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Ukraine Health Services Response to Pandemic Influenza

Provisional Guidelines for Ukraine's Health Services to Plan and Organize Measures to Combat Pandemic Influenza

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PATH

US Centers for Disease Control and Prevention

World Health Organization



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For more information about the CDC, visit www.cdc.gov.

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Abstract

Influenza pandemics have swept the world from time to time throughout history. They have caused widespread illness, large numbers of deaths, and huge societal disruption in just a few weeks. Currently, there is increasing concern that a new influenza virus with pandemic potential will emerge and spread. The consequences of a pandemic will be serious: a quarter of the population will be affected, with more than 50,000 deaths in Ukraine alone.

This document provides the overall framework and specific operational procedures for Ukraine's health sector response to an influenza pandemic. The plan is based on the current advice from the World Health Organization. Its prime objectives are to save lives, reduce the health impact of a pandemic, and minimize disruption to health and other essential services, while maintaining business continuity as much as possible and reducing the general disruption to society.

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Acronyms

AD	Autodisable
CBC	Complete blood count
CDC	US Centers for Disease Control and Prevention
EDTA	Ethylenediaminetetraacetic acid
EKG	Electrocardiogram
HIV	Human immunodeficiency virus
ICC	Interagency Coordinating Committee
ICU	Intensive care unit
IHR	International Health regulations
ILI	Influenza-like illness
MoES	Ministry of Emergency Situations
MoH	Ministry of Health
PATH	Program for Appropriate Technology in Health
PCR	Polymerase chain reaction
PPE	Personal protective equipment
RT-PCR	Reverse transcriptase polymerase chain reaction
SARI	Severe acute respiratory infection
SARS	Severe Acute Respiratory Syndrome
SES	Sanitary-epidemiological station
SST	Serum separator tube
VTM	Viral transport medium
UNICEF	United Nations Children's Fund
WBC	White blood cell
WHO	World Health Organization

Introduction

The 1918 influenza A/H1N1 influenza pandemic, which is thought to have originated from an avian virus, resulted in the deaths of an estimated 50 to 100 million people worldwide, overwhelmed health care services, and disrupted infrastructure throughout the world. It is estimated that the emergence of a new influenza virus could sicken as much as 30 percent of the population in one season. Even a less severe pandemic with low mortality could overwhelm health care resources, disrupt essential services, and cause enormous economic losses. A pandemic caused by a highly virulent strain would result in a million deaths globally.

The first outbreak of highly pathogenic avian influenza A/H5N1 (H5N1) virus in humans occurred in Hong Kong in 1997 and raised concerns of the potential for a pandemic as severe as the one on 1918. It is uncertain whether the strain of A/H5N1 currently circulating in poultry and wild birds or the A/H1N1 strain that is circulating in pigs will become the next human pandemic strain. Nevertheless, appropriate early response to an emerging virus might prevent the onset of a pandemic. If the virus is not contained, aggressive public education interventions on respiratory hygiene, social distancing, and enhanced health care capacity to deal with a surge of influenza cases and deaths could slow the progression of the pandemic and decrease the disruption of essential services. Such interventions might also slow progression of the pandemic until sufficient vaccine supplies become available.

The major **goal of influenza pandemic preparedness** is to mitigate the health, social, and economic consequences of the pandemic. To achieve this goal, a number of measures need to be taken, including:

- Strengthening health care services and providing adequate diagnostic equipment and resources for treatment and care.
- Putting in place appropriate surveillance and public health response capacity.
- Ensuring immunization with an effective vaccine against the novel virus.
- Securing treatment and provision of health care to patients and management of complications.
- Strengthening communication and emergency services and educating communities on how to prevent the spread of infection and deal with a pandemic.

These goals will be realized only through the coordinated efforts of all levels of government in planning and preparation.

The **objectives of these guidelines** are to assist and facilitate appropriate planning and response at all levels of health care of the population and to provide a clear, comprehensive, and operationally viable plan. These guidelines reflect currently available scientific knowledge regarding the potential for an influenza pandemic, the expected ramifications for residents of Ukraine, and the most effective strategies and tactics to support our response.

This document should be viewed as part of a future pandemic preparedness plan for all components of society, including those beyond the health sector. Such a plan will specify the roles of non-health stakeholders and various businesses to maintain key societal functions and business operations during a pandemic.

1. Basic Principles of Planning

Pandemic preparedness planning is based on the following assumptions regarding the evolution and impacts of a pandemic:

- Susceptibility to the pandemic influenza subtype will be universal.
- The clinical disease attack rate will be 25 percent in the overall population.
- Of those who become ill with influenza, 50 percent will seek outpatient medical care
- The number of hospitalizations and deaths will depend on the virulence of the pandemic virus. Estimates differ about 10-fold between more and less severe scenarios. Because the virulence of the influenza virus that causes the next pandemic cannot be predicated, two scenarios are presented based on extrapolation of past pandemic experience (Table 1).

TABLE 1. Pandemic Influenza Scenarios: Moderate and Severe

CHARACTERISTIC	KEY ASSUMPTIONS	MODERATE (1958/68-LIKE)	SEVERE (1918-LIKE)
Illness	25% of population	12 million	12 million
Outpatient medical care	50% of flu patients	6 million	6 million
Hospitalization	1% to 10% of flu patients	120,000	1,200,000
Intensive Care Unit (ICU) care	15% of hospitalized patients	18,000	180,000
Mechanical ventilation	5% of hospitalized patients	6,000	60,000
Deaths	0.3% to 2% of flu patients	36,000	240,000

- Risk groups for severe and fatal infections cannot be predicted with certainty. During the annual fall and winter influenza season, infants and the elderly, persons with chronic illnesses, and pregnant women are usually at higher risk of complications from influenza infections. In contrast, in the 1918 pandemic, most deaths occurred among young, previously healthy adults.
- The incubation period for seasonal influenza averages 2 days. We assume this would be the same for a novel pandemic strain.
- Infected persons may shed virus and transmit infection for one-half to one day before the onset of illness. Viral shedding from the infected person and the risk for transmission will be greatest during the first 2 days of illness and will continue for 4 to 7 days.
- On average about 2 secondary infections will occur as a result of transmission from someone who is ill.
- In an affected territory, the pandemic will last about 6 to 8 weeks. At least two pandemic disease waves are likely.
- The seasonality of a pandemic cannot be predicted with certainty. During 20th-century pandemics, the largest waves occurred in the fall and winter.

2. Key Capabilities Needed for an Effective Response

An influenza pandemic will place extraordinary and sustained demands on public health and health care systems and on providers of essential community services across Ukraine. Table 2 lists key pandemic response actions that public health, medical, and other government authorities at all levels must be prepared to take to mitigate potentially catastrophic consequences of a pandemic. For each key pandemic response activity, capabilities needed for implementation of an effective response are indicated.

A more detailed list of Ministry of Health (MoH)-specific response actions categorized by World Health Organization (WHO) pandemic phase is shown in Section 4.

TABLE 2. Key Pandemic Response Elements and Capabilities for Their Implementation

KEY RESPONSE ACTIONS	KEY CAPABILITIES NEEDED FOR AN EFFECTIVE RESPONSE
Coordination of Response	
Coordination of pandemic planning and response at all levels	National Pandemic Planning Committee with authority and mandate Chain of command and incident commander defined
Surveillance and Protective Public Health Measures	
International collaboration to track the emerging epidemiological patterns and impacts of disease caused by the novel influenza subtype	Agreements with WHO and international surveillance and research institutions
Identification of a potential pandemic and beginning of containment activities Implementation of surveillance and control measures (isolation of patients, quarantine of contacts, antiviral drug treatment and prophylaxis) to decrease the spread of the pandemic virus	Assets (people, facilities, equipment, supplies, and material and technical means) to investigate an outbreak and initiate emergency response
Obtaining of samples of the potential pandemic virus from infected people, performance of genetic, antigenic, and antiviral resistance analysis	Laboratory assets and agreements with international partners to analyze the novel influenza virus strain
Timely surveillance for severe acute respiratory infection (SARI) to assess the spread of the virus and severity of the pandemic	Functioning influenza sentinel stations across the country; electronic connectivity between key health and sanitary-epidemiological station (SES) institutions across Ukraine to obtain regular influenza disease and resource availability information Widely available, reliable, rapid, sensitive and accurate diagnostic tests
Implementation of public health measures to limit the spread of infection	Assets (people, facilities, equipment, supplies, and material and technical means) to affect infection control measures, educate individuals on personal protection strategies, and continually analyze data during the course of the pandemic to guide response activities and assess the safety and efficacy of interventions
Monitoring of pandemic response actions and their effectiveness	
Vaccines and Antiviral Drugs	
Consideration of administration of pre-pandemic stockpiled vaccine, if available, to pre-defined groups critical to pandemic response, which might provide partial immune protection	A national stockpile of 7.2 million doses (2 per person) of vaccine against influenza virus subtypes considered to pose a substantial pandemic risk (currently A/H1N1 or A/H5N1)

Vaccines and Antiviral Drugs (continued)	
Procurement of vaccine against the specific pandemic virus strain	Agreement with the WHO and/or pandemic vaccine manufacturers
Allocation and administration of pandemic vaccine to pre-defined priority groups; security assurance for protections of scarce vaccines	National, regional, city, and district vaccine distribution plans, guided by recommendations for use of pandemic vaccine when supply is short, that are specific, are implementable, and have been practiced in tabletop and field exercises
Monitoring of vaccine coverage and tracking of vaccine use so persons who receive initial pandemic vaccine can return for a second dose, if required Monitoring for adverse events following vaccination and studies to assess vaccine safety and effectiveness	Assets (people, facilities, equipment, supplies, and material and technical resources) to monitor vaccine coverage, adverse events, and effectiveness
Allocation of stockpiled antiviral drugs for use in pre-defined high-risk and critical infrastructure populations	Availability of reserve of approved antiviral drugs—enough for treatment of approximately 25 percent of the Ukraine population National and regional antiviral drug distribution plans, guided by recommendations for use of the medicines when supply is short
Monitoring of antiviral drug distribution and adverse events, to further assess safety and effectiveness	Assets (people, facilities, equipment, supplies, material and technical resources) to monitor antiviral distribution, adverse events, and effectiveness
Health Care Including Emergency Care Provided by Medical Facilities	
Provision of stockpiled ventilators and other medical material needed to treat and care for infected individuals to hospitals responsible for direct patient care	Equipment and supplies maintained in the National Material Reserve and regional stockpiles sufficient to enhance medical surge capacity
Deployment (if necessary) of Mobile Medical Stations to provide health care surge capacity in hardest-hit areas	Mobile Medical Stations and health care assets (people, facilities, equipment, supplies, and material and technical resources) to enhance medical surge capacity
Reorientation of hospitals or hospital departments for the provision of medical care to influenza patients	Assets (people, facilities, equipment, supplies, and established procedures) for the provision of care
Lab surge capacity	Reagents, personnel, accessioning plan
Assistance to communities with surge mortuary services to accommodate a large number of expected fatalities	Assets (people, facilities, equipment, supplies, and material and technical resources) for the timely, safe, and respectful disposition of the deceased
Provision of psychosocial support to affected communities	Organization of psychosocial support services and development of workforce resiliency programs
Communication and Outreach	
Public education and information campaign to 1. Communicate measures the public can implement to minimize risk and decrease the spread of infection. 2. Provide accurate, understandable, and timely information. 3. Counter confusion and panic in the population.	Pretested risk communication materials that provide the public with accurate, easy-to-understand information regarding pandemic influenza, how individuals can protect themselves and help others during an influenza pandemic, and appropriate use of vaccines and antiviral drugs Pretested procedures through which public authorities within each administrative territory can provide information and guidance to the public (including special/minority population groups) during an influenza pandemic

3. Roles and Responsibilities of Main Government Authorities Contributing to the Response

This section outlines the roles and responsibilities of key government authorities. It places particular emphasis on the Ukraine Ministry of Health and its agencies, which should organize and implement measures on influenza pandemic preparedness and response and mitigation of its consequences.

The Cabinet of Ministers of Ukraine is the main authority that defines priorities, ensures implementation of the national policies in the domain of influenza pandemic preparedness and response, and directs and coordinates the work of ministries and other central and regional executive authorities. The **National Emergency Anti-Epidemic Commission** and the **National Commission on Man-caused and Ecological Safety issues and Emergency Situations**, which are permanently functioning bodies under the Cabinet of Ministers of Ukraine, carry out the operational management and coordination of the work of central and local authorities on pandemic influenza preparedness and response, as well as mitigation of its health and sanitary consequences and civil protection of the population in pandemic-related emergencies.

Respective commissions have been established and function at the regional and local levels under the state administrations and municipal councils. According to the provisions for the commissions, they may include representatives of other ministries and departments as needed.

KEY LEGISLATIVE DOCUMENTS REGULATING ORGANIZATION OF RESPONSE IN CASE OF INFLUENZA PANDEMIC

Laws of Ukraine:

- “On protection of population from infectious diseases,” dated April 6, 2000, № 1645-III.
- “On protection of population and territories against emergency situations of manmade and natural causes,” dated June 8, 2000, № 1809-III.
- “On legal regimen of an emergency situation,” dated March 16, 2000, № 1550-III.

Decrees of the President of Ukraine:

- “On urgent measures for prevention of import and spread of highly pathogenic influenza and minimization of consequences of a possible influenza pandemic.” dated October 19, 2005, № 1450/2005.

Legislative acts of the Cabinet of Ministers of Ukraine:

- Resolution of the Cabinet of Ministers of Ukraine № 1198, dated August 3, 1998: “On unified state system for prevention and response to emergency situations of manmade and natural causes.”
- Resolution of the Cabinet of Ministers of Ukraine № 22, dated January 14, 2004: “On approval of provisions regarding the State Emergency Anti-Epidemic Commission under the Cabinet of Ministers of Ukraine.”
- Resolution of the Cabinet of Ministers № 174, dated February 16, 1998: “On the state commission on issues related to man-caused and ecological safety and emergency situations.”
- Resolution of the Cabinet of Ministers of Ukraine № 1501, dated October 11, 2002: “On approval of standard provisions regarding state emergency anti-epidemic commissions under the Council of Ministers of the Crimea Autonomous Republic, regional and Kiev and Sebastopol city state administrations.”
- Decree of the Cabinet of Ministers of Ukraine № 118-p, dated March 1, 2006: “On approval of the plan of measures to combat influenza among the population and to prevent an influenza pandemic.”

- Decree of the Cabinet of Ministers of Ukraine № 446-p, dated April 28, 2009: “On approval of the plan of measures to prevent swine influenza among the population.”

Legislative acts of Ministries:

- Order of the Ukraine MoH № 488, dated July 17, 2006: “On measures regarding prophylaxis and response to avian influenza and prevention of a pandemic.”
- Order of the Ukraine MoH and Ministry of Emergency Situations (MoES) № 88/111, dated March 1, 2006: “On measures in case of an emergency situation related to epidemiological complications of highly pathogenic avian influenza in the population.”
- Order of the Ukraine MoH № 661, dated November 20, 2008: “On approval of guidelines for surveillance and control of seasonal and avian influenza in humans.”
- Order of the Ukraine MoH and MoES № 882/715, dated December 3, 2008: “On approval of the instruction regarding cooperation between MoES and MoH on prevention and response to emergency situations related to infectious diseases, poisoning of people and other medical and sanitary conditions.” Registered with the Ministry of Justice on February 17, 2009, under № 147/16163.
- Decree of the State Sanitary Physician of Ukraine №12, dated May 5, 2009: “On introduction of additional anti-epidemic measures on prevention of influenza A/H1N1 in the population.”

TABLE 3. Major Pandemic Response Roles of Ukraine’s Central Government Agencies

AGENCY	MAIN ROLES
Cabinet of Ministers of Ukraine	Develops and approves national programs and plans on influenza pandemic preparedness and response and mitigation of the pandemic consequences in the country.
	Ensures financing of executive authorities engaged in organization and implementation of pandemic response measures. Coordinates implementation of the above measures.
	Coordinates and directs the work of ministries and other executive authorities regarding their preparedness to respond to an influenza pandemic in the country and mitigate its consequences.
	Makes inter-governmental agreements related to protection of the population against an influenza pandemic.
	Resolves other issues within its responsibilities defined by the Ukraine legislation.
National Emergency Anti-Epidemic Commission under the Cabinet of Ministers of Ukraine and National Commission on Man-caused and Ecological Safety issues and Emergency Situations	Provides operational management and coordination of measures implemented by executive and local authorities, institutions, and organizations regardless of their ownership form and population regarding prevention of avian and pandemic influenza spread in the country, pandemic response, and mitigation of the pandemic consequences.
	Provides practical assistance to regional emergency anti-epidemic commissions in implementation of response measures.
	Ensures engagement of leading scientists in prompt development of preventive and response measures.
	Develops and submits proposals to the Cabinet of Ministers of Ukraine regarding establishment of quarantine and other restrictive measures on areas affected by avian and pandemic influenza.
	Conducts hearings of government officers’ reports regarding implementation of preventive, treatment, and response measures; their results; and follow-up organizational and practical decisions made.
	Engages health care workers, leaders, and employees of enterprises, institutions, and organizations of all ownership forms into implementation of preventive and response measures.
	Reviews and analyses materials on pandemic response and mitigation of the pandemic consequences.
Ministry of Health	Coordinates operations planning efforts for the health sector and the state sanitary service; develops respective guidelines and procedures and oversees implementation of the plan.
	Coordinates communication with WHO, vaccine and antiviral drug manufacturers, and suppliers; secures supplies of an effective vaccine, antiviral drugs, antibiotics, and other pharmaceutical products and essential supplies.
	Provides information and guidance to regional health administrations, sanitary-epidemiological services (SES), and other organizations involved in planning a response at the national, regional, and local levels.
	Develops strategies, priority groups, and recommendations for use of vaccine and use of antiviral agents.
	Coordinates antiviral and other drug delivery from the Strategic National Stockpile.
	Monitors effectiveness of response activities and modifies strategies as necessary.
	Monitors antiviral drug use, effectiveness, safety, and resistance.
	Coordinates provision of consistent, accurate advice to health and public health professionals.
	Coordinates public information and communications. Makes recommendations on diagnosis, treatment, and prevention of influenza illness.

AGENCY	MAIN ROLES
Ministry of Health (continued)	Communicates information on personal protection measures, including the importance and availability of vaccinations and antiviral drugs as well as proper hygienic practices, to treat pandemic influenza and prevent its spread.
	Develops and endorses a list of national consultants on influenza manifestation, diagnosis, treatment, and prevention and disseminates it to all health care services of the country.
	Tracks the course of the epidemic; shares information with other interested ministries and stakeholders.
National Sanitary-Epidemiological Service	Initiates meetings of the Extraordinary Anti-Epidemic Commission under the Cabinet of Ministers of Ukraine based on the epidemiological situation.
	Provides regular virological monitoring of circulating influenza viruses among the people, conducts clinical and epidemiological influenza surveillance and monitoring of pandemic health impacts.
	Coordinates pandemic response activities with local governments and health authorities.
	Implements containment measures as necessary to prevent the spread of pandemic disease in territories and communities.
	Monitors vaccination program implementation and investigates adverse effects to vaccine.
	Monitors the effectiveness of protective public health measures at the community and facility levels. Organizes broad community health campaigns for different strata and social groups to prevent and control the disease and decrease risk of infection.
State Enterprise “Ukrainian National Center of Influenza and Acute Respiratory Infections” of the Ministry of Health	Conducts and supports virological and epidemiological influenza surveillance and monitoring.
	Contributes to international surveillance of influenza.
	Collaborates with WHO and neighboring countries’ influenza centers over potential vaccine candidate strains.
	Collaborates with the reference laboratories in testing the antiviral susceptibility of isolates.
	Evaluates factors that influence transmission of influenza viruses, including drug-resistant strains.
State Enterprise “Center for Immuno-Biological Preparations”	Facilitates import and provides permission for use of a pandemic vaccine per a special decision of the Ukraine MoH upon availability of the documents specified in MoH order 143, dated May 15, 1997: “Procedures for import of unregistered medical preparations on the territory of Ukraine.”
	Monitors adverse effects to vaccine.
Pharmacological Committee	Facilitates import and provides permission for use of a pandemic vaccine per special decision of the Ukraine MoH upon availability of the documents specified in MoH order 143 dated May 15, 1997: “Procedures for import of unregistered medical preparations on the territory of Ukraine.”
	Monitors adverse effects to antiviral drugs.
Gromashevsky Institute of Epidemiology and Infectious Diseases of the Academy of Medical Sciences of Ukraine	Develops recommendations for use of antiviral drugs and pandemic vaccines including dosing, target populations, and directions for use.
	Participates in the research of influenza virus.
	Participates in the evaluation of novel influenza vaccines and vaccination strategies.
	Evaluates the immune response to infection and vaccination.
	Assesses the spectrum of secondary bacterial infections complicating influenza and their antimicrobial susceptibility and makes recommendations to incorporate into clinical practice.

AGENCY	MAIN ROLES
National Academy of Sciences, Academy of Medical Sciences	Provides technical, scientific, and expert assistance in research of pandemic viruses and treatment of patients.
Regional Health Administrations	<p>Develop regional pandemic plans and controls their implementation.</p> <p>Conduct training exercises related to the organization of treatment and prevention measures to control the spread of influenza.</p> <p>Ensure hospital preparedness and creates a permanent stock of treatment, diagnostic, and disinfection preparations.</p> <p>Ensure order of priority and re-orienting of hospitals and hospital departments for the provision of care to pandemic influenza patients.</p> <p>Provide coordination between institutions at the regional level.</p> <p>Plan labor resources (including engagement of medical students and interns) for the provision of care to pandemic influenza patients.</p> <p>Endorse lists of regional consultants on influenza manifestations, diagnosis, treatment, and prevention.</p>
Ministry of Emergency Situations and Protection of Population Against the Consequences of the Chernobyl Catastrophe	<p>Coordinates implementation of measures by central and local authorities directed at protection of the population from the consequences of the pandemic-related emergencies.</p> <p>Coordinates measures related to operational preparedness of the National Catastrophe Medicine Service and health institutions related to mitigation of health and sanitary consequences of an influenza pandemic.</p> <p>Develops and conducts complex pandemic influenza training exercises for personnel of civil protection institutions and local authorities.</p> <p>Provides material and human resources for mitigation of an influenza pandemic and its consequences; in particular, takes part in provision of emergency medical care to patients and social support of affected and infected population groups.</p> <p>Facilitates provision of information to the population on the course of a pandemic and effectiveness of implemented measures; carries out educational activities on pandemic influenza issues.</p>
Ministry of Agrarian Policy, State Committee on Veterinary Medicine	<p>Monitors epizootic situation regarding highly pathogenic avian influenza.</p> <p>Develops guidelines for veterinary surveillance and control of highly pathogenic avian influenza.</p> <p>Organizes and carries out training of veterinary medicine specialists regarding avian influenza response.</p> <p>Provides education and cooperates with the employees of the poultry sector.</p> <p>Implements prevention and disease-control activities in poultry.</p> <p>Organizes regular laboratory tests for samples obtained from poultry and wild birds.</p> <p>Regulates importation of animals and animal products and controls their safety.</p> <p>Provides information to the MoH and MoES regarding the highly pathogenic avian influenza epizootic situation and assists MoH in implementation of pandemic-response activities.</p>
National Security Service	Organizes and ensures stable functioning of state institutions.

AGENCY	MAIN ROLES
Ministry of Internal Affairs	Ensures order in the society.
	Renders security services at regimen institutions including health facilities engaged in pandemic response and at pandemic vaccine and antiviral storage facilities.
	Provides logistical support to health authorities during the influenza pandemic.
Ministry of Transport and Communications	Assists the MoH in meeting the logistical needs of the pandemic response.
	Provides additional transport to serve and hospitalize influenza patients.
Ministry of Finance	Ensures financial support of implementation of the pandemic plan and pandemic response measures.
Ministry of Defense	Provides logistical, human resources, and equipment to support the response to the pandemic.
State Border Service Administration	Ensures stable functioning of the state border.
State Committee on TV and Radio	Provides information on the pandemic influenza situation and measures to address health, sanitary, and socioeconomic consequences.
	Organizes and conducts presentations of medical experts, consultants, and other authorities.
State Customs Service	Ensures free transportation through the state border for influenza virus strains, clinical and biological materials for diagnostic studies, equipment, reagents, and diagnostic materials for influenza virus testing and identification in Ukraine.
	Develops customs procedures during an influenza pandemic.
Ukrainian Red Cross Society	Assists with material and technical resources and engages the visiting nurses service and volunteers in providing medical assistance and care for influenza patients in stationery and mobile hospitals.
International organizations	May provide financial and technical assistance.
	May participate in joint research activities.

4. MoH Actions for Pandemic Influenza Preparedness and Response

The MoH follows the WHO's guidance for national pandemic planning, which defines pandemic activities in six phases (Tables 4 and 5).

TABLE 4. Summary of WHO Phases of Pandemic Influenza

PHASE	DESCRIPTION
1	No animal influenza virus circulating among animals has been reported to cause infection in humans.
2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
4	Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.
5	The same identified virus has caused sustained community-level outbreaks in two or more countries in one WHO region.
6	In addition to criteria defined in Phase 5, the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.
Post-peak period	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
Possible new wave	Levels of pandemic influenza activity in most countries with adequate surveillance are rising again.
Post-pandemic period	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.

Source: WHO, 2009.

This section includes a description of activities that the MoH and its agencies, such as SES, regional health departments, health care providers, and public health partners will undertake. It is presented by pandemic phase using the above classification system.

TABLE 5. Summary of Ministry of Health and its Agencies' Actions During Pandemic Influenza Phases

PREPAREDNESS COMPONENTS	PHASES				
	1–3	4	5–6	POST-PEAK	POST-PANDEMIC
Planning and Coordination	Develop, exercise, and periodically revise national pandemic preparedness and response plan	Direct and coordinate rapid pandemic containment activities in collaboration with WHO to limit or delay the spread of infection	Provide leadership and coordination to multisectoral resources to mitigate societal and economic impacts	Plan and coordinate for additional resources and capacities during possible future waves	Review lessons learned and share experiences with the international community Replenish resources
Ministry of Internal Affairs	Develop robust national surveillance systems in collaboration with animal health authorities and other relevant sectors	Increase surveillance; monitor containment operations; share findings with WHO and the international community	Actively monitor and assess the evolving pandemic and its impacts and mitigation measures	Continue surveillance to detect subsequent waves	Evaluate the pandemic characteristics and situation monitoring and assessment tools for the next pandemic and other public health emergencies
Communications	Complete communications planning and initiate activities to communicate real and potential risks	Promote and communicate recommended interventions to prevent and reduce population and individual risk	Continue providing updates to the general public and all stakeholders on the state of the pandemic and measures to mitigate risk	Regularly update the public and other stakeholders on any changes to the status of the pandemic	Publicly acknowledge contributions of all communities and sectors and communicate the lessons learned; incorporate lessons learned into communications activities and planning for the next major public health crisis
Reducing the Spread of Disease	Promote beneficial behaviors in individuals for self-protection; plan for the use of pharmaceuticals and vaccines	Implement rapid pandemic containment operations and other activities; collaborate with WHO and the international community as necessary	Implement individual, societal, and pharmaceutical measures	Evaluate the effectiveness of the measures used to update guidelines, protocols, and algorithms	Conduct a thorough evaluation of all interventions implemented
Continuity of Health Care Provision	Prepare the health system to scale-up	Activate contingency plans	Implement contingency plans for health systems at all levels	Rest, restock resources, revise plans, and rebuild essential services	Evaluate the response of the health system to the pandemic and share the lessons learned

Actions taken during pandemic **Phases 1 through 3** are aimed at strengthening pandemic influenza preparedness and response capacities at national and regional levels (Table 6).

TABLE 6. Actions Taken During Pandemic Phases 1 Through 3

PREPAREDNESS COMPONENTS	PHASES 1-3
<p>Planning and Coordination</p>	<ul style="list-style-type: none"> • Establish and activate a cross-governmental, multi-agency, national pandemic preparedness committee that meets regularly. • Assess capacities and identify priorities for pandemic preparedness planning and response at national and sub-national levels. • Advise regional authorities on best practices in pandemic planning; monitor and evaluate the operability and quality of their plans. • Develop, exercise, and periodically revise national and regional influenza pandemic preparedness and response plans in close collaboration with human and animal health sectors and other relevant public and private partners. • Establish, as needed, full legal authority and legislation for all proposed interventions. • Anticipate and address the resources required to implement proposed interventions at national and regional levels, including working with humanitarian, community-based, and nongovernmental organizations. • Develop an ethical framework to govern pandemic policy development and implementation. • Integrate pandemic preparedness and response plans into existing national emergency preparedness and response programs. • Provide to public and private sectors the key assumptions, guidance, and relevant information to facilitate their pandemic business continuity planning. • Identify and address trans-border issues, including interoperability of plans across borders. • Participate, when possible, in regional and international pandemic preparedness planning initiatives and exercises.
<p>Situation Monitoring and Assessment</p>	<ul style="list-style-type: none"> • Develop national surveillance systems to collect up-to-date clinical, virological, and epidemiological information on trends in human infection with seasonal influenza viruses, which will also help to estimate additional needs during a pandemic. • Detect animal and human infections with animal influenza viruses, identify potential animal sources of human infection, assess the risk of transmission to humans, and communicate this information to WHO and relevant partners. • Detect and investigate unusual clusters of influenza-like respiratory illness or deaths and assess for human-to-human transmission. • Characterize and share both animal and human influenza virus isolates and associated information with relevant international agencies to develop diagnostic reagents and candidate vaccine viruses and monitor antiviral resistance. • Strengthen the national laboratories in influenza diagnostic capabilities.
<p>Reducing the Spread of Disease</p>	<ul style="list-style-type: none"> • Identify, regularly brief, and train key personnel to be mobilized as part of a multisectoral expert response team for animal or human influenza outbreaks of pandemic potential. <p>Preventing human influenza infection from animals</p> <ul style="list-style-type: none"> • Reduce infection risk in those involved in responding to animal outbreaks (through education and training regarding the potential risk of transmission; correct use of personal protective equipment (PPE); making antiviral drugs available if indicated by a risk assessment). • Recommend measures to reduce human contact with potentially infected animals. • Control potentially contaminated environments such as wet markets and ponds with free-grazing ducks. • In conjunction with animal health authorities, establish national guidance on food safety, safe agricultural practices, and public health issues related to influenza infection among animals.

PREPAREDNESS COMPONENTS	PHASES 1-3
<p>Reducing the Spread of Disease (continued)</p>	<p>Individual / household-level measures</p> <ul style="list-style-type: none"> • Promote hand and respiratory hygiene. • Develop infection-control guidance for household settings. • Develop plans to provide necessary support for ill persons isolated at home and their household contacts. <p>Societal measures</p> <ul style="list-style-type: none"> • Establish protocols to suspend classes, especially in the event of a severe pandemic or if there is disproportionate or severe disease in children.
<p>Continuity of Health Care Provision</p>	<ul style="list-style-type: none"> • Identify priorities and response strategies for public and private health care systems for triage, surge capacity, and human and material resource management. • Review and update continuity of health care provision strategies at national and regional levels. • Develop strategies, plans, and training to enable all health care workers, including community-level workers, to respond during animal outbreaks and a pandemic. • Develop case-finding, treatment, and management protocols and algorithms. • Develop national infection-control guidance. • Estimate and plan for procurement and distribution of personal protective equipment for workers. • Develop and implement routine laboratory biosafety and safe specimen-handling and shipping policies and procedures. • Explore ways to provide drugs and medical care free of charge to encourage prompt reporting and treatment of human cases caused by an animal influenza virus or virus with pandemic potential. • Develop the capacity for the rapid deployment of diagnostic tests once available. • Assess health system capacity to detect and contain outbreaks of human influenza disease in hospital settings.
<p>Communications</p>	<ul style="list-style-type: none"> • Establish an emergency communications committee with all necessary standard operating procedures to ensure a streamlined, expedited dissemination of communications products. • Update leadership and other relevant sectors regarding global and national pandemic influenza risk status. • Build effective relationships with key journalists and other communications channels to familiarize them with influenza and pandemic-related issues. • Develop effective dialogue and listening mechanisms with the general public. • Develop effective communication strategies and messages to inform, educate, and communicate with individuals and families so they are better able to take appropriate actions before, during, and after a pandemic. • Initiate public health education campaigns in coordination with other relevant authorities on individual-level infection-control measures. • Increase public awareness of measures that may be available to reduce the spread of pandemic influenza. • Create messages and feedback mechanisms targeted toward hard-to-reach, disadvantaged, or minority groups. • Test communications procedures through exercises. • Update communications strategies as feedback from the general public and stakeholder organizations is collected and analyzed.

