CE-certified: filtering face piece class 2 (FFP2)(95%), or class 3 (FFP3)(99.7%)

4. Antivirals, inpatient supplies

Action	Quantity	Formulation	Cost of 1 course (US$)
Oseltamivir for treatment	A 5-day course for **15–35% of staff.** Increase by 10% for a buffer (2 pills per day)	**Pack of 10 capsules**	**16.4**
Oseltamivir for prophylaxis	Prophylaxis for 100% of staff, for (average of) 6 weeks (1 pill per day)	**Pack of 10 capsule**	**16.4**
IV fluids (Ringer lactate) and giving sets	Anticipate 400–500 inpatient admissions; Average 3 litres/admission = 1200–1500 litres. Average 3 giving sets/admission = 1200 - 1500.	**Ringer lactate = 1-litre bags**	
IV cannulae, various gauges	Anticipate 400–500 inpatient admissions Average 2 cannulae per day.	**Gauges 14, 16, 18, 20, 22**	
Needles for injection	Anticipate 400–500 inpatient admissions. Assume all need injectables if hospitalized. Average 2 per day.	**Gauge 21**	
Paracetamol	Anticipate 400–500 inpatient admissions (and 3500 outpatient consultations). Anticipate 20 tablets per patient. Total 80 000 tablets.	**500 mg**	
Stationery for records/notes	Up to 5000 seeking care at outpatient department, up to 500 admissions. Case notes, laboratory/referral forms.		

5. Clinical care kit

In the event of secondary bacterial pneumonia, it is advisable to stockpile or identify sources for rapid procurement of antibiotics to treat community-acquired pneumonia caused by *Haemophilus influenzae* or *Streptococcus pneumoniae.* Antibiotics recommended include amoxicillin, macrolides such as erythromycin, and cefalosporins.
To be updated as more epidemiological information becomes available.

Secondary bacterial infections estimated at 375–875 people in population of 10 000.

Potential antibiotics	Dosage
Amoxicillin	**ADULT** and **CHILD** aged >12 years: 250 mg every 8 hours, doubled in severe infections; **CHILD** aged <1 year: 20 mg/kg daily in 3 divided doses; 1–6 years: 125 mg every 8 hours; 6–12 years: 250 mg every 8 hours
Erythromycin	**ADULT** and **CHILD** aged >8 years, 250–500 mg every 6 hours; up to 4 g daily in severe infections; **CHILD** aged >2 years, 125 mg every 6 hours, doubled in severe infections; **CHILD** aged 2–8 years, 250 mg every 6 hours, doubled in severe infections
Ceftriaxone	**ADULT** 1 g daily; severe infections 2–4 g daily; **Infant** and **CHILD** under 50 kg 20–50 mg/kg daily; up to 80 mg/kg daily in severe infections (doses of 50 mg/kg and over by intravenous infusion only); *by intravenous infusion* (over 60 minutes), **neonates** 20–50 mg/kg daily (maximum 50 mg/kg daily)

Annex 7:

Advice on use of oseltamivir

Oseltamivir is recommended for use for both treatment and prophylaxis of influenza. The currently recommended doses are:

For treatment of influenza:

- Adults: 75 mg twice daily.
- Children aged 1 year or older: weight adjusted doses
  - 30 mg twice daily for ≤ 15 kg
  - 45 mg twice daily for >15 to 23 kg
  - 60 mg twice daily for >23 to 40kg
  - 75 mg twice daily for >40kg
- Children aged up to 1 year: not recommended
- Total duration of treatment is 5 days; severely ill patients may benefit from 7-10 days of treatment.

For prevention of influenza:

- Adults and teenagers aged 13 years or older: 75 mg once daily.
- Children aged from 1 to 13 years:
  - 30 mg daily for ≤15 kg
  - 45 mg daily for >15–23 kg
  - 60 mg daily for >23–40kg
  - 75 mg daily for >40kg
- Total duration of therapy should be at least 7 days from the last day of a potentially infective exposure.

In the context of the human cases of avian influenza, WHO has reviewed the limited available information and evidence about the effectiveness and safety of oseltamivir for the treatment of patients with avian influenza and also its use as prophylaxis in health workers and those involved in managing an outbreak.

