PLAN FOR
PANDEMIC INFLUENZA PREPAREDNESS AND CONTROL
IN BOSNIA AND HERZEGOVINA

Final Draft
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# LIST OF ABBREVIATIONS

| ARI | - Acute respiratory infections |
| BiH | - Bosnia and Herzegovina |
| SCDS | - State Centre for Disease Surveillance (veterinary) |
| DZ | - Dom zdravlja |
| EISS | - European Influenza Surveillance Scheme |
| FBiH | - Federation of Bosnia and Herzegovina |
| MoH FBiH | - Ministry of Health of the Federation of Bosnia and Herzegovina |
| CDA FBiH | - Civil Defence Administration of the Federation of Bosnia and Herzegovina |
| IAA FBiH | - Inspection Affairs Administration of Federation of Bosnia and Herzegovina |
| PHI FBiH | - Public Health Institute of Federation of Bosnia and Herzegovina |
| HED | - Hygiene – epidemiology Department |
| HPAI | - Highly-pathogenic avian influenza |
| ILI | - Influenza-like illnesses |
| NPHI RS | - National Public Health Institute of Republika Srpska |
| CTF | - Cantonal Task Force |
| C MoH | - Cantonal Ministry of Health |
| C PHI | - Cantonal Public Health Institute |
| TF MoH FBiH | - Task Force of the Ministry of Health of Federation of Bosnia and Herzegovina |
| LCDS | - Local Centre for Disease Surveillance (veterinary) |
| Mb | - Morbidity |
| MCA BiH | - Ministry of Civil Affairs of Bosnia and Herzegovina |
| Mt | - Mortality |
| MoFTER | - Ministry of Foreign Trade and Economic Relations |
| MH FBiH | - Minister of Health of Federation of Bosnia and Herzegovina |
| MHSW RS | - Minister of Health and Social Welfare of Republika Srpska |
| MoHRSW RS | - Ministry of Health and Social Welfare of Republika Srpska |
| IHR | - International Health Regulations |
| DoH | - Department of Health |
| DoA | - Department of Agriculture |
| RVB | - Responsible Veterinary Body in FBiH, RS and BiH Brcko District |
| DoPS | - Department of Public Safety |
| SoPH | - Sub-department of Public Health |
| PI | - Pandemic Influenza |
| PI/AI | - Pandemic Influenza/Avian Influenza |
| PHC | - Primary Health Care |
| RS | - Republika Srpska |
| RT PCR | - Reverse Transcriptase Polymerase Chain Reaction |
| CDA RS | - Civil Defence Administration of Republika Srpska |
| IAA RS | - Inspection Affairs Administration of Republika Srpska |
| R PHI | - Regional Public Health Institute |
| ERS | - Emergency Medicine Service |
| SSD | - Secondary School Degree |
WHO - World Health Organization
SHC - Secondary health care
VO BiH - Veterinary Office of Bosnia and Herzegovina
G FBiH - Government of Federation of Bosnia and Herzegovina
G BiH BD - Government of Bosnia and Herzegovina Brcko District
CoM BiH - Council of Ministers of Bosnia and Herzegovina
G RS - Government of Republika Srpska
PSSD - Post-secondary School Degree
PHI - Public Health Institute
PREAMBLE

BOSNIA AND HERZEGOVINA  
COUNCIL OF MINISTERS

Recognizing that pandemic influenza presents a global threat with disastrous consequences for the whole country, taking into consideration the WHO request that every member state should develop its own National Pandemic Influenza Preparedness Plan, pursuant to Article 17 of the BiH Council of Ministers Act (Official Gazette of Bosnia and Herzegovina No. 30/03, 42/03), at its ____ session held on ______, following the proposal of the Ministry of Civil Affairs, the Council of Ministers hereby issues the following
Chapter 1 PREFACE AND INTRODUCTION

1.1 PREFACE

In view of potential catastrophic consequences that might be caused by an emerging Influenza A virus, amongst them the highly-pathogenic H5N1 avian influenza virus in humans, and within its mandate as granted by the WHO Constitution in its Article 2 Paragraph (g) to stimulate and improve the work on the eradication of epidemics, endemics and other diseases, the World Health Organization has gathered a number of experts from various fields to develop a document, guidelines and instructions aimed at coordinating the efforts concerning alleviating undesirable consequences. With the same view, WHO has constantly provided information on the current status of disease and scientific knowledge concerning the measures of disease prevention, control and treatment.

Due to the complex organization of Bosnia and Herzegovina and constitutional competences of the entities over the health system, as well as the state's coordinating role in the field of health care vested through the Act on BiH Ministries and Other Administrative Bodies (»BiH Official Gazette« No. 5/03), pandemic influenza preparedness plans were developed in FBiH and RS in October 2005.

“The Plan for Pandemic Influenza Preparedness and Control in BiH “1 has been developed in accordance with the guidelines provided in the WHO Global Influenza Preparedness Plan. It contains all essential elements that may ensure a coordinated action towards fighting a pandemic influenza in Bosnia and Herzegovina, but in the neighbouring and other countries as well. The Global Plan contains a series of recommended measures at the state level in the pre- and post-pandemic periods.

1.2 INTRODUCTION

Influenza, a viral diseases of a large epidemic potential, occurs as a pandemic only rarely, though in certain time intervals (10-40 years). The first pandemic was documented in 1580, when an influenza epidemic spread from Europe to Africa and Asia. Since then, over 30 pandemics have been documented, three of which occurred in the 20th century; in 1918, the Spanish flu, with the estimated death toll of 40-50 million; in 1957, the Asian flu caused around 2 million deaths and Hong Kong flu with around 1 million deaths.

The influenza pandemic poses a global threat with catastrophic consequences, which means that every country must prepare, through planning, its response to this constantly present

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1 The aim of this document is enabling preparedness to occurrence of human influenza pandemic, regardless of the virus strain that causes it. Highly-pathogenic H5N1 virus of avian flu is only one of the possible causes of pandemic influenza which can mutate or reassort into humane virus. References in the document reflect current phase of global preparedness for pandemic, potentially caused by this virus.
pandemic risk. The response must be based on modern scientific knowledge, ensure a multi-sectoral approach and involve readiness to cooperate amongst all key stakeholders.

A potential threat from pandemic influenza becomes more prominent after the epizootics of the highly-pathogenic avian influenza A/H5N1 virus (HPAI) in migrating birds, which is transmitted with outbreaks in domestic poultry, while transmission to other animal species and humans has been documented. The emergence of a new pandemic virus strain with changed antigenic characteristics, to which humans are not immune, would inevitably lead to a global spread affecting all countries, including Bosnia and Herzegovina. The implementation of certain measures, such as closure of borders, restricted travel to affected countries and other, might postpone, but not stop the spread of the pandemic. That is why the main goal of this contingency plan is to reduce the impact of a possible influenza pandemic.

Given the fact that humans are not immune to the new, pandemic virus strain, it means that the number of infected, ill and dead persons would be much higher than in case of seasonal influenza, with significant social and economic disruption in all spheres of living.

The Plan is structured in such manner to reflect pandemic periods and phases defined by the WHO, in accordance with the following table:

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>PHASES</th>
<th>PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interpandemic period</strong></td>
<td>Low risk of human infection</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Substantial risk of human infection</td>
<td>2</td>
</tr>
<tr>
<td><strong>Pandemic alert period</strong></td>
<td>No or very limited human-to-human transmission</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Evidence on increased human-to-human transmission</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Evidence on significant human-to-human transmission</td>
<td>5</td>
</tr>
<tr>
<td><strong>Pandemic period</strong></td>
<td>Efficient and sustained human-to-human transmission</td>
<td>6</td>
</tr>
</tbody>
</table>

Currently (during the Plan development process), the whole world is in Phase 3: new sub-type of influenza virus causes disease in humans, but it does not spread in efficient and sustained manner among humans.
Chapter 2 CHAIN OF COMMAND

Taking into account that pandemic influenza presents a global threat with catastrophic consequences for the whole country, it is necessary to establish Task Force on Bosnia and Herzegovina state level, which would be comprised of ministers, i.e. authorized representatives of different sectors:

1. Ministry of Civil Affairs (which has coordinating role in health sector)
2. Ministries of Health of FBiH and RS and Department of Health of BiH Brcko District
3. Ministry of Foreign Trade and Economic Relations – Veterinary Office of BiH being its integral part
4. Ministry of Finance and Treasury
5. Ministry of Security whose integral part is a State Border Service, as well as the sector of civil defence with coordinating function
6. Ministry of Defence

Task Force is appointed by the Council of Ministers of BiH upon adoption of the Plan for Pandemic Influenza Preparedness and Control in Bosnia and Herzegovina.

The task of the Task Force is organizing and harmonizing measures for pandemic influenza control and adopting changes and addenda of the Plan, in accordance with current situation. Pandemic is officially declared by the World Health Organization.

Expert Team, comprised of the most distinguished experts in health and veterinary sectors, works with Task Force, with its chairperson changing in relation to the phase and the type of crisis; therefore in phases 1-3, Task Force is chaired by a veterinary expert, while in phases 4-6, Task Force is chaired by a health expert.

Members of the Expert Team are appointed by Council of Ministers, following the proposal of the Ministry of Civil Affairs of BiH, entity health ministries, Department of Health of BiH Brcko District and Veterinary Office of BiH. Person responsible for public health surveillance (person responsible for implementation of International Health Regulations – IHR) and person responsible for communication act within the Expert Team.

The task of the Expert Team is the following:
- making risk evaluation and proposing measures and activities, based on all collected information and knowledge that are being analyzed and processed by the Team;
- communicating with international institutions within the scope if its competences;
- defining and adopting technical content of all information and education materials.

Task Force is directly linked to Chain of Command on entity and BiH Brcko District level, for the health and veterinary sectors.
Taking into account that Pandemic Influenza Preparedness and Control Plan in Bosnia and Herzegovina is based on the existing organization of health care system and veterinary sector, competences of the bodies on the level of entities and BiH Brcko District are as follows:

**Level of Federation of BiH**

**FBiH GOVERNMENT:**
1. declares the onset of a natural or other disaster in the Federation of BiH following the proposal of the Civil Defence Administration of FBiH
2. orders special contingency measures:
   a. compulsory work service for health professionals and recruitment of other persons;
   b. utilization of equipment, medicines and transportation means;
   c. temporary use of business and other premises for health care provision;
   d. isolation and treatment, as well as
   e. assigning special tasks to health institutions and private practitioners

**FBiH MINISTRY OF HEALTH:**
1. declares an epidemic
2. appoints an **emergency task force** – the task of which is to organise and harmonise the measures of communicable diseases control;
3. reports to the Civil Defence Administration of FBiH on the data that are relevant to the planning, setting up and implementation of the protection and rescue of the population;
4. reports to the IAA FBiH – involvement of border inspectors, sanitary and health inspectors of FBiH;
5. decides (following a proposal epidemiological report of Public Health Institute of FBiH) on quarantine and quarantine areas;
6. orders special contingency protective measures:
   - restriction of travel to affected countries;
   - restriction of movement of the population, i.e. movement restriction in the affected areas or areas under immediate risk;
   - immunization and chemoprophylaxis against communicable diseases circulating in the country;
   - mandatory involvement of health institutions and other legal entities, private practitioners and other physical persons in disease control, i.e. use of facilities, equipment and transportation means with a view of carrying out communicable diseases control;
   - other measures in accordance with international regulations.

Cantonal Minister of Health

1. appoints an emergency task force – the task of which is to organize and harmonize measures for communicable diseases control and which acts in accordance with the TF MoH FBiH guidelines;
2. decides (on the basis of the epidemiological report) on home confinement;
3. recruits cantonal sanitary and health inspectors.

Level of the Republika Srpska

RS GOVERNMENT:

1. declares natural and other disasters in RS and orders deployment of the Civil Defence forces;
2. orders special contingency measures:
   - restriction of travel to the affected countries;
   - restriction of the movement of the population, i.e. restriction of movement in the affected areas or areas under immediate risk;
   - compulsory involvement of health institutions and other organisations and citizens in disease control, as well as the use of facilities, equipment and transportation means with a view of carrying out communicable diseases control.

RS MINISTER OF HEALTH AND SOCIAL WELFARE:

1. declares an epidemic;
2. in case of an epidemic, designates facilities for confinement and treatment.
MINISTRY OF HEALTH AND SOCIAL WELFARE OF RS

1. decides on quarantine or health surveillance, duration of quarantine, i.e. health surveillance;
2. informs the Civil Defence Administration of RS on the data that are relevant to planning, organization and implementation of civil defence measures

Level of the BiH Brcko District

Mayor (who is also the chief of the BiH BD Government) declares an epidemic.

Department of Health:
1. performs tasks with regard to the health care of the population;
2. ensures functioning of health care institutions in the BiH Brcko District.

Sub-Department of Public Health:
1. conducts surveillance of emergence and circulation of communicable diseases.

Department of Public Safety:
1. inspection surveillance;
2. planning of civil defence and protection from natural disasters.

Annex 2.1: Normative acts
Annex 2.2: Chain of Command in health sector (FBiH, RS and BiH Brcko District)
Annex 2.3: Chain of Command in veterinary sector
Chapter 3 SURVEILLANCE

Surveillance consists of routine collection, interpretation and dissemination of data on the occurrence of a disease aimed at reducing communicable diseases morbidity and mortality through control and/or preventive measures. The purpose of epidemiological influenza surveillance is to detect and provide an optimal response to the emergence of a potentially new pandemic influenza strain.

Surveillance objectives are twofold:

1. **Detect influenza emergence** (as soon as possible during the season and before the season starts)
   Pre-seasonal occurrence of influenza indicates the possibility of a new pandemic strain emergence. Virus detection is made through sampling. Specimens are taken until a satisfactory insight into circulating strains is made; based on the experience, there are usually two or three, although only one – pandemic strain – may be expected in a potential new pandemic.

2. **Monitor development of the current influenza epidemic**, in order to determine the influenza dynamics and intensity, most affected age groups, severity of the clinical features on the basis of the number of influenza-caused deaths, etc., with a view of treating the diseased, possible restriction of visits or work of health institutions and organizing the health care system in general to an optimum.

The surveillance system for seasonal human influenza in Bosnia and Herzegovina is an integral part of the ongoing passive communicable diseases surveillance, which is based on mandatory notification of influenza cases in line with the established regulations on the protection of the population from communicable diseases. Sporadic cases are notified through individual notification forms, and, in the course of an epidemic, aggregate data are reported on the collective form. The information flow is organized through the existing infrastructure (public health institutes, health institutions), from the local level, municipalities, through cantonal/regional level up to the entity and BiH Brcko District level. There are no mechanisms for surveillance activities at the state level.

Since there is no sentinel surveillance in Bosnia and Herzegovina, routine surveillance for acute respiratory infections (ARI), i.e. influenza-like illnesses, will be strengthened in certain city centres with relevant passive surveillance network. Exchange of information and joint active surveillance of human and veterinary sectors, otherwise envisaged in the laws, will be intensified.

The intention is to adapt influenza surveillance in BiH to European Influenza Surveillance Scheme – EISS standards ([www.eiss.org](http://www.eiss.org)).
Coordination Centre is a body which would be comprised of authorized epidemiologists from entity and BiH Brcko District Public Health Institutes, which would enable functional networking of BiH communicable diseases surveillance, until the State Public Health Agency of BiH is established. Person responsible for surveillance and implementation of International Health Regulations for BiH would be located in this Centre.

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3.1 INTERPANDEMIC SURVEILLANCE

The key goal is to strengthen pandemic influenza preparedness at all levels in the state.

Specific objectives are to:

1. Monitor seasonal influenza in the country and worldwide.
2. Monitor information on human infection with new influenza virus sub-type in the world.
3. Establish cooperation with veterinary institutions/services with a view of exchanging relevant information in timely manner.