An important goal during WHO pandemic **Phase 4** is to contain the new virus within a limited area or delay its spread to gain time to implement interventions, including the use of vaccines (Table 7).

TABLE 7. Actions Taken During Pandemic Phase 4

PREPAREDNESS COMPONENTS	PHASE 4
<p>Planning and Coordination</p>	<p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Direct and coordinate rapid pandemic containment activities in collaboration with WHO to limit the spread of human infection. • Activate national emergency and crisis committee(s) and national command, control, and coordination mechanisms for emergency operations. • Activate procedures to access and mobilize additional human and material resources. • Deploy operational and logistics response teams. • Identify needs for international assistance. • Designate special status as needed (such as declaring a state of emergency) to facilitate rapid containment interventions. • Provide regular updates on the evolving situation to WHO as required under international health regulations (IHR) (2005) and to other partners to facilitate coordination of response. • Encourage cross-border collaboration with surrounding countries through information-sharing and coordination of responses. • Activate pandemic contingency plans for all sectors as deemed critical for the provision of essential services. • Finalize preparations for a possible pandemic including procurement plans for essential pharmaceuticals. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Finalize preparations for a possible pandemic by activating internal organizational arrangements within the command-and-control mechanism and mobilizing staffing surge capacity in critical services. • Respond, if possible, to requests for international assistance organized by WHO.
<p>Situation Monitoring and Assessment</p>	<p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Enhance surveillance to rapidly detect, investigate, and report new cases and clusters. • Collect specimens for testing and virological characterization using protocols and procedures developed in collaboration with WHO. • Share specimens and/or strains to develop diagnostic reagents and prototype vaccines and for antiviral susceptibility. • Collect more detailed epidemiological and clinical data as time and resources permit. • To the extent possible, monitor compliance, safety, and effectiveness of mitigation measures and share findings with the international community and WHO. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Enhance virological and epidemiological surveillance to detect possible cases and clusters, especially if sharing extensive travel or trade links with affected areas. • Report any suspect cases to national authorities and WHO.

PREPAREDNESS COMPONENTS	PHASE 4
<p>Reducing the Spread of Disease</p>	<ul style="list-style-type: none"> • Consider implementing exit screening as part of the early global response. • Provide advice to travelers. <p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Undertake rapid pandemic containment operations in collaboration with WHO and the international community. • Request and distribute antiviral drugs from the WHO global stockpile and/or other national or regional stockpiles for treatment of cases and prophylaxis of all persons in the designated areas. • Consider deploying pandemic vaccine if available. • Implement individual/household and societal-level disease-control measures. • Limit all non-essential movement of persons in and out of the designated containment area(s) and implement screening procedures at transit points. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Reassess the capacity to implement mitigation measures to reduce the spread of pandemic influenza. • Distribute stockpiles of pharmaceuticals and other materials according to national plans. • Use appropriate individual/household disease-control measures for suspect cases and their contacts.
<p>Continuity of Health Care Provision</p>	<p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Provide guidance to health care workers to consider influenza infection in patients with respiratory illness and to test and report suspect cases. • Implement appropriate infection-control measures and issue personal protective equipment as needed. • Activate contingency plans for responding to the possible overload of health and laboratory facilities to deal with potential staff shortages. • Activate alternative strategies for case isolation and management as needed. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Activate pandemic contingency planning arrangements for the health sector. • Advise health care workers to consider the possibility of influenza infection in patients with respiratory illness, especially those with travel or other contact with persons in the affected country(ies).
<p>Communications</p>	<ul style="list-style-type: none"> • Activate communication mechanisms to ensure widest possible dissemination of information. • Update and disseminate talking points so that all spokespersons convey consistent information. • Conduct frequent and pre-announced public briefings through popular media outlets such as the web, television, radio, and press conferences to counter panic and dispel rumors. <p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Via established mechanisms, regularly communicate: <ul style="list-style-type: none"> a) What is known and not known about the virus, the state of the outbreak, use and effectiveness of measures, and likely next steps. b) The importance of limiting all non-essential movement of persons in and out of the designated containment area(s) and relevant screening procedures at transit points. c) The importance of compliance with recommended measures to stop further spread of the disease. d) How to obtain medicines, essential services, and supplies in the containment area(s). • Gather feedback from the general public, vulnerable populations, and at-risk groups on attitudes toward the recommended measures and barriers affecting their willingness or ability to comply. Incorporate the findings into communication and health education campaigns targeted to the specific groups. • Collaborate with surrounding countries on information-sharing.

During **Phases 5 and 6 (pandemic)**, actions shift from preparedness to response at a global level. The goal of recommended actions during these phases is to reduce the impact of the pandemic on society (Table 8).

TABLE 8. Actions Taken During Pandemic Phases 5 and 6 (Pandemic)

PREPAREDNESS COMPONENTS	PHASES 5 AND 6
<p>Planning and Coordination</p>	<p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Maintain trust across all agencies and organizations and with the public through a commitment to transparency and credible actions. • Designate special status as needed, such as declaring a state of emergency. • Provide leadership and coordination to multisectoral resources to mitigate the societal and economic impact of a pandemic. • Work for rational, ethical, and transparent access to resources. • Assess if external assistance is required to meet humanitarian needs. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Finalize preparations for an imminent pandemic, including activation of crisis committee(s) and national command and control systems. • Update, if necessary, national guidance and recommendations taking into account information from affected countries.
<p>Situation Monitoring and Assessment</p>	<p>Pandemic disease surveillance</p> <ul style="list-style-type: none"> • Undertake a comprehensive assessment of the earliest cases of pandemic influenza. • Document the evolving pandemic including geographical spread, trends, and impact. • Document any changes in epidemiological and clinical features of the pandemic virus. • Maintain adequate virological surveillance to detect antigenic and genetic changes as well as changes in antiviral susceptibility and pathogenicity. • Modify national case definitions and update clinical and laboratory algorithms for diagnosis as necessary. <p>Monitoring and assessment of the impact of the pandemic</p> <ul style="list-style-type: none"> • Monitor essential health-related resources such as medical supplies; antiviral drugs, vaccines and other pharmaceuticals; health care worker availability, hospital occupancy/availability; use of alternative health facilities; laboratory material stocks; and mortuary capacity. • Monitor and assess the national impact using criteria such as workplace and school absenteeism, regions affected, groups most affected, and essential worker availability. • Assess the uptake and impact of implemented mitigation measures. • Forecast economic impact of the pandemic, if possible.
<p>Reducing the Spread of Disease</p>	<p>If Ukraine is affected</p> <p><i>Individual/household-level measures</i></p> <ul style="list-style-type: none"> • Advise people with acute respiratory illness to stay at home and to minimize their contact with household members and others. • Advise household contacts to minimize their level of interaction outside the home and to isolate themselves at the first sign of any symptoms of influenza. • Provide infection-control guidance for household caregivers, taking the WHO guidance into account.

PREPAREDNESS COMPONENTS	PHASES 5 AND 6
<p>Reducing the Spread of Disease (continued)</p>	<p><i>Societal measures</i></p> <ul style="list-style-type: none"> • Implement social distancing measures, such as class suspensions and adjustment of working patterns, as indicated in national plans. • Encourage reduction in travel and crowding of the mass transport system. • Assess and determine if cancellation, restriction, or modification of mass gatherings is indicated. <p><i>International travel measures</i></p> <ul style="list-style-type: none"> • Consider implementing exit screening as part of the early global response (i.e. first few affected countries). • Provide advice to travelers. <p><i>Pharmaceutical measures</i></p> <ul style="list-style-type: none"> • Distribute antiviral drugs and other medical supplies in accordance with national plans. • Implement vaccine procurement plans. • Plan for vaccine distribution and accelerate preparations for mass vaccination campaigns. • Modify/adapt antiviral and vaccine strategies based on monitoring and surveillance information. • Implement medical prophylaxis campaigns for antiviral drugs and/or vaccines according to priority status and availability in accordance with national plans. • Monitor safety and efficacy of pharmaceutical interventions to the extent possible and monitor supply. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Be prepared to implement planned interventions to reduce the spread of pandemic disease. • Update recommendations on the use of planned interventions based on experience and information from affected countries. • Implement distribution and deployment plans for pharmaceuticals and other resources as required. • Consider implementing entry screening at international borders.
<p>Continuity of Health Care Provision</p>	<p>If Ukraine is affected</p> <ul style="list-style-type: none"> • Implement pandemic contingency plans for full mobilization of health systems, facilities, and workers at national and regional levels. • Implement and adjust the triage system as necessary. • Enhance infection-control practices in health care and laboratory settings and distribute personal protective equipment in accordance with national plans. • Provide medical and non-medical support for patients and their contacts in households and alternative facilities if needed. • Provide social and psychological support for health care workers, patients, and communities. • Implement corpse management procedures as necessary. <p>If Ukraine is not affected</p> <ul style="list-style-type: none"> • Prepare to switch to pandemic working arrangements.
<p>Communications</p>	<ul style="list-style-type: none"> • Regularly update the public on what is known and unknown about the pandemic disease, including transmission patterns, clinical severity, treatment, and prophylaxis options. • Provide regular communications to address societal concerns, such as the disruption to travel, border closures, schools, or the economy or society in general. • Regularly update the public on sources of emergency medical care, resources for dealing with urgent non-pandemic health care needs, and resources for self-care of medical conditions.

The overall goal of actions during the **post-peak period** is to address the health and social impact of the pandemic, as well as to prepare for possible future pandemic waves (Table 9).

TABLE 9. Actions Taken During the Post-Peak Period

PREPAREDNESS COMPONENTS	POST-PEAK PERIOD
Planning and Coordination	<ul style="list-style-type: none"> • Determine the need for additional resources and capacities during possible future pandemic waves. • Begin rebuilding of essential services. • Address the psychological impacts of the pandemic, especially on the health workforce. • Review the status of and replenish national, local, and household stockpiles and supplies. • Review and revise national plans.
Situation Monitoring and Assessment	<ul style="list-style-type: none"> • Activate the surveillance activities required to detect subsequent pandemic waves. • Evaluate the resources needed to monitor subsequent waves.
Reducing the Spread of Disease	<ul style="list-style-type: none"> • Evaluate the effectiveness of the measures used and update guidelines, protocols, and algorithms accordingly. • Continue with vaccination programs in accordance with national plans, priorities, and vaccine availability.
Continuity of Health Care Provision	<ul style="list-style-type: none"> • Ensure that health care personnel have the opportunity for rest and recuperation. • Restock medications and supplies; service and renew essential equipment. • Review and, if necessary, revise pandemic preparedness and response plans in anticipation of possible future pandemic wave(s). • Revise case definitions, treatment protocols, and algorithms as required
Communications	<ul style="list-style-type: none"> • Regularly update the public and other stakeholders on any changes to the status of the pandemic. • Communicate to the public the ongoing need for vigilance and disease-prevention efforts to prevent any upswing in disease levels. • Continue to update the health sector on new information or other changes that affect disease status, signs and symptoms, or case definitions, protocols, and algorithms.

The goal of activities during the **post-pandemic period** is to address the long-term health and social impact of the pandemic, as well as to restore normal health and social functions (Table 10).

TABLE 10. Actions Taken During the Post-Pandemic Period

PREPAREDNESS COMPONENTS	POST-PANDEMIC PERIOD
Planning and Coordination	<ul style="list-style-type: none"> • Evaluate the effectiveness of specific responses and interventions and share findings with the international community. • Review the lessons learned and apply to national emergency preparedness and response programs. • Revise national and regional pandemic preparedness and response plans.
Situation Monitoring and Assessment	<ul style="list-style-type: none"> • Collect and analyze available data to evaluate the epidemiological, clinical, and virological characteristics of the pandemic. • Review and revise situation monitoring and assessment tools for the next pandemic and other public health emergencies. • Resume seasonal influenza surveillance incorporating the pandemic virus subtype as part of routine surveillance.
Reducing the Spread of Disease	<ul style="list-style-type: none"> • Conduct a thorough evaluation of individual, household, and societal interventions implemented. • Conduct a thorough evaluation of all the pharmaceutical interventions used, including: <ul style="list-style-type: none"> • Antiviral effectiveness, safety, and resistance; and • Vaccine coverage, effectiveness, and safety. • Review and update relevant guidelines as necessary. • Continue with vaccination programs in accordance with national plans, priorities, and vaccine availability.
Continuity of Health Care Provision	<ul style="list-style-type: none"> • Collect and analyze available data to evaluate the response of the health system to the pandemic. • Review the lessons learned and share experiences with the international community. • Amend plans and procedures to include lessons learned. • As needed, provide psychosocial services to facilitate individual and community-level recovery.
Communications	<ul style="list-style-type: none"> • Publicly acknowledge the contributions of all communities and sectors. • Communicate to the public and other stakeholders the lessons learned about the effectiveness of responses during the pandemic and how the gaps that were discovered will be addressed. • Encourage stakeholders across all sectors, public and private, to revise their pandemic and emergency plans based upon the lessons learned. • Extend communication planning and activities to cover other epidemic diseases and use the principles of risk communications to build the capacity to dialogue with the public on all health matters of potential concern to them. • Improve and adjust the communication plan in preparation for the next major public health event.

5. Planning for Vaccination Against a Pandemic Influenza Virus

The primary goal of a pandemic response is to decrease health impacts, including severe morbidity and death, and minimize societal and economic impacts.

The Ukraine Ministry of Health determines high-risk populations in a pandemic and the country's vaccine needs in the event of a threat of pandemic influenza virus or if complications of avian influenza arise.

Initial pandemic vaccine stocks will be used to vaccinate designated priority groups. After vaccination of these priority groups, vaccination of all those who desire the vaccine will be phased in depending on available supplies.

RECOMMENDATIONS FOR PRIORITIZATION OF PRE-PANDEMIC AND PANDEMIC INFLUENZA VACCINE

A provisional list of priority groups for receiving vaccination and the rationale for prioritization is provided in Table 11.

TABLE 11. Recommendations for Priority Groups for Pandemic Influenza Vaccine

TIER	VACCINE PRIORITY GROUP RECOMMENDATIONS	ESTIMATED POPULATION	RATIONALE
1	Suppliers of antiviral medications and vaccine and pharmacists	5,000	The health community needs to ensure maximum availability of antiviral drugs and pandemic vaccine.
	Medical workers and support personnel involved in direct patient care and vaccinations	150,000	Health care workers are required for quality medical care. There is little surge capacity among health care sector personnel to meet increased demand.
2	Persons >6 months old with two or more influenza high-risk conditions ¹	1,200,000	These groups are at high risk of hospitalization and death.
	Persons 6 months or older with a history of hospitalization for pneumonia or influenza or other influenza high-risk condition in the past year	75,000	This group excludes those who are immunocompromised and would not be likely protected by vaccination.
3	Pregnant women	400,000	In past pandemics and for seasonal influenza, pregnant women have been at high risk; vaccination will also protect infants who cannot receive vaccine.
	Household contacts of severely immuno-compromised persons who will not be vaccinated due to likely poor response to vaccine	100,000	Vaccination of household contacts of immunocompromised and young infants will decrease the risk of exposure and infection among those who cannot be directly protected by vaccination.
	Household contacts of children <6 months old	400,000	

¹ Chronic cardiovascular (excluding hypertension), pulmonary, metabolic (such as diabetes mellitus or renal dysfunction), condition.

TIER	VACCINE PRIORITY GROUP RECOMMENDATIONS	ESTIMATED POPULATION	RATIONALE
4	Public health (SES) and health facility emergency response workers critical to pandemic response	125,000	It is critical to implement surveillance and pandemic response measures, such as providing vaccinations and managing/monitoring response activities and developing guidance as the pandemic progresses.
	Public safety workers, including militia, fire, rescue personnel of the MoES, 01-02-03-04-112 telephone dispatchers, and correctional facility staff	150,000	This group includes critical infrastructure groups that have an impact on maintaining health, implementing a pandemic response, and maintaining societal functions.
5	Utility workers essential for maintenance of power, water, and sewage system functioning	85,000	These are other important societal groups for a pandemic response, but they are of a lower priority.
	Transportation workers transporting fuel, water, food, and medical supplies, as well as public transportation workers	20,000	
	Telecommunications/information technology for essential network operations and maintenance	10,000	
6	Healthy persons ≥60 years old	50,000	These groups are also at increased risk, but not as high as the population in tier 2.
	Persons 6 months to 59 years old with one high-risk condition	20,000	
	Healthy children 6–23 months old	600,000	
	Key government leaders, central and local authorities and key health decision-makers	5,000	Preserving decision-making capacity is critical for managing and implementing a response.
	Funeral directors	5,000	These are other important societal groups for a pandemic response, but they are of a lower priority.

To prepare for vaccination of priority groups, the MoH should:

- Identify the necessity of revising/finalizing national recommendations for pandemic influenza vaccination and develop region-specific modifications for priority groups, depending on local circumstances.
- Estimate the size of relevant priority groups.
- Provide recommendations for how persons in priority groups will be identified in medical facilities and how vaccine would be most efficiently provided to these groups.
- Educate medical professionals and other stakeholders about the need for priority groups and the rationale for selecting them

Immunization should be carried out on the basis of lists of individuals that belong to priority groups from organizations approved by the heads of medical facilities and submitted to regional SES. Vaccination of individuals that belong to priority groups 2, 3, and 6 should be carried out on the basis of information from ambulatory records.

Authorization for pandemic vaccine use in Ukraine

In emergency situations, the Center of Immuno-Biological Products will use MoH decree 143 dated May 15, 1997: “Procedures regarding import of unregistered medical preparations on the territory of Ukraine.” According to the decree, import of unregistered medical preparations in case of emergencies, catastrophes, or epidemic diseases requires a special decision of the MoH and the availability of the following documents:

- A request to the MoH from local executive authorities engaged in a response to an emergency, catastrophe, or an epidemic disease that specifies a name, required quantity, presentation, dose, lot number, and expiration date of the preparation.
- Documents that confirm that the preparation is registered and used in the country from which it is being imported into Ukraine.
- A certificate of quality for each lot specifying the expiration date (at least 6 months from the date of import).
- Instructions for use.

Vaccine procurement and distribution

The Ukraine Ministry of Health cooperates with WHO regarding pandemic influenza preparedness. The WHO Secretariat is planning to establish and maintain a stockpile of vaccines for H5N1 and other influenza viruses with human pandemic potential and associated equipment, including syringes, needles, and applicators, consistent with expert guidance. The WHO stockpile will initially include 150 million doses of H5N1 vaccine for use in accordance with expert guidance. Indicatively:

- 50 million doses will be for use in affected countries, according to public health need, to assist in containing the first outbreak or outbreaks of an emerging pandemic.
- 100 million doses will be for distribution, once a pandemic begins, to least developed and developing countries that have no or inadequate access to H5N1 influenza vaccines, on a per capita basis, with use to be determined by those countries.

Direct agreements with vaccine manufacturers regarding making a Ukraine-specific reserve in case of influenza pandemic are being considered as well. Vaccines will be distributed by Ukrvaccina to regions by refrigerated vehicles equipped with electronic temperature monitoring devices: three Scania trucks (40 m³), one Kamaz truck (25 m³), and seven refrigerated vans (10 m³). In case of an emergency, if all vehicles are mobilized, distribution to regions may be completed in 12 to 36 hours. Further distribution from regions to districts and then to health facilities will take another 1 to 2 days.

During a pandemic, planned influenza vaccination is postponed. Other vaccinations are given according to the immunization schedule unless there are other MoH recommendations.

Each regional and district SES will receive available vaccine in proportion to the size of its population in defined priority groups. The provisional pandemic vaccine forecasting and distribution plan is provided in Table 12.

TABLE 12. Provisional Forecasting and Distribution Plan for Pandemic Vaccine

Vaccine presentation (dose/vial): **1**
 Vaccine packaged volume (ml/dose): **60**

Oblasts	Total population*	TARGET POPULATION FOR PANDEMIC VACCINATION							SUPPLIES				
		Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	TOTAL	Pandemic vaccine (2 doses + 5% wastage)	Cold space needed (litres)	AD syringe (pcs)	Reconstitution syringe (if applicable)	Safety boxes (pcs)
Vinnitsya	1,679,556	5,600	46,061	32,514	9,935	4,155	24,566	122,830	257,944	15,477	257,944	257,944	5,159
Volyn	1,037,225	3,458	28,446	20,079	6,135	2,566	15,171	75,855	159,296	9,558	159,296	159,296	3,186
Dnipropetrovsk	3,408,488	11,364	93,477	65,984	20,162	8,431	49,854	249,272	523,471	31,408	523,471	523,471	10,469
Donetsk	4,557,770	15,196	124,996	88,232	26,960	11,274	66,664	333,322	699,976	41,999	699,976	699,976	14,000
Zhytomyr	1,311,863	4,374	35,978	25,396	7,760	3,245	19,188	95,940	201,474	12,088	201,474	201,474	4,029
Zakarpattia	1,242,717	4,143	34,081	24,057	7,351	3,074	18,177	90,883	190,855	11,451	190,855	190,855	3,817
Zaporizhzhya	1,839,508	6,133	50,448	35,610	10,881	4,550	26,906	134,528	282,509	16,951	282,509	282,509	5,650
Ivano-Frankivsk	1,383,544	4,613	37,943	26,784	8,184	3,422	20,236	101,182	212,483	12,749	212,483	212,483	4,250
Kyiv	1,744,694	5,817	47,848	33,775	10,320	4,316	25,519	127,594	267,948	16,077	267,948	267,948	5,359
Kirovohrad	1,046,958	3,491	28,713	20,268	6,193	2,590	15,313	76,567	160,790	9,647	160,790	160,790	3,216
Luhansk	2,367,983	7,895	64,941	45,841	14,007	5,857	34,635	173,177	363,672	21,820	363,672	363,672	7,273
Lviv	2,562,603	8,544	70,279	49,609	15,158	6,339	37,482	187,410	393,561	23,614	393,561	393,561	7,871
Mykolayiv	1,207,776	4,027	33,123	23,381	7,144	2,988	17,666	88,328	185,489	11,129	185,489	185,489	3,710
Odesa	2,392,540	7,977	65,615	46,316	14,152	5,918	34,995	174,973	367,443	22,047	367,443	367,443	7,349
Poltava	1,532,783	5,110	42,036	29,673	9,067	3,792	22,419	112,097	235,403	14,124	235,403	235,403	4,708
Rivne	1,153,266	3,845	31,628	22,326	6,822	2,853	16,868	84,341	177,117	10,627	177,117	177,117	3,542
Sumy	1,204,213	4,015	33,025	23,312	7,123	2,979	17,613	88,067	184,941	11,096	184,941	184,941	3,699
Ternopil	1,101,960	3,674	30,221	21,332	6,518	2,726	16,118	80,589	169,238	10,154	169,238	169,238	3,385
Kharkiv	2,800,406	9,337	76,800	54,212	16,565	6,927	40,960	204,801	430,083	25,805	430,083	430,083	8,602
Kherson	1,112,685	3,710	30,515	21,540	6,582	2,752	16,275	81,374	170,885	10,253	170,885	170,885	3,418
Khmelnyskiy	1,356,426	4,522	37,200	26,259	8,023	3,355	19,840	99,199	208,318	12,499	208,318	208,318	4,166
Cherkasy	1,322,088	4,408	36,258	25,594	7,820	3,270	19,338	96,688	203,045	12,183	203,045	203,045	4,061
Chernivtsi	905,061	3,017	24,821	17,521	5,354	2,239	13,238	66,190	138,998	8,340	138,998	138,998	2,780
Chernihiv	1,143,816	3,813	31,369	22,143	6,766	2,829	16,730	83,650	175,666	10,540	175,666	175,666	3,513
City of Kyiv	2,721,739	9,074	74,643	52,689	16,099	6,733	39,810	199,048	418,001	25,080	418,001	418,001	8,360
Sebastopol agglomeration	378,970	1,263	10,393	7,336	2,242	937	5,543	27,715	58,202	3,492	58,202	58,202	1,164
Autonomous Republic of Crimea	1,974,181	6,582	54,141	38,218	11,678	4,883	28,875	144,377	303,192	18,192	303,192	303,192	6,064
UKRAINE	46,490,819	155,000	1,275,000	900,000	275,000	115,000	680,000	3,400,000	7,140,000	428,400	7,140,000	7,140,000	142,800

*As of July 2006, State Statistics Committee of Ukraine

The currently available cold space in all regional warehouses is adequate for meeting the additional demand. In 2008, United Nations Children’s Fund (UNICEF) supplied 87 ice-lined refrigerators, Vestfrost MK 304, 108 L, and 20,000 vaccine carriers (1.7 L).

Additional 7.2 million autodisable (AD) syringes and 142,000 safety boxes are needed for pandemic influenza immunization. These supplies will be financed by regional budgets or donors upon a MoH request. A national epidemiological emergency reserve funding may be used for emergency purchases, too.

Local SES and health administrations should:

- Identify health facilities that will provide vaccinations to persons in priority groups.
- Obtain written commitments from the heads of each clinic or facility responsible for vaccinating a priority group.
- Develop strategies for rapid distribution and administration of vaccines, taking into account vaccine security issues, cold chain requirements, and transport and storage issues.
- Estimate the size of the priority groups that will be vaccinated based on extrapolation from national data or on local data where available.
- Develop or refine procedures for collecting, removing, and disposing of used syringes, needles, and other vaccination supplies.
- Develop a plan for training vaccinators and other staff responsible for mass vaccination.
- Develop strategies for vaccinating hard-to-reach populations.

A vaccine against pandemic influenza will likely require two doses, administered at least a month apart, to provide a level of immunity comparable to that obtained with seasonal influenza vaccines. If two doses are required to achieve immunity, it will be necessary to ensure that vaccinated persons return for the second dose. Regional and district SES and health administrations should do the following:

- Arrange for information about the need for a second dose to be provided when the first dose is administered.
- Ensure that planning for vaccine procurement and distribution to clinics and other facilities accounts for the need to use portions of future shipments for second doses, thus reducing the number of available first doses.
- Consider implementing a call-back system, immunization database, or other management information system that would help accomplish the goals of pandemic vaccination.

Vaccine effectiveness monitoring

- Vaccine effectiveness will be assessed by comparing rates of influenza-related illness, hospitalization, and/or death among vaccinated and unvaccinated persons.² Vaccine tracking will be implemented by regional and local health SES on the basis of reports submitted by health facilities. Vaccine tracking may be used by decision-makers at the central and other levels to estimate adverse event rates and to determine whether vaccine is being administered according to established priority groups for pandemic vaccine. Data will be collected from individual providers, collated at the district and regional levels, and reported to the MoH on a scheduled routine basis according to the established reporting procedures (Table 13).

²Since influenza-related illnesses have non-specific clinical definitions, this assessment must be supplemented with laboratory surveillance, so at least a subset of cases are laboratory-confirmed and reasonable estimates can be made.

TABLE 13. Report on Pandemic Influenza Immunization

_____ OBLAST _____ WEEK, MONTH 2009

PRIORITY GROUPS	TARGET	NO. OF INFLUENZA VACCINATIONS (DOSE #1) THIS MONTH						CUMULATIVE (DOSE #1)	
		0-2 YRS	3-6 YRS	7-14 YRS	15-59YRS	60+ YRS	TOTAL	TOTAL ONLY	%
Group 1									
Group 2									
Group 3									
Group 4									
Group 5									
Group 6									
TOTAL									

PRIORITY GROUPS	TARGET	NO. OF INFLUENZA VACCINATIONS (DOSE #2) THIS MONTH						CUMULATIVE (DOSE #2)	
		0-2 YRS	3-6 YRS	7-14 YRS	15-59YRS	60+ YRS	TOTAL	TOTAL ONLY	%
Group 1									
Group 2									
Group 3									
Group 4									
Group 5									
Group 6									
TOTAL									

USE OF PANDEMIC INFLEUNZA VACCINES (IN DOSES)						
BALANCE AT OBLAST SES STORE AT THE BEGINNING OF THE PERIOD (DOSES)	RECEIVED (DOSES)	ISSUED (DOSES)	BALANCE AT THE OBLAST SES AT THE END OF THE PERIOD (DOSES)	BALANCE AT RAYON (TOWN) SES AND HEALTH FACILITIES AT THE END OF THE PERIOD (DOSES)	TOTAL IMMUNIZATIONS GIVEN	TOTAL AMOUNT OF VACCINE USED (DOSES)
0	0	0	0	0	0	0
1	2	3	4=1-2-3	From rayon reports	Must equal the reported no. of given doses 1- 2 above	Must be higher than the number of immunizations given

The MoH will use the existing system for reporting and investigating adverse effects following immunization with a pandemic vaccine. Reportable adverse events include death, anaphylactic shock, toxic shock, allergic reactions (such as generalized edema, laryngeal spasm), post-injection abscess, Guillain–Barre syndrome, and encephalopathy.

Public health communications

Regional and local SES and health departments should work with the MoH to disseminate accurate, useful, and consistent public health messages on:

- The importance of vaccination, given the likelihood of subsequent pandemic waves.
- The rationale for prioritization and the list of priority groups.
- Phasing of vaccination, if any, after priority groups have been vaccinated.
- Information about when and where vaccination is available.

Training

Regional and district SES and health departments can assist health care partners in conducting training exercises to facilitate rapid and effective delivery and use of vaccines. Exercises and drills are essential to ensuring that emergency procedures are in place and that roles and responsibilities are well-understood.

6. Antiviral Drug Distribution and Use

Drugs with activity against influenza viruses (“antivirals”) include the adamantanes: *amantadine* and *rimantadine* and the neuraminidase inhibitors *oseltamivir* and *zanamivir*. All are registered by the Pharmacological Committee of Ukraine and imported into the country by a number of suppliers. Appropriate use of these agents during an influenza pandemic may reduce morbidity and mortality and diminish the overwhelming demands that will be placed on the health care system. Antivirals might also be used during the pandemic alert period in limited attempts to contain small disease clusters and potentially slow the spread of novel influenza viruses.

A large and uncoordinated demand for antivirals early in a pandemic could rapidly deplete national and local supplies. Preparedness planning for optimal use of antiviral stocks is therefore essential.

USE OF ANTIVIRALS TO MANAGE CASES OF NOVEL INFLUENZA DURING INTER-PANDEMIC AND PANDEMIC ALERT PERIODS

1. For treatment of cases of novel influenza: A patient with a suspected case of avian influenza A (H5N1) or another novel strain of influenza should be isolated and treated in accordance with the clinical algorithm for the pandemic alert period. The recommendations include the use of oseltamivir (Tamiflu) administered as early as possible and ideally within 48 hours after onset of symptoms. Neuraminidase inhibitors are preferred because the majority of avian influenza A (H5N1) viruses currently affecting humans are resistant to amantadine and rimantadine. Current recommended doses for antiviral treatment are provided in Table 14 below.

TABLE 14. Recommended Daily Dosage of Antivirals for Treatment and Prophylaxis of Influenza

ANTIVIRAL	INHIBITS	ACTS ON	ADMINISTRATION	AGE GROUPS (YEARS)				
				1–6	7–9	10–12	13–64	65+
Amantadine	M2 ion channel	Influenza A	Oral	Treatment	5mg/kg body weight/day in 2 doses		100 mg x twice daily	100 mg/day
				Prophylaxis				
Rimantadine	M2 ion channel	Influenza A	Oral	Treatment			100 mg x twice daily	100 mg/day
				Prophylaxis	5mg/kg body weight/day in 2 doses	100 mg x twice daily		100 mg/day
Oseltamivir (Tamiflu)	Neuraminidase	Influenza A and B	Oral	Treatment	Weight <15 kg: 30mg x twice daily Weight 15-23 kg: 45 mg x twice daily Weight 23-40 kg: 60 mg x twice daily Weight >40 kg: 75 mg x twice daily		75 mg x twice daily	
				Prophylaxis			75 mg/day	
Zanamivir (Relenza)	Neuraminidase	Influenza A and B	Inhaler	Treatment	10 mg x twice daily			
				Prophylaxis				

2. For prophylaxis of contacts: Antiviral prophylaxis is currently recommended to household or close family contacts of a probable or confirmed H5N1/H1N1 case.

3. For containment of disease clusters: In special situations regional SES and health administrations can consider “targeted antiviral prophylaxis” as a community-based measure for containing small clusters of infection with novel strains of influenza. This measure can be implemented in small, well-defined settings. However, once a pandemic is under way, such a strategy would not represent an efficient use of limited antiviral supplies.