TREATMENT

The evidence for effectiveness of oseltamivir in human H5N1 disease is based on virological data from in vitro, animal models, and limited human studies and extrapolation from the results of trials in patients with ordinary human influenza. There is no direct clinical trial evidence that shows that oseltamivir is effective in human H5N1 disease because such studies have not yet been conducted given the ethical issues of denying any patients treatment in such outbreaks. Without such trials, the optimal dose and duration of oseltamivir treatment is uncertain in H5N1 disease and therefore doses of oseltamivir used for seasonal human influenza continue to be recommended. The clinical course and, presumably, some aspects of the immunopathogenesis of human H5N1 disease (in particular the severe form), may be different from normal seasonal influenza, requiring a different dosing approach. At present, there is no clear evidence that shows that higher dosages than the approved ones will be more effective for patients with H5N1. However, because the optimal dosage has not been resolved by clinical trials, and because H5N1 infections continue to have a high mortality rate, prospective studies are needed urgently to determine optimal dosing and duration of treatment for H5N1. It is possible that severely ill patients may benefit from longer duration of therapy (e.g. 7–10 days) or perhaps higher doses (e.g. 300 mg/day), but prospective studies are required.

In terms of safety and adverse effects, evidence from the trials in ordinary influenza shows that although oseltamivir is generally well tolerated, gastrointestinal side-effects in particular may increase with increasing doses, particularly above 300 mg/day.

There are no adequate data on the use of oseltamivir in pregnant women. The animal toxicology studies do not indicate direct or indirect harmful effects with respect to pregnancy or fetal development. Decisions to use oseltamivir in pregnant women should be made on a case-by-case basis where the potential benefit to the mother justifies the potential risk to the fetus.

WHO will continue to monitor the situation and will provide updates on the availability of clinically important new information related to the optimal dosing and duration of treatment with oseltamivir for H5N1-infected people.

PROPHYLAXIS

The evidence for effectiveness of oseltamivir for prophylaxis of H5N1 disease is based on the results of trials of preventing ordinary influenza in healthy and elderly patients and children.

For prevention of disease in household contacts of a case of H5N1 influenza, the current recommendation is to provide adults with 75 mg/day for 7–10 days from the last day of a potentially infective exposure. Children should receive oseltamivir as post-exposure prophylaxis for the same length of time with the weight-adjusted doses recommended for prevention of seasonal influenza. For people with repeated or prolonged exposure, such as health-care workers or personnel involved in bird culls, pre-exposure courses, repeat post-exposure courses or continuous treatment may be necessary. Continuous treatment for up to 6 weeks with 75 mg/day is generally well-tolerated. The efficacy and safety of post-exposure prophylaxis have been shown in children aged 1 year and older.

Currently, there is no evidence to support an increase in prophylactic dose or duration of use for people with a single exposure to H5N1. If the contact already has fever or other symptoms suggestive of H5N1 infection, full therapeutic doses should be administered.

At this time, there is little information available about a number of important aspects that may influence decisions to provide prophylaxis and to alter the dose of oseltamivir in people who become ill while taking the medicine prophylactically. Should a person develop a febrile respiratory illness while on prophylaxis, whenever possible, they should have samples collected for viral diagnosis, and a concurrent blood sample taken for later measurement of drug concentration.

In order to evaluate the efficacy of prophylaxis, people placed on prophylactic courses should be followed in well-designed studies that include control groups to ascertain the effectiveness of current dosing for prophylaxis.

To accumulate important additional safety information about the use of oseltamivir, it is important that all people who are receiving it for prophylaxis are monitored for side-effects. Suspected adverse events should be reported to the manufacturer and to the adverse drug reaction monitoring centre of the country.

This advice will be reviewed regularly and updated as information becomes available. It is issued without any warranty of any kind, either express or implied. In no event shall WHO be liable for damages of any nature arising from the use of this advice.

Annex 8:

Key reference documents

1. Ten things you need to know about pandemic influenza. WHO, October 2005.
http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html

2. Avian influenza: assessing the pandemic threat. WHO, January 2005
http://www.who.int/csr/disease/influenza/WHO_CDS_2005_29/en/index.html

3. Avian influenza frequently asked questions. WHO (revised December 2005).
http://www.who.int/csr/disease/avian_influenza/avian_faqs/en/index.html

4. Avian influenza, including influenza A (H5N1), in humans: WHO interim infection control guidelines for health care facilities (revised February 2006).
http://www.who.int/csr/disease/avian_influenza/guidelines/infectioncontrol1/en/index.html

5. WHO interim guidelines on clinical management of humans infected by influenza A(H5N1). March 2004.
http://www.who.int/csr/disease/avian_influenza/guidelines/clinicalmanage/en/index.html

6. Non-pharmaceutical interventions: their role in reducing transmission and spread. WHO, November 2005.
http://www.who.int/csr/disease/avian_influenza/pharmaintervention2005_11_3/en/