H5N1 Case definition (Annex 3.1)

Every case definition has a threefold hierarchy: confirmed, probable and possible case. The «case with an epidemiological link» is a case who has been in contact with a confirmed case or equally exposed to the cause of disease as the confirmed case.

- a confirmed case is a case that has been verified by laboratory testing (to be specified);
- a probable case has a clear clinical picture or epidemiological link with a confirmed case;
- a possible case: indicative clinical features, a case which is neither probable nor confirmed case.

Reporting on seasonal influenza:

The Service for Communicable Diseases Epidemiology of FBiH PHI/RS NPHI, in cooperation with all cantonal/regional public health institutes, BiH Breko District's Public Health Sub-Department, infectious diseases clinics, paediatric clinics, paediatricians and family medicine doctors, organizes collection of specimens for serological and microbiological diagnostics after receiving initial individual influenza reports on the basis of the clinical features and clusters of clinical influenza syndrome.

It is necessary to establish adequate cooperation with the neighbouring countries until the national laboratories for viral diagnostics have been established.

Upon confirmation (serology, antigen identification or virus isolation) of influenza, the epidemiological service of FBiH PHI/RS NPHI notifies the cantonal/regional public health institute on the influenza onset and shifts to weekly influenza reporting. Influenza cases are reported by age groups, geographical distribution and epidemiological week. The reason for such reporting is the inability to process reports on individual cases during an influenza season, and, on the other hand, a possibility of collecting epidemiologically relevant data is preserved.

Routine pandemic surveillance is integrated with veterinary surveillance.
3.1.1 PHASE 1

No new influenza virus sub-types have been detected in humans. If present in animals, the risk of human infection or disease is considered to be low.

Specific objectives are to:

1. Monitor the latest information on seasonal influenza circulation in our country and abroad.
2. Monitor information on new influenza virus sub-type circulation in animals and humans.

Implementation activities:

1. Monitoring of influenza circulation in the world, in cooperation with the national collaborative centres.
2. Monitoring and analysis of influenza circulation in Bosnia and Herzegovina and reporting to WHO thereof.
4. Establishing an early warning system.

It is necessary to establish surveillance aimed at detection of unusual or inexplicable emergence of acute respiratory diseases.

Influenza and influenza-like illness cases are reported by the first-contact doctor (doctors in primary health care, specialist – consultative services and clinicians in infectious diseases and other hospital wards), who has diagnosed the diseased, through individual and, later on, weekly reports to the competent epidemiological service, which further reports to the epidemiological service of the cantonal/regional public health institute, which forwards these reports to the entity public health institutes.

Every case of influenza syndrome, occurring out of the influenza season, is reported on the individual form; during the influenza season, individual reporting shifts to collective reporting based on the week of onset, disease outcome and age groups.

The moment of shifting to collective weekly reporting is determined and publicized by the Communicable Diseases Epidemiology Service of the entity PHIs and SoPH of BiH Brcko District on the basis of individual reports monitoring and laboratory data on the influenza virus findings, on which a special official bulletin is published.

In addition to this system aimed at an early detection of influenza, direct contacts between doctors and other persons, who may observe increased number of the ill in the course of their work, are crucial. That is why, in addition to the above mentioned system, a hot line within epidemiological services in the area of each canton/region for reporting clusters of cases with the influenza symptoms, is established.
The BiH Influenza centres (laboratories) will forward initial information on the influenza virus emergence in the state directly to the WHO international influenza surveillance network.

In case of the emergence of a new pandemic strain, such as avian influenza A/H5N1 or any other new strain, the BiH Influenza centres (laboratories) will immediately notify the epidemiological services of the entity PHIs and SoPH of BiH Brcko District. The information will subsequently be forwarded to the regional/cantonal PHIs and municipal levels. The above information will be forwarded to WHO as well.

If the isolated influenza virus in humans is determined as the animal one, such as avian A/H5N1, the veterinary State Centre for Disease Surveillance will be informed, which will, in case an influenza virus in animals is suspected or isolated, immediately inform the epidemiological services of the entity PHIs and SoPH of BiH Brcko District, in accordance with the applicable regulations.

Information on the emergence and circulating of an influenza epidemic/pandemic for the public will be provided by persons who are responsible and in charge of communication with the public at all levels, within their competence.

Reporting outside the health system will be made by: schools, public institutions, public services, citizens, if they observe clustering of influenza-like cases, with symptom of elevated body temperature.

Activities of the advanced routine surveillance
- preparedness at the hospital level for appearance of persons suffering from acute respiratory diseases at the admission or during the admission;
- surveillance of inexplicable lethal outcomes caused by respiratory diseases in the community;
- surveillance of unclear lethal outcomes caused by respiratory diseases in hospitals;
- defining other sources of information on clusters of unusual diseases and syndromes (family medicine doctors, physicians in outpatient clinics, occupational medicine departments, staff of geriatric institutions and emergency services, and others).

3.1.2 PHASE 2

No new influenza virus sub-types have been detected in humans. However, a circulating animal influenza virus sub-type poses a substantial risk of human disease.

The surveillance goal is to reduce the risk of transmission to humans and early detection of suspect human cases.

Specific objectives are to:

1. Monitor the virus transmission between different species and between animal species.
2. Conduct the ongoing risk assessment of potential transmission of virus from animals/birds to humans and potential human-to-human spread.
3. Introduce zero surveillance in order to ensure a swift response of the veterinary and health services in case of suspect cases in animals/birds and humans caused by a new influenza virus sub-type.

Implementation activities:

- introducing zero reporting with a view of increasing alertness;
- carrying out continuous cooperation with competent veterinary institutions;
- conducting an epidemiological investigation and laboratory testing in order to assess the disease circulation (Annex 5.2, Epidemiological questionnaire for contacts) in affected areas;
- implementing infection spread prevention and control measures in animals/birds;
- conducting health surveillance of the members of veterinary teams that are in charge of implementing infection control and eradication measures for animals/birds with a view of early detection of disease symptoms and early administration of antiviral drugs;
- prompt transport of causes of suspect cases to the BiH Influenza centres/WHO reference laboratories for virus identification

3.2 PANDEMIC ALERT PERIOD

The general goal is to: ensure rapid characterization of the new virus sub-type, case definition, early detection of cases, disease reporting and application of measures aimed at infection control.

The key goal is early detection and reporting.

3.2.1 PHASE 3

Human infection with a new virus sub-type, but no human-to-human spread, or at most rare instances, spread due to a close contact. In general, there is no human-to-human transmission.

The surveillance goal is to ensure rapid characterization of the new virus sub-type and early detection, notification and response to new cases.

Specific objectives are to:

1. Re-examine and, as necessary, improve the current surveillance mechanisms for early detection and recognition of the disease, as well as implement measures in light of a potential threat to the health of the population.
2. Early detection of the disease with a view of preventing further spread.

Implementation activities:

- introducing zero reporting in the whole territory of the state;
- confirming infection and notifying the competent authorities through the defined communication channels;
- clarifying the case in epidemiological terms (infection source, routes and manner of transmission, contact, incubation period, period of contagiousness);
- amending the case definition or modifying the existing one in line with the WHO guidelines, as necessary;
- strengthening the surveillance of humans, including reporting to PHIs, HCSs and laboratories on the current situation and detection and surveillance of the first contacts;
- veterinary and health services to identify and declare infected and affected areas in accordance with the applicable regulations pertinent to those fields, as the core of preventive measures;
- identifying groups at risk in human population in order to undertake preventive measures;
- defining case management;
- assessing the efficiency of infection control measures and revising them as necessary;
- continuing with collecting specimens and sending them to the competent laboratories.

3.2.2 PHASE 4

Small clusters with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans. The key goal is to contain the new virus within limited foci and prevent its spread.

Specific objectives are to:

2. Conduct epidemiological investigation of contacts (including identification of risk factors and other data on the spread).
3. Assess the impact of implemented control measures and adjust the planned measures as necessary.
4. Implement procedures to delay or contain the infection spread in humans within limited foci.

Implementation activities:

- urgent notification and involvement of all responsible levels;
- notifying the WHO on registered cases, including suspect cases;
- undertaking all of the planned disease spread control measures;
- detecting cases in primary health care: all PHC doctors are alert to patients whose disease is compatible to the case definition and epidemiological criteria;
- detect hospital cases – all hospital staff acquainted with the alert status concerning patients whose disease is consistent with the case definition and epidemiological exposure criteria;
- detecting cases of inexplicable deaths – notification of deaths due to inexplicable respiratory disease;
- detecting cases in other institutions;
- monitoring of contacts of all confirmed cases and those who meet the case definition criteria, recommendation for voluntary self-confinement/quarantine to contacts;
- describing and assessing epidemiological, viral and clinical characteristics of the infection and adjusting the case definition, as well as assessing the possibility of the infection spread to a wider community;
- assessing the impact of the control measures on the epidemic development, reporting to the WHO and recommending their adjustment/updating as necessary;
- strengthening surveillance at all levels, particularly on border crossing points, of all incoming travellers from affected areas, in accordance with the law, International Health Regulations and current WHO recommendations. Pay special attention to identifying persons with influenza symptoms who have arrived from the affected areas and collect specimens for viral diagnostics (irrespective of the influenza season);
- strengthening surveillance of the following groups at risk: persons involved in the disposal of influenza affected birds and animals; persons exposed to influenza affected birds and animals (farmers, veterinarians, etc.); health care professionals that are nursing patients with a suspect pandemic influenza virus strain; laboratory staff who work with clinical specimens taken from patients with a suspect infection; mortuary staff.

3.2.3 PHASE 5

Larger clusters, but human-to-human spread still localized, suggesting that the virus is not fully transmissible yet.

The general goal is to maximize efforts to contain or delay spread to possibly avert a pandemic and to gain time to implement pandemic response measures.

Specific objectives are to:

1. Apply procedures to delay or control the infection spread in humans within the affected area, in order to delay or avert, as long as possible, the onset of a pandemic.
3. Assess and adjust public health measures that are necessary for a response to a pandemic, as necessary.

Implementation activities:

- to maximally expand and adjust the Phase 4 activities;
- monitoring of hospital admissions – daily reporting on hospitalised cases (suspect and confirmed cases with a pandemic influenza strain);
- monitoring of deaths: deaths of in-patients – daily reporting on deaths of suspect and confirmed cases, deaths of non-hospitalized patients – daily reporting of the deaths of suspect and confirmed cases;
- monitoring of absenteeism (hospital staff, PHC staff, clinical and other staff in health care, schools and other services of public relevance);
- assessing the impact of the undertaken control measures and to adjusting them in cooperation with the WHO;
- ensuring the functioning of all public services, particularly in the foci, and reallocating resources, as necessary.
3.3 PANDEMIC PERIOD

3.3.1 PHASE 6

The general surveillance goal for this phase is to minimise the catastrophic impact of the pandemic on the health of the overall population, as well as to reduce/prevent the occurrence of grave social and economic disruption in the functioning of the social community.

Specific objectives are to:

1. Monitor epidemiological, viral and clinical characteristics of diseases, their circulation and impact of a pandemic at the national level in order to forecast trends and optimally utilize constrained resources.
2. Assess the efficacy of the applied interventions during the first wave of a pandemic to possibly adjust and plan future activities.

Implementation activities:

- continuing with advanced surveillance measures and monitoring the global epidemiological situation;
- adjusting previously defined risk groups, i.e. priority groups, as necessary, based on monitoring of the “attack” rate;
- defining, as soon as possible, groups at risk which could be different from groups at risk during seasonal influenza;
- monitoring of assessment results of the vaccination programme impact and administration of antiviral drugs in other countries (safety, efficacy, antiviral resistance) and adjusting the planned measures accordingly;
- monitoring of the geographic spread of influenza from clusters, i.e. from the first cases;
- advanced surveillance of zero reporting to detect the initial case, contacts and routes of territorial spread;
- monitoring of possible changes of epidemiological, viral and clinical characteristics of diseases;
- monitoring of and assessing the impact at the state level (incidence, mortality, work and school absenteeism, observed local and regional foci, incidence in risk groups, availability of health staff, bed occupancy, increased hospitalisation demand, use of alternative health institutions, the capacity of mortuaries);
- assessing the need for urgent measures, such as urgent burials, application of legal procedures, maintenance of essential public services;
- assessing whether the availability of resources is adequate, forecasting trends, course of a pandemic and economic consequences;
- continuous assessment of efficacy and safety of the applied measures (vaccination, treatments, adverse effects of the vaccines and antiviral drugs, and drug resistance);
- with a rapid spread of the disease, the surveillance will be adjusted accordingly, viral surveillance will be reduced except for assessing the molecular evolution of the strain over
time, no individual case reporting, collective reports by defined age groups and deaths will be collected.

**Subsiding (end of pandemic or decrease of incidence between waves)**

- evaluation of needs for additional resources and strengthening between pandemic waves;
- selection of the most effective type of surveillance and control measures for the period between pandemic waves;
- dissemination of the acquired knowledge;
- re-establishment of advanced surveillance for early detection of a new wave;
- exchange of experiences with the World Health Organization.

**Annex 3.2 Influenza, epidemiological and clinical diagnosis**
Chapter 4  CONTAINMENT/SPREAD PREVENTION STRATEGIES

4.1  NON-PHARMACEUTICAL MEASURES

The prevention of the spread of disease is conducted by non-medical and medical procedures. In the absence of a specific vaccine and antiviral drugs, the following non-pharmaceutical measures may have an important role in the prevention of the spread of disease in community, laboratories, as well as nosocomial spread.

4.1.1 Application of veterinary measures to control poultry and other animal infection

Control of infection in poultry and other animals is implemented in accordance with the Plan prepared by the Veterinary Office of Bosnia and Herzegovina.

4.1.2 Undertaking measures to prevent animal-to-human transmission

The safe handling of animals and animal products has important effects on the delay of virus spread and prevents dual infections, thus decreasing the possibility of the mutation of the virus and its adaptation to humans.

Special guidelines for safe handling of animals and other information material will be prepared by veterinary and health care services.

Persons who are in contact with animals must be vaccinated against seasonal influenza, protected by antiviral drugs, must use personal protective equipment and maintain personal and universal hygiene.

These persons must be specially educated and provided with written instructions on the manner of protection and course of action in the event of the emergence of the first symptoms of disease.

Risk groups for transmission of infection from animals are as follows:

- poultry farmers;
- veterinarians and veterinary technicians;
- staff in laboratories;
- persons involved in poultry meat processing industry;
- hunters;
- gamekeepers, etc.

The population is advised not to consume suspicious products of animal origin, when assessed that they may be a vehicle for infection transmission.
In the event of ungrounded rumour and ill-intentioned propaganda, the population is objectively and truthfully informed and advised that products of animal origin may be used safely.

4.1.3 Travel restriction and trade ban

In case of the occurrence of disease in other countries, the population is advised to avoid travelling to the affected countries.

Depending on the assessment of the situation and recommendations of the World Health Organization, measures to ban travelling to the affected areas, i.e. to ban leaving from certain areas, may be introduced. These measures clash with human rights and are applied only in case there is clear evidence on their efficiency, and they are taken in cooperation with transportation companies and travel agencies. There must be a legal basis for implementation of these measures and it is therefore necessary to check the legislation in that sense.

International travellers are informed, via written notices, on the manner of infection, symptoms of disease, measures of protection and course of action in case they notice the symptoms of disease. Airports, air-companies and other transportation companies must get clear instructions on the course of action in the event of discovering disease in travellers. The health care service must be ready to immediately admit ill travellers and transport them to the health care institution. Travellers may be requested to fill in questionnaires (health declaration), and if required by the circumstances, traveller screening measures may be introduced (taking body temperature, medical examination and alike). In accordance with the regulations, a measure of placement under medical surveillance during the period of maximum incubation may be taken (reporting to the health care institution on a daily basis).