RECOMMENDATIONS ON PANDEMIC ANTIVIRAL DRUG USE

During a pandemic, the following assumptions specific to antiviral drugs should be considered:

- Treatment with a neuraminidase inhibitor (e.g., Tamiflu) will be effective in decreasing the risk of pneumonia, decreasing hospitalization by approximately half, and decreasing mortality, especially if started within 48 hours
- Antiviral resistance to amantadine and rimantadine may limit their use during a pandemic.
- The primary source of antiviral drugs for a pandemic response will be the supply of antiviral drugs that has been stockpiled.
- Treating early after the onset of disease is most effective in decreasing the risk of complications and shortening illness duration. Generally, treatment should be given within the first 48 hours.
- Assumptions about the amount of antiviral drug needed for defined priority groups are based on the populations in those groups and the assumptions that 35 percent of individuals in the priority groups will have influenza-like illness and 75 percent will present within the first 48 hours and be eligible for treatment. The number of priority groups that can be covered would be known at the start of the pandemic,
- based on the amount of drug that is stockpiled. Additional supply that would become available during the pandemic could provide some flexibility.

Objectives of pandemic response:

- Reduce incidence and mortality (main objective).
- Minimize impact on society.
- Minimize economic losses.

TABLE 15. Antiviral Drug Priority Group Recommendations

GROUP	ESTIMATED POPULATION (THOUSAND)	STRATEGY	# COURSES		RATIONALE
			FOR TARGET POPULATION	CUMULATIVE	
1. Patients admitted to the hospital	200	Treatment	150	150	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die
2. Health care workers with direct patient contact and emergency medical service providers	150	Treatment	39 150x35%x75%	189	Health care workers are required for quality medical care. There is little surge capacity among health sector personnel to meet increased demand.
3. Highest risk outpatients: immuno-compromised people and pregnant women	600	Treatment	156	345	Groups at greatest risk of hospitalizations and death; immunocompromised cannot be protected by vaccination
4. Pandemic health responders (public health, vaccinators), public safety (police, fire, MoES rescue personnel, corrections), and government decision-makers	280	Treatment	74	419	These groups are critical for an effective public health response to a pandemic
5. Increased risk outpatients: young children 6–23 months old, persons >60 years old, and persons with underlying medical conditions	3,000	Treatment	780	1,199	These groups are at high risk for hospitalization and death

During an actual pandemic, these recommendations could be modified based on the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

Ensuring antiviral drugs supplies

Currently, WHO holds two completely separate stockpiles of oseltamivir.

One stockpile consists of 2 million adult therapeutic courses allocated in equal measure to the six WHO regional offices, with each office entitled to 300,000 therapeutic courses, for use in the developing countries that are most likely to be affected by avian influenza in humans and that are unable to afford oseltamivir. WHO headquarters also retains 200,000 courses of this stockpile in Geneva to further support the WHO regions as required. The 200,000 courses of oseltamivir in the Geneva-based stockpile can be released rapidly to any Member States that do not have enough antivirals (and to their immediate neighbors) so that they can tackle: (1) management of sporadic human infections caused by an influenza virus with pandemic potential and (2) a threat to humans from an avian influenza outbreak in poultry.

The second stockpile is held by the manufacturer F. Hoffmann-La Roche Ltd. It consists of 3 million courses to be used in support of a national rapid containment operation, supported by WHO, according to the organization's assessment of the situation, at the site of the outbreak of a possible human influenza pandemic. It would be used to reduce morbidity and mortality and contain or delay national and international spread. The WHO Secretariat has prepared and posted on the WHO website a document entitled *WHO Interim Protocol: Rapid Operations to Contain the Initial Emergence of Pandemic Influenza (Updated October 2007)*. This document outlines a strategy for using antivirals and other measures (for example, quarantine, isolation, and social distancing) in any country to stop (if possible) or slow the spread of an influenza virus with pandemic potential, if that virus is detected and reported rapidly enough. The WHO interim protocol provides practical guidance on use of the antivirals and on their release from the rapid response stockpile. The interim protocol includes standard operating procedures that provide processes and procedures for (1) countries to request antivirals; (2) WHO to evaluate countries' requests and notify the manufacturer of the decision to deploy antivirals; (3) WHO and the manufacturer to discharge their responsibilities for deploying oseltamivir; and (4) recipient countries to fulfill their responsibilities for receiving, storing, distributing, and dispensing the antivirals and monitoring and reporting on their use. Once a decision to launch a rapid containment operation has been made by national authorities in collaboration with WHO, the manufacturer is responsible for transporting the antivirals to the nearest international airport in the country in which the operation is being conducted, respecting a time limit of 24 hours from receipt of a request from WHO. A direct handover to the WHO country office will take place at the airport. National authorities should be ready to authorize any package type, composition, and waiver liability and assume responsibility for customs release and compliance with importation requirements.

The Ukraine Ministry of Health is also considering a possibility of creating a national strategic reserve if antiviral drugs and other lifesaving medicines.

The establishment of national, local, or institutional stockpiles should take into account the expiration dates of the purchased material. All drugs are marked with an expiration date, based on review of stability data, at the time of manufacture. However, when purchased, the drugs might have been stored for some time in warehouses, so that the time to expiration may be shorter than the time from initial manufacture to expiration date. Moreover, one shipment might consist of several batches with different expiration dates. Antivirals maintained in the national stockpile may be tested for potency, and dating can be extended by the Pharmacological Committee of Ukraine.

The decision to deploy national supplies of antivirals will be made by MoH officials. Antivirals will be delivered to regional storage facilities as determined by the regional health administrations. Allocation and distribution of antiviral drugs from regional health departments to drug delivery or dispensing sites will be established based on regional and local pandemic plans.

Regional-level planning

Regional health administrations should determine:

- The need for antiviral drugs.
- Mechanism for obtaining antiviral drugs from the national stockpile.
- Plans for distribution and targeted use.
- Data collection on drug use, drug-related adverse events, and drug resistance.
- Legal preparedness.
- Training; dissemination of public health information.

These planning efforts require coordination and collaboration with health care providers who will administer antivirals during a pandemic.

Establishing priority groups

Regional and local health authorities should determine how certain priority groups will be defined in their jurisdictions.

Planning steps for distribution of antivirals to priority groups might include:

- Estimating the size and needs of priority groups in the regions and districts using provisional recommendations.
- Assessing antiviral stocks available at the national, local, and hospital levels.
- Establishing mechanisms for requesting antivirals from the national stockpile.
- Activating pre-existing plans for the transport, receipt, storage, security, tracking, and delivery of antiviral stocks for use in treatment and post-exposure prophylaxis (e.g., for direct contacts of infected patients).
- Developing a communication plan to explain the rationale for establishing these target groups.

Monitoring of the use of antiviral drugs

To ensure optimal use of antiviral drugs during an influenza pandemic, regional and local health departments and health care partners should collect data on:

- Distribution of national supplies of antiviral drugs.
- Occurrence of adverse events following administration of antiviral drugs.
- Effectiveness of treatment and prophylaxis.
- Development of drug resistance.

Antiviral effectiveness and antiviral drug resistance

Studies to evaluate the effectiveness of antiviral drug use during a pandemic may be conducted by the MoH, the Gromashevsky Institute of Infectious Diseases, and the National Influenza Center, in collaboration with regional and local health departments and other health care and academic partners.

Adverse events

Serious adverse events associated with the use of antiviral drugs for prophylaxis and treatment of influenza should be reported to the MoH and the Pharmacological Committee. These events will be investigated using established procedures.

Training

Regional and local health departments should enhance training and education efforts related to the use of antiviral drugs during a pandemic. Exercises that involve health care providers who will administer antivirals to

individual patients are essential to ensuring that distribution systems are in place and that roles and responsibilities are well understood. It may be useful, for example, to provide health care providers with educational materials and to practice emergency distribution of antiviral drugs to target groups.

Public health information

Regional and local health departments should develop and implement plans to educate the public, the medical community, and other stakeholders about:

- The role of antivirals in responding to pandemic influenza.
- The need to prioritize use of limited antiviral supplies for treatment and prophylaxis and rationale for the priority groups identified.
- The importance of appropriate use (i.e., using the drugs as prescribed and for the full number of days recommended) to minimize the development of drug resistance.

7. Influenza Control and Prevention in the Community

Infection-control strategies understood and implemented by both the public and the health care community are critical to reducing transmission of infectious disease entities, including novel respiratory viruses. Since the availability of pharmaceutical interventions is unlikely to be available during the early phase of the pandemic, emphasis on social distancing and personal hygienic practices must be continually reinforced before a pandemic, allowing such practices to become a “norm” and widely accepted and adopted as routine practice.

Careful attention to handwashing and respiratory etiquette has been suggested by mathematical models as a core management strategy for the control of respiratory pathogens. Isolation of the patient with febrile respiratory symptoms at home may represent the other key strategy to infection control. Persons in the early acute phase of an influenza illness are most infectious during this time period and should remain at home, away from work, school, and social and other public gatherings. Such a strategy will require reinforcement and support by family, friends, administrators and health care providers.

Other public health measures, such as school closings, cancellation of public events and gatherings, or closure of work sites may offer some benefit for community mitigation. However, such decisions may have substantial economic and societal impact that needs to be examined and discussed by governmental officials, health care providers, and the public before the pandemic for feasibility and acceptability.

With introduction of a novel virus with pandemic potential into Ukraine, containment activities will focus on public health and individual measures that attempt to slow and limit viral transmission. Regional and local health authorities should be guided by epidemiological data and MoH recommendations to implement the most appropriate of these measures in efforts to maximize impact on disease transmission and minimize impact on individual freedom of movement.

Containment measures applied to individuals (e.g., **isolation** and **quarantine**) may have limited impact on preventing the transmission of pandemic influenza, due to the short incubation period of the illness, the ability of persons with asymptomatic infection to transmit virus, and the possibility that early symptoms among people infected with a novel influenza strain may be non-specific.

Nevertheless, during the pandemic alert period with a less efficiently transmitted virus, these measures may have some effectiveness, slowing disease spread and allowing time for targeted use of medical interventions. In addition, implementing these measures early in a pandemic—when disease is first introduced into Ukraine and when the scope of the outbreak is focal and limited—may slow geographical spread and increase time for vaccine importation and implementation of other pandemic response activities. Later, when disease transmission is occurring in communities around the country, individual quarantine is much less likely to have an impact, and it is unlikely that implementation would be feasible. Emphasizing what individuals can do to reduce their risk of infection (e.g., practicing hand hygiene and cough etiquette) may be more effective disease-control tools. Consideration to **community-based containment measures** (e.g., **closing schools** or **restricting public gatherings**) may be warranted if there is widespread public acceptance for such strategies.

Although there are few data from past pandemics to guide containment efforts, the potential effectiveness of strictly implemented **movement restrictions** is supported by historical accounts. Today, much more extensive international and domestic travel and the interdependence between communities make it unlikely that strict restrictions could be effectively imposed and that, except in unique settings, communities could prevent outbreaks from occurring. Hence, travel restrictions, which would be resource-intensive, would not be suggested as a primary means of limiting further transmission of the virus.

The rest of this chapter provides recommendations to regional and local partners on the use of disease-containment strategies to prevent or decrease transmission at different phases of an influenza pandemic alert period and pandemic period.

Recommendations for the inter-pandemic and pandemic alert periods outline actions that may be taken during the earliest stage of a pandemic, when the first potential cases or disease clusters are detected. In this context, individual-level containment measures (e.g., patient isolation and identification, monitoring, quarantine of contacts) may be useful in slowing the spread of pandemic influenza and may be used without causing undue strain on limited public health and other health care resources.

Recommendations for the pandemic period focus on measures that may be beneficial and practical when there is a large number of cases and extensive viral transmission. In such a setting, individual-level measures may no longer be effective or feasible (e.g., if most contacts cannot be traced in time to prevent further exposures; if staffing constraints make contact tracing impractical). In this context, regional and local health departments might consider measures that decrease social contact within groups or whole communities (e.g., cancellation of public events, stay-at-home days, quarantine of groups of exposed persons, individual community quarantine). Effective use of community-containment measures during a pandemic will require periodic assessment of the properties of the pandemic virus and the distribution and clinical presentation of the cases. Guidance on containment recommendations will be updated as needed.

RECOMMENDATIONS FOR THE PANDEMIC ALERT PERIOD

1. Planning for disease control and containment

Key activities include:

- Identifying and engaging local authorities, representatives of SES, health care settings and departments, and non-traditional community partners (e.g., transportation workers) to participate in preparedness planning and pandemic influenza containment exercises and drills.
- Identifying potential isolation and quarantine facilities.
- Establishing procedures for medical evaluation and isolation of quarantined persons who exhibit signs of influenza-like illness (ILI).
- Developing tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine, as well as to family members of affected persons and other community members.
- Establishing procedures for delivering medical care, food, and services to persons in isolation or quarantine.
- Developing protocols for monitoring and enforcing quarantine measures.
- Ensuring that legal authorities and procedures exist for isolation and quarantine of exposed or infected persons and various levels of movement restrictions.
- Establishing procedures for issues related to employment compensation and job security.

2. Planning for influenza clinics and hotlines

An influenza pandemic is likely to put great stress on the health care delivery system, especially emergency departments. To prevent overwhelming demand from compromising the function of emergency departments, health care providers, organizations, and public health authorities should consider optimal methods for delivering assessment and care to individuals with probable influenza. This may include designating certain offices or clinics for screening, triage, and care of individuals with ILI. While the large majority of outpatient care during a pandemic will be provided by patients' usual medical care practitioners, health authorities may decide to establish special facilities (influenza clinics) to provide rapid medical assessment of potentially infected persons. These facilities would be part of efforts to control and contain small, well-defined disease clusters or located in geographical areas that are medically underserved. Ill persons would be encouraged to call special influenza hotlines that provide advice on whether to stay home or to seek medical care.

Local public health systems supporting hotlines as triage and information systems must be aware of the health care resources available in the community. These "community triage" efforts may help prevent hospitals from being overwhelmed with patients who do not require hospital-level care. Moreover, community triage efforts may also reduce the number of uninfected persons who mingle with infected persons at clinics and hospitals. Preparedness planning for establishing influenza hotlines includes:

- Establishing telephone hotline numbers that people can call.
- Identifying sites, staff members, and volunteers.
- Developing protocols for hotline staff members that include training components and triage decision trees or algorithms.
- Establishing communication systems with influenza clinics, if they are established.

3. Increasing public understanding of disease-containment measures

Community preparedness for implementation of both individual and community control measures can be enhanced during the inter-pandemic period by improving public understanding of the dangers of pandemic influenza and the benefits of communitywide disease-control practices, including personal hygiene and social-distancing measures that can prevent illness and death (Annex 1). Strategies for disease control will be facilitated by clear communication of the rationale for—and duration of—containment measures.

Local public health campaigns should explain how individual action (e.g., strictly complying with respiratory hygiene, staying home when ill) and community efforts can help reduce disease transmission. Education campaigns can describe the criteria, justification, role, method, and duration of quarantine and the social, medical, and psychological ways in which persons will be supported during the quarantine period. The campaigns can also explain that quarantine—which temporarily restricts personal movement—is a collective action implemented for the common good. Key messages prepared for use during the inter-pandemic period can be adapted for use during an actual pandemic.

4. Management of patients infected with novel strains of influenza and their contacts

A. Patient isolation

Infection-control precautions and procedures for isolating influenza patients are described in Chapters 9 and 10 of the *National Guidelines for Surveillance and Control of Human Cases of Avian Influenza*. The patient will be admitted to a hospital if clinically indicated, if public health needs require it, or if isolation at home or in a community facility cannot be achieved safely and effectively.

B. Management of close contacts

The MoH recommends identification of exposed individuals to minimize the transmission potential, acknowledging that in some situations—even at the earliest stages of a pandemic—it will not likely be possible to trace and quarantine close contacts of suspected or confirmed cases within 48 hours (the average incubation period for human influenza).

Close contact with a human case is defined as:

- Having intimate contact (within 1 meter).
- Living in the same household.
- Providing care.
- Having direct contact with respiratory secretions, body fluids, or excretions within 7 days of symptom onset.

Management of contacts includes prophylaxis with antiviral medications (see Chapter 9 of the *National Guidelines for Surveillance and Control of Seasonal and Avian Influenza in Humans*), passive or active monitoring without activity restrictions, and/or quarantine at home or in a designated facility (when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others).

Contacts should be monitored by a health facility worker at least once a day—by phone or in person—to assess symptoms and address any needs. Frequent monitoring will facilitate early detection, reducing the interval between the onset of symptoms and the isolation of the sick person. Monitoring/quarantine may be stopped as soon as the exposed contact has remained without signs or symptoms of disease for a complete incubation period for influenza disease (7 days after the last exposure). Contact monitoring form is provided in Chapter 7 of the above-mentioned surveillance guidelines.

5. Containment of small clusters of infection with novel strains of influenza

A. Targeted chemoprophylaxis

This intervention includes administration of antiviral treatment to persons with probable or suspected pandemic influenza and provision of drug prophylaxis to all likely exposed persons in the affected community. It requires an intensive effort to ensure coverage of the entire affected area, effective communication with the affected community, and rapid distribution and administration of antivirals because they are most effective when provided within 48 hours of symptom onset or when used as post-exposure prophylaxis before onset of illness. This measure is not likely to be useful once a pandemic is under way.

B. Influenza hotlines and clinics

During the later phases of a pandemic alert, in a community experiencing a disease cluster, a combination of self-assessment and establishment of influenza hotlines may be effective in detecting potential influenza disease and conducting “community triage” to direct persons with symptoms to the appropriate site and level of

care. This intervention includes asking all members of the affected community to monitor their symptoms. For example, all members of the community might be asked to take their temperature once or twice daily. Persons with temperatures above a certain level may be asked to proceed to a neighborhood influenza clinic, where they will be referred for isolation and care.

6. Managing travel-related risk of disease transmission

During the pandemic alert period, when there is limited transmission in other countries and potential for importation of cases into the Ukraine, the MoH, regional SES, and health departments might consider the following actions:

- Initiate enhanced disease surveillance at ports of entry.
- Provide guidance on infection-control procedures that can be implemented if needed, (e.g., separate the ill passenger from other passengers; provide the ill passenger with a mask or tissues to prevent viral spread via coughing).
- Isolate arriving ill passengers and quarantine their contacts as necessary.
- Collect information on all arriving passengers if notification is warranted (e.g., for antiviral administration, vaccination, or health monitoring).

7. Health information for travelers

The MoH will develop up-to-date notices for travelers to countries affected by novel influenza viruses reflecting risk for travelers and recommended preventive measures.

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

During the pandemic period, control measures such as contact tracing and quarantine applied to individuals may have limited impact on decreasing influenza transmission. In addition, individual-level measures may no longer be feasible. During this stage, regional SES and health departments should consider measures that decrease social contact within groups or whole communities and measures that individuals can take personally to decrease their risk of infection.

Border closures or severe travel restrictions are *not recommended* as a measure to prevent import of influenza into the country due to minimal effectiveness, massive cost, and indirect resource expenditures.

Entry screening is *not recommended*. The effectiveness of this intervention is minimal because many infected people may be pre-symptomatic or asymptomatic. At the same time, direct and indirect losses of material and human resources will be disproportionately high. These resources should be used to implement more effective interventions.

The recommendations to limit one's travel (except essential travel) during the pandemic period will not be effective either, unless most of the population adheres to this recommendation.

1. Patient isolation

As noted above, a patient with a suspected or confirmed case of pandemic influenza should be separated from persons who are well for 14 days since the onset of symptoms, using infection-control measures described in Chapters 9 and 10 of the *National Guidelines for Surveillance and Control of Human Cases of Avian Influenza*. If a surge in patients overwhelms health care capacity or if home isolation is not feasible, health departments may need to use alternative facilities for isolation of influenza patients and engage students of medical colleges and universities, irrespective of their form of ownership and departmental subordination, as well as students of medical academies and institutes of postgraduate education.

2. Management of contacts

Contact tracing, contact monitoring, and quarantine of close contacts **are not likely to be effective** once the pandemic has started to spread. Health authorities should consider community-based measures that reduce disease transmission by increasing social distance.

3. Community-based containment measures

Community-based containment measures can be grouped into two broad categories: measures that affect groups of exposed or at-risk persons (3.1–3.3) and measures that affect entire communities (3.4–3.7). Table 16 lists factors that may influence decisions on where and when to impose community-based containment measures.

TABLE 16. Factors That May Influence Decisions Surrounding Community-based Containment

CONSIDER MEASURES THAT AFFECT EXPOSED OR AT-RISK PERSONS WHEN:	CONSIDER MEASURES THAT AFFECT WHOLE COMMUNITIES WHEN:
There is limited disease transmission in the area	There is moderate to extensive disease transmission in the area
Most cases can be traced to contact with an earlier case or exposure to a known transmission setting (e.g., a school or a workplace)	Many cases can not be traced to contact with an earlier case or known exposure
The intervention is likely to slow the spread of infection or decrease the overall magnitude of an outbreak	Cases are increasing among contacts of influenza patients
	There is significant delay between the onset of symptoms and the isolation of cases because of the large number of ill persons

The analysis and decision should also take into consideration the following parameters:

Epidemiological information:

- Number of cases.
- Number of hospitalized cases.
- Mortality.

Health care resources:

- Hospital/facility bed capacity.
- Staff resources, patient–staff ratio.
- Number of all or absent staff members.
- Availability of ventilators and other respiratory equipment (in hospitals and in reserve).
- Availability of therapeutic medications (in hospitals and in reserve).

Public health resources:

- SES personnel (epidemiological and SES) to cases ratio.

Community compliance:

- Degree of compliance with voluntary isolation.
- Degree of movement out of the community.
- Degree of compliance with community-containment measures.

Measures That Affect Groups of Exposed or At-Risk Persons

These measures focused on increasing “social distance.”

3.1. Cancellation of mass social and entertainment events (e.g., concerts, sports events, movies, plays).

3.2. Closure of recreational facilities (e.g., sport clubs, youth clubs, swimming pools, educational societies, courses, art settings).

3.3. Quarantine of groups of exposed persons is *not recommended* considering the mass costs that result from a significant number of people off work and massive loss of productivity, as well as the impossibility of supervision, paying wages, or compensation to well people.

Measures That Affect Entire Communities

3.4. Community-wide infection-control measures. Throughout a pandemic, public health authorities will encourage all people with signs and symptoms of a respiratory infection, regardless of presumed cause, to:

- Cover the nose and mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects or materials.

All people, especially persons at high risk for complications of influenza, will be advised to avoid public gatherings (e.g., movies, religious services, public meetings) when pandemic influenza is in the community. They should also avoid going to other public areas (e.g., food stores, pharmacies).

Disposable surgical-type masks should be used by health care workers taking care of ill patients to prevent splashes and droplets of potentially infectious material (e.g., from coughs and sneezes) from reaching the mucous membranes of the health care worker’s nose or mouth. The benefit of wearing masks by well persons in public settings has not been established and is not recommended as a public health control measure at this

time. Nevertheless, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings. Mask use may be most important for persons who are at high risk for complications of influenza, those who are unable to avoid close contact with others, or those who must travel for essential reasons such as seeking medical care. Public education should be provided on how to use and dispose of masks appropriately. In addition, this education should emphasize that mask use is not a substitute for social distance or other personal protection measures.

3.5. Stay-at-home days. Stay-at-home days for well people can effectively reduce transmission without explicit activity restrictions. They may be instituted for an initial 10-day period, with final decisions on their duration based on an epidemiologic and social assessment of the situation. Implementation requires provision of recommendations to the public for acquisition and storage of necessary provisions, including type and quantity of supplies needed during such periods. Special consideration should be given to personnel who maintain primary functions in the community (e.g., law enforcement personnel, fire and rescue workers, transportation workers, and utility workers: electricity, water, gas, telephone, sanitation).

3.6. Closure of office buildings, shopping malls, schools, and public transportation. Closure of office buildings, stores, schools, and public transportation systems may be considered as community containment measures during a pandemic. All of these venues have significant impact on the community and workforce, however, so careful consideration should be given to their potential effectiveness, how they can most effectively be implemented, and how to maintain critical supplies and infrastructure while limiting community interaction. For example, when public transportation is cancelled, other modes of transportation must be provided for emergency medical services and medical evaluation.

School closures may be effective at decreasing spread of influenza and reducing the overall magnitude of disease in a community. In addition, the risk of infection and illness among children is likely to be decreased, which would be particularly important if the pandemic strain causes significant morbidity and mortality among children. During a pandemic period, parents should be encouraged to consider child care arrangements that do not result in large gatherings of children outside the school setting.

3.7. Widespread community restrictions (cordon sanitaire). Widespread community quarantine restricts travel into or out of an area circumscribed by a real or virtual “sanitary barrier” or “cordon sanitaire” except to authorized persons, such as public health or health care workers, and involves a legally enforceable action if necessary. Implementation of this measure during a pandemic **is not recommended** because it is unlikely to prevent the introduction or spread of pandemic disease much better than less restrictive “stay-at home” days, except in uncommon or unique circumstances (such as in a community able to be completely self-sufficient).

The decision to discontinue community-level measures must balance the need to lift individual movement restrictions against community health and safety. Premature removal of containment strategies can increase the risk of additional transmission.

Decisions should be based on evidence of improving local/regional control, such as:

- A consistent decrease in the number of cases.
- The presence of effective protective countermeasures (e.g., high coverage with a pandemic influenza vaccine).

General recommendations are to withdraw the most stringent or disruptive measures first (e.g., widespread community quarantine, “stay-at-home” days, mass transit interruptions).

8. Public Health Communications

Strategic communication activities based on scientifically derived risk-communication principles are an integral part of a comprehensive public health response before, during, and after an influenza pandemic. Effective communication guides the public, the news media, health care providers, and other groups in responding appropriately to outbreak situations and complying with public health measures.

This strategy will help regional and local communications professionals accomplish these goals:

- Provide timely, accurate, consistent, and appropriate information about pandemic influenza public health interventions.
- Emphasize the rationale and importance of adherence to public health measures that some people may consider intrusive (e.g., quarantine).
- Help set realistic expectations of public health and health care systems.
- Promptly address rumors, inaccuracies, and misperceptions.
- Minimize stigmatization that may occur during a pandemic.
- Acknowledge the anxiety, distress, and grief that people experience during long-term, major public health events such as pandemics.

Key risk communications concepts are presented below:

- When health risks are uncertain, as likely will be the case during an influenza pandemic, people need information about what is known and unknown as well as interim guidance to formulate decisions to help protect their health and the health of others.
- Coordination of message development and release of information among national, regional, and local health officials is critical to helping avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures.
- Guidance to community members about how to protect themselves and their family members and colleagues is an essential component of crisis management.
- Information provided to the public should be technically correct and succinct without seeming patronizing.
- Information presented during an influenza pandemic should minimize speculation and avoid over-interpretation of data or overly confident assessments of investigations and control measures.
- An influenza pandemic will generate immediate, intense, and sustained demand for information from the public, health care providers, policymakers, and news media. Health care workers and public health staff are likely to be involved in media relations and public health communications.
- It is essential to provide systematic (daily) information about the epidemiological situation, anti-epidemic measures, and effectiveness of pandemic response measures on websites of health care system institutions.

RECOMMENDATIONS FOR THE PANDEMIC ALERT PERIOD

During the pandemic alert period, national, regional, and local health communications professionals should focus on preparedness planning and on building flexible, sustainable communications networks to keep the public and other target groups updated about risks as the threat of a pandemic evolves. Actions fall into four major categories:

- Assessing communications capacity and needs.
- Conducting collaborative planning.
- Developing and testing standard procedures for disseminating information.
- Developing, testing, and disseminating locally tailored messages and materials.

Key responsibilities of the MoH include:

- Developing a communications strategy for pandemic influenza.
- Developing key messages and materials, conducting audience research, and testing messages.
- Coordinating pandemic influenza media messages to ensure consistency.
- Providing tools and resources through the MoH website and other avenues to help educate regional and local communications staff.
- Identifying and training lead spokespersons.
- Providing regional and local health agencies with guidance about developing and integrating communications aspects of preparedness plans.
- Working with regional and local administrations to incorporate communications preparedness as part of larger preparedness exercises.
- Distributing educational messages and materials about pandemic influenza and ways that people can protect themselves and their families.
- Addressing rumors and false reports regarding pandemic influenza threats and related issues.
- Coordinating international information exchange and communication strategies with WHO and other international partners as appropriate.

Key responsibilities of regional and local SES and health administrations are to:

- Assess and monitor readiness to meet communications needs in preparation for an influenza pandemic, including regular review and update of communications plans.
- Plan and coordinate emergency communication activities with private industry, education, and nonprofit partners.
- Identify and train lead subject-specific spokespersons.
- Provide public health communications staff with training on risk communications for use during an influenza pandemic.
- Develop and maintain up-to-date communications contacts.
- Participate in tabletop exercises and other collaborative preparations to assess readiness.
- Address rumors and false reports regarding pandemic influenza threats.
- Provide systematic (daily) information about the epidemiological situation, anti-epidemic measures, and effectiveness of pandemic response measures on websites of health care system institutions.

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

During the pandemic period, national, regional and local health communications professionals should focus on well-coordinated health communications to support public health interventions designed to help limit influenza-associated morbidity and mortality. Efforts should be directed to rapid sharing of appropriate, up-to-date information on what is known and what is unknown about the progression of the outbreak, the possible disruptions to routines and events, and contingency measures. Consistency in messaging across all levels is strongly advised.

Key responsibilities of the MoH are to:

- Coordinate pandemic influenza media messages to ensure consistency across various branches of the government.
- Coordinate communications activities with regional and local SES and health administrations.
- Promptly respond to rumors and inaccurate information to minimize concern, social disruption, and stigmatization.
- Coordinate international information exchange and communication strategies.

Key responsibilities of regional and local SES and health administrations are to:

- Contact key community partners and implement regular update briefings.
- As appropriate, implement and maintain community resources, such as hotlines and websites to respond to local questions from the public and professional groups.
- Tailor communications messages to specific local audiences.
- Obtain and track information daily on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. Use these reports to determine priorities among community outreach and education efforts and to prepare for updates to media organizations in coordination with national partners.
- Provide systematic (daily) information about the epidemiological situation, anti-epidemic measures, and effectiveness of pandemic response measures on websites of health care system institutions.

The MoH and its agencies are carrying out the following activities to implement this communications strategy.

Planning and assessment of current knowledge

- Determine what communications actions will be taken and by whom in advance of a pandemic and once a pandemic is confirmed by WHO.
- Identify the communication needs of various audience segments (e.g., what materials, resources, processes, and systems will be necessary).
- Conduct an assessment of current knowledge of pandemic influenza, which will include:
 - Literature review on pandemic flu, public health risks, and the public response to similar incidents (e.g., SARS).
 - Assess and analyze media and public baseline knowledge and attitudes.
 - Review current national and international efforts and programs to control the pandemic and work with international partners, such as WHO, to coordinate activities.

Formative audience research

- Define public perceptions, attitudes, and beliefs. Study these from a communications perspective to position information so that people listen to messages and act upon them.
- Conduct interviews and focus group discussions with general public.
- Conduct stakeholder interviews with health professionals and community leaders.

Message and material development

- Develop pre-pandemic and pandemic messages and materials based on risk communication principles, as outlined in WHO's *Outbreak Communication Guidelines*.
- Define audiences and develop materials for these audiences.
- Develop message maps and concepts appropriate for each phase of an influenza pandemic. Draft message maps for the general public are provided in Annex 2.
- Conduct focus groups with the general public to pretest event messages and/or materials.

Cross-government collaboration and coordination

- Lead the work of the interagency working group that includes communication, policy, and subject matter experts. This working group will review and share strategies and activities being undertaken by each agency and develop a coordinated communication approach. This working group will:
 - Develop consistent messages about pandemic influenza.
 - Ensure common understanding of MoH objectives and strategies.
 - Leverage existing activities and resources to address pandemic influenza.
 - Develop an inventory of current activities.
 - Identify gaps and make recommendations on how they can be filled.
 - Coordinate media planning, stakeholder outreach.
 - Coordinate communications systems as appropriate.

Training

- Conduct training for emergency risk communication among “master trainers,” who will then provide local training within their regions and districts.
- Conduct media training for spokespersons on public health crisis response and risk communication principles.
- Conduct risk communication and message development workshops for regional stakeholders to support effective risk communication during an outbreak of pandemic influenza.
- Run simulation exercises for members of regional interagency coordination committees (ICCs) on pandemic influenza to establish a clear alert system and to promote effective communication, coordination, and collaboration among agencies participating in the ICC during an outbreak of pandemic influenza.

9. Clinical Management of Suspected and Confirmed Pandemic Influenza Cases

Early identification and isolation of cases may help slow the spread of influenza within a community. Clinical awareness of novel or pandemic influenza disease can also benefit the individual patient, as rapid diagnosis and initiation of treatment can avert potentially severe complications.

