



**Republic of Serbia
MINISTRY OF HEALTH**

**INFLUENZA PREPAREDNESS PLAN BEFORE AND
DURING PANDEMIC OF THE REPUBLIC OF SERBIA**

**Adopted by Government of Republic of Serbia
October 2005**

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PLAN OF ACTIVITIES BEFORE AND DURING INFLUENZA PANDEMIC

Importance of adoption of the plan

Influenza pandemic represents a worldwide outbreak emerging from the creation of new influenza virus subtype A that has never circulated throughout human population and there is no immunity thereof. Therefore, there was a great number of simultaneous outbreak throughout the world, with several millions of infected and deceased persons. Starting from 16th century, in average there were three pandemics every hundred years, in periods from 10 to 50 years.

In the 20th century, three influenza pandemics occurred: in 1918 A(H1N1) so called Spanish fever; in 1957. type A(H2N2) so called Asian influenza and in 1968. pandemics A(H3N2) so called Hong Kong influenza. In addition to ten million of infected and several million of deceased persons, each pandemic also caused social and economic disturbance of the society, and recovery thereof was several years long. Through analysis of these pandemics, world experts, under the umbrella of the World Health Organization, concluded that the consequences were fatal due to non preparedness of the state governments to react swiftly to a great number of infected and deceased persons within the short period. This has brought about idea to adopt uniform world plan on undertaking measures in case of a threat concerning outbreak of a new influenza pandemic. First recommendations were adopted in 1999.

It is deemed that the world is now in the closest point to a new influenza pandemic, which will be caused most probably by a type of influenza virus similar to subtype H5N1 (bird influenza virus). The World Health Organization and European Commissariat EU, recommended to the governments of all states to adopt national plans for fight against influenza pandemic, harmonized with the recommendations in question.

Undertaking of proposed measures has been classified in four periods and six phases:

Interpandemic period (phases I and II, new subtype of the influenza animal virus does not occur in humans, but circulating animal subtype has potential to cause human infections).

Pandemic alert period (phase II, human infection with the new virus subtype was detected, without transmission from one person to another, due to insufficient adaptation of the virus to human organism; phase V, larger groups of infected persons transmitting virus from one

person to another, virus becomes more and more adaptable to people, but the spreading is still limited, because there is no full adaptation of the virus to transmit swiftly from one person to another, there is an actual risk of pandemic outbreak).

Pandemic period (phase VI, intensive outbreak of the new influenza virus subtype in general population).

Postpandemic period (return to the period before the pandemic).

Recommended objectives and activities in all phases of the Plan shall be classified in five categories:

- 1) planning and coordination;
- 2) situation monitoring and assessment
- 3) prevention and containment
- 4) Health System Response
- 5) communications

Objective of establishing activities on the territory of the Republic of Serbia (hereinafter Republic) before and during the pandemics shall be training in order to timely identify and contain the influenza pandemic, which will reduce the number of infected and deceased persons, as well as the negative social and economic influence to entire society.

Extent of the implementation of all activities will depend upon provided resources. Prescribed measures are based on the newest knowledge on seasonal influenza outbreaks and previous influenza pandemics. Recommendations will change and adapt to new knowledge and experiences, hence timely revision of the pandemic response plans is necessary in order to globally harmonize planned actions.

OBJECTIVES AND ACTIVITIES IN THE PREPANDEMIC PERIOD

Phase I

The overarching objective of the Plan is strengthening preparedness on the territory concerning influenza pandemic at all levels.

1 – Planning and coordination

Specific objectives are:

- 1.1. development and update of the plan pertaining to potential influenza pandemic, which is harmonized with international plans;
- 1.2. improvement of capacity and ability to react after first reports on the new type of influenza virus;
- 1.3. development of efficient mechanisms for mobilization and swift relocation of resources in areas where required;
- 1.4. development of efficient mechanisms for fast decision making and undertaking of activities with regard to cases related to influenza at all levels of the Republic and internationally.