Restriction on movement may also be introduced at the local level (ban to enter, i.e. leave the infected area).

Export of animals, i.e. products of animal origin, from affected areas to Bosnia and Herzegovina may be prohibited if assessed that this may be a route for the importation of infection into the country, i.e. in case such a measure can have impact on the prevention of importation. A ban on trade shall be introduced in agreement with the Ministry of Foreign Trade, the Veterinary Office and other relevant institutions.

The public must be prepared in advance for the possibility of the introduction of the aforementioned measures, by informing the public through media, leaflets, pamphlets, and alike.

4.1.4 Universal and Personal Hygiene

In the absence of specific protection, universal and personal hygiene play an important role in influenza prevention.
Hand washing and disinfection prevent the transmission of viruses to the mouth, nose and eye mucous membrane. Citizens are advised and provided with written instructions for the application of this measure, which also plays an important role in preventing other diseases. Placing a face mask on the nose and mouth prevents the transmission of viruses to other people and is also applied as a personal hygiene measure.

The airing of premises influences the decrease of virus concentration on the premises, and it is often a measure more efficient than air disinfection. Disinfection and hygienic disposal of contaminated material prevent the contamination of environment and transmission of viruses to other persons.

Special guidelines on personal hygiene and disposal of contaminated material, which must be simple, clear and easily understandable to the categories of citizens they are intended to, are made. Special guidelines shall be prepared for health care professionals.

4.1.5 Use of Personal Protective Means

The proper deployment of adequate protective means is necessary in health care institutions, laboratories, mortuaries, in the field, in the course of work with ill animals, etc.

Stockpiles of protective means, which are distributed to all those involved in preventing and fighting a pandemic in accordance with the needs, are provided in the entire Bosnia and Herzegovina. Priority in supplying with protective equipment is given to health care institutions which are designated for the hospitalization of the initial cases and mobile field teams responsible for initial cases. Protective equipment sets for rapid response teams must be easily available at the time of a need for the response by the teams.

Personal protective equipment is comprised of:

- caps;
- face masks;
- special high-efficiency masks;
- glasses;
- surgical gloves, (gloves could give a false feeling of protection if one neglects hand hygiene. They only have to be used by HCW in droplet-making situations (sampling, ventilator ...));
- special gloves;
- protective clothes;
- protective coats;
- goggles;
- overalls.

Medical personnel, veterinary service and other parties involved must be made aware of the need for the use and the efficiency of certain means of protection in due course (see Procedures for use of personal protective equipment).
4.1.6 Ban on public gathering

If warranted by the circumstances, the competent institutions will be advised to ban public gatherings during the epidemic wave. The public must be prepared in advance for the possibility of the introduction of this measure, particularly owing to restrictions on gathering on the occasion of religious holidays. The legislation should be adjusted in relation to this issue at the entity level and local level, but more significant effects should be expected from health education and providing objective public information rather than from repressive action.

4.1.7 Closure of educational institutions

The prevention of close contact, as well as the absence of a large number of children, pupils and students may be a reason for the closure of kindergartens, schools, colleges, etc. This measure is undertaken in consultation with competent ministries and the public is prepared for the possibility of closing these institutions in advance. Information for teaching staff and parents on the re-opening of school facilities must be provided in timely manner and must be truthful and frequent.

4.1.8 Home confinement

Owing to tremendous overload of health care capacities, milder cases of disease should be placed in home confinement. These persons are informed through the media on the measures of protection, therapy administration, course of disease, etc. on daily basis and they must be provided with written instructions as well.

Voluntary home confinement is also recommended to persons who have been in close contact with ill persons and to healthy persons which should not leave the house unless absolutely necessary.

4.2 PHARMACEUTICAL MEASURES

Vaccination and antiviral drugs are two particularly important medical interventions aimed at reducing morbidity and mortality caused by pandemic influenza. Influenza vaccine and antiviral drugs are therefore an important component of a broad pandemic response which includes the planning of increased pharmaceutical needs (vaccines, antiviral drugs, antibiotics and other health care resources).

Given their limited capacity, it is necessary to have a balance between these pharmaceutical and non-pharmaceutical measures (personal, respiratory, environmental hygiene, social distancing measures, etc.) in the course of planning.

4.2.1 Vaccination

Vaccination represents the main preventive measure not only for seasonal influenza, but also for pandemic influenza. As influenza viruses constantly mutate, a new vaccine is produced
every year and its composition matches in the majority of cases the identified circulating viruses.

The production of the pandemic vaccine must also wait for the emergence and identification of a new virus sub-type at the beginning of the pandemic. During the first wave of the pandemic, a pandemic vaccine will not be available and antiviral drugs will play an important role during this period. The pandemic vaccine could be available for the second and the following pandemic waves. In any case, the amounts of the vaccine will be limited and vaccine will not be available to the majority of the population.

The Pandemic Influenza Preparedness Plan should define principles and options in prioritizing the use of vaccines and antiviral drugs during the pandemic. At the same time, during the interpandemic period, one should ensure the increase in coverage with seasonal, annual vaccination, which will contribute to better pandemic preparedness and will allow increase of production capacities of the pharmaceutical companies. In phase 3, when avian influenza cases and outbreaks occur in the country, seasonal vaccine could reduce the risk of simultaneous infection and exchange of the genetic material of human and avian influenza virus strains.

There is no routine program of vaccination against influenza in Bosnia and Herzegovina. Vaccination is “optional”, the vaccine is procured for the so-called risk groups (persons suffering from chronic diseases, persons over 65 years of age, persons with professional exposure to persons at risk of complications, i.e. HCW). Given the fact that seasonal vaccine is not included in the mandatory vaccination program, there are no available funds for procurement of necessary annual quantity of seasonal vaccine (assessed annual need for BiH is 500,000 doses). Average annual consumption of seasonal vaccine in BiH was 150,000 doses and, taking into consideration limited financial resources, it is realistic to increase the above mentioned quantity to 500,000 doses.

Differences in planning the needs for annual and pandemic influenza:

- with pandemic influenza, the target population will be broader (priority groups are different from seasonal influenza risk groups);
- it is impossible to anticipate how quickly a new virus “will arrive”; it will take 6-8 months from the emergence of a virus to the production of the vaccine and the necessary quantity of vaccine will not be available;
- once the vaccine is available, it will be necessary to distribute it as quickly as possible. Stockpiling, distribution and administration of vaccine will be carried out through existing network of public health institutes and health institutions (see Procedures for planning, purchase, stockpiling and distribution);
- after initial vaccination with the pandemic vaccine, the immunological response of sero-negative persons will be weak, therefore one should possibly count on a second dose (booster), 2-4 weeks later;
- the priority needs for the vaccine should be defined during the interpandemic period, with the aim to devise an efficient and consistent strategy of pandemic immunization;
- plans to procure and administer vaccines should be devised for different scenarios, from the minimal (similar to the annual influenza program) to a broader, pandemic plan of the use of influenza vaccine.

Vaccination during interpandemic period:

- to promote annual seasonal influenza programs;
- to increase the coverage of traditional risk groups (persons over 65 years of age, chronically ill persons, immune-compromised, etc.);
- to define risk groups based on national vaccination guidelines;
- to establish priorities and develop guidelines for administration of vaccines throughout the pandemic period;
- to establish a plan of mass vaccination of priority groups with pandemic vaccine (once available);
- to assess needs, sustainable procurement, stockpiling and coordinated distribution of vaccines;
- to establish adequate monitoring of coverage, safety of vaccination (reporting of adverse effects);
- to develop strategies for situations in which the administration of vaccine is refused or which are counter-indicated;
- to adjust the current system of recording of the procurement, stockpiling, distribution and administration of the vaccine (especially if the second dose should be necessary).

Planning of pandemic vaccine – stockpiling, distribution and administration will require increase in existing capacities in case there is a need for mass vaccination, which will, apart from PHC vaccination sites, require involvement of mobile teams – field vaccination campaigns - and alike, as well as additional capacities of cold chain for vaccine storage. Private sector should also be involved.

Recommendations to procure and use influenza vaccines under the conditions of restricted supply are based on the establishment of risk, i.e. priority groups:

Recommended risk groups for annual influenza vaccination programme:

Group 1. Persons at high risk of serious and fatal consequences of influenza
The vaccination is recommended to:

a) persons of 65 years of age and more;
b) persons suffering from chronic diseases: diabetes, lung, cardiac, liver and kidney diseases, immune-compromised, etc.;
c) persons permanently accommodated in collective institutions, given the more rapid spread of infection in collective accommodation institutions (homes for the elderly, for persons with special needs, disabled persons, etc.).
Group 2. Health care professionals
Rationale: the health care sector is the “first line” in influenza control. The health service’s capacity for pandemic response and the vaccination program are central components in any (both annual and pandemic influenza) preparedness plan. Health care professionals which have contact with patients are exposed to a higher risk of being infected or of conveying infection than others (hospitals for acute conditions, emergency medicine service, PHC, dental care services, laboratories, pharmacies, etc.).

Group 3. Persons at higher risk of infection

a) veterinary, poultry activity;
b) teaching staff;
c) media employees.

Group 4. Workers with services of special public importance
Rationale: a possibility of an effective response by the local community in case of epidemic (particularly pandemic) threat of influenza may be called into question owing to the increased rate of absenteeism in key services:

a) police;
b) services of public interest (water supply, power supply, gas supply, communications, public transportation, etc.);
c) key persons, decision-makers in states of emergency (key government branches, emergency services, etc.).

It is necessary to ensure that the annual vaccination program against seasonal influenza has sustainable funding, with specially defined procedures of purchase, stockpiling and distribution (special fund, partly planned from the WB loan funds for both entities).

Priority groups for vaccination

In order to achieve rational use and consistency in relation to equal access to the existing stockpiles, every country should define in advance, during the pre-pandemic period, the priority groups for vaccination which will alter and adjust to the epidemic situation and which may be different from priority risk groups for seasonal influenza vaccine:

Depending on the goals set:
- maintain essential services;
- prevent or reduce mortality rate and hospitalization;
- prevent or reduce morbidity rate.

Defined priority groups are the following:

Health care professionals – hospitals for acute conditions, emergency medicine centres, collective accommodation institutions
Workers with essential services (of importance to effective pandemic response)
Persons at high risk (their prioritization during a pandemic depends on the epidemiology of disease):
- persons accommodated in collective institutions;
- persons suffering from chronic diseases (including children > 6 months of age);
- persons over 65 years of age;
- persons with professional exposure (farmers, veterinary workers, etc.);
- persons-contacts, which may transmit infection to persons at risk.

**Pandemic period:**

- full activation of the vaccination program with pandemic vaccine – including stockpiling, distribution, administration, monitoring safety, effectiveness;
- redefining operational guidelines for vaccine application, as necessary;
- informing the public and health professionals on the immunization protocol and priorities.

The processes of procurement, stockpiling, distribution of influenza vaccine, monitoring the coverage, side-effects, etc., may use the existing infrastructure for vaccines from the Mandatory Vaccination Program (tender procurement, stockpiling and distribution through the public health infrastructure, the health institution network from local, regional/canton, to entity level).

### 4.2.2 Antiviral drugs

Antiviral drugs will be primarily used for treatment and post-exposure prophylaxis. The options of AV use depend on the available quantities of drugs, the size of target groups and goals to be achieved within pandemic response. Since antiviral drugs capacity does not correspond to the needs, it is necessary to define priority groups for prophylaxis and treatment, i.e. prophylaxis on the level of entities, BiH Brcko District and the whole state of BiH.

Antiviral drugs should be used with care, in accordance with indications and primarily for treatment during phase 6, while in phases 3-5, they can be used only for individual cases, especially if the H5N1 virus is present in the country.

WHO recommendations for use of antiviral drugs in treatment and prophylaxis are presented in **Annex 4.1.**

Side-effects of antiviral drugs are presented in **Annex 4.2.**

**Prophylaxis:**

- long-lasting (influenza prevention in the defined population, minimum of 4 weeks);
- prophylaxis as a counter-epidemic measure in closed collective accommodation - (minimum of 2 weeks);
- individual protection after vaccination, until the development of immunity (2-6 weeks, depending on whether 1 or 2 doses of vaccine will be needed);
- individual protection after exposure to pandemic influenza (approximately 1 week).

**Treatment**

- affected persons, within 48 hours from symptom onset;
- exposed persons for which vaccination is counter-indicated

Medicine of choice: oseltamivir (zanamivir as an alternative), application in accordance with the established protocol; amantadine and rimantadine should not be used for chemoprophylaxis.

The trigger for the beginning of prophylaxis is the identification of a virus in an environment, i.e. exposure.

Chemoprophylaxis by antiviral drugs is based on risk stratification:

a) High-risk exposure:
- home or close contact with a suspected or confirmed H5N1 case, environment, poultry;
- health care professionals in close contact with suspicious or confirmed H5N1 patients or their body fluids, particularly during invasive procedures, without protective equipment; this group also includes laboratory personnel if personnel is unprotected or exposed to samples contaminated by the virus. Health professionals in droplet-making situations (as above mentioned) are at very high risk.

Chemoprophylaxis: oseltamivir (zanamivir as an alternative), 7-10 days from the last exposure, including pregnant women

b) Moderate-risk exposure:
- personnel involved in handling ill animals, contaminated facilities, without adequate protective equipment;
- persons with unprotected, close exposure to ill or dead poultry infected with H5N1;

Chemoprophylaxis: oseltamivir may be used (zanamivir as an alternative), 7-10 days from the last exposure, including pregnant women

c) Low-risk exposure:
- Health care professionals which have not been in close contact (distance of over 1 m) with a highly suspected or confirmed H5N1 patient, without direct contact with infectious material of the patient;
- Health care professionals which have adequately used protective equipment during exposure to a H5N1 patient;
- staff involved in handling ill animals or decontamination of contaminated environment, which have adequately used protective equipment;

Chemoprophylaxis: chemoprophylaxis is not needed after this type of exposure, especially for pregnant women.

Interpandemic period

- to forecast a scenario of the procurement of AV drugs (ensure procurement fund, funds are partly planned in WB loan - the plan is to initially stockpile 5,000 doses of oseltamivir in FBiH and 3,000 in RS.
to develop protocols of stockpiling, distribution, administration (central stockpiling in the Public Health Institute, i.e. Infective Disease Clinic), with a defined Administration Protocol (see Procedures for stockpiling and distribution);

to ensure clear communication with the general public and health care professionals on rational approach (priority groups) - with continuous education, adequate safe stockpiling and distribution measures.

Priority groups for antiviral drugs:

1. Persons hospitalized for influenza (within 48 hours from symptom onset, treatment).
2. Infected workers of essential health services - within 48 hours from onset, treatment.
4. Health care and other professionals of key importance to effective pandemic response (prophylaxis).
5. High-risk patients, hospitalized not for influenza (prophylaxis).

Pandemic period

- monitoring of availability of drugs, activating planned distribution (delivery of existing buffer stock, etc. to hospitals, infirmaries and other priority places of care for infected persons/persons exposed to infection, if needed);
- ensuring that professionals, general public, media have timely, relevant information on the use of AV drugs;
- monitoring of side-effects, re-defining/adapting plans for the use of antiviral drugs (in accordance with the decision of expert teams, if necessary).
Chapter 5 CASE MANAGEMENT

5.1 VIRAL DIAGNOSTICS

Viral diagnostics of pandemic influenza in BiH is conducted at multiple levels and in different laboratories. On the top, there are two reference laboratories that provide the final viral diagnostics of suspect pandemic influenza cases within 24 hours.