GUIDELINES FOR THE PANDEMIC ALERT PERIOD

During the pandemic alert period, the primary goal of rapid detection is to quickly identify and contain cases of novel influenza. To limit the need to evaluate an overwhelming number of patients, the screening criteria should be specific, relying on a combination of clinical and epidemiologic features (see Annexes 6 and 9). Although febrile respiratory illnesses are one of the most common indications for medical evaluation, particularly during the winter, during the pandemic alert period, human cases of novel influenza are expected to be quite rare.

Criteria for detection of patients with possible novel influenza

Use the **WHO case definitions** for the pandemic alert period to identify suspected, probable, and confirmed cases.

Initial management of cases who meet the criteria for novel influenza

When a patient meets the above criteria for a suspected or probable case of novel influenza, health care personnel should initiate the following activities:

1. Implement infection control precautions for novel influenza as described in Annex 4.

Patients should be placed on droplet precautions for a minimum of 14 days, unless there is full resolution of illness or another etiology has been identified before that period has elapsed. Health care personnel should wear surgical or procedure masks on entering a patient's room, as well as gloves and goggles, when indicated. Patients should be admitted to a single-patient room, and patient movement and transport within the hospital should be limited to medically necessary purposes.

2. Notify the district SES without any delay, by any existing means of communication (telephone, fax, email, or in person) to facilitate initiation of case control measures.

3. Obtain clinical specimens for novel influenza A virus testing (see Annex 8)

Novel influenza can be confirmed by reverse transcriptase polymerase chain reaction (RT-PCR) or virus isolation from tissue cell culture with sub-typing.

Rapid influenza diagnostic tests and immunofluorescence may be used to detect seasonal influenza, but should not be used to confirm or exclude novel influenza during the pandemic alert period. Rapid influenza tests have relatively low sensitivity for detecting seasonal influenza, and their ability to detect novel influenza subtypes is unknown. The sensitivity of rapid diagnostic tests will likely be higher in specimens collected within two days of illness onset. Such tests can identify influenza A viruses but cannot distinguish between human infection with seasonal and novel influenza A viruses. A negative rapid influenza test result does not necessarily exclude human infection with either seasonal or novel influenza A viruses. A positive rapid influenza test result could

be a false positive or represent infection with either seasonal or novel influenza A viruses. Therefore, both negative and positive rapid influenza test and immunofluorescence results should be interpreted with caution, and RT-PCR testing for influenza viruses should be performed.

4. Evaluate alternative diagnoses

An alternative diagnosis should be based only on laboratory tests with high positive predictive value (e.g., polymerase chain reaction (PCR), blood culture, viral culture, pleural fluid culture, *Legionella* urinary antigen). If an alternate etiology is identified, the possibility of co-infection with a novel influenza virus may still be considered if there is a strong epidemiologic link to exposure to novel influenza.

Depending on the clinical presentation and the patient's underlying health status, other initial diagnostic testing might include:

- Chest radiograph.
- Complete blood count (CBC) with differential.
- Blood cultures.
- Sputum (in adults), tracheal aspirate, and pleural effusion aspirate (if an effusion is present), Gram stain and culture.
- Antibiotic susceptibility testing (encouraged for all bacterial isolates).
- Multivalent immunofluorescent antibody testing or PCR of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children.
- In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing (if available).
- If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
- Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected.

5. Decide on inpatient or outpatient management

The decision to hospitalize a suspected novel influenza case (e.g, A/H1N1) will be based on the physician's clinical assessment and assessment of risk and whether adequate precautions can be taken at home to prevent the potential spread of infection. Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. (See more details in Annex 5.)

6. Initiate antiviral treatment as soon as possible, even if laboratory results are not yet available.

Clinical trials have shown that these drugs can decrease the duration of illness due to seasonal influenza by several days when they are initiated within 48 hours of illness onset. The clinical effectiveness of antiviral drugs for treatment of novel influenza is unknown, but it is likely that the earlier treatment is initiated, the greater the likelihood of benefit. During the pandemic alert period, available virus isolates from any case of novel influenza will be tested for resistance to the currently licensed antiviral medications. See Chapter 6 for current antiviral information and treatment strategies.

7. Identification of potentially exposed contacts

All persons in close contact with the case-patient at any time beginning one day before the onset of illness are considered at risk. Close contacts might include household and social contacts, family members, workplace or school contacts, fellow travelers, and/or health care providers.

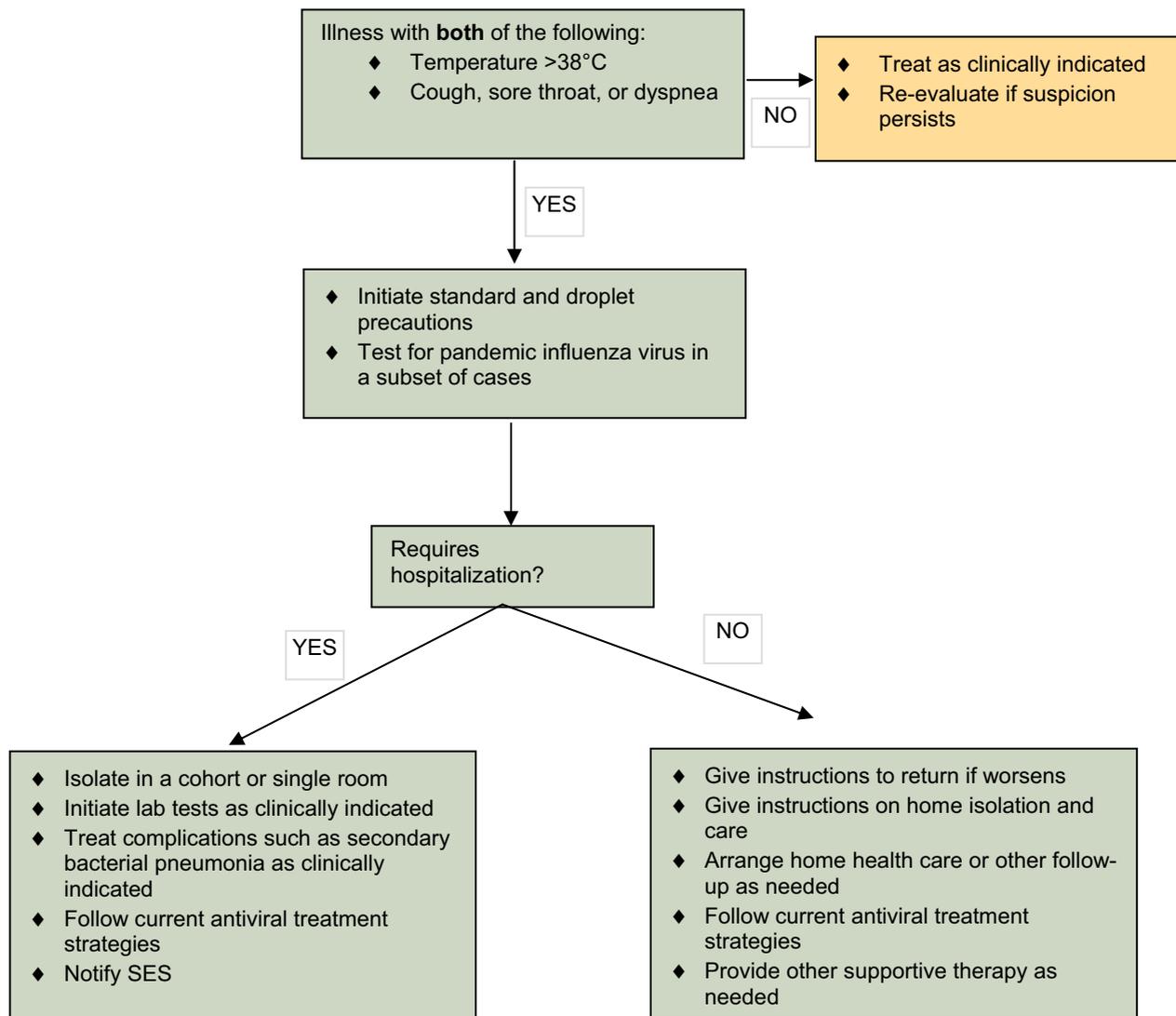
TABLE 17. Management of Patients who Test for Seasonal and Novel Influenza

Test positive for novel influenza	Continue antiviral treatment and all isolation and infection control precautions, and isolate patients with novel influenza from seasonal influenza patients.
Test positive for seasonal influenza	Maintain standard and droplet precautions, and continue antiviral treatment for a full recommended treatment course.
Test negative for novel influenza	<p>The sensitivity of the currently available tests for detecting novel influenza viruses in clinical specimens is high, but false-negative test results may occur. If test results are negative but the clinical and epidemiologic suspicion remains high, continue antiviral treatment and isolation procedures.</p> <p>Antiviral therapy and isolation precautions for novel influenza may be discontinued on the basis of an alternative diagnosis. The following criteria may be considered for this evaluation:</p> <ul style="list-style-type: none"> • Absence of strong epidemiologic link to known cases of novel influenza. • Alternative diagnosis confirmed using a test with a high positive-predictive value. • Clinical manifestations explained by the alternative diagnosis.

GUIDELINES FOR THE PANDEMIC PERIOD

During the pandemic period, the primary goal of rapid detection is to appropriately identify and triage cases of pandemic influenza. During this period, outpatient clinics and emergency departments might be overwhelmed with suspected cases, restricting the time and laboratory resources available for evaluation. In addition, if the pandemic influenza virus exhibits transmission characteristics similar to those of seasonal influenza viruses, illnesses will likely spread throughout the community too rapidly to allow the identification of obvious exposures or contacts. Evaluation will therefore focus predominantly on clinical and basic laboratory findings, with less emphasis on laboratory diagnostic testing (which may be in short supply) and epidemiologic criteria. The main features of clinical management during the pandemic period are outlined below.

FIGURE 1. Case detection and clinical management during the pandemic period.



Criteria for detection of patients with possible novel influenza

A fever $>38^{\circ}\text{C}$ plus one of the following: sore throat, cough, or dyspnea.

Once pandemic influenza has arrived in a particular locality, clinical criteria will be sufficient for classifying the patient as a suspected pandemic influenza case. An exposure history will be marginally useful for clinical management when disease is widespread.

Initial management of cases who meet the criteria for pandemic influenza

When a patient meets the above criteria for a suspected case of pandemic influenza, health care personnel should initiate the following activities:

1. Urgently report the case to the district SES (See Chapter 12).

2. Decide on inpatient or outpatient management.

The decision to hospitalize a suspected pandemic influenza case will be based on the physician's clinical assessment of the patient (temperature, pulse, blood pressure, respiratory rate, skin color, neurologic symptoms, chest x-ray, electrocardiography (EKG), laboratory studies).

An unstable patient will be considered a high priority for admission, but patients with the following high-risk conditions might also warrant special attention, such as observation or close follow-up, even if disease is mild:

- More than 65 years old.
- Pregnancy.
- Chronic lung disease (e.g., chronic obstructive pulmonary disease, cystic fibrosis, asthma).
- Congestive heart failure.
- Renal failure.
- Immuno-suppression (due to underlying disease or therapy).
- Hematological abnormalities (anemia, hemoglobinopathies).
- Diabetes.
- Hepatic disease.
- Socially unable to cope (i.e., without personal support at home, such patients may need an alternative center of care). An alternate care arrangement may also be considered if a high-risk individual lives in the same household as the influenza patient.
- Patients on long-term acetylsalicylic acid therapy (increased risk of Reye's syndrome).

Danger signs in children two months to five years old include:

- Difficulty breathing (chest indrawing, nasal flaring, grunting, stridor, or fast breathing).
- Cyanosis.
- Unable to breastfeed or drink.
- Vomiting everything (continuous vomiting).
- Lethargic, unconscious, or confused.
- Convulsions/seizures.

- Full fontanelle.
- Stiff neck, photophobia.

When these danger signs are present in infants younger than two months old, they suggest very severe disease and may be life threatening.

Additional danger signs in children under two months old include:

- The child stopped feeding well (less than half of the usual amount of fluids).
- Wheezing.
- Grunting or stridor when calm.
- Severe chest indrawing.
- Abnormally sleepy or difficult to wake.
- Poor circulation: sudden pallor, cold legs up to the knees.
- Fewer than four wet diapers in 24 hours.
- Signs of pneumonia.

The following clinical findings shown in Table 18 require additional laboratory studies to assess the patient's condition more accurately.

TABLE 18. Clinical Findings Requiring Additional Laboratory Studies

PRIMARY ASSESSMENT	RESULTS REQUIRING ADDITIONAL OR LAB STUDIES
Temperature	< 35°C or > 39°C
Respiratory rate	< 2 months = >60 breaths per minute 2-12 months = >50 breaths per minute > 12 months to 5 years = >40 breaths per minute > 5 years = > 30 breaths per minute
Skin color and temperature (lips, hands)	Cyanosis, sudden pallor, cold legs up to the knees
Chest signs and symptoms (pain may be difficult to detect in young children)	Chest indrawing, wheezing, grunting, inquire for chest pain
Mental status	Lethargic or unconscious, confused
Function	Unable to breastfeed or drink, persistent vomiting (>2-3 times/24 hr.) Inability to function independently
Neurologic symptoms and signs	Convulsions, full fontanelle, stiff neck, photophobia
Oxygen saturation	< 90% room air

Results of complementary laboratory studies requiring supervision or hospital admission are presented below in Table 19.

Note: Not all tests will be needed for all patients, and clinical judgment should be used, particularly if resources are scarce.

TABLE 19. Results of Complementary Laboratory Studies Requiring Supervision or Hospital Admission

COMPLEMENTARY LABORATORY STUDIES	RESULTS REQUIRING SUPERVISION OR ADMISSION
CBC	Hgb < 8.0 g/dL WBC < 2,5*10 ⁹ cells/L or > 12*10 ⁹ cells/L Bands >15% Platelets < 50*10 ⁹ cells/L
Electrolytes	Na < 125 mmol/L or > 148 mmol/L K < 3 mmol/L or > 5.5 mmol/L
BUN, creatinine	BUN < 10.7 mmol/L Creatinine < 150 mmol/L
Glucose	< 3mmol/L or > 13.9 mmol/L
Blood gases, O ₂ saturation	Blood gases pO ₂ < 60 room air O ₂ saturation < 90% room air
Chest x-ray	Abnormal, consistent with pneumonia or with congestive heart failure
EKG	Evidence of ischemia, new arrhythmia

Home management with follow-up might be appropriate for well-appearing young children with fever alone. Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed of with other household waste (See Annex 5). Infection within the household may be minimized if a primary caregiver is designated; ideally, someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be of benefit. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap.

Recommended **instructions for self-care of subjects 18 + years** (with no co-morbidity) sent home:

- Paracetamol (adults or children), ibuprofen or acetylsalicylic acid (adults only), to treat myalgia, hyperthermia and arthralgia.
- Fluids.
- Bed rest.
- Drink hot liquids.
- Decongestants.
- Do not smoke or expose to second-hand smoke.
- Seek help if the following symptoms develop:
 - Increasing shortness of breath.
 - New pleuritic, chest pain.
 - New purulent sputum.
 - Persistent vomiting.

Children without co-morbidities presenting with uncomplicated influenza infection may be sent home with parental education regarding:

- Maintaining hydration.
- Fever management (do not use salicylic acid).
- Watching for signs of deterioration, failure to improve.
- When to return.
- Follow-up plan if necessary.
- Mothers of young infants should be told to return to the health center immediately if the child worsens or does not feed well, or if breathing becomes difficult.
- Immunization/prophylactic treatment of high-risk contacts in the household.
- Infection control practices (see above).

3. If the patient is hospitalized, implement infection control precautions for pandemic influenza, including respiratory hygiene/cough etiquette. Place the patient on droplet precautions for a minimum of 5 days from the onset of symptoms. Health care personnel should wear surgical or procedure masks when entering a patient's room, as well as gloves and gowns when indicated, as per standard precautions (Annex 4). Patient movement and transport outside the isolation area should be limited to medically necessary purposes.

4. Obtain clinical specimens for general evaluation, as clinically indicated.

Diagnostic testing might include:

- Chest radiograph.
- Complete blood count (CBC) with differential.
- Blood cultures.
- Sputum (in adults), tracheal aspirate, and pleural effusion aspirate (if an effusion is present), Gram stain and culture.
- Antibiotic susceptibility testing (encouraged for all bacterial isolates).
- Multivalent immunofluorescent antibody testing or PCR of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children.
- In adults with radiographic evidence of pneumonia, Legionella and pneumococcal urinary antigen testing (if available).
- If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
- Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected.

Once pandemic influenza has arrived in a community, influenza testing will likely not be needed for most patients. Laboratory testing in conjunction with health departments will likely be performed in a subset of pandemic influenza cases, however, as part of ongoing virologic surveillance (see Chapter 12—Surveillance).

Guidelines for pandemic influenza virus testing are provided in Annex 8.

As with seasonal influenza, RT-PCR and virus isolation from tissue culture will be the most accurate methods for diagnosing pandemic influenza. Rapid influenza tests have relatively low sensitivity for detecting seasonal and pandemic influenza, so their use is not recommended at this time.

5. Clinical management

In addition to the use of antiviral drugs, clinical management of severe influenza should address supportive care and the rapid identification and treatment of secondary complications. Children aged <18 years with suspected or confirmed pandemic influenza should not be treated with aspirin or other salicylate-containing products because of an increased risk of Reye's syndrome (characterized by acute encephalopathy and liver failure) in this age group.

Post-influenza bacterial community-acquired pneumonia will likely be a commonly encountered complication. It might affect approximately 10 percent of persons with pandemic influenza, based on data from previous influenza pandemics. Assuming that pandemic influenza will affect about 15–35 percent of the Ukraine population, 0.7 to 1.7 million cases of post-influenza bacterial community-acquired pneumonia could occur.

Post-influenza bacterial community-acquired pneumonia often presents as a return of fever, along with a productive cough and pleuritic chest pain, after an initial improvement in influenza symptoms over the first few days. Findings include lobar consolidation on chest x-ray and, in adults, sputum smear positive for leukocytes and bacteria. The most common etiologies of post-influenza bacterial pneumonia are *Streptococcus pneumoniae*, *Staphylococcus aureus*, group A *Streptococcus*, and *Haemophilus influenzae*. Primary viral pneumonia, with abrupt onset and rapid progression, is more common than bacterial pneumonia in children, yet rare in adults. Physical and radiologic findings in viral pneumonia are consistent with interstitial and/or alveolar disease and include bilateral inspiratory crackles and diffuse infiltrates. Mixed viral-bacterial pneumonia is slightly more common than primary viral pneumonia, but they are often indistinguishable. Bacterial pathogens in mixed infections are similar to those found in secondary bacterial pneumonias. Droplet and standard precautions are currently recommended for community-acquired pneumonia of bacterial etiology.

As with pandemic influenza, the decision to hospitalize for post-influenza bacterial community-acquired pneumonia during the pandemic period will rely on the physician's clinical assessment of the patient as well as availability of personnel and hospital resources. Antimicrobial therapy will have to take into consideration culture and susceptibility testing of appropriate clinical specimens and by awareness of local antibiotic susceptibility patterns.

10. Health Care Planning

An influenza pandemic will place a huge burden on the country's health care system. Estimates based on extrapolation of the 1957 and 1968 pandemics suggest that there could be about 120,000 hospitalizations and 6 million outpatient visits. Estimates based on extrapolation from the more severe 1918 pandemic suggest that substantially more hospitalizations and deaths could occur. Pre-pandemic planning by health care facilities is therefore essential to provide quality, uninterrupted care to ill persons and to prevent further spread of infection. Despite planning and preparedness, however, in a severe pandemic it is possible that shortages, for example, of mechanical ventilators, will occur. Medical care standards may need to be adjusted to most effectively provide care and save as many lives as possible.

Flusurge 2.0 software developed by the US Centers for Disease Control and Prevention was used to estimate the impact of an influenza pandemic on hospital surge capacity in Ukraine.

The following assumptions were used:

Total number of staffed non-ICU beds in the country	406,870
Total number of staffed ICU beds	5,895
Total number of ventilators available	2,000
Pandemic duration (weeks)	8
Attack rate (percent of population that will become ill due to pandemic influenza)	25
Proportion of influenza patients who will require hospitalization (percent)	1.5
Average length of non-ICU hospital stay for influenza-related illness (days)	5
Average length of ICU stay for influenza-related illness (days)	10
Average length of ventilator usage for influenza-related illness (days)	10
Average proportion of admitted influenza patients who will need ICU care (percent)	15
Average proportion of admitted influenza patients who will need ventilators (percent)	5
Average proportion of influenza deaths assumed to be hospitalized (percent)	70
Daily percentage increase of cases arriving compared to previous day (percent)	3

The results are presented in Table 20 below. They are based on the **most likely scenario**.

TABLE 20. Pandemic Influenza Impact

PANDEMIC INFLUENZA IMPACT		WEEKS									
		1	2	3	4	5	6	7	8	9	10
Hospital admission	Weekly admissions	10,426	17,377	26,065	33,016	33,016	26,065	17,377	10,426		
	Peak admissions/day				5,145	5,145					
Hospital capacity	# of flu patients in hospital	7,664	12,773	19,160	24,269	25,130	22,088	16,939	11,112		
	% of hospital capacity needed	2%	3%	5%	6%	6%	5%	4%	3%		
ICU capacity	# of influenza patients in ICU	1,564	3,317	5,093	6,727	7,281	7,083	5,628	3,886		
	% of ICU capacity needed	27%	56%	86%	114%	124%	120%	95%	66%		
Ventilator capacity	# of flu patients on ventilators	521	1,106	1,698	2,242	2,427	2,361	1,876	1,295		
	% usage of ventilator capacity	26%	55%	85%	112%	121%	118%	94%	65%		
Deaths	# of deaths from influenza			2,153	3,588	5,382	6,817	6,817	5,382	3,588	2,153
	# of influenza deaths in hospital			1,507	2,512	3,767	4,772	4,772	3,767	2,512	1,507

Total hospital admissions—174,000 (most likely); Total deaths—36,000 (most likely); Estimates for the most severe (1918-type) scenario may need to be increased 5–10-fold

Notes:

- 1) Number of influenza patients in hospital, in ICU, and number of influenza patients on ventilators are based on maximum daily number in a relevant week.
- 2) Hospital capacity used, ICU capacity used, and percent usage of ventilator are calculated as a percentage of total capacity available.
- 3) The maximum number of influenza patients in the hospital each week is lower than the number of weekly admissions because we assume a 5-day stay in general wards.

Based on these projections, Ukraine is likely to experience a moderate shortage of intensive case beds and ventilators beginning in the third week of a pandemic.

RECOMMENDATIONS FOR THE PANDEMIC ALERT PERIOD

Planning for provision of care in hospitals

All health care facilities in the country must be prepared for the rapid pace of pandemic influenza. Hospitals should be equipped and ready to care for a limited number of patients infected with a pandemic influenza virus, or other novel strains of influenza, as part of normal operations; and a large number of patients in the event of escalating transmission of pandemic influenza.

Hospital response plans for pandemic influenza should:

- Outline administrative measures for detecting the introduction of pandemic influenza, preventing its spread, and managing its impact on the facility and the staff.
- Incorporate planning suggestions from regional health departments and SES.
- Identify criteria and methods for measuring compliance with response measures (e.g., infection control practices, case reporting, patient placement, health care worker illness surveillance).
- Review and update inventories of supplies that will be in high demand during an influenza pandemic.
- Review procedures for the receipt, storage, and distribution of assets received from national stockpiles.

Hospitals should consider using “table top” simulations or other exercises to test response capabilities. Planning should be carried out by an internal committee led by the facility head and should consider concurrent public health, community, and health care planning efforts at the local and regional levels, which may require input of representatives of the local health administration and SES. Copies of draft pandemic influenza plans from other local or regional hospitals may be used as models.

The elements of a hospital influenza pandemic preparedness plan discussed below are listed in the Hospital Preparedness Checklist provided in Annex 7.

Hospital surveillance for novel strains of influenza

During the pandemic alert period, health care providers and health care facilities play an essential role in surveillance for suspected cases of infection with novel strains of influenza and should be on the alert for such cases. Novel strains may include avian or animal influenza strains that can infect humans (like avian influenza

A/H5N1) and new or re-emergent human viruses that cause cases or clusters of human disease. Hospitals should be guided by surveillance procedures outlined in the “National Guidelines for Surveillance and Control of Human Cases of Avian Influenza.” WHO Case Definitions for Human Infections with Influenza A (H5N1) for detection of cases during the inter-pandemic and pandemic alert periods are also presented in Annex 6.

Hospital communications

Each hospital should work with SES and other government officials, neighboring health care facilities, the lay public, and the press to ensure rapid and ongoing information-sharing during an influenza pandemic.

External communications

- Assign responsibility for external communication about pandemic influenza; identify a person responsible for updating SES reporting, a clinical spokesperson, and a media spokesperson.
- Identify points of contact among local media (e.g., newspaper, radio, television) representatives and public officials and community leaders.
- With guidance from regional SES and health administration, determine the methods, frequency, and scope of external communications.
- Determine how communications between local and regional health care facilities will be handled.
- Identify key topics for ongoing communication (e.g., staffing needs, bed capacity, durable and consumable medical equipment and device needs, supplies of influenza vaccine and antiviral drugs).
- Assign responsibility within the hospital for communications with other health care facilities.
- Consult with local SES and health administration officials regarding the hospital’s role in communicating with the media and the public.
- Determine the type of hospital-specific communications (e.g., press releases, community bulletin board) that might be needed, and develop templates for these materials.
- Determine how public inquiries will be handled (e.g., refer callers to the SES or health administration; provide technical support for handling calls).
- Identify the types of information that will be provided by the hospital and the types of inquiries that will be referred to local SES and health administration.

Internal communications

Determine how to keep administrators, personnel (including clinical, admissions, and triage staff), patients, and visitors informed of the ongoing impact of pandemic influenza on the facility and on the community.

Education and training

Each hospital should develop an education and training plan that addresses the needs of staff, patients, family members, and visitors. Hospitals should assign responsibility for coordination of the pandemic influenza education and training program and identify appropriate training materials.

Staff Education

- Identify educational resources for clinicians, including MoH guidelines, regional and local SES and health administration programs, and training materials from various sources.
- General topics for staff education should include:
 - Prevention and control of influenza.
 - Implications of pandemic influenza.
 - Benefits of annual influenza vaccination.

- Role of antiviral drugs in preventing disease and reducing rates of severe influenza and its complications.
 - Infection control strategies for the control of influenza, including respiratory hygiene/cough etiquette, hand hygiene, standard precautions, droplet precautions, and, as appropriate, airborne precautions.
- Hospital-specific topics for staff education should include:
 - Policies and procedures for the care of pandemic influenza patients, including how and where pandemic influenza patients will be cohorted.
 - Pandemic staffing contingency plans, including how the facility will deal with illness in personnel.
 - Policies for restricting visitors and mechanisms for enforcing these policies.
 - Reporting to the district SES suspected cases of infection caused by novel influenza strains during the pandemic alert period
 - Measures to protect family and other close contacts.
 - Establish a schedule for training/education of clinical staff and a mechanism for documenting participation. Consider using monthly specialist meetings and other educational venues as opportunities for training on pandemic influenza.
 - Cross-train clinical personnel, including outpatient health care providers, who can provide support for essential patient-care areas.
 - Train admission department and triage staff to detect patients with influenza symptoms and to implement immediate containment measures to prevent transmission.
 - Supply nurses with guidance for providing psychological support to patients and hospital personnel during an influenza pandemic. Obtain educational materials on: signs of distress, traumatic grief, stress management and effective coping strategies, building and sustaining personal resilience, and behavioral and psychological support resources.
 - Develop a strategy for “just-in-time” training of non-clinical staff who might be asked to assist (e.g., help with triage, distribute food trays, transport patients), clinical personnel, students, retired health professionals, and volunteers who might be asked to provide basic nursing care (e.g., bathing, monitoring of vital signs); and other potential in-hospital caregivers (e.g., family members of patients).

Education of patients, family members, and visitors

- Identify appropriate materials for educating patients, family members, and hospital visitors during an influenza pandemic.
- Develop a plan for distributing information to all persons who enter the hospital. Identify staff to answer questions about procedures for preventing influenza transmission.

Triage, clinical evaluation, and admission procedures

During the peak of a pandemic, hospital emergency departments and outpatient offices might be overwhelmed with patients seeking care. Therefore, triage should be conducted to:

- 1) Identify persons who might have pandemic influenza.
- 2) Separate them from others to reduce the risk of disease transmission.
- 3) Identify the type of care they require (i.e., home care or hospitalization)—see Chapter 9.

- Develop a strategy for triage, diagnosis, and isolation of possible pandemic influenza patients. Consider the following triage mechanisms:
 - Using phone triage to identify patients who need emergency care and those who can be referred to a polyclinic or other non-urgent facility.
 - Assigning separate waiting areas for persons with respiratory symptoms.
 - Assigning a separate triage evaluation area for persons with respiratory symptoms.
 - Assigning a “triage coordinator” to manage patient flow, including deferring or referring patients who do not require emergency care.
- Review procedures for the clinical evaluation of patients in the emergency department and in polyclinics to facilitate efficient and appropriate disposition of patients.
- Review admission procedures and streamline them as needed to limit the number of patient encounters in the hospital (e.g., direct admission to an inpatient bed).

Facility access

Hospitals should determine in advance the criteria and procedures they will use to limit access to the facility if pandemic influenza spreads through the community.

- Define “essential” and “non-essential” visitors with regard to the hospital and the population served. Develop protocols for limiting non-essential visitors.
- Develop criteria or “triggers” for temporary closing of the hospital to new admissions and transfers. The criteria should consider staffing ratios, isolation capacity, and risks to non-influenza patients. As part of this effort, hospital administrators should: 1) determine who will make decisions about temporary closings and how and to whom these decisions will be communicated, and 2) consult with the regional health administration on their roles in determining policies for hospital admissions and transfers.
- Determine how to enforce access controls. Consider meeting with local militia officials in advance to determine what assistance, if any, they can provide. Note that local militia might be overburdened during a pandemic and have limited ability to assist health care facilities with security services.

Occupational health

The ability to deliver quality health care is dependent on adequate staffing and optimum health and welfare of staff. During a pandemic, the health care workforce will be stressed physically and psychologically. Like others in the community, many health care workers will become ill. Health care facilities must be prepared to:

- 1) Protect healthy workers from exposures in the health care setting through the use of recommended infection control measures.
- 2) Evaluate and manage symptomatic and ill health care personnel.
- 3) Distribute and administer antiviral drugs and/or vaccines to health care personnel, as recommended by the MoH.
- 4) Provide psychosocial services to health care workers and their families to help sustain the workforce.

Managing ill workers

- Establish a plan for detecting signs and symptoms of influenza in health care personnel before they report for duty.
- Consider assigning staff who are recovering from influenza to care for influenza patients.

Time-off policies

Ensure that time-off policies and procedures consider staffing needs during periods of clinical crisis.

Reassignment of high-risk personnel

Establish a plan to protect personnel at high risk for complications of influenza (e.g., pregnant women, immuno-compromised persons) by reassigning them to low-risk duties (e.g., non-influenza patient care, administrative duties that do not involve patient care).

Psycho-social health services

- Identify resources for counseling of health care personnel during a pandemic. Counseling should include measures to maximize professional performance and personal resilience.
- Develop a strategy for housing and feeding health care personnel who might be needed on-site for prolonged periods.

Surge capacity

Health care facilities should plan ahead to address emergency staffing needs and increased demand for isolation wards, ICUs, assisted-ventilation services, and consumable and durable medical supplies.

Staffing

- Assign responsibility for the assessment and coordination of staffing during an emergency.
- Estimate the minimum number and categories of personnel needed to care for a single patient or a small group of patients with influenza complications on a given day.
- Determine how the hospital will meet staffing needs as the number of patients with pandemic influenza increases and/or health care and support personnel become ill or remain at home to care for ill family members. Consider the following options:
 - Assigning patient-care responsibilities to clinical administrators.
 - Recruiting retired health care personnel.
 - Using trainees (e.g., medical and nursing students).
 - Using patients' family members in an ancillary health care capacity.
- Collaborate with local and regional health administrations to achieve adequate staffing of the hospital during an influenza pandemic (e.g., decide whether and how staff will be shared with other health care facilities, determine how salary issues will be addressed for employees shared between facilities, and consider ways to increase the number of home health care staff to reduce hospital admissions during the emergency).
- Increase cross-training of personnel to provide support for essential patient-care areas at times of severe staffing shortages (e.g., in emergency departments, ICUs, or medical units).
- Create a list of essential-support personnel titles (e.g., engineering services, food services, administrative, clerical, medical records, information technology, laboratory) that are needed to maintain hospital operations.
- Create a list of non-essential positions that can be re-assigned to support critical hospital services or placed on administrative leave to limit the number of persons in the hospital.