Activities for implementation of objectives:

The working group of the Ministry of Health, according to the recommendations from World Health Organization and based on epidemiological situation in the Republic, shall initiate harmonization of the Plan in cooperation with the Ministry of Health and other competent ministries.

Implementation of the plan and preparation activities shall be assured by appointing responsible persons and their deputies at Republic level, by the Ministry of Health, and as suggested by the Institute of Public Health of Serbia and Republic Commission for the protection of population from communicable diseases, as well as by other competent ministries.

On the basis of the Plan, the Institute of Public Health in Serbia shall prepare operational plans, using the same methodology, for territories in their competence and shall professionally and methodologically assist other health institutions and other non medical relevant institutions in drawing up of individual action plans. (Addendum 1)

Provision of necessary resources for prevention, diagnostics and treatment (professional human resources, vaccines, equipment and goods for laboratory diagnostics, personal hygiene goods, disinfectants, necessary medicines, specific equipment and devices for the treatment of severely ill patients and their quick activation in case it is needed) will be in two-ways: from the Republic level, via Institute of Public Health to local community. Harmonization of the needs shall be done based on feedback.

Procedure for fast shipment of samples for laboratory confirmation of the influenza, shall be regulated with the special good practice guide.

2 – Situation monitoring and assessment

Specific objectives are:

2.1. Monitoring of the most up to date information on spreading of seasonal influenza locally and internationally.

2.2. Monitoring of information on infections with the new influenza virus subtype, to animals and people worldwide.

Activities for implementation of objectives:

Web page update of the site of the Institute of Public Health of Serbia and continuous update of information forwarded by public health institutes to health care institutions and media.

Adaptation of the existing surveillance system, description of characteristics and assessment of the group of diseases similar to influenza and death cases due to respiratory diseases, ALERT (early outbreak detection system), including weekly reporting and feedback to all participants, Ministry of Health and the media.

Emergency reporting of unusual conditions detected in ALERT supervision by the Institute of Public Health of Serbia and Regional Office of the World Health Organization for Serbia and Montenegro in Belgrade.

Isolates of the influenza viruses and information on circulating type in humans shall be submitted to related laboratory of the World Health Organization in London, and isolates of animal origin to related laboratory of the International Epizootic Organization in Weighbridge, Great Britain.

Monitoring of seasonal spreading of the influenza through collective reports, may serve for assessment of additional needs during pandemic, as well as monitoring morbidity and mortality, spreading rate in the region and district, risk groups by age.

Detection of outbreak is also possible by using indirect indicators (absence from work of active labor population, absence in preschool institutions and schools, used capacity of beds, increased hospitalization, increased number of examinations within primary health care units, increased consumption of medications, increased number of funerals).

3 – Prevention and containment

Specific objectives are:

- 3.1. Adopt agreement on strategy with regard to containment of the disease, in accordance with legal regulations, International Health Regulation and World Health Organization recommendations.
- 3.2. Provide adequate quantity of vaccines in case of pandemic outbreak.
- 3.3. Develop a strategy for providing reserves of antiviral and other medicines, as well as distribution criteria.
- 3.4. Develop a strategy and criteria for simultaneous use of seasonal and monovalent vaccine during pandemic.
- 3.5. Ensure development of the domestic production of monovalent vaccine for pandemic.

Activities for implementation of objectives:

The Institute of Public Health of Serbia shall draw up a guide in accordance with recommendations of the World Health Organization, pertaining to traveler's behavior in international traffic, health care supervision after returning from pandemic areas.

Suspicious case identified during health care supervision shall be isolated at the Department for Communicable diseases, according to the strategy, which was adopted and tested during SARS pandemic.

Immunization programme shall be adapted to target groups according to recommendations of the World Health Organization. (Addendum 2)

Priorities for monovalent vaccine shall be defined with respect to logistic needs (storage, distribution, cold chain, vaccine centers, staff and points for providing vaccines).