Final viral diagnostics of pandemic influenza virus in BiH is obtained by Reverse Transcriptase Polymerase Chain Reaction, RT PCR.

Reference laboratories are located in Banja Luka and Sarajevo. Diagnostics is also performed by regional laboratories, two of which are located in the FBiH, in Tuzla and Mostar, and one in RS, in Eastern Sarajevo.

Transport medium, used for urgent transport of suspect materials to the reference laboratories, will be available in primary health care institutions.

Laboratory activities in the process of pandemic avian influenza preparedness are grouped by period and phase as defined by the WHO.

Interpandemic period
(Phases 1 and 2)

Equipping laboratories at all levels and defining standard diagnostic procedures.
Distribution of necessary diagnostic material and transport media for health professionals at the primary health care level.
Ensuring engagement of adequately educated staff in viral laboratories.
Informing the laboratory staff on the latest diagnostic methods and introduction of such methods.
Mandatory evaluation of the staff proficiency and certification.
Assigning concrete tasks to viral laboratories and identifying responsible persons for certain procedures and tasks (collection, dispatching, receipt of material, processing of the material upon its receipt, testing, providing results, communication with other laboratories and health institutions and authorities concerned).
Development of standard procedures, which must be available to all members of the laboratory staff at all times.
Paying particular attention to the quality control measures, as well as ensuring laboratory biosafety.
The measures of internal and external laboratory performance quality control are to be regularly applied.
All members of the staff must be provided with adequate protective equipment.
A special attention should be paid to the disposal of biological waste after testing.
Training of primary and secondary health care professionals in influenza rapid tests and transport of material to the reference laboratories (see Annex: Viral diagnostics).
Acquainting health professionals on all health care levels with the possibilities of viral laboratories and ways of communicating with them.
Providing transportation means and vehicles for transport of specimens from health care institutions and regional laboratories to reference laboratories.
Providing conditions for storage of isolated viruses of pandemic influenza and their shipment to WHO European Reference Collaborative Centre (laboratory Mill Hill, London).

**Pandemic alert period**
(Phase 3)

Making an inventory of all equipment and reagents and bridging possible gaps.
Continuous education of the laboratory staff.
Checking the supplies of health institutions concerning diagnostic material and transport media.
Further implementation and strengthening of measures of internal and external quality control.

**Pandemic alert period**
(Phase 4)

Continuing with the activities for the previous phase.
Increasing capacities for storage of isolated viruses of pandemic influenza.

**Pandemic alert period**
(Phase 5)

Continuing with the activities from the previous phase.
Learning about the characteristics of a newly detected, pandemic strain of virus and experiences of other laboratories that have already diagnosed it.
New selection and adjustment of diagnostic methods.
Prompt introduction of new diagnostic methods, as necessary.
Additional equipment and training of the laboratory staff, as necessary.
Planning and enabling work of the viral laboratory in difficult conditions of procurement and communication (lack of water, electricity, diagnostic and other means, decrease in number of laboratory staff).
Introducing 24-hour availability of laboratories (on-duty hours).
Ensuring continuous mutual communication of the staff.
Ensuring continuous mutual communication with the authorities concerned.
Detailed examination of knowledge on biosafety measures in laboratories.
Detailed examination of material transport procedures, by means of simulation exercise, from different levels of health care to reference laboratories in BiH (Banja Luka and Sarajevo), as well as to WHO European Reference Collaborative Centre (laboratory in Mill Hill, London) from reference laboratories in BiH (fast air transport).

**Pandemic period**
(Phase 6, BiH unaffected)

To intensively continue with the activities from the previous phase.
**Pandemic period**  
(Phase 6, BiH affected)

Paying special attention to a full viral characterization of the virus circulating in the BiH population, i.e. sequencing.
Examining the sensitivity of new virus strains to available antiviral drugs.
Increasing laboratory capacities and adjusting and improving work, as necessary.
Summing up the results of work and experiences and conducting their scientific evaluation.

**Annex 5.1** Viral diagnostics procedures

**5.2 CASE INVESTIGATION**

It is important to manage the risk of human infection by the highly-pathogenic H5N1 (not only!) not only because of high mortality rates but also because of the potential threat of its adaptation or reassortment with other influenza viruses, resulting in a new pandemic strain.

The case management guidelines for A (H5) affected persons are based on the available knowledge of the limited number of deaths from human AI and are aimed at:

- early detection and monitoring of persons exposed to risk in order to reduce morbidity and mortality rates through as early administration of antiviral drugs as possible, as well as other measures and thus containment of the further spread of the infection;
- prevention of severe course of disease and death, through adequate case management;
- minimizing the risk of nosocomial spread of the infection, through the recognition and implementation of control measures.

Adequate case management calls for specific activities in the interpandemic period:

- strengthening of local surveillance activities for early detection of influenza-like illnesses (ILI), monitoring of unusual Mb and Mt caused by acute respiratory diseases;
- taking part in the monitoring of HPAI epizootic in animal species, integrated veterinary surveillance;
- ensuring engagement of trained first-contact staff (PHC, emergency centres);
- strengthening of triage/screening capacities;
- development and regular «maintenance» of communication plans (public and professional)
- enabling two-way information flow;
- providing standardized guides, protocols for health professionals;
- setting up a rapid response team (epidemiologist, GP, veterinarian, laboratory technician, medical technician and others – with the flexibility in terms of team composition, as necessary)
- building up capacities for patient confinement, with possibility to apply control measures – containment of the infection (non-pharmaceutical measures, social distancing measures).
5.2.1 Detection – how to recognize signals, «event trigger»:

Every country is responsible for surveillance and viral investigation in rapid PI signal detection process. If a country identifies a signal («trigger») that suggests transmission of a «new» virus, it is expected to immediately launch an investigation (in parallel to notifying the WHO – without waiting for the confirmation or completion of the investigation).

The first potential signal of early pandemic activities cannot be forecast (for example, it can be detection of a local epidemic of a respiratory disease of an unknown aetiology).

Initial case investigation may be initiated after an epidemiological or viral «trigger».

To manage cases (detection, early response) in a territory (country), the case definition and its individual categories (possible, probable, confirmed) should be adapted to the current epidemiological situation in the country. It means that a country with a registered HPAI among the animal population should adopt a more sensitive case definition for further laboratory testing than countries in the areas with no registered AI epizootic.

The case definition of confirmed A/H5 influenza should be standardised at all levels with a confirmed laboratory diagnosis:

Steps in the initial epidemiological investigation of signals:

a) standard laboratory testing;

b) initial epidemiological investigation (descriptive epidemiology of persons, place, time, exposure, risk factors);

c) clinical characterization of the disease, proportion of the affected persons requiring hospital treatment, disease outcome…);

d) monitoring of contacts, active case finding, relation with the initial cluster case according to place and time;

A «cluster» is defined as two or more individuals that are diagnosed as A/H5 influenza cases (including deaths from inexplicable acute respiratory disease) with the onset of symptoms within two weeks, common specific accommodation (household, hospital, camp and other institutionalised accommodation);

c) investigation of the source, reservoirs, if the initial investigation suggests relation according to time and place (for example, unusual deaths of poultry, birds and other animals, urgent, with intensive veterinary investigation (and possible external assistance).

In addition to the viral trigger investigation (e. g. viral isolate in one or more persons), contacts are monitored and active case finding is conducted with regard to the place from which the isolates have been collected. Given the fact that mutations related to increased
transmissiveness are not fully understandable, the viral trigger should be interpreted in accordance with the epidemiological one.

Reporting to WHO – urgent reporting on the detection of a possible sign. Particularly important are the information indicating the increase of clusters - following the exposure.

5.2.2 Verification, assessment and urgent measures (research intervention team)

Initial risk assessment – if a signal is detected:

Activities:
   a) diagnostic confirmation (laboratory specimen is sent to a reference laboratory for the detection or verification of agents);
   b) needs assessment – WHO in cooperation with experts and other national authorities assesses the needs for additional support (staff, equipment, etc.);
   c) constant communication;
   d) urgent control measures (the aim of which is to reduce further transmission, immediately after case detection).

5.2.3 Treatment of a detected case:

1. confinement of clinical cases – mild to severe respiratory diseases and other cases under investigation – confinement room (if available or single room). For laboratory confirmed cases, cohort accommodation in rooms with several beds;
2. identified – voluntary home confinement of asymptomatic cases (primarily home care treatment) and close contacts, with monitoring of the onset of symptoms on daily basis;
3. administration of antiviral drugs for case treatment, post exposure prophylaxis (doses and treatment duration to be based on the latest available information);
4. infection control measures, protective equipment;
5. intensive promotion of personal, respiratory and environmental hygiene.

Annex 5.2 Epidemiological surveillance of persons who have been in contact with bird/poultry infected with A/H5N1 virus

5.3 CASE MANAGEMENT

The aim of case management is to ensure adequate care and minimize transmission:

Case assessment: a patient phones a health service. If the doctor assessed that there is a risk, the patient is transported to the triage centre (each canton/region should plan to have one), in an ambulance, with a mask on (surgical), in order to be examined; in case there are indications, s/he is referred to hospital treatment to the designated clinical centres, with a prior telephone notification. The patient, with the mask on, is transported in an ambulance (a mask for the driver!).
If there are no phones or if the patient comes direct to a health institution, s/he should immediately be isolated from other patients and have a mask on.
If the patient is in home confinement – treatment, s/he will be advised, in writing, to avoid all contacts until the period of contagiousness elapses, on the measures to be undertaken concerning the infection control and what to do in case the symptoms exacerbate. Persons experiencing the symptoms should restrict their contacts with other persons. Upon the medical assessment, if the infection is mild, the person may stay in home confinement for at least 24 hours after the temperature has fallen back to normal.

If the disease symptoms are mild or severe, the patient should be immediately hospitalized in the infectious diseases ward.

_Hospital isolation:_ in single rooms or cohort accommodation in room with more beds, mask, restriction of movement.

In any case of a suspicion to AI/PI, the competent epidemiological service should be informed immediately. Until a mechanism for sampling and transport of laboratory material is established (from BiH to other countries), it is necessary to take blood specimens from persons who are justifiably believed to have been exposed to the A/H5 infection, process it in the centrifuge, freeze the serum and store it at \(-70^\circ C\), as well as to administer antiviral drugs.

_Model of detection and case management plan, for the pandemic/avian influenza suspected cases in BiH._

![Diagram]

3 See Annex 3.2
5.4 Treatment

Treatment can be two-fold: hospital treatment and home treatment.

5.4.1 Hospital treatment

If the person is suspected to have been infected with pandemic influenza (according to the definition of suspicion), the health care institution that suspects pandemic influenza case, will refer patients, with a prior telephone notification, depending on the distance, to the infectious diseases departments of the University Clinical Centres Sarajevo, Tuzla, Banja Luka, Infectious Ward of the Foca Hospital or institutions designated for the hospitalization of initial cases.

The hospitals to accept such patients are defined in the current plans, but must be institutionally prepared for emergency situations. Simulation exercises are planned to be conducted under the World Bank project and are particularly important. Preparation of infectious diseases departments is described in Chapter 6 (Health departments, health services and health care).

In case of a pandemic, patients should be treated in the additional facilities of the University Clinical Centres in Sarajevo, Tuzla, Banja Luka, infectious diseases wards of general hospitals and alternative accommodation facilities, which need to be defined in hospitals crisis plans in the future period.

Should the circumstances demand so, patients will be referred to the closest hospital with an infectious diseases ward. For every case suspect to pandemic influenza it is necessary to conduct the monitoring of clinical surveillance. The clinical monitoring will be conducted in primary, secondary and tertiary health care.

5.4.2 Home treatment

In case of a pandemic, certain number of patients will be sent home for treatment. Criteria for referring patients to home treatment are presented as algorithms for hospital treatment (Annex 5.3 and Annex 5.4).

Should the circumstances allow so, patient is monitored and controlled through home visits or phone calls. Patients are advised through written instructions on how to avoid contact with other people, on measures that need to be taken (see Annex 6.3). In case patient’s condition worsens, medical assistance is required.

5.4.3 Admission of persons suspect to avian influenza in humans

If there are clinical indications, the patient should be hospitalized in accordance with the infection control precaution measures.

The clinical diagnosis will be based on the initial clinical symptoms of the disease (Annex 3.2).
The final diagnosis will be established upon the confirmation of the etiological diagnosis by a reference laboratory. Patients will be admitted by competent infectious diseases wards and their previously established teams consisting of: infectious diseases specialist, pulmologist, specialists in anaesthesia and resuscitation and, as necessary, paediatrician and other specialists.

The infectious diseases ward staff, admitting such patients, must be previously administered with a seasonal influenza vaccine and must use personal protective equipment at work.

The triage of patients must be located in primary health care facilities or in defined alternative locations. Severe and unclear cases are being triaged in infectious diseases clinics/wards. Whenever possible, hospitals should have a triage area for suspect influenza cases, which should be separated from other admission areas. Upon registering a pandemic influenza case, the algorithm of procedures for adult patients (>14 yrs) in case of suspected influenza (Annex 5.3) and algorithm of procedures for children (<14 yrs) in case of suspected influenza and symptoms of respiratory insufficiency and other severe symptoms (Annex 5.4) will be applied.

5.4.4 Confinement and assessment of the health condition of the person diagnosed as a suspect human case of pandemic influenza

Following the preparations in the sanitary area, the person who is a suspect human case of avian influenza will be placed in confinement, where s/he will stay until the discharge. Hospital confinement: single rooms or cohort accommodation in beds with more rooms, masks, restriction of movement.

Collection of specimens for viral research (see Annex Viral diagnostics)

5.4.5 Diagnosis

The diagnosis of pandemic influenza in humans is established when the criteria set for the definition are met: an acute disease case who meets the definition criteria for suspect human case of pandemic influenza, following an etiological diagnosis by a reference laboratory.

5.4.6 Reporting and notification

If the case definition is met, the competent infectious diseases specialist notifies, on a communicable disease cases/deaths notification form, a case of pandemic influenza and, at the same time, promptly telephones the competent epidemiological service.

5.4.7 Case treatment

If there are clinical indications, patients should be hospitalised in the infectious diseases ward in accordance with infection control precaution measures, as described in Chapter 6 (Health departments, health services and care), under 3 (Prevention of the influenza spread in health institutions).

Case treatment is presented in Annex 5.5.
Hospitals must appoint at least 3 teams of doctors and supporting nursing and hygiene teams, which will take care of these patients in particular, although the patients will be under care of the entire staff, as necessary.

Additional education of specialists in infectious diseases wards, general practitioners and family medicine doctors and other employees of health institutions, in relation to the clinical characteristics of human cases of pandemic influenza, should be provided by the infectious diseases clinics of the University Clinical Centres in Sarajevo, Tuzla and Banja Luka.

It is necessary to demand from health professionals, which are in direct contact with patients, to monitor their body temperature two times a day and report to competent persons any febrile case. Every health professional, with an elevated body temperature (>38°C), who has been in direct contact with a patient, needs to be treated immediately (see Case treatment).

Post-exposure prophylaxis (e.g. oseltamivir 75 mg, daily, orally, 7 days) should be offered to all health professionals which have had a potential contact with the patient's airborne droplets, without adequate personal protective equipment.

Health professionals which do not feel well should not be involved in direct care of patients, because they are more vulnerable and the probability of them developing a severe form of the disease is higher if exposed to the A (H5N1) influenza virus.

As soon as the confirmation (bacteriological, serological and others) that the disease is not pandemic influenza but other bacterial or viral disease is received, an adequate antimicrobial therapy may be administered as necessary and the patient may be transferred to a more liberal hospital treatment, i.e. discharged to home treatment and nursing.