Bed capacity

- Review and revise admissions criteria for times when bed capacity is limited.
- Develop policies and procedures for expediting the discharge of patients who do not require ongoing inpatient care (e.g., develop plans and policies for transporting discharged patients home or to other facilities; create a patient discharge holding area or discharge lounge to free-up bed space).
- Work with polyclinics to arrange at-home follow-up care for patients who have been discharged early and for those whose admission was deferred because of limited bed space.
- Develop criteria or “triggers” for temporarily canceling elective surgical procedures and determining what and where emergency procedures will be performed during a pandemic. Determine which elective procedures will be temporarily postponed.
- Determine whether patients who require emergency procedures will be transferred to another hospital.
- Discuss with local and regional health administrations how bed availability, including available ICU beds and ventilators, will be tracked during a pandemic.
- Consult with hospital licensing agencies on plans and processes to expand bed capacity during times of crisis. These efforts should take into account the need to provide staff and medical equipment and supplies to care for the occupant of each additional hospital bed.
- Identify areas of the facility that could be vacated for use in cohorting influenza patients. Consider developing criteria for shifting use of available space based on ability to support patient-care needs (e.g., access to bathroom and shower facilities). Consider developing cohorting protocols based on a patient’s stage of recovery and infectivity.

Consumable and durable supplies

- Evaluate the existing system for tracking available medical supplies in the hospital to determine whether it can detect rapid consumption, including items that provide personal protection (e.g., gloves, masks). Improve the system as needed to respond to growing demands for resources during an influenza pandemic.
- Consider stockpiling enough consumable resources such as masks (see Table 21) for the duration of a pandemic wave (6–8 weeks).
- Assess anticipated needs for consumable and durable resources, and determine a trigger point for ordering extra resources. Estimate the need for respiratory care equipment (including mechanical ventilators), and develop a strategy for acquiring additional equipment if needed. Neighboring hospitals might consider developing inventories of equipment and determining whether and how that equipment might be shared during a pandemic.
- Anticipate needs for antibiotics to treat bacterial complications of influenza, and determine how supplies can be maintained during a pandemic.
- Establish contingency plans for situations in which primary sources of medical supplies become limited. Consult with regional health administrations about access to regional stockpiles during an emergency.

TABLE 21. Examples of Consumable and Durable Supply Needs for the Pandemic Period

CONSUMABLE RESOURCES	DURABLE RESOURCES
Hand hygiene supplies (antimicrobial soap and alcohol-based, waterless hand hygiene products) – ensure a standard 3-month supply Disposable respirator N95, surgical and procedure masks – ensure a standard 3-month supply Face shields (disposable and reusable) – ensure a standard 3-month supply Gowns – additional 50% Gloves – ensure a standard 3-month supply Facial tissues – in the admission department and all wards Morgue packs – at least 8 per 10,000 population	Ventilators – at least 2 per 10,000 population Respiratory care equipment – at least 2 per 10,000 population Beds – at least 40 per 10,000 population IV pumps – at least 120 per 10,000 population

Continuation of essential medical services

- Address how essential medical services will be maintained for persons with chronic medical problems served by the hospital (e.g., hemodialysis patients).
- Develop a strategy for ensuring uninterrupted provision of medicines to patients who might not be able to (or should not) travel to hospital pharmacies.

Security

Health care facilities should plan for additional security. This may be required given the increased demand for services and the possibility of long wait times for care, and because triage or treatment decisions may lead to people not receiving the care they think they require.

Mortuary issues

To prepare for the possibility of mass fatalities during an influenza pandemic, hospitals should do the following:

- Assess current capacity for refrigeration of deceased persons.
- Discuss mass fatality plans with local and regional health administrations.
- Work with local health officials to identify temporary morgue sites.
- Determine the scope and volume of supplies (e.g., body bags) needed to handle an increased number of deceased persons.

Planning for provision of care in non-hospital settings

Planning and effective delivery of care in outpatient settings is critical. Appropriate management of outpatient influenza cases will reduce progression to severe disease and thereby reduce demand for inpatient care. A system of effective outpatient management will have several components. Telephone hotlines should be established to provide advice on whether to stay home or to seek care. Most persons who seek care can be managed appropriately by outpatient providers.

Hospitals should develop a strategy for triage of potential influenza patients, which may include establishing a site outside of the admission department where persons can be seen initially and identified as needing emergency care or may be referred to an outpatient care site for diagnosis and management. Finally, polyclinics can provide follow-up for those managed at home, decreasing potential exposure of the public to persons who are ill and may transmit infection. Issues to address include:

- Plans to establish and staff telephone hotlines.
- Development of training modules, protocols, and algorithms for hotline staff.
- Plans on the organization of care for influenza patients; materials and strategies to inform patients on care-seeking during a pandemic.
- Plans that include education, staffing, triage, infection control in waiting rooms and other areas, and communication with hospitals and SES.

Alternative care sites

If an influenza pandemic causes severe illness in large numbers of people, hospital capacity might be overwhelmed. In that case, communities will need to provide care in alternative sites (e.g., convention centers, re-assigned hospital departments, etc.). The selection of alternative care sites for pandemic influenza should specifically address the following infection control and patient-care needs:

- Bed capacity and spatial separation of patients.
- Facilities and supplies for hand hygiene.
- Lavatory and shower capacity for large numbers of patients.
- Food services (refrigeration, food handling, and preparation).
- Medical services.
- Staffing for patient care and support services.
- Personal Protective Equipment (PPE) supplies.
- Cleaning/disinfection supplies.
- Common everyday services (linen, laundry, waste).

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

Following initial detection of pandemic influenza in the country, the facility's pandemic influenza response plan should be activated.

The main first steps will be to:

- Establish contact with key SES, health care, and community partners.
- Implement hospital surveillance for pandemic influenza, including detection of patients admitted for other reasons who might be infected with the pandemic strain of influenza virus.
- Implement a system for early detection and antiviral treatment of health care workers who might be infected with the pandemic strain of influenza virus.
- Reinforce infection control measures to prevent the spread of influenza.
- Accelerate the training of staff, in accordance with the facility's pandemic influenza education and training plan.

- Implement activities to increase capacity, supplement staff shortages, and provide supplies and equipment.
- Identify, isolate, and treat all patients with potential pandemic influenza.
- Post signs for respiratory hygiene/cough etiquette.

Suggested actions when pandemic influenza is registered in local area

Admissions department

- Establish segregated waiting areas for persons with symptoms of influenza.
- Implement phone triage to discourage unnecessary outpatient department visits.
- Enforce respiratory hygiene/cough etiquette.

Access controls

- Limit number of visitors to those essential for patient support.
- Screen all visitors at point of entry to facility for signs and symptoms of influenza.
- Limit points of entry to facility; assign clinical staff to entry screening.

Hospital admissions

- Defer elective admissions and procedures until local epidemic wanes.
- Discharge patients as soon as possible.
- Cohort patients admitted with influenza.
- Monitor for nosocomial transmission.

Staffing practices

- Consider placing on leave or reassigning pregnant staff and other staff at high risk for complications of influenza.
- Consider reassigning non-essential staff to support critical hospital services or placing them on administrative leave; cohort staff caring for influenza patients.
- Consider assigning staff recovering from influenza to care for influenza patients.
- Implement system for detecting and reporting signs and symptoms of influenza in staff reporting for duty.
- Provide staff with antiviral prophylaxis according to the MoH recommendations.

In case of nosocomial transmission that is limited to only a small number of units in the facility:

- Close units where there has been nosocomial transmission.
- Cohort staff and patients.
- Restrict new admissions (except for other pandemic influenza patients) to affected units.
- Restrict visitors to the affected units to those who are essential for patient care and support.

If there is widespread transmission in the community and the hospital, and patient admissions is at surge capacity:

- Redirect personnel resources to support patient care (e.g., administrative clinical staff, clinical staff working in departments that have been closed).
- Recruit community volunteers (e.g., retired nurses and physicians, clinical staff working in outpatient settings).
- Consider placing on administrative leave all non-essential personnel who cannot be reassigned to support critical hospital services.

11. Infection Control

When a pandemic begins, a vaccine may not yet be widely available, and the supply of antiviral drugs may be limited. The ability to limit transmission in health care settings will, therefore, rely heavily on the appropriate and thorough application of infection control measures. The infection control guidance provided in this chapter is based on our knowledge of routes of influenza transmission, the pathogenesis of influenza, and the effects of influenza control measures used during past pandemics and inter-pandemic periods. Given some uncertainty about the characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that take new information into account as the situation unfolds. The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain unknown until the pandemic gets underway. If the new virus is unusual in any of these respects, the MoH will provide updated infection control guidance.

Modes of influenza transmission

Droplet transmission involves contact of the conjunctivae or the mucous membranes of the nose or mouth of a susceptible person with large-particle droplets containing microorganisms generated from a person who has a clinical disease or who is a carrier of the microorganism. Droplets are generated from the source person primarily during coughing, sneezing, or talking and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only short distances (about 1m) through the air. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission. *Based on epidemiologic patterns of disease transmission, large droplet transmission has been considered a major route of influenza transmission.* Articles contaminated by the virus may serve as a temporary influenza virus transmission factor. *Transmission via contaminated hands and fomites has been suggested as a contributing factor in some studies.*

BASIC INFECTION CONTROL PRINCIPLES FOR PREVENTING THE SPREAD OF PANDEMIC INFLUENZA IN HEALTH CARE SETTINGS

1. Limit contact between infected and non-infected persons by following these guidelines:

- Isolate infected persons (i.e., confine patients to a defined area as appropriate for the health care setting).
- Limit contact between nonessential personnel and other persons (e.g., social visitors) and patients who are ill with pandemic influenza.
- Promote spatial separation in common areas (i.e., sit or stand as far away as possible—at least 1m from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.

2. Protect persons caring for influenza patients in health care settings from contact with the pandemic influenza virus. Persons who must be in contact should:

- Wear a surgical or procedure mask for close contact with infectious patients.
- Use contact and airborne precautions, including the use of N95 respirators, when appropriate.
- Wear gloves for contact with respiratory secretions.
- Perform hand hygiene after contact with infectious patients.

3. Contain infectious respiratory secretions by following these guidelines:

- Instruct persons who have “flu-like” symptoms to use respiratory hygiene/cough etiquette (see below).
- Recommend use of masks by symptomatic persons in common areas (e.g., waiting rooms in physician offices or admission departments) or when being transported (e.g., in emergency vehicles).

RESPIRATORY HYGIENE/COUGH ETIQUETTE

To contain respiratory secretions, all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, should be instructed to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

Health care facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand sanitizer.
- Provide soap and disposable towels for handwashing where sinks are available.

If paper tissues are not available, cotton or gauze ones can be used and discarded after use.

Masking and separation of persons with symptoms of respiratory infection

Persons who are coughing should be offered either a procedure mask (i.e., with ear loops) or a surgical mask (i.e., with ties) to contain respiratory secretions. Coughing persons should be encouraged to sit as far away as possible (at least 1m) from others in common waiting areas.

DROPLET PRECAUTIONS AND PATIENT PLACEMENT

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of five days from the onset of symptoms. Because immuno-compromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness. Health care personnel should wear appropriate personal protective equipment (PPE).

PERSONAL PROTECTIVE EQUIPMENT

Masks (surgical or procedure)

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.
- Change masks when they become moist, at least once every 2-4 hours.
- Do not leave masks dangling around the neck.
- Upon touching or discarding a used mask, perform hand hygiene.

Gloves

- A single pair of patient-care gloves should be worn for contact with blood and body fluids, including during hand contact with respiratory secretions (e.g., providing oral care, handling soiled tissues). Gloves made of latex, vinyl, nitrile, or other synthetic materials are appropriate for this purpose; if possible, latex-free gloves should be available for health care workers who have latex allergy.
- Gloves should fit comfortably on the wearer's hands.
- Remove and dispose of gloves after use on a patient; do not wash gloves for subsequent reuse.
- Perform hand hygiene after glove removal.
- If gloves are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for glove use might need to be established. In this circumstance, reserve gloves for situations where there is a likelihood of extensive patient or environmental contact with blood or body fluids, including during suctioning.
- Use other barriers (e.g., disposable paper towels, paper napkins) when there is only limited contact with a patient's respiratory secretions (e.g., to handle used tissues). Hand hygiene should be strongly reinforced in this situation.

Gowns

- Ensure availability of an extra isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. Procedures such as intubation and activities that involve holding the patient close (e.g., in pediatric settings) are examples of when a gown may be needed when caring for pandemic influenza patients.
- A disposable gown made of synthetic fiber or a washable cloth gown may be used.
- Ensure that gowns are of the appropriate size to fully cover the area to be protected.
- Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.
- If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for their use may need to be established.

Goggles or face shield

In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary. If sprays or splatter of infectious material is likely, goggles or a face shield should be worn as recommended for standard precautions.

PPE for aerosol-generating procedures

During procedures that may generate increased small-particle aerosols of respiratory secretions (e.g., endotracheal intubation, nebulizer treatment, bronchoscopy, suctioning), health care personnel should wear gloves, gown, face/eye protection, and an N95 respirator or other appropriate particulate respirator. Respirators should be used within the context of a respiratory protection program that includes fit-testing and training. If possible, and when practical, use of an airborne isolation room may be considered when conducting aerosol-generating procedures.

HAND HYGIENE

Hand hygiene has frequently been cited as the single most important practice to reduce the transmission of infectious agents in health care settings and is an essential element of standard precautions. The term “hand hygiene” includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that does not require the use of water.

- If hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either non-antimicrobial or antimicrobial) and water.
- In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
- Always perform hand hygiene between patient contacts and after removing PPE.
- Ensure that resources to facilitate handwashing (i.e., sinks with warm and cold running water, plain or antimicrobial soap, disposable paper towels) and hand disinfection (i.e., alcohol-based products) are readily accessible in areas in which patient care is provided.

DISPOSAL OF SOLID WASTE

Standard precautions are recommended for disposal of solid waste (medical and non-medical) that might be contaminated with a pandemic influenza virus:

- Contain and dispose of contaminated medical waste in accordance with facility-specific procedures and/or local regulations for handling and disposal of medical waste, including used needles and other sharps, and non-medical waste.
- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

LINEN AND LAUNDRY

Standard precautions are recommended for linen and laundry that might be contaminated with respiratory secretions from patients with pandemic influenza:

- Place soiled linen directly into a laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.
- Wear gloves for transporting bagged linen and laundry.
- Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.
- Wash and dry linen according to routine standards and procedures.

DISHES AND EATING UTENSILS

Standard precautions are recommended for handling dishes and eating utensils used by a patient with known or possible pandemic influenza:

- Wash reusable dishes and utensils in a dishwasher with recommended water temperature.
- Disposable dishes and utensils (e.g., used in an alternative care site set-up for large numbers of patients) should be discarded with other general waste.
- Wear gloves when handling patient trays, dishes, and utensils.

PATIENT-CARE EQUIPMENT

Follow standard practices for handling and reprocessing used patient-care equipment, including medical devices:

- Wear gloves when handling and transporting used patient-care equipment.
- Wipe heavily soiled equipment with an MoH-endorsed hospital disinfectant before removing it from the patient's room. Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.
- Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room upon removal from the patient's room.

CLEANING AND DISINFECTION OF PATIENT-OCCUPIED ROOMS

- Wear gloves in accordance with facility policies for environmental cleaning, and wear a surgical or procedure mask in accordance with droplet precautions. Gowns are not necessary for routine cleaning of an influenza patient's room.
- Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.

- Use any MoH-endorsed hospital detergent-disinfectant. Follow manufacturer's recommendations for use-dilution (i.e., concentration), contact time, and care in handling.
- Follow facility procedures for regular cleaning of patient-occupied rooms. Give special attention to frequently touched surfaces (e.g., bedrails, bedside and over-bed tables, TV controls, call buttons, telephones, lavatory surfaces including safety/pull-up bars, doorknobs, commodes, ventilator surfaces) in addition to floors and other horizontal surfaces.

CLEANING AND DISINFECTION AFTER PATIENT DISCHARGE OR TRANSFER

Follow standard facility procedures for post-discharge cleaning of an isolation room:

- Clean and disinfect all surfaces that were in contact with the patient or might have become contaminated during patient care. No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soiling.
- Do not spray occupied or unoccupied rooms with disinfectant. This is a potentially dangerous practice that has no proven disease-control benefit.

POSTMORTEM CARE

Follow standard facility practices for care of the deceased. Practices should include standard precautions for contact with blood and body fluids.

LABORATORY SPECIMENS AND PRACTICES

Follow standard facility and laboratory practices for the collection, handling, and processing of laboratory specimens.

OCCUPATIONAL HEALTH ISSUES

Health care personnel are at risk for pandemic influenza through community and health care-related exposures. Once pandemic influenza has reached a community, health care facilities must implement systems to monitor for illness in the facility workforce and manage those who are symptomatic or ill:

- Implement a system to educate personnel about occupational health issues related to pandemic influenza.
- Screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should stay home until they are physically ready to return to duty. Health care personnel who have recovered from pandemic influenza should develop antibody against infection with the same virus, and therefore should be prioritized for the care of patients with active pandemic influenza and its complications. These workers would also be well-suited to care for patients who are at risk for complications from influenza (e.g., transplant patients and neonates).
- Inform personnel who are at high risk for complications of pandemic influenza (e.g., pregnant women, immuno-compromised persons) about their medical risk and offer them an alternate work assignment, away from influenza patient care, or consider them for administrative leave until pandemic influenza has abated in the community.

HOSPITAL-SPECIFIC GUIDANCE

Detection of persons entering the facility who may have pandemic influenza

- Post visual alerts at the entrance to hospital outpatient facilities (e.g., admission departments, polyclinics) instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to practice respiratory hygiene/cough etiquette.
- Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors:
 - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used-tissue disposal.
 - Provide conveniently located dispensers of alcohol-based hand sanitizer.
 - Provide soap and disposable towels for handwashing where sinks are available.
- Triage patients calling for medical appointments for influenza symptoms:
 - Discourage unnecessary visits to medical facilities.
 - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

As the scope of the pandemic escalates locally, consider setting up a separate triage area for persons presenting with symptoms of respiratory infection. Because not every patient presenting with symptoms will have pandemic influenza, infection control measures will be important in preventing further spread.

- During the peak of a pandemic, emergency departments and outpatient offices may be overwhelmed with patients seeking care. A “triage officer” may be useful for managing patient flow, including deferral of patients who do not require emergency care.
- Designate separate waiting areas for patients with influenza-like symptoms. If this is not feasible, the waiting area should be set up to enable patients with respiratory symptoms to sit as far away as possible (at least 1m) from other patients.

Hospitalization of pandemic influenza patients

Patient placement

- Limit admission of influenza patients to those with severe complications of influenza who cannot be cared for outside the hospital setting.
- Admit patients to either a single-patient room or an area designated for cohorting of patients with influenza.

Cohorting

- Designated units or areas of a facility should be used for cohorting patients with pandemic influenza. During a pandemic, other respiratory viruses (e.g., non-pandemic influenza, respiratory syncytial virus, parainfluenza virus) may be circulating concurrently in a community. Therefore, to prevent cross-transmission of respiratory viruses, whenever possible assign only patients with confirmed pandemic influenza to the same room. At the height of a pandemic, laboratory testing to confirm pandemic influenza

is likely to be limited, in which case cohorting should be based on having symptoms consistent with pandemic influenza.

- Personnel (clinical and non-clinical) assigned to cohorted patient-care units for pandemic influenza patients should not “float” or otherwise be assigned to other patient-care areas. The number of personnel entering the cohorted area should be limited to those necessary for patient care and support.
- Personnel assigned to cohorted patient-care units should be aware that patients with pandemic influenza may be concurrently infected or colonized with other pathogenic organisms (e.g., *Staphylococcus aureus*, *Clostridium difficile*) and should adhere to infection control practices (e.g., hand hygiene, changing gloves between patient contact) used routinely, and as part of standard precautions, to prevent nosocomial transmission.
- Because of the high patient volume anticipated during a pandemic, cohorting should be implemented early in the course of a local outbreak.

Patient transport

Limit patient movement and transport outside the isolation area to medically necessary purposes.

- Consider having portable x-ray equipment available in areas designated for cohorting influenza patients.
- If transport or movement is necessary, ensure that the patient wears a surgical or procedure mask. If a mask cannot be tolerated (e.g., due to the patient’s age or deteriorating respiratory status), apply the most practical measures to contain respiratory secretions. Patients should perform hand hygiene before leaving the room.

Visitors

- Screen visitors for signs and symptoms of influenza before entry into the facility and exclude persons who are symptomatic.
- Instruct family members who accompany patients with influenza-like illness to the hospital to wear masks; they are also assumed to have been exposed to influenza.
- Limit visitors to persons who are necessary for the patient’s emotional well-being and care.
- Instruct visitors to wear surgical or procedure masks while in the patient’s room.
- Instruct visitors on hand-hygiene practices.

Control of nosocomial pandemic influenza transmission

- Once patients with pandemic influenza are admitted to the hospital, nosocomial surveillance should be heightened for evidence of transmission to other patients and health care personnel. (Once pandemic influenza is firmly established in a community, this may not be feasible or necessary.)
- If limited nosocomial transmission is detected (e.g., has occurred on one or two patient care-units), appropriate control measures should be implemented. These may include:
 - Cohorting of patients and staff on affected units.
 - Restriction of new admissions (except for other pandemic influenza patients) to the affected unit(s).
 - Restriction of visitors to the affected unit(s) to those who are essential for patient care and support.

- If widespread nosocomial transmission occurs, controls may need to be implemented hospital-wide, and might include:
 - Restricting all nonessential persons.
 - Stopping admissions not related to pandemic influenza and stopping elective surgeries.

PRE-HOSPITAL CARE (EMERGENCY MEDICAL SERVICES)

Patients with severe pandemic influenza or disease complications are likely to require emergency transport to the hospital. The following information is designed to protect ambulance personnel during transport:

- Screen patients requiring emergency transport for symptoms of influenza.
- Follow standard and droplet precautions when transporting symptomatic patients.
- Consider routine use of surgical or procedure masks for all patient transport when pandemic influenza is in the community.
- If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing, or use the most practical alternative to contain respiratory secretions.
- Oxygen delivery with a non-re-breather face mask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.
- Avoid aerosol-generating procedures (e.g., mechanical ventilation) during pre-hospital care unless medically necessary to support life.
- Optimize the vehicle's ventilation to increase the volume of air exchange during transport. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area.
- Notify the receiving facility that a patient with possible pandemic influenza is being transported.
- Follow standard operating procedures for routine cleaning of the emergency vehicle and reusable patient-care equipment.

HOME HEALTH CARE SERVICES

Home health care includes health and rehabilitative services performed in the home by providers including home health agencies, hospices, durable medical equipment providers, home infusion therapy services, and personal care and support services staff. The scope of services ranges from assistance with activities of daily living and physical and occupational therapy to wound care and infusion therapy.

When pandemic influenza is in the community, home health agencies should consider contacting patients before the home visit to determine whether persons in the household have an influenza-like illness.

- If patients with pandemic influenza are in the home, consider:
 - Postponing nonessential services.
 - Assigning providers who are not at increased risk for complications of pandemic influenza to care for these patients.

- Home health care providers who enter homes where there is a person with an influenza-like illness should follow the recommendations for standard and droplet precautions described above.

OUTPATIENT MEDICAL OFFICES (POLYCLINICS)

Detection of persons entering the facility who may have pandemic influenza

- Post visual alerts at the entrance to hospital outpatient facilities (e.g., admission departments, polyclinics) instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to practice respiratory hygiene/cough etiquette.
- Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors:
 - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used-tissue disposal.
 - Provide conveniently located dispensers of alcohol-based hand sanitizer.
 - Provide soap and disposable towels for handwashing where sinks are available.
- Triage patients calling for medical appointments for influenza symptoms:
 - Discourage unnecessary visits to medical facilities.
 - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

Patient placement

- Where possible, designate separate waiting areas for patients with symptoms of pandemic influenza. Place signs indicating the separate waiting areas.
- Place symptomatic patients in an evaluation room as soon as possible to limit their time in common waiting areas.

CARE OF PANDEMIC INFLUENZA PATIENTS IN THE HOME

Most patients with pandemic influenza will be able to remain at home during the course of their illness and can be cared for by other family members or others who live in the household. Anyone residing in a household with an influenza patient during the incubation period and illness is at risk for developing influenza. A key objective in this setting is to limit transmission of pandemic influenza within and outside the home. When care is provided by a household member, basic infection control precautions should be emphasized (e.g., segregating the ill patient, hand hygiene). Infection within the household may be minimized if a primary caregiver is designated, ideally someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit.

Management of influenza patients

- Physically separate the patient with influenza from non-ill persons living in the home as much as possible.
- Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., five days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and wear procedure or surgical masks if available.

Management of other persons in the home

- Persons who have not been exposed to pandemic influenza and who are not essential for patient care or support should not enter the home while persons are actively ill with pandemic influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the pandemic influenza patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should monitor themselves closely for the development of influenza symptoms and contact a telephone hotline or medical care provider if symptoms occur.

Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap and water or use of an alcohol-based hand sanitizer) after contact with an influenza patient or the environment in which care is provided.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

RECOMMENDATIONS FOR INFECTION CONTROL IN SCHOOLS AND WORKPLACES

- In schools and workplaces, infection control for pandemic influenza should focus on:
 - Keeping sick students, faculty, and workers away while they are infectious.
 - Promoting respiratory hygiene/cough etiquette and hand hygiene as for any respiratory infection. The benefit of wearing masks in these settings has not been established.

- School administrators and employers should ensure that materials for respiratory hygiene/cough etiquette (i.e., tissues and receptacles for their disposal) and hand hygiene are available. Educational messages and infection control guidance for pandemic influenza are available for distribution.

12. Pandemic Influenza Surveillance

In Ukraine, influenza surveillance is carried out routinely. The goals are as follows:

1. Describe the epidemiology of influenza and the burden of disease.
2. Provide isolates for identifying influenza viruses.
3. Provide data for program planning and preparedness.

In addition to the benefits of seasonal influenza surveillance, the early detection of A/H1N1 (see Annex 9) and A/H5N1 (see Annex 6) influenza cases in humans plays a critical role in combating a potential pandemic. The main benefits of having ascertained clear and fast recognition of transmission to human beings will ultimately include:

- Prompt implementation of public health and medical interventions aimed at preventing, delaying, or containing human-to-human virus transmission.
- More effective medical care of the infected persons, resulting in reduced mortality.
- Reduced economic and social impact of a potential pandemic.

PRE-PANDEMIC SURVEILLANCE STRATEGIES

Indicator-based surveillance: During WHO phases 3–5, as described in the National Guidelines for Influenza Surveillance and Control, a sentinel system for monitoring severe acute respiratory illness (SARI) should be implemented and expanded to a minimum of 4–6 well-selected, representative sites around the country. A surveillance coordinator for SARI surveillance has been assigned at each participating sentinel site hospital. Any patient admitted to any ward (e.g., adult and pediatric infectious disease, therapeutic and pulmonary wards) with an acute onset of fever with cough or sore throat and shortness of breath/dyspnea is enrolled into the surveillance system. This involves collection of basic epidemiologic data (including a minimum of age and disease outcome) and collection of respiratory specimens. This procedure for sentinel site surveillance is described in more detail in the Guidelines for Influenza Surveillance and Control. In addition to the benefits of seasonal influenza surveillance, this surveillance infrastructure will support the detection of a novel influenza virus in pre-pandemic stages.

Early-warning/event-based surveillance: A population-based early warning system to sensitize clinicians to detect and report triggers that may indicate the circulation of respiratory pathogens of pandemic potential in the population has been established. To ensure its adequate functioning, clinicians throughout Ukraine should be educated on the triggers for immediate reporting and response. The following cases or events identified by providers require immediate notification of the district SES without any delay, by any existing means of communication (telephone, fax, email, or in person).

- Any report about a *suspected* or *probable* influenza A/H1N1 or A/H5N1 case in humans by a health care provider or a laboratory (see Annexes 6 and 9).
- Any unexplained death from severe acute respiratory illness (pneumonia or a respiratory illness with acute onset).
- Two or more cases of severe acute respiratory illness with onset occurring within a 14-day period among people who share a living space.
- Severe acute respiratory illness cases in health care workers who have cared for another case with severe acute respiratory illness.

In turn, the district SES must notify the following institutions within 1 hour:

- The regional SES (which must notify the MoH and the NIC within 1 hour).
- The district veterinary service and the district administration (to coordinate epidemic and epizootic response measures).
- The regional/district hospital (to prepare for transportation and admission of the patient(s)).

The district SES will immediately initiate a public health investigation commensurate to anticipated risk and collect throat swabs or lower-respiratory specimens for novel influenza A and other respiratory pathogen testing. These surveillance procedures, as well as additional measures for enhancing pre-pandemic early warning surveillance, are further outlined in the National Guidelines for Influenza Surveillance and Control.

PANDEMIC SURVEILLANCE STRATEGIES

Importance of surveillance to detect and respond to a pandemic

Successful containment or control of pandemic influenza will rely on early recognition of sustained human-to-human transmission which requires a system for outbreak detection, rapid data collection, analysis, assessment, and timely reporting. Early detection of the start of a pandemic is crucial to rapidly implement measures to stop the pandemic at its source and to prevent millions of deaths, social disruption, and economic loss. Modeling studies suggest that mass prophylaxis with antiviral drugs combined with other public health interventions, such as movement restriction, social distancing, and vaccination may successfully contain an emerging pandemic. However, such an approach (i.e., rapid containment operation) would need to be implemented within the first few weeks that transmission of a pandemic virus began. The goal of rapid containment is to delay, if not stop the pandemic. This will provide additional time for countries to implement public health actions, produce and distribute pandemic vaccines, and allow mobilization of international resources.

As part of national pandemic preparedness planning, Ukraine is preparing for enhanced surveillance to:

1. Detect the emergence of the new disease.
2. Characterize the disease (epidemiology, clinical manifestations, severity).
3. Monitor its evolution.

Effective surveillance should result in a rapid accumulation of critical clinical, epidemiological, and virological data about the new disease and will allow health care providers and public health authorities to modify their strategies for case management, community mitigation, and health resource allocation.

International Health Regulations (2005)

The International Health Regulations 2005 (IHR) is the international legal framework for public health actions of WHO and all of its Member States to prevent, control, and respond to the international spread of disease. The IHR includes a number of rights and obligations of Member States relevant to pandemic influenza, such as: notification, reporting, and verification of public health events to WHO (including all cases of new subtype human influenza); measures at international borders, ports and airports; protections for international travelers; required capacities for domestic surveillance and response in all States; and coordinated response to public health emergencies of international concern.

Once there is credible reason to believe that an animal or human-animal influenza virus has evolved that is capable of sustained human transmission in a community, the IHR (2005) gives the Director-General of WHO the authority to determine that the event constitutes a Public Health Emergency of International Concern. On such occasions, an IHR Emergency Committee will provide its views to the Director-General on Temporary Recommendations for the most appropriate and necessary public health measures to prevent or reduce the international spread of disease and avoid unnecessary interference with international traffic.

KEY SURVEILLANCE COMPONENTS

The critical information needed during the course of the pandemic will vary at different points in time and will be generated by different types of surveillance activities. This chapter describes three types of surveillance activities or components of pandemic surveillance:

1. Early detection and investigation

The goal is to detect and investigate the first evidence of sustained human-to-human transmission of an influenza virus with pandemic potential. Specific objectives include:

- Detection and identification of an influenza virus with pandemic potential.
- Confirmation that an influenza virus with pandemic potential has acquired the ability to transmit from person-to-person and to initiate and sustain community-level outbreaks.
- Description of the early epidemiological, virological, and clinical characteristics of the outbreak.
- Estimation of the geographical extent of virus spread to inform containment and control efforts.
- Alert other countries of a public health event of international concern.

This component of pandemic influenza surveillance is closely allied with the notification reporting and verification requirements under the International Health Regulations (IHR). Annex Two of IHR requires that all events are notified, even before laboratory confirmation of any new influenza subtype, when they meet at least two of four public health criteria: (1) potential serious public health impact, (2) unusual or unexpected, (3) significant risk of international spread, and (4) significant risk of international restrictions.

Triggers/signals for investigation of possible human-to-human transmission

The primary focus of early detection is to detect events that may signal human-to-human transmission of an influenza virus with pandemic potential. As new pandemic strains are thought to arise from viruses circulating in animal populations, events related to human infection with animal influenza viruses should also trigger an initial investigation. Specific triggers include:

- Clusters³ of cases of unexplained acute lower respiratory illness.
- Severe, unexplained lower respiratory illness occurring in a health care worker who provides care for patients with respiratory disease.