7. Clarification: use of masks by health-care workers in pandemic settings. WHO, November 2005
http://www.who.int/csr/resources/publications/influenza/Mask%20Clarification10_11.pdf

8. Antiviral drugs: their role during a pandemic. WHO, November 2005
http://www.who.int/csr/disease/avian_influenza/antivirals2005_11_3/en/

9. Advice on use of oseltamivir. WHO, March 2006
http://www.who.int/csr/disease/avian_influenza/guidelines/useofoseltamivir2006_03_17A.pdf

10. WHO pandemic influenza draft protocol for rapid response and containment. WHO, March 2006
http://www.who.int/csr/disease/avian_influenza/guidelines/draftprotocol2006_03_17/en/index.html

11. Recommended laboratory tests to identify avian influenza A virus in specimens from humans. WHO, June 2005.
http://www.who.int/csr/disease/avian_influenza/guidelines/avian_labtests2.pdf

12. Avian influenza A (H5N1) Infection in humans. *New England Journal of Medicine*, 2005, 353:1374–1385.

WHO website for updates and guidelines on avian and pandemic influenza:
http://www.who.int/csr/disease/influenza/en/index.html

Annex 9:

Glossary

Attack rate. Frequently used measure of morbidity computing the number of new cases of a specific disease reported during an epidemic period as compared with the total population at the start of an epidemic period.

Consolidated appeals process (CAP). Process to strengthen the coordination of humanitarian emergency assistance of the United Nations. It serves a two-fold purpose: (i) an inclusive and joint strategic planning, monitoring and reviewing mechanism, based on an objective assessment of humanitarian needs (the CHAP); (ii) a fundraising exercise using project proposals based on the CHAP and monitored by the financial tracking system, a service provided by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Countries under the CAP in 2006 included Central African Republic, Chad, Great Lakes block (Burundi, Democratic Republic of the Congo, Rwanda, Uganda, United Republic of Tanzania), Guinea, Nepal, Republic of the Congo, Somalia, Sudan, West Africa block (Benin, Burkina Faso, Côte D'Ivoire, Ghana, Guinea-Bissau, Liberia, Mali, Senegal, Sierra Leone, Togo), West Bank and Gaza Strip, and Zimbabwe.

Containment. Specialized handling of highly pathogenic substances requiring highly-trained staff and specially-equipped laboratories operating at a very high level of biosecurity.

The WHO containment strategy. WHO may attempt containment activities to control or delay the spread of the virus if there is timely detection of cases suspected of having been transmitted from human to human during WHO pandemic phases 3–5. Modelling studies have indicated that a rapid response to initial cases using antivirals, isolation and quarantine may allow at least a delay in the spread of the virus. This delay could allow more time for production of vaccine, and for other control measures to be put in place. A containment strategy of this sort has never been attempted, and the obstacles to its successful implementation are formidable.

Clinical management. Effective and safe treatment of (suspected) human cases within health-care facilities. It is very important that clinical guidelines are developed in advance. Staff must be made aware of admission criteria, appropriate specimen collection, updated treatment protocols and trained in infection control measures.

Early warning disease surveillance. Systematic collection, analysis and interpretation of broadly categorized information for quick detection and control of diseases of immediate public health concern. A sensitive early warning system is needed to detect the first sign of changes in the behaviour of the influenza virus.

Epidemic. An increase, often sudden, in cases of the disease above what is normally expected in that population in that area. *Outbreak* carries the same definition as epidemic but is often used for a more limited geographical area.

Endemic. Constant presence and/or usual prevalence of a disease or infectious agent in a population within a geographical area.

Health education. Any combination of learning experiences designed to facilitate voluntary actions conducive to optimal health for the individual or community.

Health promotion. The process of enabling people to increase control over, and to improve, their health and its determinants. Health promotion strategies are not limited to a specific health problem, or to a specific set of behaviours.

Infection control. Activities implemented at different levels to effect the interruption of transmission of pathogens through measures of hygiene. **Standard** and **droplet** precautions are recommended to prevent influenza transmission in a health-care facility.

Standard precautions synthesize the major features of blood and body fluid precautions, designed to reduce the risk of transmission of bloodborne pathogens, and body substance isolation, designed to reduce the risk of transmission of pathogens from moist body substances, and apply them to all patients receiving care in hospitals, regardless of their diagnosis or presumed infection status. Standard precautions apply to (i) blood; (ii) all body fluids, secretions and excretions except sweat, regardless of whether or not they contain visible blood; (iii) non-intact skin; and (iv) mucous membranes. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Droplet precautions are designed to reduce the risk of droplet transmission of infectious agents. Droplet transmission involves contact of the conjunctivae or the mucous membranes of the nose or mouth of a susceptible person with large-particle droplets (larger than 5 μm) containing microorganisms generated from a person who has a clinical disease or who is a carrier of the microorganism. Transmission via large-particle droplets requires close contact between source and recipient individuals, because droplets do not remain suspended in the air and generally travel only short distances (usually 1 m or less) through the air. Droplet precautions apply to any patient known or suspected to be infected with epidemiologically important pathogens that can be transmitted by infectious droplets.