5.4.8 Discharge of patients

Further studies are needed to enable a better understanding of the ways of virus excretion in humans who are infected by the A (H5N1) influenza in relation to the recent outbreak in Thailand and Vietnam. Until new evidence is obtained, the WHO recommends that precaution measures for infection control should be in place for adult patients in the course of 7 days after the temperature has dropped.

Early studies of human influenza indicated that children under 12 years of age may spread a virus 21 day after the outbreak. That is why infection control measures for children should be applied in this period of time. Where not feasible (because of the shortage of local resources), the family needs to be educated in terms of maintaining personal hygiene and implementation of infection control measures (e.g. hand hygiene and use of paper or surgical masks for a child who is still coughing). Children must not go to school in this period.
Chapter 6 HEALTH SERVICES AND HEALTH CARE

Owing to the political order of the country, the state of BiH does not have either the Infective Diseases Management and Control Centre (with all aspects of action), or the Pandemic Influenza Control Centre or routine surveillance of seasonal influenza. Bearing in mind this fact, the WHO recommendation is that the Influenza Management Expert Team, appointed by the Ministry of Civil Affairs / BiH Council of Ministers, is engaged in management of influenza outbreak with pandemic potential, if necessary.

HEALTH CARE DEPARTMENTS, HEALTH SERVICES AND HEALTH CARE

The activities of the health care services in BiH in case of the occurrence of influenza pandemic will be conducted at several levels, in following order: state, entity, cantonal/regional, municipal. The scope of health care services will depend on the fact whether there is suspicion of human, probable or confirmed influenza and the pandemic phase will be determined in accordance with WHO recommendations.

With the aim to maximally reduce morbidity and mortality during a pandemic it is necessary to:

1. Maintain the normal work of the health care services (in the scope of maintenance of the services of special importance).
2. Enable the provision of all necessary health services.
3. Continuously implement measures of protection from further spread of disease.

It is necessary to follow all instructions related to actions that enable the accomplishment of the goal.

6.1 HEALTH CARE DEPARTMENTS

In peace, any country has its own organization of health care service, depending on needs, existing legislation and capacities.

In extraordinary situations, special crisis plans, on which the preparation of the overall health care sector aimed at human health preservation is based, are activated. There are no hospitals crisis plans, therefore it is necessary to develop crisis plans for hospitals, based on adopted state plan, in the future.

In order to activate crisis plans, it is necessary to:

1. provide 1-2 beds in infectious diseases clinics/wards in phases 1-3, when sporadic cases of influenza occur;
2. provide 5 beds in infectious diseases clinics/wards (separate rooms or cohort accommodation) in phases 4-5;
3. enable, in phase 6 (pandemic): availability of all capacities of primary, secondary and tertiary health care, including emergency service and intensive care units capacities or 70-90% capacity:
- 90% of infectious diseases wards capacity (280 beds);
- 70% of internal medicine, dermatological, pulmological, paediatric wards capacities (1900 beds);
- 50% of surgical wards capacity. (700 beds).

According to the size of population, it would be ideal to have:

- 17-18,000 beds prepared for influenza affected patients at the level of BiH state;
- the anticipated number of patient beds for health care activities in alternative accommodation (5-7,000);
- potential alternative locations (schools, pupils’ accommodation, kindergartens, rehabilitation institutions);
- separate triage centres-offices in primary care along with premises intended for alternative hospital accommodation in the municipality area where the ill person stays (vertical triage is performed according to anticipated algorithms);
- the Plan related to the number of recruited health care professionals and those working in health care:
  - retired specialist in infectious diseases;
  - retired nurses with high-school degree and post-secondary school degree;
  - young unemployed doctors of medicine and nurses, previously educated for the required workplace, as well as the different profiles of workers dealing with hygiene maintenance, workers dealing with transportation of ill persons, workers in technical services – electricians, plumbers, etc.;
  - number of volunteers (through volunteers’ organizations) trained in nursing and other necessary services.

- Medical supplies
  - for 15-18 teams (equipment for personal protection, antiviral drugs, antibiotics);
  - in alternative health care facilities (schools, kindergartens, pupils’ accommodation, rehabilitation institutions);
  - drugs (for 13-18,000 of ill people), stockpiled in hospital pharmacies;
  - identification of means of additional supplying (budget for special purposes in FBiH and RS, World Bank loan);
    - mechanisms for coordination of patient transportation to higher-level health care centres;
    - central inventory list of beds for ill persons;
    - centralized dispatcher service for the ambulance /call centre/;
    - capacity for taking over the dead where there is excessive mortality (establish maximum existing capacity at cemeteries, clinical and medical centres, alternative capacity - cold chambers), while respecting cultural and religious beliefs.
6.2. HEALTH CARE SERVICES

Health-care teams at all levels must be prepared and trained for rapid response with the aim of:

- safe transportation of patients;
- rapid isolation of causal agents;
- monitoring;
- laboratory confirmation of pandemic influenza diagnosis and
- adequate treatment of possibly infected person.

Requirements necessary for achieving these aims are:

- specially equipped Emergency Service ambulance;
- infectious disease wards/clinics prepared for the admission of suspect, probable and confirmed cases of pandemic influenza;
- adequately prepared isolation facilities;
- prepared personal protective equipment;
- instruments-equipment for treatment of ill persons facing respiratory threats;
- necessary amount of drugs (antiviral drugs, antibiotics and other).

Emergency Service ambulance must have:

- well-trained team and equipment for transportation of respiratory affected patients;
- disinfectants;
- protective clothes and shoes;
- PVC bags for disposal of personal protective clothes and shoes;
- all members of the team, including the driver, wear personal protective equipment;
- upon the admission of the patient to the infectious diseases ward, the ambulance driver disinfects the vehicle;
- all members of the team dispose of their protective clothes and shoes at the infectious diseases ward/clinic, for safe disposal;
- equipment in the vehicle used during the transportation of the infected person is disinfected immediately after the patient’s admission to the hospital and is sterilized afterwards in the main health care institution in accordance with the equipment manufacturer’s regulations;
- single use equipment is disposed of in the same PVC bag along with the personal protective equipment.

Preparation of infectious diseases wards/clinics for admission of suspect cases or persons infected with PI:

Any infectious diseases ward/clinic should prepare rooms for the isolation of suspect cases and persons who have probably been infected or who have been confirmed to be infected with avian influenza.
Isolation rooms should be:

- with negative pressure (if there is artificial ventilation) or
- in the separate wing of the building with a separate entrance if possible or
- at the end of the corridor.

If there is no possibility for such isolation, cohort isolation is deployed. This means:

- isolation of several infected persons with confirmed diagnosis of avian influenza in one room, with the distance between beds of more than 1.5 meters and spatial separation with screens;
- all surplus furniture is to be taken out of isolation rooms;
- a pre-corridor (private room) toward the rest of the corridor should be made by spatial separation with screens in front of the isolation room.

Accommodation conditions, isolation behaviour protocol and inventory of PPE are presented in Annex 6.1.

Adequate personal protection equipment must be stockpiled in:

- intervention epidemiological teams of DZs and
- infectious diseases wards/clinics (Clinical Centres in Sarajevo, Tuzla, Banja Luka, Mostar, departments in Zenica, Bihac, Doboj, Foca, Kasindo) (pandemic phases 1-3).

Infectious diseases clinics/wards must have:

- teams comprised of infectious diseases specialists, anaesthesiologists, pulmologists paediatricians;
- mobile respirators (at least 3);
- vital functions monitors;
- equipment for intubation, oxygen, defibrillator;
- pulsoximeter, infusomate (2-4).

Necessary amount of drugs (antibiotics, antiviral drugs, vaccines) and other:

Based on the most recent WHO assessment concerning the BiH population, in case vaccination is not carried out, 5-35% of the total population is expected to become infected, which in figures means 197,000-1,380,000 persons.

It is assessed that out of this number, 30,000-132,000 infected persons will request health care outside hospital, while 3,000-18,000 persons with serious complications will be treated in the hospital.

The assessment of the necessary amount of drugs in the state of BiH is presented in the enclosed tables (Annex 8).
6.3 PREVENTION OF SPREAD OF INFLUENZA IN HEALTH CARE INSTITUTIONS

With the aim of preventing the spread of PI in health care institutions it is necessary to implement the following measures:

1. Vaccination of health care staff.
2. Vaccination of patients at risk.
3. Continuously implement standard measures of protection.
   a- wearing gloves during each contact with the patient, his/her secretions and blood and contaminated surrounding surfaces;
   b- hand hygiene with ordinary/antimicrobial soap and disinfection with alcohol-based disinfectant after contact with each patient;
   c- wearing other personal protective equipment.

4. Additional measures of protection (Annex 6.2)

Education of health care professionals:

Additional education on clinical features of human cases of pandemic influenza for infectious disease specialists, general and family medicine specialists, medical and other workers in health care institutions should be continuously conducted by the infectious diseases clinics (Sarajevo, Tuzla, Banja Luka, Mostar).

Reporting on the influenza morbidity/mortality:
Upon the receipt of the results of the viral and/or serological confirmation of pandemic influenza in acutely infected person suspected to be suffering from influenza, the competent infectious diseases specialist:
- reports on disease/death caused by infectious disease on the relevant reporting form and at the same time
- informs the competent epidemiology service of the PHI by phone (FBiH, RS, BiH Brcko District)

With aim to prevent pandemic influenza spread, it is necessary to prepare the following:

1. Instructions for health care professionals who are in contact with persons infected with influenza.
2. Instructions for laboratory staff.
3. Education of patient and family members during discharge.
5. Recommendations for travellers to areas where avian influenza emerged (in accordance with the WHO recommendations) (Annex 6.3).
Chapter 7 COMMUNICATION

Communication is a process in which information is disseminated amongst members of an institution, program, project, team or within a social and work system. Communication is a two-way process. It implies not only sending but also receiving, validating and forwarding the messages.

If we recognize that communication is a tool for connecting people within an organisation, institution, etc., in order to attain common results, then it is clear that it presents a link, cohesive force that gathers people, creates an atmosphere of their better mutual understanding, but also understanding with the management and motivates people to further improve their work and contribution.

The aim of communication, in its broadest sense, is to bring about such changes in development and progress that are in the interest of an organization, institution, program, etc.

Communication may have a tangible, measurable impact on the welfare of the community through what has been expressed as well as through pace and plausibility of what has been said. Research has shown that in some emergency situations, such as natural disasters, the public measures the success of an operative response to a phenomenon or problem by the quantity and pace of relevant information it receives from officials in charge of response to emergency situations.

Emergency communication is distinguished by its goal, purpose, communication channels, as well as the manner of communication. Given this difference, the Strategy distinguishes the following types of communication:

1. Informative-educational communication, the purpose of which is to raise awareness and change behaviour of general public, as well as other, special target groups, in order to prevent occurrence and spread of pandemic influenza.

2. Professional communication, the purpose of which is to, in multisectoral and multidisciplinary manner, prevent crisis situations, reduce the possibility of the epidemic spread or reduce its consequences in the most expeditious and efficient manner.

3. Command (management) chain, i.e communication the purpose of which is organized crisis management and to empower the State Task Force to command and manage the crisis in the whole territory of Bosnia and Herzegovina in a uniform manner with a view of averting anarchy and panic.

The communication chain structure

Given the fact that it is of the crucial importance that the information intended for the public and all other specialized groups that are involved are consistent and relevant, what we need is
a structure of command communication, where everyone knows his/her place. Only in that case will it be possible to achieve goals and develop suitable and adequate activities.

The command communication structure for pandemic influenza pre-pandemic phase, as well as pandemic influenza phase should look like as follows:

This structure will be observed during all activities and by all groups involved in the communication chain.

**Activities to be undertaken:**
1. **To establish the BiH State Communication Board**

The Board is appointed by the Council of Ministers and it is comprised of representatives of:

- Ministry of Foreign Trade – Veterinary Office;
- Ministry of Communications and Transport;

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4 The Communication Strategic Plan envisages establishment of Communication Centre. The organisation and functioning of the Centre will vary with the crisis phases. In the interpandemic phase, the members of the Centre will perform their ordinary activities with an emphasis on the activities as defined in the Communication Strategic Plan for the interpandemic phase
• entity health ministries and Department of Health of BiH Brcko District;
• entity education ministries and Department of Education of BiH Brcko District;
• a representative of Prime Minister’s Cabinet;
• Chairperson of Communication Team, in case there is a pandemic influenza (person responsible for communication - member of the Expert Team).

Chairperson can change (in phases 1-3, person in charge of animal health). S/he is a member of Expert Team of Task Force. All necessary decisions should be made by this team.

2. To establish the State “Influenza Communication Team”

which would provide support to the main goals for understanding, informing, preventing and awareness raising before and during an event. The team should be composed of the following:

- two experts from the field of agriculture (at least one veterinarian);
- two experts from the health sector;
- a PR expert;
- a media expert;
- a secretary.

This team will be a truly working team. It must produce lots of material and initiate and control the production of the material by third parties. Beginning with WHO phase 3, the Communication Team will occasionally have to work around-the-clock, so it will be prudent to have stand-by members ready to get involved at any time.

Communication Team is responsible of development of all communication materials. In case of the occurrence of pandemic influenza, the Communication Team must receive its mandate from the BiH Communication Board to undertake other activities in addition to replying the queries received through the hot line. It is essential that the messages are harmonized and similar in both entities and BiH Brcko District, regardless of the spokesperson. Co-ordination is thus essential. Team leader is selected among team members and can be replaced.

3. Communication Strategic Plan envisages establishing of Communication Centre. This Centre is comprised of a number of sectors:

1. sector for the management of the Centre, the members of which are directors of the largest state and entity media agencies and independent media and their authorized representatives, as well as heads of Civil Defence institutions and entities and a representative of NGO associations;
2. multidisciplinary Expert Sector, the members of which are veterinarians, doctors, sociologists, psychologists and communication experts (journalists);
3. sector for production of informative – educational programs, the members of which are: communication experts, journalists, TV and radio editors, TV and radio operators and other required staff.
4. IT sector, the member of which are IT engineers, telecom operators, students.

The members of the Centre Management, as well as the Head of the Communication Centre will be appointed by the Chairperson of the Council of Ministers, following a proposal of
competent state and entity ministries. The Head of the Centre will appoint heads of the sectors as his/her key associates.

The organization and functioning of the Centre will vary with the crisis phases. In the interpandemic phase, the members of the Centre will perform their ordinary activities with an emphasis on the activities as defined in the Communication Strategic Plan for the interpandemic phase.

The Head of the Centre or the person s/he authorizes will convene meetings of the heads of the sectors from time to time, at which short-term action plans will be adopted or their implementation analyzed.

In the phase of avian influenza emergence and particularly during the pandemic influenza phase, the Centre should work around-the-clock. That is why it is necessary for each sector to plan establishing one or two stand-by teams (the possibility that some members of the Centre will be affected should be taken into account). It is necessary to ensure an uninterrupted and motivating work of the Centre through solid logistics. The organization and work of the Centre will be regulated by the Book of Rules of the Communication Centre.

**Overview of communication channels by pandemic phases**

**7.1 Interpandemic Phase (WHO phases 1 and 2)**

The goals of communication in the pre-pandemic influenza phase are directed at education, advocating, preparing and prevention activities in the sphere of human health, veterinary health and animal health.

Communication is focused on general public and target groups (health professionals, veterinarians, journalists, children - as a special target group, etc.). Communication with health professionals and veterinarians will be carried out through:

- training in pandemic influenza issues (seminars, workshops, etc.);
- training in regional/cantonal institutes will be conducted by expert teams of the RS NPHI and FBiH PHI, and the trained professionals will subsequently train the staff of the epidemiological services of health centres. Trained physicians will further provide training at the primary health care level.
- development and distribution of a manual on all aspects of the prevention of the influenza occurrence and treatment procedures for affected birds and humans in written form as well as its availability via electronic media, manuals, brochures, leaflets and other information material for certain population categories. Manuals should be prepared by the expert teams.