³ A cluster is defined as two or more persons presenting with manifestations of unexplained acute lower respiratory illness with fever (>38°C) (or who died of an unexplained respiratory illness) and are detected with onset of illness in a two-week period and in the same geographical area and/or are epidemiologically linked.

- Changes in the epidemiology or mortality associated with the occurrence of ILI or lower respiratory illness in a community, for example, a change in the age distribution of severe lower respiratory illness, an increase in deaths observed from respiratory illness, or an increase in the occurrence of severe respiratory illness in previously healthy adults or adolescents.
- Persistent changes noted in treatment response or outcome of severe lower respiratory illness.
- A laboratory finding of a strain of influenza with pandemic potential from routine surveillance or other investigation.
- Outbreaks of death or illness in fowl (e.g., poultry or ducks) or other animals (e.g., swine, cats).
- Any suspect human case of infection with an influenza virus with pandemic potential.

Data requirements

Following the initial notification of suspected pandemic influenza, article Six of the IHR requires the affected country to communicate to WHO further information to enable risk assessment, especially to determine if sustained human-to-human transmission is occurring.

- Summary description of the initial outbreak investigation findings including:
 - Case finding activities, nature, and extent of enhanced surveillance activities.
 - Case definition used for case finding and classification, and algorithm for screening.
 - Timeline of suspect, probable, and confirmed cases with dates of illness onset within clusters and dates of exposures.
 - Best estimates for case fatality ratio and incubation period.
 - Testing criteria for cases.
 - Results of investigation for related animal outbreaks, if any.
 - Evidence for human-to-human transmission.
 - Geographic extent of investigation and estimation of spread of virus.
- Copies of all data collection forms for each case contain the following:
 - A unique identifier that links epidemiological information with clinical specimens.
 - Patient demographic and exposure information.
 - Pre-existing conditions.
 - Clinical presentation and course (requires follow up of patients).
 - Outcome: death, recovery, hospitalization, convalescent, lost for follow-up.
 - Date that the clinical samples were taken and the results.
 - Final status: discarded, suspected, probable, confirmed, lost for follow-up.
- Virological characteristics:
 - Name of laboratory and contact details.
 - Antigenic characterization of the virus.
 - Antiviral sensitivity.
- Summary description of control measures taken:
 - Isolation and quarantine measures used.
 - Contact tracing and management, including the number of contacts under observation, their clinical status, and the date of the last known contact.
 - Infection control measures implemented in health care facilities.
 - Extent of animal culling, if any.

- Use of antiviral drugs for treatment or prophylaxis.
- Travel restrictions, if any.
- Risk-communication activities.
- Estimates or indicators of effectiveness of containment.
- Lessons learned.

The information will be used to assess the feasibility of rapid containment, and will help to inform recommendations about control activities if containment is unsuccessful.

2. Comprehensive assessment

The primary goal of the comprehensive assessment is to characterize the new pandemic at an early stage to facilitate a more effective response, both nationally and internationally. The information from the comprehensive assessment will be critical to the MoH for making decisions about pandemic mitigation strategies, to health care providers for treating ill persons, and to the general public for reducing their risk of infection and minimizing damaging rumors.

Specific objectives include:

Characterize the epidemiological features:

- Characterize the **epidemiological features** of the outbreak that distinguish it from seasonal influenza (e.g., epidemiological curve, age-specific attack rates, age-specific mortality rates, attack rates in health care workers).
- Describe the **impact** of the illness on the community compared to mild seasonal influenza (e.g., attack rates for symptomatic illness and severe disease).
- Describe **transmission** characteristics (e.g., epidemiological curve, incubation period, generation time, reproductive number, R_0).

Characterize the clinical features of the illness to inform clinical management, surveillance, and control.

- Describe the clinical presentation and spectrum of the illness to facilitate development of effective treatment protocols.
- Refine the case definition for use in surveillance and early detection in subsequently infected countries.
- Define the population at highest risk for severe outcome to enable efficient resource targeting (e.g., pregnant women).

Characterize the virological features of the new strain:

- Characterize the antigenicity of the virus to guide the development of vaccines and diagnostic tests.
- Assess the antiviral susceptibility of the virus to direct treatment decisions.

The comprehensive assessment will require a combination of different approaches (case-based data collection, community and cluster investigations) to collect clinical data on at least 100 confirmed cases, to obtain epidemiological information on the affected community and to collect virological samples.

Data requirements

1. Epidemiological characteristics:

- Total number of cases (suspect, confirmed) and deaths.
- Distribution of cases and deaths by age group.
- Attack rate by age group.
- Case fatality ratio.
- Epidemic curve for the first four weeks of the pandemic.
- Number of cases in health care.

Impact of the illness in the community:

- Qualitative assessment of severity by comparing the pandemic situation with a typical influenza season or another epidemic that recently affected the country.
- Proportion of cases with severe illness.
- Attack rates by geographic location and/or mapping of most affected geographic locations.

Transmission characteristics:

- Incubation period.
- Period of infectiousness (viral shedding).
- Reproduction number (R_0).

2. Clinical characteristics: Database of information for 100 cases

WHO requests that Ukraine provide information for 100 laboratory confirmed cases using the Pandemic Influenza Case Form (see Annex 9). For each person, clinical information and samples will be collected initially and again two weeks later. It is likely some clinically ill persons will have other respiratory infections and not pandemic influenza. Therefore, SES and physicians are encouraged to collect data for more than 100 persons, if possible.

All viruses isolated from these 100 cases will be submitted to a WHO Collaborating Center for further characterization.

3. Virological characteristics: Virological Summary Form

This form is being developed at this time and will be made available to laboratories later this year.

3. Pandemic monitoring

This component aims to gather information regularly to monitor the course of the pandemic and answer critical questions such as: is the pandemic increasing or decreasing; is the pandemic over; is a new wave beginning.

Specific objectives include:

- Track the geographical spread of the virus.
- Track the trend of disease occurrence as it rises and falls.
- Track the intensity of transmission (e.g., how is the population affected; number of cases and deaths).
- Track the impact of the pandemic on the health care infrastructure.
- Monitor for changes in the antigenicity and antiviral sensitivity of the virus.

Data requirements (data to be reported on a weekly basis)

Activity (laboratory-confirmed case(s) of influenza, or evidence of increased or unusual respiratory disease activity).

yes no no information available for this week.

Geographic spread (how many regions are reporting the disease activity?)

- localized: limited to one region
- regional: appearing in multiple regions representing less than half of the country
- widespread
- no information available for the previous 1-week period.

Trend (changes in the level of respiratory disease activity compared to the previous week).

increasing unchanged decreasing no information available

Intensity (an estimate of the overall level of respiratory disease activity in the population).

low or moderate high very high no information available

Impact (the degree of disruption of the health care infrastructure due to influenza)

- low: demands on health care infrastructure are not above usual levels.
- moderate: demands on health care infrastructure are causing some stress to system above usual levels, but still below maximum capacity.
- severe: demands on health care infrastructure exceeding capacity to provide care.
- no information available.

Routine surveillance data

- number of hospitalizations by age group.
- number of deaths related to acute respiratory disease by age group.

Data from sentinel surveillance stations on ILI and SARI

- number of ILI cases reported in the last 1-week period by age group.
- number of total outpatient visits for all causes.
- number of new SARI cases admitted in the last 1-week period by age group.
- number of total admissions (from same facilities as number of SARI cases reported).
- number of SARI-related deaths by age.

Data from reporting laboratories:

- number of specimens collected for influenza testing.
- number of specimens tested that are positive for influenza by subtype.

DATA REPORTING

In the absence of specific MOH instructions, health facilities report to SES according to the existing orders and legal documents.

DATA ANALYSIS

The MoH and the National Influenza Center will convene a special group of experts to evaluate, analyze, and interpret submitted data. This group will convene on a regular basis during the pandemic.

INFORMATION DISSEMINATION

Reported information, interpretations, and summaries of the current knowledge about the pandemic will be made available to interested organizations and populations through the Ministry of Health and the National Influenza Center websites, publications, expert briefings, and other means of communication (see Chapter 8).

USE OF INFORMATION FOR ACTION

Summary of the surveillance objectives and associated management actions are presented in Table 22 below:

TABLE 22. Summary of Surveillance Objectives and Associated Management Actions

OBJECTIVE	ACTION
Early Detection and Investigation	
Detect influenza virus with pandemic potential	Launch investigation for evidence of sustained human-to-human transmission
Document human-to-human transmission	Determine if influenza virus with pandemic potential the cause; if so, conduct assessment and decide if rapid containment appropriate.
Describe early pandemic characteristics	Refine case management and control measures Provide vaccine strain candidate
Estimate geographic extent	Plan and adjust extent of rapid containment measures
Alert other countries	Notify IHR focal point, request assistance and support if needed
Comprehensive Assessment	
Describe epidemiological characteristics	Assess severity and initiate appropriate community-mitigation measures
Describe clinical characteristics	Refine definitions for case finding, target treatment and control measures to high-risk groups
Describe virological characteristics	Adapt recommendations for use of antiviral drugs. Submit samples and isolates to WHO Collaborating Center for confirmation and characterization

OBJECTIVE	ACTION
Monitoring	
Track activity	Adjust mitigation and control measures as milestone events are reached
Track geographical spread	
Track trend of pandemic	
Track impact of pandemic	Adjust allocation of health care resources, initiate additional management strategies as indicated
Track intensity of transmission	
Monitor changes in antigenicity and antiviral sensitivity	Adjust use of pharmaceutical interventions

13. Management of Mass Fatalities During an Influenza Pandemic

During a pandemic, local authorities will have to be prepared to manage additional deaths due to influenza, over and above the number of fatalities from all causes currently expected during the inter-pandemic period. Within any locality, the total number of fatalities (including influenza and all other causes) occurring during a six-to-eight-week pandemic wave is estimated to be similar to that which typically occurs over six months in the inter-pandemic period. This guideline aims to assist local authorities in preparing to cope with large-scale fatalities due to an influenza pandemic. A number of issues have been identified, which should be reviewed jointly by local authorities, health workers, coroners/medical examiners, specialized communal enterprises and ritual services administrations of local authorities, religious groups, etc.

The following documents should be consulted when planning the above measures:

- The law of Ukraine “On Funerals and Funeral-related Matters” dated July 10, 2003 1102-IV.
- The order of the State Committee of Ukraine on Housing and Communal Services “about approval of legislative acts to implement the Law of Ukraine “On Funerals and Funeral-related Matters.”
- National Sanitary Norms and Rules entitled “Hygienic requirements for equipping and maintaining cemeteries in inhabited settlements in Ukraine” 2.2.2.028-99.
- Instruction on burial procedures and cemetery maintenance in inhabited settlements of Ukraine, 1979.

In order to identify planning needs for the management of mass fatalities during a pandemic, it is important to examine each step (see Table 23) in the management of a corpse under normal circumstances and then to identify what the limiting factors will be when the number of corpses increases over a short period of time.

TABLE 23. Corpse Management Process

STEPS	REQUIREMENTS	LIMITING FACTORS	PLANNING / POSSIBLE SOLUTIONS
Death pronounced and certified	Person authorized to perform this task: health workers and personnel of civilian registry offices.	Availability of people able to do this task. If death occurs in the home, then one of these people will need to be contacted.	<ul style="list-style-type: none"> • Inform population re. how to access an authorized person. • Train sufficient number of staff that can certify death and issue certificates. • Plan and test an on-call system available 24/7 specifically for this task. • Allow keeping corpse for no longer than 1 day in cases where the situation does not require autopsy or coroner’s investigation. • Establish a system for issuing death certificates right at the place of death by a health worker that certifies it. • Engage the Red Cross Society, Social Services, religious organizations, and communities to facilitate delivery of death certificates.

STEPS	REQUIREMENTS	LIMITING FACTORS	PLANNING / POSSIBLE SOLUTIONS
Body wrapped	Person(s) trained to perform this task Body bags	Supply of human and physical (body bags) Resources of specialized communal enterprises and ritual services Administrations of local authorities and ambulances	<ul style="list-style-type: none"> Envision a rotating 6-month inventory of body bags, given their shelf life. Plan on training or expanding the role of current staff to include this task. Envision engagement of additional staff of the MoES and military units. Provide this service in the home in conjunction with pronouncement and transportation to morgue or place of burial (cremation).
Transportation to the morgue	In hospital: trained staff and stretcher Outside hospital: informed person(s), stretcher and vehicle suitable for this purpose	Availability of human and physical resources	<ul style="list-style-type: none"> In hospital: plan training of additional staff working within the facility. Look for alternate suppliers of equipment that could be used as stretchers in an emergency. Outside hospital: inform population or provide specific instructions through a phone service re: where to take corpses if the family must transport.
Morgue storage	A suitable facility that can be maintained at 4 to 8 degrees Celsius	Capacity of such facilities	<ul style="list-style-type: none"> Identify and plan for possible temporary morgue sites. Optimize (reduce) morgue storage time.
Autopsy if required/ requested	Person qualified to perform autopsy and suitable facility with equipment	Availability of human and physical resources May be required in some circumstances	<ul style="list-style-type: none"> Ensure that physicians and families are aware that an autopsy is not required for confirmation of influenza as cause of death.
Cremation	Suitable vehicle of transportation from morgue to crematorium Availability of cremation service A cremation certificate	Capacity of crematorium/speed of process Availability of designated officials to issue certificates	<ul style="list-style-type: none"> Identify alternate vehicles that could be used for mass transport (MoES, military units, etc.). Examine the capacity and surge capacity of crematoriums within the jurisdiction. Introduce a round-the-clock work schedule for crematoriums. Establish an expedited cremation certificate completion process, provide additional staff for this work.
Funeral service	Appropriate location (s), caskets (if not cremated), bags, funeral director	Availability of caskets, bags Availability of location for service and visitation	<ul style="list-style-type: none"> Determine resources of specialized communal enterprises and ritual services administrations of local authorities, and other similar institutions regardless of their form of ownership and departmental subordination to create a rotating 6-month inventory. Entrust heads of specialized communal enterprises and ritual services administrations of local authorities to determine surge capacity and possibly the need for additional sites (e.g., use of churches, etc. for visitation).
Transportation to temporary vault or burial site	Suitable vehicle and driver	Availability of human and physical resources	<ul style="list-style-type: none"> Identify alternate vehicles that could be used for this purpose (MoES, military units, etc.). Consider use of volunteer drivers.
Burial	Grave digger Space at cemetery	Availability of grave diggers and cemetery space Extreme cold and heavy snowfall	<ul style="list-style-type: none"> Identify sources of supplementary workers (MoES, military units, volunteers). Envision communal graves upon getting consent of local sanitary-control offices.

GENERAL PLANNING CONSIDERATIONS

In order to develop guidelines or adjust existing plans to suit the pandemic situation, local authorities should ensure that the following persons are involved in mass-fatality planning:

- Heads of specialized communal enterprises and ritual services administrations of local authorities.
- Heads of ritual institutions, regardless of their form of ownership and departmental subordination.
- Representative of the local department of the Ministry of Emergency Situations.
- Representative of the local department of the Ministry of Interior Affairs.
- Representative of the District Health Administration.
- Representative of local SES.
- Representatives of district health care facilities.
- Representatives of local religious and ethnic groups.

Because it is expected that most fatal influenza cases will seek medical services prior to death, hospitals and other health institutions must plan for more rapid processing of corpses and issuance of death certificates. These institutions should work with the pandemic planners and civilian registry offices to ensure that they have access to the additional supplies (e.g., body bags) and can expedite the steps, including the completion of required documents, necessary for efficient corpse management during a pandemic.

In order to deal with the increase in fatalities, some municipalities will find it necessary to expand morgue capacity. The power of legislative documents that regulate functioning of morgues extends to premises used as temporary morgues. Plans should be based on the capacity of existing facilities compared to the projected demand for each municipality. Local planners should make note of all facilities available, including those owned by religious organizations, and discuss access to these resources in advance for carrying out ritual services.

Autopsies

Many deaths in a pandemic would not require autopsies, since autopsies are not indicated for the confirmation of influenza as the cause of death. However, for the purpose of public health surveillance (e.g., confirmation of the first cases at the start of the pandemic, disputed diagnosis), respiratory tract specimens or lung tissue for culture or direct antigen testing could be collected postmortem.

Preparations for Cemeteries and Crematoria

In a pandemic, each individual cemetery could expect to have to handle about six months' work within a six- to eight-week period. That may not be a problem in some communities, but cemeteries in larger cities may not be able to cope with the increased demand. Individual cemeteries should be encouraged to make specific plans during the inter-pandemic period regarding the need for additional human resources during a pandemic situation. For example, volunteers may be able to take on tasks such as digging graves, under the direction of current staff. Crematoriums will also need to look at the surge capacity within their facilities. Most crematoriums can handle about one body every four hours and will need to run 24 hours to cope with increased demand. Cremations have fewer resource requirements than burials and, where acceptable, this may be an expedient and efficient way of managing large numbers of corpses during a pandemic.

Death Registration

Death registration is a territorial responsibility; it should be carried out according to the country laws and regulations. A medical death certificate and a death certificate issued by a civilian registry office are required for burial. In the pandemic situation, with the increased number of deaths, medical death certificates can be issued at the place of death or in morgues. If the person's death does not meet any of the criteria for needing to be reported to a coroner, then the person could be moved to a holding area (a morgue) soon after being pronounced dead or left at home for burial. A simplified procedure for issuing death certificates by civilian registry offices needs to be developed.

Infection Control

Special infection control measures are not required for the handling of persons who died from influenza, as the body is not "contagious" after death. Visitations could be a concern in terms of influenza transmission amongst attendees, particularly in smaller communities.

Transportation

No special vehicle or driver's license is needed for transportation of a corpse. Therefore, there are no restrictions on families transporting bodies of family members if they have a death certificate.

Supply Management

Special ritual services, regardless of their form of ownership and departmental subordination, are discouraged from ordering excessive amounts of supplies such as embalming fluids, body bags, etc., but are encouraged to ensure that they have enough on hand in a rotating inventory to handle the first wave of the pandemic (enough for six months of normal operation). Fluids can be stored for years, but body bags and other supplies have a limited shelf life.

Special Populations

A number of religious and ethnic groups have specific directives about how bodies are managed after death, and such needs must be considered as a part of pandemic planning. Jews, Hindus, and Muslims each have specific directives for the treatment of bodies and for funerals. The wishes of the family will provide guidance; however, if no family is available, local religious or ethnic communities can be contacted for information.

Annex 1

QUARANTINE AND RESTRICTIVE MEASURES: MODERN PRINCIPLES AND RECOMMENDATIONS

Quarantine is isolation of people who are not ill but who have been exposed to infection, for the purpose of preventing transmission of disease.

The goal of quarantine is to protect the public by separating those exposed to a dangerous communicable disease from the general population. The goal of restrictive measures is to limit disease spread through minimization of social interactions between people at the affected territory.

Quarantine **may be used when:**

- A person or a well-defined group of people has been exposed to a highly dangerous and highly contagious disease.
- Resources are available to care for quarantined people.
- Resources are available to implement and maintain the quarantine and deliver essential interventions.

Quarantine, as a measure that can limit infection spread, is only effective at the beginning of an epidemic (when the first cases are registered). Premises specified in the “comprehensive plans for sanitary protection of an area” should be used for isolation of quarantined people.

Restrictive measures encompass **a range of disease-containment strategies**, including:

- Short-term, home isolation for the duration of an incubation period.
- Restrictions on the assembly of groups of people (e.g., school events).
- Cancellation of public events.
- Suspension of public gatherings and closings of public places (e.g., theaters, entertainment centers, etc.).
- Restrictions on travel (air, rail, water, motor vehicle, pedestrian).
- Limiting of mass transit systems.
- Temporary suspension of activities of certain affected communities.
- “Cordon sanitaire” (a guarded barrier restricting passage in and out of an area).

Quarantine and restrictive measures should be used **in combination with other interventions**, including:

- Enhanced disease surveillance and symptom monitoring.
- Rapid diagnosis and treatment for those who fall ill.
- Preventive interventions for quarantined individuals, including vaccination or prophylactic treatment, depending on the disease.

Quarantined individuals will be sheltered, fed, and cared for under **the supervision of trained health care professionals**. They will also be among the first to receive all available medical interventions to prevent and control disease, including:

- Vaccination.
- Antiviral medications.
- Early and rapid diagnostic testing and symptom monitoring.
- Early treatment if symptoms appear.

Based on current available data, the recommended duration of quarantine for influenza is generally ten days from the time of exposure. Quarantine should last only **as long as necessary** to protect the public by providing public health interventions (e.g., immunization or drug treatment, as required) and ensuring that quarantined persons do not become ill or infect others.

The choice of quarantine and restrictive measures should be determined by an epidemiological situation. Recent experience from SARS-affected countries suggests that restrictive measures can be quite effective in slowing the rate of infection spread, especially when combined with antiviral prophylaxis and vaccination. A reduction of morbidity below the threshold level for the affected area is the key criterion for the end of an epidemic.

Implementation of quarantine and restrictive measures require a clear understanding of public health roles at all levels and preparedness planning by local authorities and many public and private response partners, including agencies and groups involved in public health, health care, transportation, emergency response, law enforcement, and security. It also requires the trust and participation of the general public, who must be informed about the dangers of quarantinable disease and justification, role, and duration of quarantine before an outbreak occurs, as well as during an actual event.

General considerations

- Monitor each quarantined person daily, or more frequently if feasible, for fever, respiratory symptoms, and other symptoms of early influenza disease and for compliance with quarantine.
- Provide a hotline number for quarantined persons to call if they develop symptoms or have other immediate needs.
- If a quarantined person develops symptoms suggestive of influenza, arrangements should be in place for separating that person from others in quarantine and ensuring immediate medical evaluation.
- Set up temporary hospitals (departments) for hospitalization of cases diagnosed in quarantine facilities.
- Provide persons in quarantine with all needed support services, including 1) psychological support, 2) food and water, 3) household and medical supplies, and 4) care for family members who are not in quarantine.

At the end of the designated quarantine period, contacts should have a final assessment for fever and respiratory symptoms. Persons without fever or respiratory symptoms may return to normal activities.

Home quarantine

Whenever possible, contacts should be quarantined at home. Home quarantine requires the fewest additional resources, although arrangements must still be made for monitoring patients, transporting patients for medical evaluation if necessary, and reserving medical personnel to carry out such evaluations. Home quarantine is

most suitable for contacts with a home environment that can meet their basic needs and in which unexposed household members can be protected from exposure. Other considerations include:

- Persons in home quarantine must be able to monitor their own symptoms (or have them monitored by a caregiver).
- The person's home should be evaluated for suitability before being used for quarantine (see below).
- Quarantined persons should minimize interactions with other household members to prevent exposure during the interval between the development and recognition of symptoms. Precautions may include sleeping and eating in a separate room, appropriate use of personal protective equipment, etc.
- Persons in quarantine may be assessed (or interviewed by phone) for symptoms by either active or passive monitoring. Active monitoring of contacts in quarantine facilitates objective and timely diagnosis of the infection.
- Household members may go to school, work, etc., without restrictions unless the quarantined person develops symptoms. If the quarantined person develops symptoms, household members should remain at home in a room separate from the symptomatic person and await additional instructions from health workers.
- Household members can provide valuable support to quarantined persons by helping them feel less isolated and ensuring that essential needs are met.
- Immediate and ongoing psychological support services should be provided to minimize psychological distress. Quarantined persons should be able to maintain regular communication with their loved ones and health care providers.

Quarantine in designated facilities

In some cases, affected persons may not have access to an appropriate home environment for quarantine. Examples include travelers; persons living in dormitories, homeless shelters, or other group facilities; and persons whose homes do not meet the minimum requirements for quarantine. In other instances, contacts may have an appropriate home environment but may not wish to put family members at risk. In these situations, local authorities and health officials should identify an appropriate community-based quarantine facility. Monitoring of quarantined persons may be either passive or active, although active monitoring may be more appropriate in a facility setting.

Medical observation

Health care workers or other essential personnel who are at occupational risk of influenza infection are subject to medical observation either at home or in a workplace. This includes:

- Monitoring for symptoms during work shifts and at home.
- Prompt medical evaluation of anyone who develops symptoms.
- Provision of transportation to and from work, if needed.
- Mechanisms for immediate and ongoing psychological support.

At the end of the designated medical observation period, contacts should receive physical (fever and respiratory symptoms) and psychological health assessments. Persons without fever or respiratory symptoms may return to normal activities.

Factors to be considered in the evaluation of a residence for isolation:

- Basic utilities (water, electricity, telephone, garbage collection, heating).
- Fire and technogenic safety.
- Basic supplies (food, hand-hygiene supplies, masks, tissues, thermometers).
- Basic services (meal preparation, laundry).
- Accessibility to health care workers or ambulance personnel (assigned by local health authorities).
- Ability to provide a separate bedroom for the influenza patient.

Additional considerations for community-based facilities include:

- Adequate rooms and bathrooms for each contact.
- Delivery systems for food and other needs.
- Staff to monitor contacts at least daily for fever and respiratory symptoms.
- Transportation to medical evaluation for persons who develop symptoms.
- Mechanisms for communication, including telephone (for monitoring by health staff, reporting symptoms, gaining access to support services, and communicating with family).
- Adequate security for those in the facility.
- Social support resources (TV, radio, reading materials).

Annex 2

DRAFT MESSAGE MAPS FOR GENERAL PUBLIC ON AVIAN AND PANDEMIC FLU

TABLE A-1. Questions, Key Messages, and Supporting Facts

QUESTION OR CONCERN	KEY MESSAGE	SUPPORTING FACTS
What is Avian Flu?	Avian influenza is normally found in birds.	A severe form of bird flu is widespread in Asia.
		Outbreaks of avian influenza in birds have occurred previously in Ukraine and have been contained.
		Ukraine is strengthening surveillance to identify disease.
	It's possible for avian influenza to spread to humans in some cases.	Bird flu rarely affects humans, because it requires close contact with infected birds.
		The avian influenza virus may change so it could spread more easily and cause a pandemic.
		Avian influenza can cause serious disease and death in humans.
	An outbreak is possible, if the virus changes to a form that is spread easily from person to person.	Disease in birds can be spread from country to country through bird migration.
		Plans are being developed to import vaccine quickly if a pandemic begins.
		Tamiflu will be stockpiled to help treat avian influenza in humans.
Avian Flu confirmed in birds in Ukraine	H5N1 avian influenza has been confirmed in ___birds in Ukraine.	The virus was isolated (event specific,when/where).
		Officials are moving quickly to limit the spread of avian flu in birds.
		Outbreaks of avian influenza in birds have occurred previously in Ukraine and have been contained.
	This does NOT mean that people will get sick.	Bird flu rarely affects humans, because it requires close contact with infected birds.
		Officials are watching closely for any increase influ-like illnesses, as an indicator of changes in the epidemiological situation.
		There have been no avian influenza cases in people in Ukraine.
	There are things to do to protect yourself.	Don't handle any wild birds or poultry with your bare hands.
		Don't attract wild birds with bird feeders or bird baths.
		Always cook poultry thoroughly and wash your hands and any surfaces that have come into contact with raw poultry.

QUESTION OR CONCERN	KEY MESSAGE	SUPPORTING FACTS	
<p>What is pandemic flu?</p>	<p>Pandemic influenza is a worldwide flu outbreak.</p>	<p>Avian flu and pandemic influenza are not the same thing.</p> <p>An influenza pandemic could be caused by a new flu virus other than avian flu.</p> <p>Pandemic influenza is expected to have a high death rate.</p>	
	<p>If the current Asian bird flu changes so it spreads easily to humans, a pandemic could occur.</p>	<p>There were 3 pandemics during the 20th century and scientists think we're overdue for the next.</p> <p>It is likely that vaccine against a pandemic influenza strain will not be available initially or will be in limited supply.</p> <p>Any available vaccine will go first to medical workers and support personnel involved in direct patient care and vaccinations, because they are critical for the provision of quality medical care.</p>	
	<p>We are prepared for an influenza pandemic, because we have a response plan.</p>	<p>We have improved surveillance through nationwide information-sharing with SES and health facility partners.</p> <p>We have trained staff and partners to respond through local drills based on regional plans.</p> <p>We are coordinating with national agencies and local partners to receive and distribute vaccine as soon as it becomes available.</p> <p>We have developed documents that regulate prevention, diagnosis, and management of avian influenza in humans.</p> <p>We have coordinated efforts of all stakeholders.</p>	
	<p>Pandemic Flu arrives. What should the public know about an outbreak of pandemic flu?</p>	<p>The pandemic has now reached Ukraine.</p>	<p>This flu is highly contagious and is spread by coughing and sneezing.</p> <p>Past influenza pandemics have caused many serious illnesses and deaths, so we must work together to try to stop the spread of this disease.</p> <p>Cases have been reported in ___ districts.</p>
		<p>Vaccine supply is limited, and additional vaccine may not be available for 3-6 months.</p>	<p>Since vaccine supply is limited, only ____ (event-specific) will receive the flu shot.</p> <p>It's vital that these people get vaccinated first because ____ (event-specific).</p> <p>To reduce risk, do the following ____ (event-specific), e.g:</p> <ul style="list-style-type: none"> • Avoid close contact with the sick. • Wash hands often. • Cover your cough. • Wear a mask in public. <p>Limit time spent in public, especially if you have flu symptoms.</p>
		<p>We want to reduce contact and slow the spread of disease.</p>	<p>We might have to close schools for a while and limit public gatherings.</p> <p>To protect people who have not gotten sick, SES is quarantining those who have been exposed to ill individuals for as long as the incubation period of the disease.</p> <p>Sick individuals must remain in isolation until 7 days after the end of fever.</p>

QUESTION OR CONCERN	KEY MESSAGE	SUPPORTING FACTS	
<p>Now that there is an outbreak, what can people do to protect themselves?</p>	<p>Avoid close contact between sick and well people.</p>	<p>Limit attendance at public events. Cover mouth and nose with your sleeve or tissue every time you sneeze or cough. Put used tissue in the trash.</p>	
	<p>Stay home from work, school, or errands when you are sick.</p>	<p>You can spread flu to coworkers, resulting in severe staff shortages. If you need food or medicines, ask others who are healthy to bring them to you rather than going to the store yourself. Friends or helpers can leave supplies outside your door so that you do not expose them to the flu.</p>	
	<p>Wash your hands with soap often and use a hand sanitizer if soap and water aren't available.</p>	<p>Flu can be spread by direct contact. Soap or hand sanitizer can kill the flu virus. Handwashing is helpful to reduce the spread of flu.</p>	
	<p>What are symptoms of pandemic flu?</p>	<p>Typical signs and symptoms of flu are well known.</p>	<p>Symptoms include fever, headache, body aches and cough. Signs and symptoms appear approximately 2-5 days after exposure. Illness may last 1-2 weeks.</p>
		<p>Signs and symptoms of a pandemic influenza strain may differ.</p>	<p>Event-specific</p>
		<p>If you believe you have the flu, contact a physician or call the regional health administration call center for information about symptoms.</p>	<p>The number is _____ and the hours of operation are _____. Additional information is available on the MoH website: http://www.moz.gov.ua/ If you think you have the flu, telephone your doctor for advice and ask for a mask as soon as you arrive at his/her office.</p>
		<p>What is treatment of pandemic flu?</p>	<p>Since this is a new strain of flu, no vaccine is available right now.</p>
	<p>Tamiflu may be available, but will probably be reserved for treatment of the sick.</p>		<p>It is in limited supply. It may or may not be effective. When effective, it can lessen symptoms if taken within 24 hours of onset of symptoms.</p>
	<p>Those who are ill should remain at home.</p>		<p>Drink plenty of fluids and get plenty of rest. Discard used tissues properly and wash your hands frequently after coughing or sneezing. Limit contacts with family members and friends.</p>

QUESTION OR CONCERN	KEY MESSAGE	SUPPORTING FACTS
<p>Why have you imposed/lifted a quarantine during the pandemic?</p>	<p>Because flu is so contagious, aggressive action is necessary.</p>	<p>Flu can be spread by air (coughing or sneezing) or direct contact.</p>
		<p>An infected person can spread flu before developing symptoms.</p>
		<p>People who have been exposed may pose a risk of illness to others.</p>
	<p>Initially, quarantine may possibly slow down spread of flu.</p>	<p>Quarantine limits personal contact.</p>
		<p>Slowing the spread of flu may allow time to develop and dispense a vaccine.</p>
		<p>Slowing the spread of flu may allow additional time to prepare for the outbreak.</p>
	<p>Flu is now too widespread for quarantine to make an impact.</p>	<p>Quarantine means keeping people who are not sick, but who have been exposed to the flu, away from anybody else.</p>
		<p>Efforts now are better-directed in caring for the sick, rather than making sure exposed people remain in quarantine.</p>
		<p>Flu is so widespread that people will be exposed to flu despite quarantine efforts.</p>
<p>What can the public or a business do to prepare for pandemic flu?</p>	<p>Determine the impact a pandemic would have on your business.</p>	<p>Determine the impact of a large number of employees getting sick.</p>
		<p>Determine the impact from a customer perspective.</p>
		<p>Determine the impact on your inventory of products or services.</p>
	<p>Develop an emergency plan to operate during a pandemic.</p>	<p>Train personnel, identify critical positions, and test plan.</p>
		<p>Cross-train for critical positions.</p>
		<p>Prioritize personnel for possible vaccination (if available).</p>
	<p>Network with external partners to ensure continued services.</p>	<p>Set up brainstorm sessions to meet and begin discussion.</p>
		<p>Develop strategies.</p>
		<p>Practice these strategies.</p>

Annex 3

BUSINESS PANDEMIC INFLUENZA PLANNING CHECKLIST

TABLE A-2. Plan for the Impact of a Pandemic on your Business

	COMPLETED	IN PROGRESS	NOT STARTED
Identify a pandemic coordinator and/or team with defined roles and responsibilities for preparedness and response planning.			
Identify essential employees and other critical inputs (e.g., raw materials, suppliers, sub-contractor services/products, and logistics) required to maintain business operations by location and function during a pandemic.			
Train and prepare ancillary workforce (e.g., contractors, employees in other job titles/descriptions, retirees).			
Develop and plan for scenarios likely to result in an increase or decrease in demand for your products and/or services during a pandemic (e.g., effect of restriction on mass gatherings, need for hygiene supplies).			
Determine potential impact of a pandemic on company business financials using multiple possible scenarios that affect different product lines and/or production sites.			
Determine potential impact of a pandemic on business-related domestic and international travel (e.g., quarantines, border closures).			
Find up-to-date, reliable pandemic information from the SES, local health administration and other sources and establish sustainable information links.			
Establish an emergency communications plan and revise periodically. This plan includes identification of key contacts (with back-ups), chain of communications (including suppliers and customers), and processes for tracking and communicating business and employee status.			
Implement an exercise/drill to test your plan, and revise periodically.			