Insure availability of vaccines and all necessary medications for treatment of infected persons.

4 - Health System Response

Specific objectives are:

4.1. Provide adequate conditions for respiratory isolation and treatment of suspected infection cases at the beginning of outbreak.

4.2. Draw up instructions for reception, isolation, treatment and care concerning suspected cases at the beginning of the spreading of new pandemic type of the influenza virus (as well as for the great number of infected persons during outbreak, in short period, in health care institutions, in the network plan and private health care institutions, as well as in other specific objects: hotels, student dormitories, kindergartens, schools, barracks, etc.)

Activities for implementation of objectives:

Appoint persons responsible for management and control of the health care system in case of pandemic.

Identify priorities of the health care system for each phase of the Plan. (Addendum 3)

Ensure implementation of the routine laboratory protection, safe sampling, control of the clinical infections through distribution of already existing ones and through drawing up of special good practice guides.

Estimate quantity of the necessary medications and other material and ensure supply. (Addendum 4)

Provide sufficient quantities of personal equipment for protection. (Addendum 5)

Provide sufficient quantities of diagnostic laboratory reagents and tests as well as the adequate level of protection. (Addendum 6)

Increase awareness and responsibility through additional training of medical and non medical workers regarding influenza pandemic.

5 – Communications

Specific objectives are:

5.1. Ensure regular communication between the Ministry of Health, competent ministries and organizations as well as other institutions, which may be included in the activities of the Plan.

5.2. Maintain adequate level of alertness, with reaction of Republic Commission for the protection of population from communicable diseases and the Ministry of Health.

5.3. Ensure cooperation with media.

Activities for implementation of objectives:

Establish communication plan in accordance with communication strategy phases before and during the pandemic.

Ensure that the communication infrastructure is appropriate with regard to pandemic needs:

Establish website with relevant information.

Establish communication network between decision makers.

Inform media about the Plan.

Continuous cooperation with the Regional Office of the World Trade Organization for Serbia and Montenegro in Belgrade.

Feedback for the territory of the Republic (in particular, relevant in the sense of replies to rumors which may greatly influence causing of panic in the public).

Phase II

Overarching objective is the reduction of risk of transmitting infections to humans and early detection and reporting of transmission, if there is any.

1 – Planning and coordination

Specific objectives are:

1.1. Ensure swift response related to possible human cases of new pandemic type of influenza virus by introducing zero surveillance in the restricted community if the disease is suspected.

1.2. In order to reduce risk of infection in humans, coordinate implementation of measures by directly cooperating with veterinary service.

Activities for implementation of objectives:

Activate joint actions with veterinary service and other relevant organizations.

Enable possibility of fast mobilization and relocation of experts of different sectors in order to realize team work.

Enable possibility of the fast relocation of reserves to the vulnerable area.

2 – Situation monitoring and assessment

Specific objectives are:

2.1. Monitor transmission of the virus among animal species in preliminary phase and inform the World Health Organization and relevant laboratories thereof.

2.2. Conduct current risk assessment with regard to transmission of the virus with pandemic potential to humans.

Activities for implementation of objectives:

Carry out supervision of animals and humans, based on recommendation of the World Health Organization, International Epizootic Organization and International Health Regulation.

Urgently send samples of infected animals to the relevant laboratories of the World Health Organization and International Epizootic Organization for identification of the virus.

Urgently send samples of suspected cases in humans to the “influenza” laboratory at Institute of Immunology and Virology “Torlak” or laboratory at Institute of Public Health, Novi Sad, Virology Department.

In order to assess spreading of the disease in affected area, conduct epidemiologic and laboratory field research.

Ensure expertise and capacity for supervision of the virus within the “influenza” laboratory at Institute of Immunology and Virology “Torlak” with respect to the standard procedure of the World Health Organization and International Epizootic Organization.

Carry out supervision using fast viral tests on exposed farmers, including their families and veterinarians.