Main communication channels are the following: Internet (web page), posters, brochures, radio/TV clips - advertisements, regular contacts with journalists, etc.

**7.2 Pandemic Alert Phase (WHO phases 3 to 5)**

The key task for this phase is rapid response to the problem and rapid provision of clear information to the public in the broadest sense of the word.
7.3 Pandemic Influenza Phase (WHO phase 6)

Changes in the structure of command communication

Communication with the population and all of the above mentioned special groups within the country now must be coordinated under the chain of command of health sector, which takes over the main role in this phase and which is responsible for information on pandemic influenza, that have been received in the course of the influenza occurrence phase, in the form of a brochure containing clinical information for health professionals.

Communication scheme in pandemic influenza phase is presented in Annex 7.
Chapter 8 RESEARCH AND EVALUATION

8.1 RESEARCH

Research at the state level not only contributes to increased global knowledge in the country, but can also be directly beneficial. This justifies a need for the control strategy during pandemic.

The goal of the research is: monitoring epidemiological, viral and clinical features, the course and effects of the pandemic at the national level.

In order to be able to analyze the health condition of the population, compare and measure changes in the course of research in interpandemic (beginning with phase 3) and pandemic period, the following indicators will be followed:

<table>
<thead>
<tr>
<th>Health care indicators</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>• morbidity indicators:</td>
<td>Pandemic alert period</td>
</tr>
<tr>
<td>- incidence, prevalence, average duration of disease, disease risk indicators, global burden of disease (GBD), number of persons hospitalized</td>
<td>Phase 3</td>
</tr>
<tr>
<td>- mortality indicators:</td>
<td>Phase 4</td>
</tr>
<tr>
<td>- general mortality rate, specific rates according to gender, age, standardized mortality rates, mortality of infants, lethality</td>
<td>Phase 5</td>
</tr>
<tr>
<td>Indicators of health care provision</td>
<td>Pandemic period</td>
</tr>
<tr>
<td>• accessibility of health care service, availability of health care professionals and their absence from work;</td>
<td>Phase 6</td>
</tr>
<tr>
<td>• medical supplies and medicines/vaccine supplies;</td>
<td></td>
</tr>
<tr>
<td>• pressure for hospital admission, availability of hospital beds;</td>
<td></td>
</tr>
<tr>
<td>• use of alternative health capacity, mortuary capacity, etc.</td>
<td></td>
</tr>
</tbody>
</table>

Apart from the above mentioned health monitoring indicators, research during the pandemic alert period, as well as during the pandemic, will include:

1. Researching human infection risk factors and the possibility of human-to-human transmission with the assistance and drafting of the research protocol.
2. Monitoring of the onset of unusual clinical syndromes, etiologically unclear and sudden deaths from lung diseases, case fatality, affected risk groups, affected areas, geographical distribution.
3. Adapting the current records and reporting, which will enable the monitoring of the new situation. It is necessary to develop a strategy for the collection and analysis of data.
4. Monitoring of characterization and sub-characterization of the virus, its geographical distribution and conducting possible laboratory tests in the country.
5. Evaluating the efficiency of the vaccine against pandemic influenza and monitoring the occurrence of post-vaccination reactions.
6. Conducting research on the efficiency, effectiveness, safety and resistance to antiviral drugs and their side-effects.
7. Monitoring of the efficiency of the public health measures aimed at control of the pandemic, during pandemic phase.

8.2 PLAN EVALUATION

Plan evaluation is a process by which the value of the Preparedness Plan is assessed. The task is to improve the results and the quality of the Plan by reviewing the process of its planning and implementation.

A plan for the case of influenza pandemic should be a document which has clearly defined goals, indicators and reference units that may be used for the assessment of its application. Also, the Plan should have a mechanism which will ensure its application and should be usable also in case new threats arise.

The model of the review of the plan development should match the principle of the description of scenarios or simulation exercises, by focusing on the specific aspects of the response plan.

Parts of the Plan should be reviewed during minor epidemics or during regular influenza season or some vaccination campaigns.

The Plan should be revised and updated in the absence of an epidemic every 3 years.

It is necessary to:
- evaluate needs in resources in case of future waves, if they happen;
- establish the most efficient measures of surveillance and control for future pandemic waves;
- exchange experience gained with the international community;
- publish research results at the state, as well as international level;
- after the first wave, the response to the pandemic at all levels should be evaluated, with recommendations for improvement.
Annex 2.1
Normative and legal grounds for the development of the Plan for Pandemic Influenza Preparedness and Control in Bosnia and Herzegovina

Given the organisation and system of health care, the following documents have been considered in the development of the Plan for Pandemic Influenza Preparedness and Control in Bosnia and Herzegovina:

1. General Human Rights Declaration;
2. European Convention on Human Rights;
3. WHO Constitution;
4. WHO declaration on the responsibility of WHO member states for the health of their population;
5. European policy “Health for All Goals in the 21st century”;
6. Other documents and recommendations of international institutions and organisations.

The following state-level acts have been considered:

1. BiH Constitution – Annex IV;
2. BiH Council of Ministers Act (“BiH Official Gazette”, No. 30/03, 42/03);
3. Act on Ministries and Other Administrative Bodies in Bosnia and Herzegovina (“BiH Official Gazette”, No. 5/03);
4. State Border Service Act (“BiH Official Gazette”, No. 50/04);
5. Act on the Supervision and Control of the State Border Crossing (“BiH Official Gazette”, No. 56/04; 52/05)
6. BiH Defense Act (“BiH Official Gazette”, No. 88/05);
7. Veterinary Act (“BiH Official Gazette”, No. 34/02);
8. Agreement on manner and procedure of use of health care for insured persons in the territory of Bosnia and Herzegovina, out of entities territory, i.e. Brcko District, which the insured persons belong to (“BiH Official Gazette, No. 30/01);

FEDERATION OF BOSNIA AND HERZEGOVINA

1. FBiH Constitution;
2. Act on Federal Ministries and Other Bodies of Federal (“FBiH Official Gazette”, No. 58/02,19/03,38/05,2/06 and 8/06);
3. Act on the Protection of the Population from Communicable Diseases (“FBiH Official Gazette”, No. 29/05/;
4. Health Care Act (“FBiH Official Gazette”, No. 29/97);
5. Health Insurance Act (“FBiH Official Gazette”, No. 30/97 and 7/02);
6. Act on the Protection and Rescue of People and Property from Natural and Other Disasters (“FBiH Official Gazette”, No,. 39/03 and 22/06);
7. FBiH Criminal Code (“FBiH Official Gazette”, No.: 36/03);
8. Pandemic Influenza Preparedness Plan of FBiH.

REPUBLIC OF SRPSKA

1. RS Constitution;
2. Ministries Act (“RS Official Gazette”, No. 70/02, 33/04, 118/05);
3. Act on the Protection of the Population from Communicable Diseases (“RS Official Gazette”, No. 10/95);
4. Health Care Act (“RS Official Gazette”, No. 18/99, 58/01 and 62/02);
5. Health Insurance Act (“RS Official Gazette”, No. 18/99 and 70/01);
6. RS Criminal Code (“RS Official Gazette”, No.49/03, 8/04, 37/06);
7. Civilian Protection Act (“RS Official Gazette”, No. 26/02 and 39/03);
8. National Pandemic Influenza Preparedness Plan of RS.

BH BRČKO DISTRICT

1. Brčko District Constitution;
2. Act on the Executive Authorities of the BiH Brčko District (“BiH Brčko District Official Gazette”, No. 2/00, 5/01, 9/01, 12/01, 16/01, 17/02, 8/03, 14/03, 31/04);
4. Health Care Act (“BiH Brčko District Official Gazette”, No 2/01);
5. Health Insurance Act (“BiH Brčko District Official Gazette”, No.1/02 and 7/02);
Annex 2.2: Chain of Command in health sector (FBiH, RS and BiH Brčko District)
Annex 2.3: Chain of Command in veterinary sector
Annex 3.1

WHO case definitions for human infections with influenza A (H5N1) virus

29 August 2006

Background

Prompt and accurate reporting of H5N1 influenza cases to WHO is the cornerstone for monitoring both the global evolution of this disease and the corresponding risk that a pandemic virus might emerge. In collaboration with several partners, WHO has developed standardized case definitions to facilitate:

1. Reporting and classification of human cases of H5N1 infection by national and international health authorities.
2. Standardization of language for communication purposes.
3. Comparability of data across time and geographical areas.

Application of the H5N1 case definitions

1. The case definitions apply to the current phase of pandemic alert (phase 3) and may change as new information about the disease or its epidemiology becomes available.

2. National authorities should formally notify only probable and confirmed H5N1 cases to WHO. The case definitions for persons under investigation and suspected cases have been developed to help national authorities in classifying and tracking cases.

3. The case definitions are not intended to provide complete descriptions of disease in patients but rather to standardize reporting of cases.

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

Case definitions

Person under investigation

A person whom public health authorities have decided to investigate for possible H5N1 infection.
**Suspected H5N1 case**

A person presenting with unexplained acute lower respiratory illness with fever (>38 °C) and cough, shortness of breath or difficulty breathing.

**AND**

One or more of the following exposures in the 7 days prior to symptom onset:

a. Close contact (within 1 metre) with a person (e.g. caring for, speaking with, or touching) who is a suspected, probable, or confirmed H5N1 case;

b. Exposure (e.g. handling, slaughtering, defathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their faeces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month;

c. 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;

d. Close contact with a confirmed H5N1 infected animal other than poultry or wild birds (e.g. cat or pig);

e. Handling samples (animal or human) suspected of containing H5N1 virus in a laboratory or other setting.

**Probable H5N1 case (notify WHO)**

*Probable definition 1:*
A person meeting the criteria for a suspected case

**AND**

One of the following additional criteria:

a. infiltrates or evidence of an acute pneumonia on chest radiograph plus evidence of respiratory failure (hypoxemia, severe tachypnea)

**OR**

b. positive laboratory confirmation of an influenza A infection but insufficient laboratory evidence for H5N1 infection.

*Probable definition 2:*
A person dying of an 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 conducted in a national, regional or international influenza laboratory whose H5N1 test results are accepted by WHO as confirmatory:

a. Isolation of an H5N1 virus;

b. Positive H5 PCR results from tests using two different PCR targets, e.g. primers specific for influenza A and H5 HA;

c. A fourfold or greater rise in neutralization antibody titer for H5N1 based on testing of an acute serum specimen (collected 7 days or less after symptom onset) and a convalescent serum specimen. The convalescent neutralizing antibody titer must also be 1:80 or higher;

d. 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 haemagglutination inhibition titer of 1:160 or greater or an H5-specific western blot positive result.
Annex 3.2 Influenza, epidemiological and clinical diagnosis

**EPIDEMIOLOGICAL DIAGNOSIS**

The criteria for establishing an epidemiological diagnosis of a probable case of A/H5N1 viral infection are as follows:

- Travel to the areas with confirmed or suspect avian influenza cases, seven days before the onset of symptoms;
- Close contact (less than 1 meter) with live or dead wild birds, domestic poultry and other animals with confirmed a/H5N1 virus infection;
- Work (stay) at poultry farms where A/H5N1 virus infection was confirmed;
- Contact with wild birds in affected and infected areas;
- Professional exposure (veterinarians, doctors, health workers, staff in poultry production, as well as workers in production lines where risks of avian virus transmission are present);
- Consummation of inadequately thermically processed meat of poultry infected with H5N1 virus;
- Contact, 7 days prior to the symptom onset, with a confirmed human A(H5) case in the period of contagiousness;
- Risk of human-to-human transmission of infection is a direct contact with ill person. Contact within less than one meter is considered to be particularly risky or stay in a confined area with the affected person for more than 60 minutes.

**CLINICAL DIAGNOSIS**

Clinical diagnosis will be based on initial clinical symptoms of the A/H5N1 disease:

- Sudden onset, high temperature > 38 °C, coughing, conjunctivitis, headache, sore throat, difficult breathing;
- X-ray in terms of pneumonia or respiratory distress syndrome (RDS);
- Productive coughing;
- Tiredness, malaise, diarrhea;
- Lymphopenia, Thrombocytopenia;
- Tachypneia with changes in the lungs that correspond to viral pneumonias;
- These symptoms appear, in most cases, within 7 days (3 - 16 days).

Within advanced surveillance of inpatients, AI/H5N1 testing is indicated for the following:
* patients with X-ray confirmed pneumonia, acute respiratory distress syndrome or other severe respiratory disease for which there is no alternative diagnosis, with epidemiological data on the following:
- travel over past 10 days in the country with documented AI (H5N1) infection in poultry and humans; or
*individual cases, in consultation with surveillance officer (local and higher levels) for inpatients and outpatients with:
- documented T>38°C or one or more symptoms: coughing, sore throat, difficult breathing; and
- information on the contact with poultry (e.g. visit to a poultry farm or market with a confirmed or suspect case of human A (H5N1) infection or to an affected country 10 days prior to the onset of the symptoms.
Annex 4.1

Treatment of patients with confirmed or probable infection with the avian influenza A (H5N1) virus in non-pandemic phase where neuraminidase inhibitors are available:

1. In patients with confirmed or probable infection with the bird influenza A (H5N1) virus, clinical workers must administer oseltamivir as soon as possible.
2. In patients with confirmed or strongly suspected infection with the bird influenza A (H5N1) virus, the clinical workers may administer zanamivir.
3. If neuraminidase inhibitors are present, the clinical worker should not administer amantadine alone in the first line of the treatment of patients with confirmed or strongly suspected human infection with the bird influenza A (H5N1) virus.
4. If neuraminidase inhibitors are not available and especially if the virus is known or likely to be susceptible, clinicians might administer amantadine in the first line of treatment of patients with confirmed or strongly suspected infection with the bird influenza A (H5N1) virus.
5. If neuraminidase inhibitors are available, clinicians should not administer rimantadine alone in the first line of treatment of patients with confirmed or strongly suspected infection with the bird influenza A (H5N1) virus.
6. If neuraminidase inhibitors are not available and especially if the virus is known or likely to be susceptible, the clinicians might administer rimantadine as the first line of treatment of patients with confirmed or strongly suspected infection with the bird influenza A (H5N1) virus.
7. If neuraminidase inhibitors are available, or the virus is known or likely to be susceptible, the clinicians might administer a combination of neuraminidase inhibitors and M2 inhibitors to patients with confirmed or strongly suspected infection with the bird influenza A (H5N1) virus. This can only be done in the context of prospective data collection.

Indications for chemoprophylaxis according to risk level

1. In the high-risk exposure groups, oseltamivir may/should be administered as chemoprophylaxis continuously 7 to 10 days after the last known exposure.
2. In moderate-risk exposure groups, oseltamivir might be administered as chemoprophylaxis, continuously 7-10 days after the last known exposure.
3. In low-risk exposure groups, oseltamivir should probably not be administered as chemoprophylaxis.
4. Pregnant women in the low-risk exposure group should not receive oseltamivir as chemoprophylaxis.
5. In the high-risk exposure group, zanamivir may/should be administered as chemoprophylaxis, continuously 7-10 days from the last known exposure.

1 Recommendations used originate from WHO document: WHO Rapid Advice Guidelines on pharmacological management of humans infected with avian influenza A (H5N1) virus (WHO/PSM/PAR/2006.6). The reader is advised to check upon the strength of recommendations and recommendations evidence quality in the above mentioned document. (Document is available on WHO web page: http://www.who.int/medicines/publications/WHO_PSM_PAR_2006.6.pdf)
6. In the moderate-risk exposure group, oseltamivir may be administered as chemoprophylaxis continuously 7-10 days from the last known exposure.