TABLE A-3. Plan for the Impact of a Pandemic on your Employers and Customers

	COMPLETED	IN PROGRESS	NOT STARTED
Forecast and allow for employee absences during a pandemic due to factors such as personal illness, family member illness, community containment measures and quarantines, school and/or business closures, and public transportation closures.			
Implement guidelines to modify the frequency and type of face-to-face contact (e.g., hand-shaking, seating in meetings, office layout, shared workstations) among employees and between employees and customers according to the SES recommendations.			
Encourage and track annual influenza vaccination for employees.			
Evaluate employee access to and availability of health care and social services during a pandemic, and improve services as needed.			
Identify employees and key customers with special needs, and incorporate the requirements of such persons into your preparedness plan.			

TABLE A-4. Establish Policies to be Implemented During a Pandemic

	COMPLETED	IN PROGRESS	NOT STARTED
Establish policies for employee compensation and sick-leave absences unique to a pandemic (e.g., non-punitive liberal leave), including policies on when a previously ill person is no longer infectious and can return to work after illness.			
Establish policies for flexible worksite (e.g., telecommuting) and flexible work hours (e.g., staggered shifts).			
Establish policies for preventing influenza spread at the worksite (e.g., promoting respiratory hygiene/cough etiquette, and prompt exclusion of people with influenza symptoms).			
Establish policies for employees who have been exposed to pandemic influenza, are suspected to be ill, or become ill at the worksite (e.g., infection control response, immediate mandatory sick leave).			
Establish policies for restricting travel to affected geographic areas (consider both domestic and international sites), evacuating employees working in or near an affected area when an outbreak begins, and guidance for employees returning from affected areas.			
Set up authorities, triggers, and procedures for activating and terminating the company's response plan, altering business operations (e.g., shutting down operations in affected areas), and transferring business knowledge to key employees.			

TABLE A-5. Allocate Resources to Protect your Employees and Customers During a Pandemic

	COMPLETED	IN PROGRESS	NOT STARTED
Provide sufficient and accessible infection control supplies (e.g., hand-hygiene products, tissues, and receptacles for their disposal) in all business locations.			
Enhance communications and information technology infrastructures as needed to support employee telecommuting and remote customer access.			
Ensure availability of medical consultation and advice for emergency response.			

TABLE A-6. Communicate with and Educate your Employees

	COMPLETED	IN PROGRESS	NOT STARTED
Develop and disseminate programs and materials covering pandemic fundamentals (e.g., signs and symptoms of influenza, modes of transmission), personal and family protection and response strategies (e.g., hand hygiene, coughing/sneezing etiquette, contingency plans).			
Anticipate employee fear and anxiety, rumors, and misinformation, and plan communications accordingly.			
Disseminate information to employees about your pandemic preparedness and response plan.			
Provide information for the at-home care of ill employees and family members.			
Develop platforms (e.g., hotlines, dedicated websites) for communicating pandemic status and actions to employees, vendors, suppliers, and customers inside and outside the worksite in a consistent and timely way, including the emergency contact system.			

TABLE A-7. Coordinate with Other Organizations and Help your Community

	COMPLETED	IN PROGRESS	NOT STARTED
Collaborate with the local health administration and major local health care facilities to share your pandemic plans and understand their capabilities and plans.			
Collaborate with the national, regional, and local sanitary-epidemiological services and other emergency responders to participate in their planning processes, share your pandemic plans, and understand their capabilities and plans.			
Communicate with local and/or regional SES and health administration about the assets and/or services your business could contribute to the community.			
Share best practices with other businesses in your communities and associations to improve community response efforts.			

Annex 4

PANDEMIC INFLUENZA INFECTION CONTROL GUIDANCE TO HEALTH CARE PROVIDERS

TABLE A-8. Standard Precautions and Recommendations for Pandemic Influenza

STANDARD PRECAUTIONS	RECOMMENDATIONS
Hand hygiene	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; between patient contacts. Hand hygiene includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) that contain an emollient and do not require the use of water. If hands are visibly soiled or contaminated with respiratory secretions, they should be washed with soap (either non-antimicrobial or antimicrobial) and water. In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
Personal protective equipment (PPE) <ul style="list-style-type: none"> • Gloves • Gown • Face/eye protection (e.g., surgical or procedure mask and goggles or a face shield) 	<ul style="list-style-type: none"> • For touching blood, body fluids, secretions, excretions, and contaminated items; for touching mucous membranes and non-intact skin. • During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated. • During procedures and patient-care activities likely to generate splash or spray of blood, body fluids, secretions, excretions.
Safe work practices	Avoid touching eyes, nose, mouth, or exposed skin with contaminated hands (gloved or ungloved); avoid touching surfaces with contaminated gloves and other PPE that are not directly related to patient care (e.g., door knobs, keys, light switches).
Patient resuscitation	Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
Soiled patient-care equipment	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves if visibly contaminated; perform hand hygiene after handling equipment.
Soiled linen and laundry	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry and perform hand hygiene afterward.
Needles and other sharps	Use devices with safety features when available; do not recap, bend, break, or hand-manipulate used needles; if recapping is necessary, use a one-handed scoop technique; place used sharps in a puncture-resistant container.
Environmental cleaning and disinfection	Use MoH-approved hospital detergent-disinfectant; follow standard facility procedures for cleaning and disinfection of environmental surfaces; emphasize cleaning/disinfection of frequently touched surfaces (e.g., bed rails, phones, lavatory surfaces).

STANDARD PRECAUTIONS	RECOMMENDATIONS
Disposal of solid waste	Contain and dispose of solid waste (medical and non-medical) in accordance with facility procedures and/or local or state regulations; wear gloves when handling waste; wear gloves when handling waste containers and perform hand hygiene afterward.
Respiratory hygiene/cough etiquette: measures for persons with symptoms of a respiratory infection; (implement at first point of encounter, e.g., reception area).	Have the patient cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacle; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 1 meter) away from persons who are not ill.
DROPLET PRECAUTIONS	RECOMMENDATIONS
Patient placement	Place patients with influenza in a private room or cohort with other patients with influenza (during the early stages of a pandemic, infection with influenza should be laboratory-confirmed, if possible). Keep door closed; apply droplet precautions to all persons in the room.
Personal protective equipment	Wear a surgical or procedure mask for entry into patient room; wear other PPE as recommended for standard precautions.
Patient transport	Limit patient movement outside of room to medically necessary purposes; have patient wear a procedure or surgical mask when outside the room.
Other	Follow standard precautions and facility procedures for handling linen and laundry and dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient-care equipment, disposal of solid waste, and postmortem care.
Aerosol-generating procedures	During procedures that may generate small particles of respiratory secretions (e.g., endotracheal intubation, bronchoscopy, nebulizer treatment, suctioning), health care personnel should wear gloves, gown, face/eye protection, and a fit-tested N-95 respirator or other appropriate particulate respirator.

Annex 5

HOME CARE INFECTION CONTROL GUIDANCE FOR PANDEMIC INFLUENZA PATIENTS AND HOUSEHOLD MEMBERS

Most patients with pandemic influenza will be able to remain at home during the course of their illness and can be cared for by family members or others who live in the household. Anyone who has been in the household with an influenza patient during the incubation period is at risk for developing influenza. A key objective in this context is to limit transmission of pandemic influenza within and outside the home.

Management of influenza patients in the home

- Physically separate the patient with influenza from non-ill persons living in the home as much as possible.
- Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., five days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow respiratory hygiene/cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and should wear a mask.

Management of other persons in the home

- Persons who have not been exposed to pandemic influenza and who are not essential for patient care or support should not enter the home while persons are still having a fever due to pandemic influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the patient with pandemic influenza should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should be vigilant for the development of influenza symptoms. Consult with health care providers to determine whether a pandemic influenza vaccine, if available, or antiviral prophylaxis should be considered.

Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap and water or use of an alcohol-based hand sanitizer) after contact with an influenza patient or the environment in which they are receiving care.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be beneficial.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry may be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid self-contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Consider placing a bag for this purpose at the bedside.
- Environmental surfaces in the home should be cleaned using normal procedures.

Annex 6

WHO CASE DEFINITIONS⁴ FOR HUMAN INFECTIONS WITH INFLUENZA A (H5N1) VIRUS

Suspected H5N1 Case

Clinical Presentation

Unexplained acute lower respiratory illness with fever ($\geq 38^{\circ}\text{C}$) and cough, shortness of breath, or difficulty breathing

AND

Epidemiological Criteria

One of the following exposures within 7 days prior to symptom onset:

- Close contact (within 1 meter) with a person who is a suspected, probable, or confirmed H5N1 case (e.g., caring for, speaking with, or touching this person).
- Exposure to poultry or wild birds or their remains (e.g., handling, slaughtering, defeathering, butchering, preparing for consumption) or to environments contaminated by their feces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month.
- Consumption of raw or undercooked poultry products in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month.
- Close contact with a confirmed H5N1-infected animal other than poultry or wild birds (e.g., cat or pig).
- Handling samples (animal or human) suspected of containing the H5N1 virus in a laboratory or other setting.

⁴**Note 1:** The case definitions apply to the pandemic alert (WHO's pre-pandemic phases 3-5) and may change as new information about the disease or its epidemiology becomes available.

Note 2: The case definitions are *not intended to provide complete descriptions of disease in humans, nor are they to be used as screening criteria to determine who should have specimens collected for H5N1 screening*. Rather, they are intended to standardize reporting of cases to WHO and ensure comparability of data.

Note 3: In clinical situations requiring decisions concerning treatment, care, or triage of persons who may have H5N1 infection, decisions should be based on clinical judgment and epidemiological reasoning, and not on adherence to the case definitions. While most patients with H5N1 infection present with fever and lower respiratory complaints, the clinical spectrum is broad.

Probable H5N1 Case (Notify WHO)

DEFINITION 1: A person meeting the criteria for a suspected case

AND

one of the following additional criteria:

- Infiltrates or evidence of an acute pneumonia on chest radiograph plus evidence of respiratory failure (e.g., hypoxemia, severe tachypnea) **or**
- Positive laboratory confirmation of an influenza A infection, but insufficient laboratory evidence for H5N1 infection.

OR

DEFINITION 2: A person dying of unexplained acute respiratory illness who is considered to be epidemiologically linked by time, place, and exposure to a probable or confirmed H5N1 case.

Confirmed H5N1 Case (Notify WHO)

A person meeting the criteria for a suspected or probable case

AND

one of the following positive results in a national, regional, or international laboratory whose H5N1 test results are accepted by WHO as confirmatory:

- Isolation of an H5N1 virus.
- Positive H5 PCR results from tests using two different PCR targets (e.g., primers specific for influenza A and H5 hemagglutinin).
- A fourfold or greater rise in neutralization antibody titer for H5N1 based on testing of an acute serum specimen (collected 7 days or fewer after symptom onset) and a convalescent serum specimen. The convalescent neutralizing antibody titer must also be 1:80 or higher.
- A microneutralization antibody titer for H5N1 of 1:80 or greater in a single serum specimen collected at day 14 or later after symptom onset and a positive result using a different serological assay, for example, a horse red blood cell hemagglutination inhibition titer of 1:160 or greater or an H5-specific western blot positive result.

Annex 7

HOSPITAL PANDEMIC PREPAREDNESS CHECKLIST

TABLE A-9. Hospital Pandemic Preparedness Checklist

PREPAREDNESS SUBJECT	ACTIONS NEEDED
1. Structure for planning and decision-making	
An internal, multidisciplinary planning committee for influenza preparedness has been created.	
A person has been designated as the influenza preparedness coordinator. Name _____	
Members of the planning committee include the following hospital staff members (insert names) <ul style="list-style-type: none"> <input type="checkbox"/> Administration _____ <input type="checkbox"/> Infection control _____ <input type="checkbox"/> Facility engineering _____ <input type="checkbox"/> Nursing administration _____ <input type="checkbox"/> Intensive care _____ <input type="checkbox"/> Admission department _____ <input type="checkbox"/> Laboratory services _____ <input type="checkbox"/> Supervising nurse _____ <input type="checkbox"/> Staff development _____ <input type="checkbox"/> Diagnostic imaging _____ <input type="checkbox"/> Pharmacy _____ <input type="checkbox"/> Information technology _____ <input type="checkbox"/> Other members _____ 	
A regional health administration/preparedness person has been identified as a committee liaison. (Insert name) _____	
2. Development of a written pandemic influenza plan	
A written plan has been completed or is in progress that includes the elements listed in Section 3 below.	
The plan specifies the circumstances under which the plan will be activated.	
Responsibilities of key personnel related to executing the plan have been described.	
A simulation exercise has been developed to test the effectiveness of the plan.	
A simulation exercise has been performed. (Date performed _____)	

PREPAREDNESS SUBJECT	ACTIONS NEEDED
3. Elements of an influenza pandemic plan	
<p>A surveillance plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Syndromic surveillance and criteria for distinguishing pandemic influenza have been established in the admissions department. <input type="checkbox"/> Thresholds for heightened local surveillance for pandemic influenza have been established by local SES. <input type="checkbox"/> A system has been created for internal review of pandemic influenza activity in patients presenting to the admissions department. <input type="checkbox"/> A system for monitoring for nosocomial transmission of pandemic has been implemented and tested by monitoring nosocomial transmission for non-pandemic influenza. 	
<p>A communication plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Responsibility for external communication has been assigned. <p>Person responsible for updating public health reporting _____</p> <p>Clinical spokesperson for the facility _____</p> <p>Media spokesperson for the facility _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> Key points of contact outside the facility have been identified. <p>Regional health administration contact _____</p> <p>Local SES contact _____</p> <p>Newspaper contact(s) _____</p> <p>Radio contact(s) _____</p> <ul style="list-style-type: none"> <input type="checkbox"/> A list of other health care facilities with whom it will be necessary to maintain communication has been established. <input type="checkbox"/> A meeting with local health care facilities has been held to discuss a communication strategy. <input type="checkbox"/> A plan for updating key facility personnel on a daily basis has been established. The responsible person is _____ <input type="checkbox"/> A system to track pandemic influenza admissions and discharges has been developed and tested by monitoring non-pandemic influenza admissions and discharges in the community. <input type="checkbox"/> A strategy for regularly updating clinical, admissions, and outpatient staff on the status of pandemic influenza, once detected, has been established. (Responsible person _____) <input type="checkbox"/> A plan for informing patients and visitors about the level of pandemic influenza activity has been established. 	
<p>An education and training plan on pandemic influenza has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Appropriate materials for educating all personnel about pandemic influenza and the facility's pandemic influenza plan have been identified. <input type="checkbox"/> Current and potential sites for education of clinicians on pandemic influenza have been identified. <input type="checkbox"/> A system is in place for tracking which personnel have completed pandemic influenza training.. <input type="checkbox"/> A plan is in place for rapidly training non-facility staff brought in to provide patient care when the hospital reaches surge capacity. 	

PREPAREDNESS SUBJECT	ACTIONS NEEDED
3. Elements of an influenza pandemic plan (continued)	
<p>The following groups of health care personnel have received training on the facility's influenza plan:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Attending physicians <input type="checkbox"/> Nursing staff <input type="checkbox"/> Laboratory staff <input type="checkbox"/> Admissions department personnel <input type="checkbox"/> Outpatient personnel <input type="checkbox"/> Engineering and maintenance personnel <input type="checkbox"/> Security personnel 	
<p>A triage and admission plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> A specific location has been identified for triage of patients with possible pandemic influenza. <input type="checkbox"/> The plan includes use of signage to direct and instruct patients with possible pandemic influenza on the triage process. <input type="checkbox"/> Patients with possible pandemic influenza will be physically separated from other patients seeking medical attention. <input type="checkbox"/> A system for phone triage for purposes of prioritizing patients who require a medical evaluation has been developed. <input type="checkbox"/> Criteria for determining which patients need a medical evaluation are in place. <input type="checkbox"/> A method for tracking the admission and discharge of patients with pandemic influenza has been developed. The tracking method has been tested with non-pandemic influenza patients. 	
<p>A facility access plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Criteria and protocols for closing the facility to new admissions are in place. <input type="checkbox"/> Criteria and protocols for limiting visitors have been established. <input type="checkbox"/> Hospital security has had input into procedures for enforcing facility access controls. 	

PREPAREDNESS SUBJECT	ACTIONS NEEDED
3. Elements of an influenza pandemic plan (continued)	
<p>An occupational health plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> A system for rapidly delivering vaccine or antiviral prophylaxis to health care personnel has been developed. <input type="checkbox"/> The system has been tested during a non-pandemic influenza season. <input type="checkbox"/> A method for prioritizing health care personnel for receipt of vaccine or antiviral prophylaxis based on level of patient contact and personal risk for influenza complications has been established. <input type="checkbox"/> A system for detecting symptomatic personnel before they report for duty has been developed. <input type="checkbox"/> This system has been tested during a non-pandemic influenza period. <input type="checkbox"/> A policy for managing health care personnel with symptoms of or documented pandemic influenza has been established. The policy considers: <ul style="list-style-type: none"> <input type="checkbox"/> When personnel may return to work after having pandemic influenza. <input type="checkbox"/> When personnel who are symptomatic but well enough to work, will be permitted to continue working. <input type="checkbox"/> A method for placing on leave or altering the work locations of personnel who are at high risk for influenza complications (e.g., pregnant women, immuno-compromised health care workers) has been developed. <input type="checkbox"/> Mental health resources who will provide counseling to personnel during a pandemic have been identified. <input type="checkbox"/> A strategy for housing health care personnel who may be needed on-site for prolonged periods of time is in place. <input type="checkbox"/> A strategy for accommodating and supporting personnel who have child or elder-care responsibilities has been developed. 	
<p>A vaccine and antiviral use plan has been developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> A contact for obtaining influenza vaccine has been identified. (Name)_____ <input type="checkbox"/> A contact for obtaining antiviral prophylaxis has been identified. (Name)_____ <input type="checkbox"/> A priority list (based on MoH guidance for use of vaccines and antiviral drugs in a pandemic when in short supply) and estimated number of patients and health care personnel who would be targeted for influenza vaccination or antiviral prophylaxis has been developed. 	
<ul style="list-style-type: none"> <input type="checkbox"/> Issues related to surge capacity have been addressed. <input type="checkbox"/> A plan is in place to address unmet staffing needs in the hospital. <input type="checkbox"/> The minimum number and categories of personnel needed to care for a group of patients with pandemic influenza has been determined. <input type="checkbox"/> Responsibility for assessing day-to-day clinical staffing needs during an influenza pandemic has been assigned. Persons responsible are: (names and/or titles) _____ <input type="checkbox"/> Criteria for declaring a “staffing crisis” that would enable the use of emergency staffing alternatives have been defined. <input type="checkbox"/> The plan includes linking to local and regional health care administrations to collaborate on addressing widespread health care staffing shortages during a crisis. <input type="checkbox"/> A priority list for reassignment and recruitment of personnel has been developed. 	

PREPAREDNESS SUBJECT	ACTIONS NEEDED
3. Elements of an influenza pandemic plan (continued)	
<input type="checkbox"/> Strategies to increase bed capacity have been identified. <input type="checkbox"/> A threshold has been established for canceling elective admissions and surgeries. <input type="checkbox"/> Agreements have been made with facilities that would accept non-influenza patients in order to free-up bed space. <input type="checkbox"/> Areas of the facility that could be utilized for expanded bed space have been identified. <input type="checkbox"/> The estimated patient capacity for this facility is _____ <input type="checkbox"/> Plans for expanded bed capacity have been discussed with local and regional health administrations.	
<p>Anticipated durable and consumable resource needs have been determined.</p> <input type="checkbox"/> A primary plan and a contingency plan to address supply shortages have been developed. <input type="checkbox"/> Plans for obtaining limited resources have been discussed with local and regional health administrations.	
<p>A strategy for handling increased numbers of deceased persons has been developed.</p> <input type="checkbox"/> Plans for expanding morgue capacity have been discussed with local and regional health administrations. <input type="checkbox"/> Local morticians have been involved in planning discussions. <input type="checkbox"/> Mortality estimates have been used to estimate the number of body bags. <input type="checkbox"/> Supply sources for postmortem materials have been identified. _____	

Annex 8

GUIDELINES FOR COLLECTING, STORING, AND TRANSPORTING SPECIMENS FOR INFLUENZA DIAGNOSTICS⁵

Safety

The use of PPE is required when entering a room where aerosol-producing procedures are being performed on infected patients. The level of PPE needed will be determined by the exposure risk.

In general, PPE should include:

- A suitable form of respiratory protection.
- Non-sterile latex gloves (or equivalent if allergic).
- Goggles or a face shield.
- Gown.
- Head covering.

It may also be necessary to include:

- An impermeable apron.
- Suitable rubber boots.

High-risk activities—such as postmortem examination of a confirmed or strongly suspected human case—should be conducted only in a full-body coverall with easily cleaned waterproof boots, heavy rubber gloves, and eye protection.

PPE is essential for preventing infection during sampling, but it does not alleviate all safety concerns. Individuals taking specimens should comply with all recommended infection control precautions, including specific personal hygiene measures and the correct use of disinfectants.

Handwashing techniques. When hands are visibly dirty or contaminated with biological materials, disinfect hands and wash them with soap and water. If hands are not visibly dirty, use an alcohol-based cleanser.

Soap and water. Liquid or bar forms of plain soap are acceptable when washing hands with a non-antimicrobial soap and water. Wet hands with water and apply the amount of product necessary to cover all surfaces. Vigorously perform rotational hand-rubbing on both palms, and interlace fingers to cover all surfaces. Rinse hands with water and dry thoroughly with a single-use towel. Use the towel to turn off the tap/faucet. Make sure the hands are dry. Ensure that towels are not used multiple times or by multiple people. Use running, clean water for hand hygiene whenever possible. Avoid using hot water, as repeated exposure to hot

⁵A significant portion of this section is based on materials taken from WHO's *Collecting, Preserving and Shipping Specimens for the Diagnosis of Avian Influenza A (H5N1) Virus Infection: Guide for Field Operations* (2006).

water may increase the risk of dermatitis. When bar soap is used, small bars of soap in racks that facilitate drainage should be used.

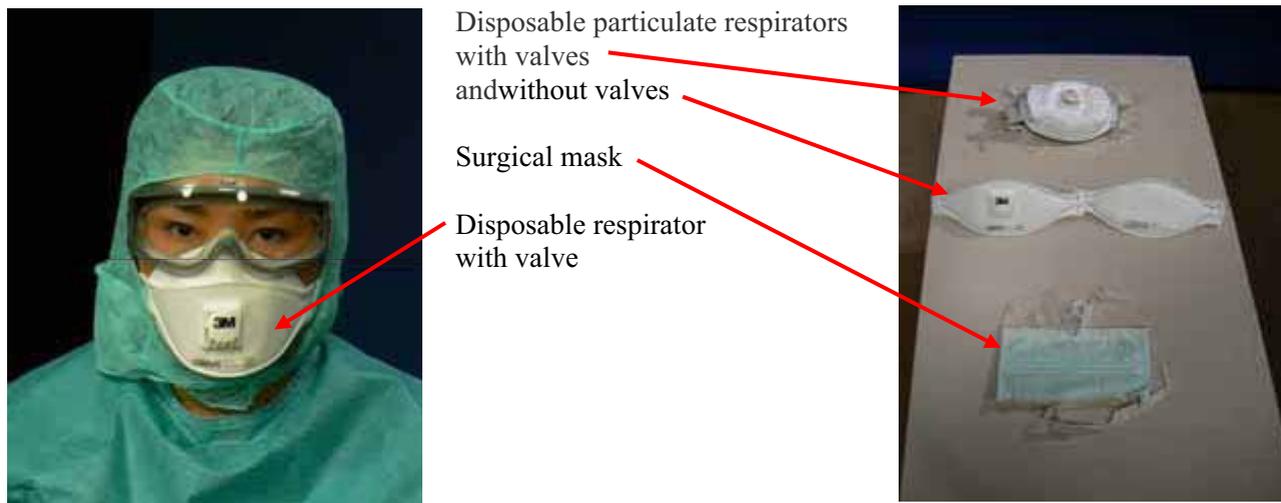
Hand cleansers. When using an alcohol-based formulation (or another disinfectant-based hand cleanser), apply a palmful of the product and cover all surfaces of the hands. Rub hands until they are dry.

Respiratory protection. The level of respiratory protection required when sampling will depend on a number of factors, including the type of sample to be taken (e.g., sampling for blood is less risky than taking a throat swab, which may cause the patient to cough) and the type of respiratory risk.

Many types of respirators and masks are available, and the different types offer different levels of respiratory protection. It must be accepted that in some situations, high-efficiency respirators will not be available, and basic gauze masks may be all that can be used. Such masks should be changed every four hours.

- Individuals should select a particulate respirator that fits well. A user-seal check (fit check) should be performed each time a disposable particulate respirator is worn.
- Disposable particulate respirators, although similar in appearance to surgical masks, differ significantly from surgical masks because they are specifically designed to protect the wearer from exposure to airborne contaminants by sealing tightly to the face and filtering infectious particles from the air.
- If a particulate respirator is not available, a tightly fitting surgical or procedure mask should be used.
- Surgical and procedure masks do not provide protection against small-particle aerosols (such as droplet nuclei). Aerosol-generating procedures should not be performed if a particulate respirator is not available.

Particulate respirators (see photographs below) are lightweight and fairly comfortable to wear. Models with exhalation valves cannot be used when working in sterile areas (such as operating rooms) because the exhalation valve allows droplets and particles exhaled by the user to escape. Since air must be actively drawn into the mask, the mask will increase the work of breathing when used properly. In addition, it is almost impossible to prevent occasional leaks of contaminated air into the mask.



Disinfectants. Chlorine is one of the disinfectants used against influenza A (H5N1) contamination. Other disinfectants registered in Ukraine may also be used in accordance with the manufacturers' instructions.

Disinfection of surfaces in laboratories where PCR work is undertaken and decontamination of blood or body fluid spills. Disinfection is carried out by special disinfectants that do not affect the course of laboratory reaction and do not damage the equipment.

Disinfection of hands. The principal means for disinfecting hands is by washing with soap and water. If available, a commercial hand disinfectant containing alcohol, chlorhexidine, or polyvidone iodine can be used. The use of strong chlorine solutions (such as 1:100 chlorine solution) should be avoided, as they are dangerous. **Sterilization and reuse of instruments and materials.** In field outbreaks, sterilization and reuse of any instruments or materials are not generally advisable. However, if it is necessary to reuse instruments, these should first be disinfected and cleaned, then sterilized.

Taking Specimens

For each type of specimen, two specimens should be taken in separate specimen tubes on each occasion. One can be used for immediate analysis and the other retained for reference purposes, such as retesting. Each patient sample should be accompanied by an appropriate laboratory notification form containing a unique identifier (such as the patient's first and last names and age). Specimen tubes should also be marked with information about the type of specimen in the tube and the date on which the specimen was taken.

Specimens to Collect from Cases

Preferred samples

- **Upper respiratory tract.** Take both types of specimens to allow detection of influenza A (H5N1) and other influenza viruses:
 - Posterior-pharyngeal (throat) swabs are currently the highest-yield upper respiratory tract specimen for detecting influenza A (H5N1) (unlike human influenza). Nasopharyngeal swabs may be collected, too (see below).
 - Nasal swabs with nasal secretions (from the anterior turbinate area) or nasopharyngeal aspirates or swabs are appropriate specimens for detecting human influenza A and B.
- **Lower respiratory tract.** If the patient is intubated, take a tracheal aspirate or collect a sample during bronchoalveolar lavage.
- **Blood.** For serum, obtain acute and convalescent specimens, if possible.
- **Secondary specimens.** These are not essential but can be useful if materials are available.
 - Plasma in ethylenediaminetetraacetic acid (EDTA) for detection of viral ribonucleic acid (RNA).
 - Rectal swab—especially if the patient has diarrhea.
 - Spinal fluid, if meningitis is suspected and a spinal tap is to be performed for diagnostic/therapeutic purposes.

When to Collect the Specimens from Suspected Cases

- **A throat swab should be taken (if possible) within 3 days of symptom onset.** Note that the virus is generally detectable in throat swabs from most patients from the onset of symptoms (or even just before) until the end of the second week and, infrequently, the beginning of the third week. Cases whose initial specimens are negative for influenza A (H5N1) but continue to show symptoms suggestive of this type of

infection (or who have a history of exposure that supports the diagnosis) should be sampled again, at least once, as soon as possible.

- Virus may be detectable **in tracheal aspirates** from the onset of lower respiratory complaints (e.g., dyspnea, difficulty breathing, marked cough) or pneumonia **until the second or third week of illness**.
- **An acute-phase serum sample** should be taken **7 or fewer days after symptom onset**. This will usually be done when the patient presents and begins treatment. A convalescent sample should be taken after 3 to 4 weeks. Note that the limited available data on antibody kinetics indicate a development of positivity (initially ELISA [enzyme-linked immunosorbent assay] and not necessarily neutralizing antibody) from day 10 onward.
- **Single serum samples** should be collected at **day 14 or later** after symptom onset, since the likelihood of detecting neutralizing antibodies increases over time, certainly during the first 3 to 4 weeks after onset of symptoms.
- **Blood serum or plasma** for the detection of viral RNA should be taken **during the first 7 to 9 days** after the development of symptoms because the patient is most likely to be RNAemic (having detectable RNA in the bloodstream) at that time.
- Ideally, initial specimens (respiratory and blood) should be collected from suspected patients before antiviral therapy is begun—but treatment must not be delayed in order to take specimens. (Note that standard treatment may render throat swabs negative for virus after 3 or more days of treatment but probably has no effect on the development of neutralizing antibody).
- Specimens should be collected from deceased patients as soon as possible after death.

Sampling Human Contacts

Taking single respiratory tract or blood specimens from contacts of human cases who remain healthy in the days immediately after potential contact with influenza A (H5N1) is unlikely to yield useful results. Individuals who have had contact with human cases or exposure to sick animals should be observed (including their daily temperature) for 7 days after the last contact. If they become ill with an ILI, they should be sampled as outlined above. Blood specimens for serological studies can be taken from contacts for several reasons:

- As a tool for searching for asymptomatic/subclinical cases.
- For studies of the prevalence of influenza A (H5N1) infection.
- To assess possible susceptibility to influenza A (H5N1) infection.