3 – Prevention and containment

Specific objectives are:

- 3.1. Reduce infection risk in humans, who had contact with infected animals.
- 3.2. Review needs assessment concerning antiviral medicines.
- 3.3. Reduce co-infection risk in humans (in order to reduce possibilities of viral recombination).

Activities for implementation of objectives:

If the disease was detected in animals on the territory of the Republic:

Provide the possibility of zero reporting, in the restricted area of outbreak, in order to increase preparedness.

Provide activities pertaining to possible outbreak (education, maintenance of personal and general hygiene, correct use of equipment for personal protection, adequate use of antiviral prophylaxis).

Recommendation of measures for the reduction of human contact with potentially infected animals (written instructions, tips for international travelers).

Intensify cooperation with veterinary services.

Update information on availability of antiviral medicines.

Provision of seasonal vaccine or monovalent vaccine, if available.

If the disease was not detected in animals on the territory of the Republic:

Establish or promote exchange mechanisms concerning data on outbreak and viruses and adopt guide for control of the infection.

4 - Health System Response

Specific objectives are:

4.1. Reduce the risk of accidental spreading of the virus during sampling, transport, and regarding laboratory, respect the procedures and biological safety requirements.

Activities for implementation of objectives:

Alert responsible persons in the health care system coordination network to check the Influenza Pandemic Preparedness Plan and capacity of the health care system to receive patients possibly infected with the new subtype of influenza virus, which require isolation and special clinical care.

Assess the capacities of the health care system to identify and contain spreading of the virus in health workers, as well as the spreading in the environment.

Alert health workers to take account of infection with the new subtype of influenza virus, where epidemiological risk may not be determined and to urgently inform republic coordinators thereof, according to the instruction.

5 – Communications

Specific objectives are:

- 5.1. Make sure that the relevant information is swiftly disseminated to health care coordinators, other partners and in public.
- 5.2. Assure existence of the mechanism for communication coordination with the veterinary sector.

Activities for implementation of objectives:

Ministry of Health shall update lists of the persons responsible for communication and shall inform the public on current information concerning spreading of the virus and the risk to human health.

OBJECTIVES AND ACTIVITIES IN THE PANDEMIC ALERT PERIOD

Phase III

The overarching objective is to insure swift description of the new type of influenza virus, case definitions, early detection, reporting and to contain spreading of the infection.

1 – Planning and coordination

Specific objectives are:

- 1.1. Increase preparedness and make a plan of establishing health care coordination and crisis headquarters for the territory of the Republic.
- 1.2.. Coordinate interventions in timely manner, in order to reduce the risk of outbreak spreading.

Activities for implementation of objectives:

Activate the Plan.

Institute of Public Health shall initiate repeated harmonization of the Plan, update and control of coordination at all levels.

2 – Situation monitoring and assessment

Specific objectives are:

2.1. Improve existing supervision mechanisms for identification of disease and implementation of measures concerning possible health threat to population.

2.2. Fast detection of illness in order to prevent further spreading.

Activities for implementation of objectives:

Introduction of zero reporting on the territory of the vulnerable district.

Quickly confirm infection and inform competent persons using defined communication methods.

Ensure swift viral procession of the material sampled in the first case, in cooperation with the relevant World Health Organization center.

Adhere to biological safety requirements during laboratory work and transport of samples.

Make clear the case in terms of epidemiology (source of infection, way and method of transmission, contacts, incubation period, contamination period) by using the guide.

Determine case definition and if necessary modify the existing definition based on the World Health Organization guide.

Describe clinical characteristics of the infection in humans and inform the World Health Organization thereof.

Identify preliminary geographic zones and group of risks as target groups for preventive measures.

Estimate efficiency of the treatment and containment measures concerning infections, and if necessary, carry out revision.

Carry out seroprevalence studies in the risk groups and expand them to general population in the environment, in order to assess prevalence and incidence of the infection (symptomatic and asymptomatic).