7. In low-risk exposure groups, zanamivir should probably not be administered as chemoprophylaxis.

8. Pregnant women in the low-risk exposure group should not receive zanamivir as chemoprophylaxis.

9. If the virus is known or likely to be an M2 inhibitor resistant H5N1 virus, amantadine should not be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus.

10. If neuraminidase inhibitors are not available and especially if the virus is known or likely to be susceptible, amantadine might be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus in the high-risk and moderate-risk exposed group.

11. If neuraminidase inhibitors are not available and even if the virus is known or likely to be susceptible, amantadine should probably not be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus in the low-risk exposure group.

12. In pregnant women, elderly people, people with renal insufficiency and individuals taking neuropsychiatric medicines or suffering from neuropsychiatric/seizure disorders, amantadine should not be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus.

13. If the virus is known or likely to be an M2 inhibitor resistant H5N1 virus, rimantadine should not be administered as chemoprophylaxis of human infection with the avian influenza A (H5N1) virus.

14. If neuraminidase inhibitors are not available and especially if the virus is known or likely to be susceptible, rimantadine might be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus in the high-risk and moderate-risk group.

15. If neuraminidase inhibitors are not available and even if the virus is known or likely to be susceptible, rimantadine should probably not be administered as chemoprophylaxis against human infection with the avian influenza A (H5N1) virus in low-risk exposure groups.

16. In pregnant women rimantadine should not be administered as chemoprophylaxis of human infection with avian influenza A (H5N1) virus.

17. In patients with severe community acquired pneumonia, regardless of the geographical location, clinicians should follow the appropriate clinical practice guidelines.

18. In patients with confirmed or strongly suspected infection with the avian influenza A (H5N1) virus, who do not need mechanical ventilation, and who do not have indications for antibiotics, clinicians should not administer prophylactic antibiotics.

19. In patients with confirmed or strongly suspected infection with the avian influenza A (H5N1) virus, which do not require mechanical ventilation, the clinicians should follow the clinical guidelines for prevention or treatment of ventilator associated or hospital acquired pneumonia.

20. In pregnant women with confirmed or strongly suspected infection with the avian influenza A(H5N1), clinicians should not administer ribavirine either as treatment or chemoprophylaxis.
Annex 4.2

Side-effects in the form of sickness and vomiting as the most common effects in adults, as well as children, have been described in relation to the deployment of oseltamivir. As for pregnant women, there are two reports on the deformities of the embryo and 4 spontaneous abortions. Dose reduction is necessary with patients suffering from renal insufficiency with the creatinine clearance of 10-30ml/min. With patients suffering from liver conditions, dose reduction is not recommended, and with gastro-intestinal symptoms, the absorption of the drug is weakened, so there is no need for reduction. If the patient vomits the drug within 1 hour after taking it, the full dosage (75mg) should be repeated.

- With zanamivir, bronchospasm has been described. Headache is one of the reactions most reported on. With pregnant women, three spontaneous abortions and a death case without an explanation of the cause have been described. There is no information on resistance to zanamivir.
- Amantadine most often causes sickness, vertigo and insomnia, as the most common effects in children, as well as adults. The symptoms have been described by the CNS, including hallucinations, delirium, psychosis and other mental alterations, to a coma of a patient with renal insufficiency and persons who have been given psychoactive medicaments. One pregnant woman had a spontaneous abortion, but she was taking other two drugs so the spontaneous abortion can not be ascribed to amantadine alone. Resistance development has been described, but in the studies with seasonal influenza.
- Side-effects reported on in relation to rimantadine are: sickness, vomiting, vertigo and insomnia as the most common symptoms, but in relation to amantadine without significant difference. Although symptoms in the form of convulsions, some of which were grand-mall, have been described by the CNS, studies have shown that the incidence of the symptoms by the CNS is lesser in rimantadine than amantadine. There are no reports on the use of rimantadine with pregnant women.
- With combined therapy of M2 inhibitor and oseltamivir, an increase in intolerance of the gastro-intestinal tract has been described. There is no information on the H5N1 virus resistance in combined therapy, but it is known with regard to the deployment of the M2 inhibitor alone. It is not recommended to use ribavirine given the fact that its efficiency with the influenza virus is weak, and side-effects, such as anaemia, are frequent.
Annex 5.1
VIRAL DIAGNOSTICS PROCEDURES

1. General remarks
Due to threat of pandemic influenza, declared by the WHO, as well as due to concern of the BiH authorities, and its two entities, Republic of Srpska and Federation of Bosnia and Herzegovina, Plan for Pandemic Influenza Preparedness and Control in Bosnia and Herzegovina puts specific demands to reference viral laboratories, in terms of their readiness to make final diagnosis of influenza and influenza-like illnesses (ILI), within 24 hours after receipt of hospital material.
During specimen collection procedure, as well as during regular work in every viral laboratory, the highest biosafety standards have to be observed, especially with procedures during which aerosol and droplets occur.
Biosafety has to be provided on several levels.
*Personal protection*: Mandatory use of protective means and clothing.
*Protection from aerosol and droplets*: Biological safety cabinets must be used for all procedures during which aerosol or droplets can occur (stirring, mixers, shaking, pipetting, ...)
*Contact protection*: Decontamination has to be carried out after every procedure which can lead to contact with infectious material

2. Clinical diagnosis
The key and the first step in response to pandemic influenza is clinical estimation of probability of having a case/s of pandemic influenza. These cases are reported as suspect or probable.

3. Type of specimens
3.1. Recommended specimens
Specimens are taken from upper respiratory tract. Recommended specimens are as follows:
- nasopharyngeal swab,
- throat swab.
During the early stages of pandemic influenza, when the exact diagnosis is of essential importance, it is necessary to collect 2 separate specimens.
Nasopharyngeal swab poses a lesser risk for the staff taking samples of nasopharyngeal wash and aspirate, which can cause aerosol or droplets occurrence.
Nasopharyngeal swab can be transported together with throat swab in a single tube or in a container with viral transport medium.
If a viral transport medium is not available, swab can be placed into 1ml of saline solution.
3.2. Other samples
Depending on the nature of pandemic virus, it can become necessary to take other specimens as well. Invasive procedures, such as bronchoalveolar lavage or lung biopsy, can be tested in viral laboratory.
3.3. When do you collect specimens?
Preferably, specimens for viral diagnostics should be collected during the first 3 days after onset of symptoms. However, for immune compromised patients and patients with severe clinical features, specimens for viral diagnostics can be taken in a later stage, i.e., 7 days after onset of disease.

3.4. Serum specimens
Acute phase serum is taken (7-10ml of blood) immediately after onset of symptoms (up to day 7), as well as 14 days after collecting the first specimen (convalescence phase).

4. Biosafety measures during specimen collection procedure
Persons collecting specimens must be fully prepared for the procedure. Procedure of putting on and removing of the protective means and clothing must be well known.

Before the specimen collection procedure begins, specimen collecting containers have to be properly labelled and contain at least the following information: name of the patient, date of birth, date of specimen collection, as well as the type of sample in question.

Mandatory labelling of specimen with: Possible pandemic influenza virus infection!

No paper forms should be taken into specimen collection room.

Mandatory notification of viral laboratory which receives the material on material delivery is needed, in order for the lab to be ready for material receipt.

Keep containers containing suspect pandemic influenza virus specimens separated from all other samples.

Containers containing suspect pandemic influenza virus specimens have to be double-packed for storage and shipment.

5. Specimen collection
5.1. Nasopharyngeal swab
Use synthetic absorptive tipped swabs with thin and flexible handle.
- label sample container, which is usually plastic tube, with: name of the patient, date of birth, date of specimen collection;
- insert the swab into the nostril parallel to the palate, while the patient's head is tilted slightly backward, in order for the nasal passage to become visible to the person taking the sample;
- gently rotate swab and slowly move it to the posterior pharyngeal wall, until you feel resistance;
- press swab tip onto the medial and posterior part of the lower part of nasal passage, leave it there for 1-2 seconds and slowly pull it out, without rotating.
- place swab into the container containing virus transport medium and break off or cut off swab handle;
- carefully seal transport container, in order to prevent leaking or evaporation of transport medium
- place swab into a plastic bag with screw-top and than place it into a bigger plastic screw-top bag.
- sample should be immediately sent to the laboratory that will carry out the testing or it can be briefly stored into refrigerator, until it is sent to the laboratory.
5.2. Throat swab
Use plastic, Dacron swab.
- label sample container, which is usually plastic tube, with: name of the patient, date of birth, date of specimen collection,
- instruct patient to open his/her mouth as wide as possible and to say „aaaaaaa ...“
- if necessary, hold the tongue down with depressor, in order to make throat walls available and to prevent contamination of the swab with micro-flora from that part of mucous membrane;
- rotate swab while touching mucous membrane of tonsils and posterior throat wall and slowly pull it out;
- place swab into container with virus transport medium and break off or cut off swab handle;
- carefully seal transport container, in order to prevent leaking or evaporation of transport medium;
- place swab into a plastic bag with screw-top and than place it into a bigger plastic screw-top bag.
- sample should be immediately sent to the laboratory that will carry out the testing or it can be briefly stored into refrigerator (+4°C), until it is sent to the laboratory.

6. Specimen transport
In the early stages of pandemic, specimens have to be sent in timely manner and transported in usual or special transport means to one or two reference laboratories.

6.1. Handling and transport of material
It is of the greatest importance to inform the staff in the laboratory that the samples are sent to about possible or probable case of pandemic influenza. Apart from that, means for safe handling of the specimens must be available.
The main objective is to send good quality specimen of patient material to relevant laboratory as soon as possible.
Packaging and transport of specimens should be carried out in accordance with recommended standard procedures for infectious materials.
Nasopharyngeal swab of the patient, suspected to be suffering from pandemic influenza, is placed into transport container containing transport medium, with tightly sealed cap, with addition of waterproof adhesive tape or Parafilm, which is placed around the cap.
The person packaging the sample starts his/her work by wearing 2 pairs of latex gloves.
The outside of specimen container is disinfected by spray containing adequate viricide which is followed by removing of outer pair of gloves of the person packaging the specimen. Container is further placed into zip-lock bag and than into bigger, plastic bag, with air bubbles in its wall, which protects specimen from mechanical damage. Ice packs and drying packs are also placed into this bag. The purpose of the drying packs is to absorb material in case specimen container becomes damaged or broken. Specimen is further placed into metal container for transport of biological specimens, with its cap tightly sealed. The outside of metallic container is disinfected by spray containing adequate viricide, which is followed by replacement of gloves of the person packaging
the specimen. Sample has to be adequately cooled down at all times, during packaging and transport. Each specimen, taken from patient suspected to be suffering from pandemic influenza, must be separately packed. Finally, metal container is placed into cardboard box. Invoice form is glued on the inside of the box. Label with address of the laboratory the specimen is sent to, as well as the label with sender’s address is on the outside. Infectious material label is required.

a. Receipt of material in the laboratory

Staff working on receipt of material assigns a lab number to the material and puts labels on the outside of specimen container. Staff working on receipt must not open metal transport container. Staff which is properly trained and prepared opens containers and processes material in BSL-2 biosafety cabinets. If the content of transport containers spills, containers are not processed, but discarded and disposed of, in accordance with standard procedures.

7. Diagnostic procedures

These diagnostic procedures are related to early pandemic stages (measures taken on border crossings and control of sporadic influenza cases). During this stage, timely and correct diagnosis is of utmost importance. RT-PCR is an optimal test for detection of pandemic strain of influenza virus and it should be the first test performed. Each RT-PCR positive specimen must be sent to WHO Collaborative Centre for Europe, in Mill Hill, London. In the later pandemic stages, when infection spreads, testing strategy can be changed.

7.1 RT-PCR

RT-PCR is an optimal test for detection of new strain of pandemic influenza virus, which uses highly-reactive primers, which can detect all haemagglutinin sub-types (HA) of influenza A virus. A “target” that is used most often is the gene that encodes matrix protein (M). Therefore, HA RT-PCR and M RT-PCR are recommended. Extraction of nucleic acid of pandemic influenza virus strain is always performed in BSL-2 biosafety chamber! After being lysated and placed into new tube, specimen is considered non-infectious.

7.2 Virus culture

Virus culture must be performed in the laboratory which can provide biosafety level 3. Characterization of the virus in cell culture is done by haemagglutination inhibition reaction, in BSL-3 laboratory. Pandemic strain of influenza virus could probably be isolated in MDCK cell culture (Madin Darby Canine Kidney).
7.3 Immunofluorescence Assay
Immunofluorescence assays are widely used for rapid type-non-specific detection of type A and type B viruses. These tests provide results in 2 – 4 hours. Preparation of specimens for this test is carried out in BSL-2 bio safety cabinets. After being treated with alcohol on glass slide, specimens are considered non-infectious.

7.4 Serology
Serological diagnostics of pandemic influenza will probably have limited use in the early stages of pandemic. However, serological tests can be useful for “not influenza” diagnosis during epidemiological surveys. Available serological tests for detection of specific influenza antibodies include: haemagglutination inhibition test, enzyme immunoassay and virus neutralization test. Microneutralization test detects antibodies 10-14 days after onset of disease in humans, caused by avian influenza A/H5N1 virus. Since this test requires use of live virus, it can be used only in BSL-3 laboratories. Acute and convalescent sera are stored at -20°C.

8. Criteria for laboratory confirmed cases

The recommended test in early pandemic stages is RT-PCR. If the test is performed without positive control, viral acid amplification products must be sequenced and compared to sequences in the data base. Each RT-PCR positive result must be confirmed by test in another laboratory. Negative RT-PCR results do not exclude presence of the influenza virus in the specimen. Results must be interpreted together with available clinical and epidemiological data. During interpandemic or pandemic alert periods, WHO recommends all laboratory results, pertaining to A/H5N1 and H9 viruses, to be checked upon in one of reference laboratories. All RT-PCR positive specimens should be sent to WHO Collaborative Centre in Mill Hill, London.

9. Reporting on results

Reference laboratory has to send the results to the institution or physician which sent the material for testing. Results are sent to WHO as well. Reference laboratory has to check whether the institution or physician which sent the material received the results.
Annex 5.2 Epidemiological surveillance of person who has been in contact with birds/poultry infected with A/ H5N1 virus

Notifying health institution ……………………………………………………………………………………..

Address/telephone/fax numbers …………………………………………………………………………………..

Date of notification…………………………………………………..

Contact notifying person ………………………………………..Cell phone……………………………………

Patient's particulars

1. First name, father's name, family name:
……………………………………………………………………………………………………………………………..

2. DOB:………………Place of residence…………………………………………………………………………

3. Date of the symptom onset………………………………

4. Which symptoms and signs appeared at the time of disease (tick)?
Temp>38°C□ Temp. not taken □ Conjunctivitis □
Coughing □ Headache □ Difficult breathing □
Sore throat □ Other (state)……………………………………..