Obtaining Specimens from the Respiratory Tract

Sampling from the respiratory tract is hazardous, as the operator is very close to the patient and the procedure can generate aerosols and droplets. Full PPE is therefore essential.

Choose a sitting position for adults and a supine position for infants and young children. Children may need to be restrained during the sampling process (see photo). It is generally best to avoid having the parent(s) in the room during the sampling procedure, since the sampling procedure can generate aerosols that could present a risk to others in the immediate vicinity.



When taking throat (or nasal) swabs, the swabs must be held correctly. They should be held between the thumb and the first and second fingers, with the shaft protruding beyond the web of the thumb (like a pencil), which ensures greater control (see photo). The swab should not be held between the thumb and forefinger with the base in the palm of the hand.

- Use only sterile dacron swabs with plastic shafts. Calcium alginate or cotton swabs or those with wooden sticks may contain substances that inactivate some viruses and inhibit PCR testing. They should be used only if dacron swabs are not available.
- Prepare two vials containing at least 2 to 3 ml of a suitable transport/preservative medium (e.g., viral transport medium [VTM]) for each specimen. These should be marked with:
 - The unique identifier.
 - The specimen date.
 - The type of specimen in the tube (e.g., blood serum, throat swab).



Note: Always mark the tube itself—not the cap, which can get switched during handling—with identifying details. Use an indelible and alcohol-resistant marker. Be aware that stick-on labels can easily come off, especially when the specimen is chilled to very low temperatures. Relevant field data sheets should be filled in.

- Take two specimens and put one into each vial.
- If VTM is not available, or if specimens cannot be stored at appropriate temperatures (e.g., no freezers are available), swabs can be stored and shipped in absolute (100 percent) ethanol. If pure ethanol cannot be used, 99 percent industrial methylated spirit—without additives other than methanol—may be substituted. Put 1 to 2 ml ethanol into a vial, and place the swab tip in the tube. Note that such specimens are suitable only for PCR.
- After a specimen is taken, the tip of the swab should be placed in the vial, and its shaft should be broken or cut off sufficiently short for the lid to be closed. Plastic swab handles usually have a weak point in them to allow them to be broken off in this manner. Others have a handle made of a brittle plastic that will snap easily.

If the shaft cannot easily be broken off short enough to be put into a small tube such as a cryovial, it will have to be cut. To do this:

- Cut the shaft with scissors, taking care not to touch the tip.
- Allow the tip to slide into the VTM and then cap the tube. Do not let cut portions of the bag or wrap fall into the tube.

Sterilize the cutting edge of the scissors by using a flame (e.g., by using a spirit burner, a Bunsen burner, or another suitable heat source). Allow the scissors to cool before reuse. If this procedure cannot be followed, agitate the swab tip in the medium for 30 seconds and squeeze it against the side of the tube before removing it from the medium and disposing of it in a safe manner (not suitable for ethanol storage).

Posterior Pharyngeal and Nasopharyngeal Swabs

Posterior pharyngeal swabs are the best upper respiratory tract specimens to take; evidence to date suggests that they are more likely to be positive than anterior nasal swabs in sporadic influenza A (H5N1) infection. However, if it is difficult to obtain the former (e.g., from babies and young children), nasopharyngeal swabs should be obtained instead.

Posterior pharyngeal swab (throat swab)

- Hold the tongue out of the way with a tongue depressor.
- Use a sweeping motion to swab the posterior pharyngeal wall and tonsillar pillars. Have the subject say “aahh” to elevate the uvula. Avoid swabbing the soft palate, and do not touch the tongue with the swab tip. (Note: This procedure can induce the gag reflex.)
- Put the swab into VTM.

Nasopharyngeal swab

- Insert a flexible, fine-shafted polyester swab into the nostril and back to the nasopharynx. The swab should be slid straight into the nostril, with the patient’s head held slightly back. The insertion technique should follow the base of the nostril up to the stop. In adults, the swab will need to be inserted at least 5 or 6 cm to ensure that it reaches the posterior pharynx. (Do not use rigid-shafted swabs for this sampling method—a flexible shafted swab is essential.)
- Leave the swab in place for a few seconds.
- Withdraw slowly with a rotating motion.
- Put the swab into VTM.
- A second swab should be used for the other nostril and put into a second tube. This can serve as the second sample from the patient.

Note: Nasopharyngeal sampling is an invasive process that can cause considerable distress to the patient.

Nasopharyngeal Aspirate

The nasopharyngeal aspirate is easier and safer than swabbing in infants and young children.

- Use an aspiration trap.
- Insert a silicon catheter into the nostril toward the auditory pit and aspirate secretion gently by suction.

Blood Specimens

- Standard precautions should always be observed when taking and handling blood specimens because the patient may be infected with a blood-borne pathogen (for example, HIV or hepatitis B or C).
- Use PPE—at least gloves, plus face shields, masks, and gowns if splashing is anticipated.
- Remove and discard PPE items *immediately* after completion of task.
- Wash hands every time gloves are removed.

Serum is the best “all around” specimen to collect. Acute and convalescent sera are useful for detecting changes in antibody titer, and serum can be used for detecting viral RNA. An acute-phase serum specimen should be taken soon after onset of clinical symptoms and no later than 7 days after onset.

EDTA-anticoagulated plasma is also valuable for detecting viral RNA in blood and may be better than serum for this particular purpose, since EDTA inactivates RNases present in the specimen. Heparin is not suitable as an anticoagulant for this type of specimen because of potential inhibition of PCR reactions.

Note that specimens for the detection of viral RNA in the blood should be collected during the first week after the development of symptoms. At least 1 ml of whole blood is needed to obtain a sufficient amount of serum or plasma for tests. This is the maximum that should be taken from infants. However, larger specimens of 3 to 5 ml should be taken from older children and adults, as this will allow a greater range of tests or repeat tests if necessary.

A convalescent-phase serum specimen should be collected 3 to 4 weeks after the onset of symptoms. When a patient is critically ill, a second antemortem specimen should be collected. Blood should be collected either by use of a vacuum venipuncture system or syringes and needles. The specimens should be collected either in a serum separator tube (SST), a clotting tube (for serum), or an EDTA tube (for plasma).

1. Label the tubes, including the unique patient identification number, using an indelible marker. Always check to ensure that the correct tubes are used for each patient.
2. Place a tourniquet above the venipuncture site. Palpate and locate the vein.
3. Disinfect the venipuncture site meticulously with 70 percent isopropyl alcohol (an alcohol swab) or 10 percent polyvidone iodine by swabbing the skin concentrically from the center of the venipuncture site outward. Let the disinfectant evaporate. Do not re-palpate the vein.
4. Perform venipuncture.
5. If withdrawing blood with conventional disposable syringes, withdraw 3 to 5 ml of whole blood from adults and older children and 1 ml from infants. Under asepsis, transfer the specimen to appropriate transport tubes. Secure caps tightly.
6. If withdrawing blood with a vacuum system (e.g., Vacutainer[®]), withdraw the desired amount of blood directly into each transport tube.
7. Remove the tourniquet. Use a cotton swab to apply pressure to the venipuncture site until bleeding stops, and apply a bandage.
8. Never recap used sharps. Discard directly into a suitable container (a proper sharps-disposal container if available, or a container such as a coffee can or other metal can that was appropriately labeled before use).
9. Recheck that the tubes used for sampling have been correctly labeled.
10. After taking all the samples, complete the appropriate field-data sheets or case investigation forms and the required laboratory request forms using the same identification numbers used on the tubes.

Separation of serum and plasma

Blood samples need to be centrifuged for at least five minutes at 1,500 g (3,000 rpm). This requires an electric centrifuge (ideally with a swing-out head rather than an angle head rotor). Hand centrifuges are not adequate for the separation of serum or plasma from red cells.

Serum separator tubes

The instructions for using these tubes must be followed carefully if the tubes are to work properly. The tubes contain a gel with an intermediate density between blood cells and blood plasma and, usually, a coagulation (clot) activator.

- Put the blood sample into the tube and then follow the instructions for mixing the contents.
- Allow the clot to form. (Follow the instructions with the tube; do not cut the clotting process short.)
- Centrifuge the tube according to the relevant instructions.

When a filled SST has been properly centrifuged, the sample will separate into a top layer of serum separated by a gel barrier from the cell/clot layer and the clot activator.

Clotting tubes

If a basic sampling tube without any additives is used, the clot can be allowed to form overnight and the serum can be pipetted off the next day. Serum should not be left in contact with the clot for more than 12 hours, as lysis of the red cells can occur.

Whichever type of tube is used, once the serum has been separated, it should be pipetted off without disturbing the gel barrier or the clot. Put the serum into a vial such as a cryovial (without VTM). Ideally, vials for transport of serum should have external caps and internal o-ring seals. If there is no internal o-ring seal, ensure that the cap is closed tightly and then sealed with an inert sealing film, such as Parafilm[®].

EDTA tubes

Centrifuge the tubes at high speed (approximately 10,000 g) to compact the cellular fraction. Then pipette off the plasma, taking care not to draw blood cells off at the same time.

Filter paper

Blood or serum specimens can also be shipped in air-dried form on filter paper discs or special filter paper strips (e.g., Nobuto strips). Volumes of 0.1 ml of whole blood or serum are put onto the strip, which is then air dried. Strips of this sort can be stored for months at room temperature.

Transport

Blood specimen bottles and tubes should be transported upright and secured in a screw-cap container or in a rack in a transport box. They should have enough absorbent paper around them to soak up all the liquid in case of spillage (see more details below).

Specimens from Patients Who Have Died

If the corpse has an endotracheal tube in place, collect a deep endotracheal aspirate. If the circumstances allow, perform tissue sampling by incision or by needle from the affected lung(s). The pathologist may use chest radiograph results to guide the sampling, aiming for areas at the margins of interstitial infiltrates, which are most likely the sites of active virus replication for the best diagnostic yield. The lung tissue sample will provide excellent material for various laboratory tests, including RT-PCR, virus isolation, histopathology, bacterial cultures, direct antigen detection or immunohistochemistry, and cytokine/chemokine analyses. The needle aspiration or the core needle sampling may give sufficient sample for microbiologic studies.

To perform this aspirate, clean a small area on the lateral chest wall between two ribs and make a small incision between the ribs, overlying the lungs with a sterile scalpel. Cut wedge sample(s) from the lung (1 to 2 cm³ minimum), or insert a large-bore needle (e.g., 18G) into the lung tissue and aspirate or cut available material into the needle/syringe. Put the specimen into VTM. The needle sampling should be performed as soon as possible after death.

Throat swabs, nasopharyngeal aspirates, or stool samples may be collected if time, sampling materials, and safety considerations permit, but this should not supersede or delay the collection of the deep endotracheal or lung material.

Storing Specimens

Table A-10 below indicates the different storage and shipment conditions that can be used and which methods are recommended (based on the likelihood of obtaining a positive influenza A [H5N1] result on laboratory analysis).

TABLE A-10. Suitability of Various Storage/Shipment Conditions for Different Specimen Types

STORAGE/SHIPMENT CONDITIONS	SWABS OR OTHER SPECIMENS IN VTM FOR ISOLATION OF VIRUS	SWABS OR OTHER SPECIMENS IN VTM FOR PCR	SWABS IN ETHANOL FOR PCR*	BLOOD SERUM FOR VIRUS ISOLATION	BLOOD SERUM FOR PCR	BLOOD SERUM FOR ANTIBODIES
-70°C or dry ice or liquid nitrogen	Strongly recommended		n/a	Strongly recommended		
-20°C	Not recommended	Adequate	n/a	Not recommended	Adequate	Strongly recommended
+4°C	Adequate for up to 4 days storage	Adequate		Adequate for up to 4 days storage	Adequate	
Room temperature	Not recommended	Adequate		Not recommended	Adequate for up to 4 days storage	
Dried blood spot on filter paper	n/a				Adequate	

*Where refrigeration is not available.

- Aliquots of specimens should be taken before the specimens are frozen.
- Repeated freezing and thawing of specimens must be avoided.
- If specimens in VTM (or blood sera/plasma) for viral isolation can be taken to the laboratory within 4 days, they may be kept at +4°C and frozen at -70°C on arrival if they are to be stored. Otherwise, they should be frozen at or below -70°C until they can be transported to the laboratory. Freezing at -20°C is not recommended, because the virus does not survive well at this temperature, particularly in frost-free freezers.
- In the absence of freezers (or of VTM), ethanol-preserved swabs are a possible alternative. Storage of such specimens at +4°C (in a standard refrigerator) is better than at room temperature.
- Blood serum samples should be frozen at -70°C for PCR and at -20°C or lower for antibody determination, but they can be stored at +4°C for approximately 4 days.

Specimen Transport

Specimens should be collected and transported in a suitable transport medium on ice or in liquid nitrogen. Specimens for influenza should not be stored or shipped in dry ice (solid carbon dioxide) unless they are sealed in glass or sealed, taped, and double plastic-bagged. Carbon dioxide can rapidly inactivate influenza viruses if it gains access to the specimens through shrinkage of tubes during freezing. The receiving laboratory should be notified before the specimens are shipped.

All specimens to be transported must be packed in packaging consisting of three layers. Packaging should be strong enough to withstand the shocks and loads normally encountered during transport. Packaging should be constructed and closed so as to prevent any loss of contents that might be caused under normal conditions of transport (e.g., by vibration or by changes in temperature, humidity, or pressure).

Primary receptacles should be packed in secondary packaging in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary packaging. Secondary packaging should be placed in a final outer package with suitable cushioning material. Any leakage of the contents should not substantially impair the protective properties of the cushioning material or of the outer packaging.

The primary receptacle(s) should be leak-proof. Absorbent material should be placed between the primary receptacle and the secondary packaging; if several fragile primary receptacles are placed in a single secondary packaging, they should be either individually wrapped or separated so as to prevent contact between them. There should be enough absorbent material to absorb the entire contents of the primary receptacle(s), and there should be a secondary packaging that is leak-proof.

HUMAN INFECTION WITH PANDEMIC (H1N1) VIRUS: UPDATED (JULY 2009) INTERIM WHO GUIDANCE ON GLOBAL SURVEILLANCE

Background

Standardized and coordinated international information sharing is crucial for the management of the pandemic at global and national levels. National authorities need to know how the pandemic is evolving, not only in their own country, but also in neighboring countries and continents. The continual flow and analysis of information provided by individual countries contributes to the development of a global picture that:

- Results in a better understanding of critical clinical, epidemiological, and virological features of the (H1N1) 2009 pandemic.
- Guides global prevention and control activities.
- Allows health-care providers and public health authorities to modify their own strategies for case management, community mitigation, and health resource allocation.
- Reduces the impact of inaccurate and unconfirmed rumors.

This updated interim guidance is designed, as much as possible, for use by existing or developing systems and infrastructure and takes into account the varying capacities of countries with regard to influenza surveillance. The guidance identifies a minimum set of data that can feasibly be collected in all settings, thereby allowing all Member States to participate in the global surveillance effort while collecting useful information to guide their own national control efforts.

Global surveillance of pandemic (H1N1) 2009 virus infections in humans

The approach and methods for global surveillance vary at different stages of the pandemic. In countries with no or very few cases, the main aims of surveillance remain early detection of the virus using laboratory confirmation of cases and initial risk assessment.

In countries where the pandemic (H1N1) 2009 virus is established, the main aims of surveillance are continuous monitoring of the epidemiological, virological, and clinical picture of the pandemic and its impact on the health care infrastructure. Timely sharing of information is needed throughout the pandemic to enable ongoing risk assessment to take place.

A. Early detection, investigation, and risk assessment

In countries with no apparent virus circulation, the aims of surveillance are to document the first appearance of the pandemic (H1N1) 2009 virus and to collect sufficient information on initial cases for risk assessment. The requirements are to:

- Detect and confirm the spread of pandemic (H1N1) 2009 virus into areas (e.g., administrative units, not previously reported confirmed cases).
- Investigate changes in the characteristics of the pandemic, such as any increase in the severity of the disease.

Triggers/signals for the investigation of suspected cases or clusters of pandemic (H1N1) 2009 virus infection include:

- Cluster(s) of cases of unexplained ILI or acute lower respiratory tract infection.
- Severe, unexplained respiratory illness.
- Changes in the epidemiology of mortality associated with the occurrence of ILI or lower respiratory tract illness, an increase in the number of deaths observed from respiratory illness, or an increase in the occurrence of severe respiratory disease in previously healthy adults or adolescents and/or among pregnant women.
- Abnormally high levels of absenteeism in a school or workplace setting.

The initial investigation should include laboratory confirmation of any suspected case of pandemic (H1N1) 2009 virus. Member States without laboratory capacity or with no access to laboratory capacity for confirmation, should contact their WHO regional office, so that an appropriate laboratory can be identified for the submission and testing of samples.

At any stage during the pandemic, unexplained clusters of respiratory disease or deaths, or any change in the epidemiological or clinical presentation of the disease seen to date, requires immediate investigation. The number of samples collected will vary depending on the needs of the investigation.

Reporting requirements

Under the IHR (2005) Article 63, a State Party is required to notify WHO of the first occurrence of pandemic (H1N1) 2009 virus detected in their country. Following this initial notification, the IHR (2005) subsequently requires the country to further communicate to WHO timely, accurate, and sufficiently detailed public health information on the notified event. WHO will continue to communicate directly with the IHR National Focal Point (NFP) to request specific information for risk assessment and risk management. Case definitions, laboratory results, source and type of risk, number of cases and deaths, conditions affecting the spread of the disease, and the health measures employed should be included in this information.

At first introduction of the virus: early detection and investigation

The first confirmed case of pandemic (H1N1) 2009 virus infection detected in a country should be immediately reported by the IHR NFP to the IHR contact point at the relevant WHO Regional Office as well as the WHO Country Representative where applicable.

At any stage during the pandemic

IHR NFPs or national public health authorities should continue to notify WHO immediately on:

- Any changes in the epidemiological, virological, or clinical presentation that are likely to be of significance for global risk assessment.
- Any unusual or unexpected public health events, including clusters of severe unexplained acute respiratory illness or unexplained deaths due to respiratory disease.

- Mortality data—the number of deaths due to acute respiratory disease (by age group if available).

B. After detection of the pandemic virus: description of the epidemiology and assessment of the early cases

Once the pandemic (H1N1) virus has been detected, it is important to:

- Describe the epidemiological and virological features of cases to guide control and prevention activities as required.
- Assess disease severity.

Following the initial assessment of the early cases, the laboratory testing of a sample of suspected cases of pandemic (H1N1) 2009 virus is sufficient for ongoing virological surveillance. Laboratory sampling should then be directed toward:

- Confirming infection in new areas.
- Testing severe cases.
- Monitoring the co-circulation of pandemic (H1N1) 2009 virus (and other respiratory viruses in countries with laboratory capacity for more detailed virological investigations).

For countries with limited laboratory capacity, or limited access to laboratory capacity, WHO recommends they aim to test a number of samples per week in order to verify that disease activity is still largely due to pandemic (H1N1) 2009 virus.

Reporting requirements

Initial spread of the virus: aggregated case counts and descriptive epidemiology of the early cases

After the first case(s) of pandemic (H1N1) 2009 virus infection have been confirmed and for as long as is feasible for the country, IHR NFPs or national public health authorities should report the following information to WHO on a weekly basis:

- The number of confirmed cases and deaths in confirmed cases.
- The age distribution of confirmed cases and deaths (where available).

Case definitions for the purpose of reporting confirmed cases of pandemic (H1N1) 2009 virus infection can be found in Annex 9.1.

Countries should contact the relevant WHO regional office for reporting arrangements. A summary form has been developed to facilitate the reporting of this information to WHO (Annex 9.2). WHO will use the information in accordance with Article 11 of the IHR (2005) as required by the circumstances of the pandemic.

In addition to the information sought above, all Member States are strongly encouraged to share with WHO any additional information relevant for ongoing global risk assessment. This includes, in particular, information on the clinical spectrum of the disease, the proportion of cases with severe illness, and risk groups for severe outcome. For detailed, case-based information, a form has been developed to facilitate the collection of these data (Annex 9.3).

C. Continuous epidemiological and virological monitoring of influenza activity

Influenza-related activity should be monitored on a continual basis throughout the pandemic and should start as soon as possible, in all countries. At a minimum, countries should report on influenza activity.

The objectives of ongoing monitoring of influenza activity throughout the pandemic are to track:

- Global geographical spread.
- Disease trend.
- Intensity.
- Impact of the pandemic on health-care services.
- The number of deaths due to acute respiratory disease (by age group if available).
- Changes in viral antigenicity and antiviral sensitivity.

Epidemiological monitoring

Epidemiological monitoring will be carried out differently by Member States. Therefore, WHO monitoring activities will accommodate several types of data to allow countries at different stages of the pandemic to participate in this monitoring effort, regardless of their surveillance and laboratory capacities.

- **All Member States** are asked to provide a general interpretation of information derived from a variety of information sources. A set of four qualitative (non-numerical) indicators are defined in Annex 9.4 and describe the geographical spread, the trend in the number of cases, the intensity of acute respiratory disease, and the impact on the health care system.

Information sources for the qualitative assessment may include:

- Sentinel sites for acute respiratory illness (ARI), influenza-like illness (ILI), and severe acute respiratory illness (SARI).
 - Absenteeism rates from schools or work places.
 - Use of pharmaceuticals for symptomatic relief of respiratory disease.
 - Outpatient or emergency department visits for acute respiratory illness.
 - Vital statistics indicating respiratory disease as cause of death.
 - Formal and informal reports from district health authorities or health care providers.
- **In addition, Member States with established epidemiological surveillance systems** will be asked to provide a set of quantitative (numerical) data that can be derived from existing surveillance systems for respiratory disease, influenza, or mortality. Case definitions and the type of data to be reported can be found in Annex 9.5.

Virological monitoring

Global influenza virological monitoring is dependent upon the existing capacity of influenza virus surveillance and national capacity for virus detection and characterization. During Phase 6, the main objective of laboratory surveillance is to monitor the evolution of the virus for the purpose of:

- Detecting any genetic drift or re-assortment events that may affect virus pathogenicity.

- Identifying drug-resistance status.
- Ensuring the specificity and sensitivity of current diagnostic assays.
- Informing vaccine development.

Virological surveillance activities will vary according to existing laboratory capacities in terms of response, number of samples tested, number of samples selected for full characterization of the virus, and many other factors.

Countries with a WHO-designated National Influenza Center (NIC) conducting regular seasonal surveillance are asked to provide WHO Collaborating Centers with a representative number of isolates for further characterization and for use in vaccine updates or drug-resistance monitoring.

Countries should contact the relevant WHO Regional Office or WHO HQ for guidance on the collection, handling, and shipping of specimens.

Reporting requirements

Unless other arrangements are in place between a Member State and the relevant WHO Regional Offices, the following reporting arrangements should be followed by national health authorities in collaboration with their IHR NFP:

- **National health authorities from all countries** should inform WHO on a weekly basis of their qualitative assessment of the geographical spread, trend of cases, intensity of disease, impact on the health care system, and deaths.
- **National health authorities from countries with established influenza surveillance systems** should report on a weekly basis data on ILI and/or SARI.
- **National influenza centers or reporting laboratories** are asked to report weekly via FluNet on the number of specimens collected and processed for influenza and the number of specimens tested that are positive for influenza by subtype.

In addition to notifications to the IHR NFP, WHO has developed a surveillance system called FluID that can be used by countries to assist in reporting. The relevant WHO Regional Office should be consulted for further guidance on online access to FluID. WHO HQ should be contacted at GISN@who.int for questions concerning FluNet.

D. Analysis and publication of surveillance data by WHO

Data collected via WHO's global influenza A (H1N1) surveillance systems will be analyzed and summary data will be published in graphs, maps, and tables on WHO's website and published in the *Weekly Epidemiological Record*. WHO will use the information provided to inform global risk assessments, including mathematical modeling of the epidemic, to better understand the spread of the pandemic and the effectiveness of mitigation measures.

Annex 9.1

CASE DEFINITION FOR THE REPORTING OF PANDEMIC (H1N1) 2009 VIRUS INFECTIONS IN HUMANS

The following case definition should be used to report **confirmed cases** of pandemic (H1N1) 2009 virus infection to WHO.

An individual with laboratory-confirmed pandemic (H1N1) 2009 virus infection by one or more of the following tests:

- Polymerase chain reaction (PCR).
- Viral culture.
- 4-fold rise in pandemic (H1N1) 2009 virus virus-specific neutralizing antibodies.

Annex 9.2

WEEKLY SUMMARY REPORTING FORM

Please complete this form on a weekly basis at country level (national level).

Fields marked with * are required.

Confirmed cases reported to WHO should be attributed to the country, territory, or area in which they are identified.

Week* ending at day (yyyy/mm/dd)

Country *

Human cases of the pandemic (H1N1) 2009 infection

Number of new cases and deaths in reporting week

New laboratory-confirmed cases	
New deaths in laboratory-confirmed cases	

Cumulative number of cases and deaths since first report

Cumulative laboratory-confirmed cases *	
Cumulative deaths in laboratory-confirmed cases *	

If available, please indicate cumulative laboratory-confirmed cases by age group

Infants	
Children	
Adults	
Elderly	
Unknown	

If available, please indicate cumulative deaths laboratory-confirmed by age group

Infants	
Children	
Adults	
Elderly	
Unknown	

Comments

Name of reporter

Name of institution

Telephone number

Email

Date of submission (yyyy/mm/dd)

Annex 9.3

WHO PANDEMIC (H1N1) 2009 CASE SUMMARY FORM FOR CLINICAL DATA COLLECTION OF LABORATORY-CONFIRMED CASES

This form can be used to collect information on individuals with laboratory-confirmed pandemic (H1N1) 2009 virus infection to determine disease severity and clinical characteristics. All data submitted on this form will be treated as confidential in accordance with the International Health Regulations (2005).

1. Case Information

Case ID (including country identifier) _____

Date of birth (yyyy/mm/dd) ____/____/____ or Age (years) _____

Sex Male Female Unknown

2. Symptoms

Date of onset of symptoms ____/____/____

Symptoms at any time during the course of infection

	TICK AS APPLICABLE	COMMENTS (IF ANY)
Fever > 38°C	<input type="checkbox"/>	_____
History of fever (not measured)	<input type="checkbox"/>	_____
Sore throat	<input type="checkbox"/>	_____
Runny nose	<input type="checkbox"/>	_____
Sneezing	<input type="checkbox"/>	_____
Cough	<input type="checkbox"/>	_____
Shortness of breath	<input type="checkbox"/>	_____
Conjunctivitis	<input type="checkbox"/>	_____
Diarrhea	<input type="checkbox"/>	_____
Nausea	<input type="checkbox"/>	_____
Vomiting	<input type="checkbox"/>	_____
Headache	<input type="checkbox"/>	_____
Seizures	<input type="checkbox"/>	_____
Altered consciousness	<input type="checkbox"/>	_____
Muscle pain	<input type="checkbox"/>	_____
Joint pain	<input type="checkbox"/>	_____
Nose bleed	<input type="checkbox"/>	_____
Other (specify)	<input type="checkbox"/>	_____

3. History and Pre-existing Conditions

Did the case have any of the following vaccines or prophylactic medication prior to illness onset?

	TICK AS APPLICABLE	COMMENTS (IF ANY)
Vaccination with seasonal influenza vaccine within the last year?	<input type="checkbox"/>	_____
Vaccination with pneumococcal vaccine?	<input type="checkbox"/>	_____
Antiviral prophylaxis in the 14 days before onset of illness?	<input type="checkbox"/>	_____

If prophylaxis was used, which

- Oseltamivir
- Zanamivir
- Amantadine
- Rimantadine
- Other (specify) _____

Did the case have any pre-existing conditions?

	TICK AS APPLICABLE
Cancer	<input type="checkbox"/>
Diabetes	<input type="checkbox"/>
HIV/other immune deficiency	<input type="checkbox"/>
Heart disease	<input type="checkbox"/>
Seizure disorder	<input type="checkbox"/>
Lung disease	<input type="checkbox"/>
Asthma	<input type="checkbox"/>
Pregnancy	<input type="checkbox"/> ____ months
Malnutrition	<input type="checkbox"/>
Obesity	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/> _____

4. Pneumonia, other complications

Did the patient show clinical signs of pneumonia? Yes No Unknown

Was a chest x-ray taken? Yes No Unknown

If no or unknown go to 5

Primary viral/influenza pneumonia diagnosed? Yes No Unknown

Secondary bacterial pneumonia diagnosed? Yes No Unknown

Did other complications (e.g., acute respiratory distress syndrome, multi-organ failure, central nervous system involvement) occur? Yes No Unknown

If yes, describe _____

5. Treatment

Date (yyyy/mm/dd) of first presentation to health care system ___/___/___

Case hospitalized during course of infection? Yes No Unknown

If yes, date (yyyy/mm/dd) of first hospitalization ___/___/___

Was case admitted to intensive care unit? Yes No Unknown

Was case mechanically ventilated? Yes No Unknown

Did case receive antibiotics? Yes No Unknown

Did case receive antiviral treatment? Yes No Unknown

If no, go to 6

TREATMENT	TICK AS APPLICABLE	DATE STARTED (YYYY/MM/DD)	DURATION (DAYS)	DAILY DOSE
Oseltamivir	<input type="checkbox"/>	___/___/___	_____	_____
Zanamivir	<input type="checkbox"/>	___/___/___	_____	_____
Amantadine	<input type="checkbox"/>	___/___/___	_____	_____
Rimantadine	<input type="checkbox"/>	___/___/___	_____	_____

Were any antiviral adverse events noted? Yes No Unknown

If yes, were they Moderate Severe Life threatening

Specify type of adverse event _____

6. Outcome

Patient fully recovered? Yes No Unknown

If yes, date of resolution of symptoms (yyyy/mm/dd) ___/___/___

Patient died? Yes No Unknown

If yes, date of death (yyyy/mm/dd) ___/___/___

Presumed cause of death _____

7. Other Observations/Comments

ANNEX 9.4: QUALITATIVE INDICATORS, TO BE REPORTED BY ALL MEMBER STATES

Geographical spread refers to the number and distribution of sites reporting influenza activity.

- No activity: no laboratory-confirmed case(s) of influenza, or evidence of increased or unusual respiratory disease activity.
- Localized: limited to one administrative unit of the country (or reporting site) only.
- Regional: appearing in multiple but <50 percent of the administrative units of the country (or reporting sites).
- Widespread: appearing in ≥ 50 percent of the administrative units of the country (or reporting sites).
- No information available: no information available for the previous 1-week period.

Trend refers to changes in the level of respiratory disease activity compared with the previous week.

- Increasing: evidence that the level of respiratory disease activity is increasing compared with the previous week.
- Unchanged: evidence that the level of respiratory disease activity is unchanged compared with the previous week.
- Decreasing: evidence that the level of respiratory disease activity is decreasing compared with the previous week.
- No information available.

Intensity. The intensity indicator is an estimate of the proportion of the population with acute respiratory disease, covering the spectrum of disease from influenza-like illness (ILI) to pneumonia.

- Low or moderate: a normal or slightly increased proportion of the population is currently affected by respiratory illness.
- High: a large proportion of the population is currently affected by respiratory illness.
- Very high: a very large proportion of the population is currently affected by respiratory illness.
- No information available.

Impact refers to the degree of disruption of health care services as a result of acute respiratory disease.

- Low: demands on health care services are not above usual levels.
- Moderate: demands on health care services are above the usual demand levels but still below the maximum capacity of those services.
- Severe: demands on health care services exceed the capacity of those services.
- No information available.

ANNEX 9.5: QUANTITATIVE INDICATORS, TO BE REPORTED BY MEMBER STATES WITH ESTABLISHED INFLUENZA SURVEILLANCE SYSTEMS

Case definitions for ILI and SARI surveillance

Influenza-like illness (ILI)

A person with sudden onset of fever of $>38^{\circ}\text{C}$ and cough or sore throat in the absence of other diagnoses.

Severe acute respiratory illness (SARI)

Meets ILI case definition (sudden onset of fever $>38^{\circ}\text{C}$ AND cough or sore throat in the absence of other diagnosis) AND shortness of breath or difficulty breathing AND requiring hospital admission.

ILI sentinel sites or out-patient visits

- Number of ILI cases reported in the past 1-week period by age group and sex (if available).
- Number of total outpatient visits for all causes, or population covered.
- Number of reporting sites.

SARI sentinel surveillance sites or in-patient facilities

- Number of new SARI cases admitted in the past 1-week period by age group and sex (if available).
- Number of total admissions (from same facilities as number of SARI cases reported), or population covered.
- Number of SARI-related deaths by age (if available).
- Number of SARI sentinel sites reporting.

Mortality data

- Number of deaths related to acute respiratory disease by age group (if available).
- Population covered.

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