Influenza. An acute viral disease of the respiratory tract characterized by fever, coryza, sore throat, cough and myalgia. Cough is often severe and protracted, but other manifestations are usually self-limited, with recovery within 2–7 days. Influenza derives its importance from the rapidity with which epidemics evolve, the widespread morbidity and seriousness of complications when these occur. Epidemics of influenza may be caused by type A or B strains, although type B is more likely to occur sporadically. Pandemics are caused only by type A.

Avian influenza refers to a large group of different influenza viruses that primarily affects birds. On rare occasions, these bird viruses can infect other species, including pigs and humans. The vast majority of avian influenza viruses do not infect humans.

Internally displaced person (IDP). A person who, owing to well-founded fear, or fact, of being persecuted for reasons of race, ethnicity, religion, nationality, membership of a particular social group or political opinion, has moved from her or his habitual place of residence within the country of his or her nationality and is unable or, owing to such fear, is unwilling to return to it.

Isolation refers to the separation of people who have a specific infectious illness from those who are healthy and the restriction of their movement to stop the spread of that illness. It is a public health strategy proven effective in stopping the spread of infectious diseases.

Mitigation. Particular action undertaken to moderate the force, intensity or effects of a destructive event or condition.

Pandemic. Refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people. An influenza pandemic is a rare but recurrent event.

Pandemic phases. Systematic epidemiological staging designed to inform the world of the seriousness of the threat of pandemic influenza and to facilitate pandemic planning. Public health goals and outcomes vary between the six pandemic phases.

Phases 3–5 constitute the **pandemic alert period** during which human infections with a novel influenza virus subtype occur, with varying degrees of human-to-human transmission and disease localization in segments of the population.

Phase 6 is the **pandemic period**, where there is increased and sustained human-to-human transmission of the novel influenza virus in the general population.

Personal protective equipment (PPE). Individual protective wear for health-care workers that is an integral part of routine infection control practice and is an important component of prevention and control activities that are intended to reduce the risk of health-care associated infections in health-care facilities.

Quarantine refers to the separation and restriction of movement of individuals who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious. It is a public health strategy proven effective in stopping the spread of infectious diseases.

Respiratory etiquette. Recommended individual behaviour and best practices for reducing person-to-person droplet (aerosol) disease transmission.

Risk communication. A continuous process of communication to the public by health authorities about the current disease burden, impact and effects on the population. A communication strategy for a pandemic situation should include training in outbreak communication and ensure integration of communicators in senior management teams.

Preparedness. Public health planning and programme activities implemented before the onset of an unusual increase in disease prevalence within the population.

Refugee. Under international law, a refugee is a person who is outside his or her country of nationality or habitual residence; has a well-founded fear of persecution because of his or her race, religion, nationality, membership in a particular social group or political opinion; and is unable or unwilling to avail himself or herself of the protection of that country, or to return there, for fear of persecution. They are a subgroup of the broader category of displaced persons.

Social mobilization. The process of mobilizing all societal and personal influences with the aim of prompting individual and family action. It is an approach that identifies key behaviours through participatory situational analysis and strategically blends a variety of communication interventions intended to engage individuals and families in considering, adopting and maintaining recommended healthy behaviours.

Social distancing. Non-pharmaceutical interventions increasing the physical space between individuals or infected populations with the aim of delaying spread of disease. Examples include: quarantine, closure of schools, confinement, prohibition of mass gatherings and contact tracing. However, most of the interventions are based on limited evidence. Many of these interventions may affect human behaviour and human rights, and therefore need a strong educational, legal and well-supported basis. Transparent decision-making and frank information-sharing should go hand-in-hand with any social distancing measures considered.

Waste management. Use of WHO-recommended standard methods for the appropriate disposal of solid material that may be contaminated with highly pathogenic biological substances.

Universal hygiene. Community-based practices promoted for implementation by all individuals as a means of further reducing overall transmission of infections within the entire population, such as regular hand washing, safe food handling, provision and use of safe water, observing recommended environmental health, good personal hygiene and risk avoidance behaviour.