5. Has the X-ray of lungs been done Yes □ No □

6. If yes, does the patient have an X-ray confirmed pneumonia or respiratory distress syndrome (REDS)? Yes □ No □

7. Has the patient made any of the following contacts over past 10 days:
   a) Close contact (less than 1m) with live poultry/birds?
      Yes □ (Date and place of the contact ………………………………………………………………………)
      No □

   b) Contact with poultry/birds suspect to A (H5)?
      Yes □ (Date and place of the contact…………………………………………………………………………………………)
      No □

   c) Visit or stay in a household with a suspect human A (H5) influenza?
      Yes □ (Date and place of the contact…………………………………………………………………………………………)
d) Visit or stay in the same household with a confirmed human A (H5) case?
   Yes □ (Date and place of the contact…………………………………………………………..)
   No □

e) Has s/he traveled or stayed in an area with a confirmed A (H5N1) epizootic?
   Yes (Date, area………………………………………………………………………………..)
   No □

f) Other possible contacts, state……………………………………………………………………

8. Date on which the health service examined the person ……………………

9. Body temperature taken? (2 times a day in the course of 7 days as of the contact with infected birds/poultry):
   Yes □                   No □

10. Seasonal influenza vaccination:   Yes □   No □

11. Antivirals administered       Yes □ (date………………..)   No □

12. Type of surveillance:        Home □          Hospital □

13. Avian influenza diagnosis:
   Suspect □        Probable □        Confirmed □       Unconfirmed □

14. Specific laboratory findings:
   ………………………………………………………………………………………………………...

15. Other remarks:
   ………………………………………………………………………………………………………...

Doctor in charge

Recovered, complications, dead
Annex 5.3 Algorithm of procedures for influenza suspect adults >14

Evident influenza symptoms

- Yes
  - Clinical influenza
    - Patient stable, no comorbidity*
      - Home self-treatment and voluntary isolation
    - Patient stable, + comorbidity/other risks
      - Therapy (oseltamivir) and voluntary isolation
    - Further examination required
      - Hospital/infectological examination
        - Diagnosis not clear, further testing
          - Pneumonia + comorbidity*
            - Acute confusion
            - Metabolic disorders
            - Respiratory disorders
            - Acute cardiac disorders
              - Hospitalisation
        - Pneumonia, no comorbidity*
          - Pneumonia treatment and discharge

- No
  - Not influenza
    - Patient stable, no comorbidity*
      - Home self-treatment and voluntary isolation
    - Patient stable, + comorbidity/other risks
      - Therapy (oseltamivir) and voluntary isolation
    - Further examination required
      - Hospital/infectological examination
        - Diagnosis not clear, further testing
          - Pneumonia + comorbidity*
            - Acute confusion
            - Metabolic disorders
            - Respiratory disorders
            - Acute cardiac disorders
              - Hospitalisation
        - Pneumonia, no comorbidity*
          - Pneumonia treatment and discharge

Discharge
Annex 5.4 Algorithm of procedures for influenza, respiratory insufficiency and other severe symptoms suspect children (<14 yrs).

Co-morbidity/other risks
- 65+ years of age,
- pregnancy,
- chronic lung disease (such as chronic obstructive lung disease, cystic fibrosis...),
- congestive heart failure,
- kidney failure,
- immunodeficiency (due to the underlying disease or therapy),
- haematological disorders (anaemia, haemoglobinopathy),
- diabetes,
- liver disease, persons under 14 years of age on long-term acetylsalicylate therapy (increased risk of the Reye syndrome).

* symptoms of respiratory insufficiency and other severe symptoms:
- difficult breathing (sucking in of nostrils, between ribs or jugulum on inspiration, rapid breathing, stridor)
- cyanosis and/or blood circulation disorders
- continuing vomiting
- conscious disorders (confusion, lethargy)
- convulsions,
- tense fontanels,
- torticollis, photophobia,
- high temperature or hypothermia,
- severe nutrition or sleep disorders

++ co-morbidity and other risks of influenza complications:

- chronic heart or lung disease
- chronic metabolism diseases (diabetes...),
- malignant diseases,
- immunodeficiency (either due to the underlying disease or therapy),
- kidney disease,
- anaemia, haemoglobinopathy,
- children on long-term acetylsalicylate therapy (increased risk of the Reye syndrome).

+++ education of parents / guardians

- hydration maintenance,
- control of increased temperature (to avoid salicylates because of the Reye syndrome!),
- monitor the child's condition,
- immunization/prophylaxis of persons at high risk,
- general measures of infection prevention (hand hygiene, disposal of used handkerchiefs, avoidance of unnecessary contacts...)

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Annex 5.5 Case Treatment

If there are clinical indications, patients should be hospitalised on the infectious diseases ward in accordance with precaution measures for infection control, as described in Part 7 (Health departments, health services and care), under 3 (Prevention of the influenza spread in health institutions).

To take specimens of respiratory tract and blood for laboratory tests for influenza and other infections for which there are clinical indications (see Figure 3) and perform X-ray of lungs in 2 projections unless already done.

The sequence of haematological, bacteriological and serological tests to be determined, depending on the patient's epidemiological – epizootic living conditions and further clinical symptoms: exanthemas, radiological and further haematological results.

Antimicrobials should not be administered until the necessary specimens of secretion, excrement, blood, swab, etc. have been collected. In the meantime, the patient should be examined frequently and detailed evidence should be kept on the course of the disease, and only supportive and symptomatic medicines and procedures should be administered and applied.

To administer neuraminidase inhibitors, such as oseltamivir (75 mg orally, 2x a day in the course of 5 days) as early as possible in the clinical courts of the disease. With regard to doses and restrictions for paediatric administration, see the instructions attached to the product. The therapy is indicated for children over 1 year of age. The therapy doses for children over 13 years of age is the same as for adults 75 mg oseltamivir 2x a day in the course of 5 days. Oseltamivir should be administered within 48 hours from the onset of symptoms. Its reducing effects on the influenza symptoms have been documented. The zanamivir therapy is administered in the course of 5 days, 2x5mg. Zanamivir is inhaled.

To ensure supportive care. To monitor oxygen saturation and to treat saturation disorders and administer oxygen as necessary. Since nebulisers and oxygen masks with high flow are potentially involved in nosocomial spread of the severe acute respiratory syndrome, these measures should be applied only when clinically justifiable and under strict control of the infection spread, including the precaution measures for the airborne infection spread.

To perform a series of tests on the specimens of respiratory tract and blood in order to exclude possible bacterial infection. To consider to which extent the administration of IV antibiotic therapy for the control of secondary bacterial infection is required.

Not to use amantadine or rimantadine because of the risk of creating conditions for the development of a resistant influenza virus with pandemic potential. Preliminary results of the WHO collaborating centres assume that the A (H5N1) influenza virus, isolated in humans recently, is resistant to amantadine and rimantadine.
To avoid the administration of salicylates (such as aspirin) to children under 18 years of age because of the risk of the Reye syndrome. To administer paracetamol or ibuprofen, orally or in the form of a suppository to handle temperature, if there are clinical indications.

Immunomodulation, such as the use of corticosteroids, should be administered only in the context of clinical research. The immune response of persons with A (H5N1) influenza requires additional studies.

Not to use ribavirine. There are no evidence supporting its efficacy against the influenza virus; in addition, side effects occur frequently, such as anaemia, which may further compromise the patient.

**Algorithm of hospital treatment (persons at high risk)**

- sending material to a laboratory centre for the H5N1 virus detection and, at the same time, rapid testing for A and B influenza viruses
- X-ray of lungs (in two projections)
- KKS i DKS (dominating lymphopaenia in A (H5N1) patients)
- platelets (thrombocytopenia)
- liver tests (AST, ALT, LDH, bilirubin)
- sputum culture
- haemoculture
- urine (legionella and Pneumococcus urinary antigens)

<table>
<thead>
<tr>
<th>NEGATIVE</th>
<th>POSITIVE</th>
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<tbody>
<tr>
<td>NEVERTHELESS, KEEP IN RESPIRATORY CONFINEMENT!</td>
<td>TO INFORM CENTRE FOR INFECTION CONTROL, IN THE COUNTRY AND ABROAD PROTECTION MEASURES (mask, gloves, protective coat, eye protection, confinement) OSELTAMIVIR AND SYMPTOMATIC THERAPY</td>
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Clinical evaluation is conducted 28 days after onset of the initial disease symptoms.
Annex 6.1 Accommodation conditions, isolation behaviour protocol and inventory of personal protective equipment

Isolation room should have:
- space for hand hygiene along with all necessary accessories (soap, towels for single use, alcohol preparations for hand disinfection);
- other sanitary material (WC, bathroom);
- all necessary equipment (thermometer, manometer, stethoscope, etc.);
- a sign should be placed on the isolation room door indicating this is a respiratory isolation room;
- isolation room door should be closed at all times;
- personal protective equipment should be placed in areas in front of the corridor of the isolation room;
- all persons entering isolation must be properly dressed;
- a necessary number of persons who may enter isolation facilities should be established;
- daily records of entries and exits from the room should be introduced;
- the patient has restricted freedom of movement within isolation: s/he leaves isolation only for special tests with a multi-layer mask; s/he also wears a mask when in contact with the staff. All surfaces s/he touches outside isolation should be cleaned and disinfected. The staff taking him/her should have personal protective equipment.

Personal protective equipment/single use per examination/includes:
- work clothes with a hood and galoshes, made of unwoven material (2 pieces);
- glasses or goggles (1 piece);
- rubber gloves, with talcum powder (10 pieces);
- protective mask of FFP2 standard (or multi-layer surgical mask) 2 pieces.

Personal protective equipment is worn by all staff that has direct or indirect contact with the infected person: medical and non-medical staff, as well as family members and visitors.

Masks must comply with the FFP3 European standards (99% filtration) or FFP2 (95% filtration). The mask must cover the mouth and the nose.
Annex 6.2 Additional protective measures

a- isolation of patient;
b- wearing protective equipment while entering the isolation room;
c- properly enter isolation (prepare necessary medical equipment, put on protective equipment in the following order: coat, galoshes, glasses, gloves, enter the room and close the door);
d- properly exit isolation (in a separate room, or in enclosed space take off and immediately put in bags the items in the following order: galoshes, gloves, protective suit, wash hands, then take off the glasses, then the mask touching it from the inside, exit to the corridor and wash hands);
j- bed linen taken off is put in the bag in the very isolation, then in another bag outside isolation;
e – restrict the movement of patients;
f- perform, on a daily basis, repeated cleaning and disinfection of all surfaces in the isolation room and of the equipment in it (particularly railing and bed sides, cabinets, tables, alarm buttons, telephone, door handles, cupboard, toilet, safety hand rails, floors, walls, especially after intubations to wipe and disinfect horizontal surfaces);
g- use chlorine-based disinfectants for toilets and bathrooms;
h- use 70% alcohol for smooth metal surfaces (caution; flammable, toxic, used where there is good ventilation!);
i- staff working on the hygiene of facilities, with personal protective equipment, also must use rubber gloves for repeated use while cleaning surfaces as well as procedure for waste disposal.
Annex 6.3

1. Instructions for health-care workers who are in contact with persons infected with influenza:

As part of self-protection, all staff in contact with persons infected with AI should:
- take their own temperature twice a day;
- watch for respiratory syndrome onset: sneezing, sour throat, especially cough.
In the event of symptom onset workers must:
- report to the institution’s head nurse;
- withdraw from work;

2. Instructions for laboratory workers

- strict compliance with the prescribed biological safety requirements while taking samples, during transportation, take-over of samples and work in the laboratory (safety levels 1,2 and 3);
- wear personal protective equipment;
- implement continuous education of the staff working in the laboratory;
- send results of viral and serological tests by phone/fax immediately (to the Expert Team/Health Care Department of the BiH Ministry of Civil Affairs/competent epidemiology service/competent infectious disease clinic-ward).

3. Education of the infected person and family members during discharge

During discharge from the hospital, the infectious diseases specialist should educate the patient and his/her family on universal and personal measures of protection that should be applied to adults up to a total of 7 days from the temperature drop, and to children 21 days following the drop of temperature. The implementation of these measures is necessary in order to prevent further spread of infection. The measures include:
- home confinement (separate room or screen isolation at the distance of 2 m);
- wearing a mask (patient and household members who are in contact with the infected person);
- wearing gloves (in contact with the ill person, secretions and blood);
- hand hygiene (washing hands with water and soap, then with alcohol disinfectant);
- wearing other personal protective equipment by the person attending to the patient during the infectious period;
- teach the ill person proper cough hygiene: cover mouth and nose with a paper handkerchief, napkin, towel while sneezing and coughing, and then put it in a plastic bag prepared for waste and tie it up. Then immediately wash hands. If a mask is worn during sneezing, it should be replaced every 30 minutes; if it is wet, it should be replaced immediately;
- separate dishes and separate washing-up;
- airing of rooms;
- cleaning surfaces, furniture, items touched by the patient;
- proper waste removal (put used handkerchiefs, food leftovers, into separate bags, and then burn them);
- no visits allowed;
- proper administration of the prescribed therapy, if there is one.

4. Procedure in case of death of patient with influenza

- wear full protective equipment by all who are in contact with the deceased, if the patient died during the infectious period (up to 7 days after the drop of temperature for persons over 12 years of age, up to 21 days from the symptom onset for persons under 12 years of age);
- put the corpse into a special impregnated bag before transportation to the mortuary;
- show the deceased at the request of the family (with the protection provided by personal protective equipment if in the infectious period);
- transport the deceased to the mortuary as soon as possible, after the establishment of death.

5. Recommendations for travellers to areas where avian influenza emerged (in accordance with the WHO recommendations)

- to previously get informed on events in the area they travel to;
- depending on the information from the field to:  - access to vaccination and/or
  - bring appropriate drugs;
- to get informed where health care can be obtained abroad;
- to eat, during travel, poultry meat that has been properly thermally processed;
- to drink only bottled industrial drinking water;
- not to touch live/dead birds or poultry in the area;
- to wash hands well with water and soap;
- not to go to poultry and bird farms;
- recommendation for the traveller is not to go, unless necessary, to Turkey or Asian countries area where human AI emerged;
- upon return, to monitor his/her health condition in home confinement for 10 days and to request medical assistance if s/he has high temperature, cough or difficult breathing.
Annex 7 Communication scheme in pandemic phase
## Annex 8

### Resources needed for purchase of necessary drugs and equipment for initial response to occurrence of avian influenza and/or influenza pandemic

<table>
<thead>
<tr>
<th>No.</th>
<th>DESCRIPTION</th>
<th>F BiH</th>
<th>RS</th>
<th>DB</th>
<th>BiH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vaccines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) seasonal influenza (150,000 vaccines) 12 BAM each</td>
<td>1,064,000</td>
<td>701,000</td>
<td>35,000</td>
<td>1,800,000</td>
</tr>
<tr>
<td></td>
<td>b) pandemic influenza</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Antiviral drugs (Oseltamivir) - 6,100 packs/10 tablets each, 104 BAM per pack</td>
<td>354,000</td>
<td>264,000</td>
<td>16,000</td>
<td>634,000</td>
</tr>
<tr>
<td>3</td>
<td>Other drugs and I.V. fluids</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Disposable medical material</td>
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<td></td>
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<tr>
<td>5</td>
<td>Personal protective equipment</td>
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<td></td>
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<tr>
<td>6</td>
<td>Medical equipment</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7</td>
<td>Laboratory (equipment, reagents, tests)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL (BAM)</td>
<td>21,134,000</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Notices:

1. Planned vaccine quantities for BiH are distributed between entities and DB in accordance with their population percentage in relation to the total number of inhabitants in BiH.
2. Necessary quantity of antiviral drugs, by entity, is the estimate of entities and BD.
   Currently, oseltamivir stock amounts to 1,500 packs in the FBiH and 400 packs in RS.
3. Other drugs: antimicrobial drugs, cephalosporins, aminoglycosides, non-steroid antiinflammatories, diuretics, I.V. fluids.
4. Disposable medical material: single-use syringes and needles, alcohol, cotton, and disinfection solutions.
5. Personal protective equipment: special masks, special protective suits, protective spectacles, non-sterile gloves, sterile surgical gloves, protective rubber boots, protective coats, protective surgical caps.
6. Medical equipment: stationary respirator, mobile respirator with oxygen concentrate, vital functions monitor, aspirator, mobile X-ray machine, ultrasound, ECG machine, acid-alkaline status machine, rapid glucose status machine, and autoclave. Needed quantity of the equipment has been estimated by representatives of FBiH, RS, and BD.