3 – Prevention and containment

Specific objectives are:

3.1. Reduce the risk of human-to-human virus transmission.

3.2. Implement measures for reduction of mortality by using adequate treatment and care.

3.3 To identify possibilities for the use of antivirals in the current and subsequent phases.

3.4 To ensure technological requirements for the production of a domestic monovalent vaccine.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic

Apply appropriate measures as defined by the Plan, with concomitant consultations with relevant partners and strict control of applied measures and with ongoing cooperation with veterinary services.

Timely send the virus isolate to the WHO Reference Laboratory in London in order to identify the antigenic and genetic features of the isolate.

Apply preexposure chemoprophylaxis with antivirals in cases of professional exposure (persons who implement measures of containment of animal infection, investigate contacts and treat first isolated suspected cases).

As regards persons who were in contact with diseased animals, apply preexposure chemoprophylaxis with antivirals.

In first cases of suspected disease, commence the treatment with antivirals within 48 hours of the occurrence of first symptoms.

Continuously promote vaccination with the seasonal influenza vaccine in persons who are most likely to be exposed to the animal virus, so as to reduce the risk of infection.

If no diseased persons have been registered in the territory of the Republic

Reassess the availability of antivirals.

Review the data concerning efficacy and safety of antivirals and, where necessary, modify the strategy, guidelines and priorities.

Review the vaccine application strategy together with the partner organizations.

If no strategy on the mass use of monovalent vaccine has been adopted, implement emergency campaign vaccination with the seasonal vaccine.

Assess the necessary additional quantities of vaccines and medical supplies (e.g. needles and syringes).

Ensure Government and international support for the production of a new vaccine at the “Torlak” Institute of Immunology and Virology.

4. Health System Response

Specific objectives:

4.1 Prevent hospital and laboratory infections.

4.2 Increase the level of preparedness of health care workers, taking into account possible mass spreading of the disease.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Urgent reporting of new cases and implementation of isolation measures.

Activation of health coordination committees and crisis committees, with simultaneous improvement of previously established coordination between the health sector and other public institutions and organizations.

Ensure a mode for adequate drug supply and appropriate distribution channels.

Public health institutes and centres shall initiate the updating of the Plan at all levels, with particular emphasis on the need for increased hospital capacities.

Educate health care workers for rapid detection and identification of case groups.

Ensure implementation of the procedures aimed at infection containment and prevention of transmission in hospital circumstances.

Ensure compliance with standard biosafety procedures in laboratories and procedures for safe sample handling and transport.

If no diseased persons have been registered in the territory of the Republic:

Update case definition, update protocols and assist in case detection, treatment and containment, as well as inspection surveillance.

Check patient treatment and infection control procedures against the currently applicable instructions issued by the World Health Organization.

5. Communications

Specific objectives:

5.1 To communicate with the public in a clear and open manner, taking into account possible progression of the outbreak and occurrence of panic in the social community.

5.2 Ensure rapid and adequate provision of information between health authorities, relevant public sectors, health care workers and other stakeholders.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Activate the Communication Plan.

The Ministry of Health shall forthwith notify the World Health Organization and the governments of the neighbouring countries of the epidemiological situation in Serbia and of the possible need for additional resources, interventions and extraordinary powers.

The Institute of Public Health of Serbia shall ensure the provision of regular updates to the WHO and other international and national stakeholders in connection with the epidemiological situation in Serbia.

If no diseased persons have been registered in the territory of the Republic:

Identify target groups for dissemination of key messages; prepare and distribute adequate awareness raising material.

Review and update the information material indented for the press, the media, the general public, health care workers and politicians.

Phase IV

The overarching objective is to contain the occurrence of a new virus within a limited hotspot or to reduce the rate of its spreading in order to gain the necessary time for application of the envisaged measures, including vaccination.

1. Planning and Coordination

Specific objectives:

1.1 Strengthening of the existing systems of defining the characteristics of the outbreak and of risk assessment concerning the possible occurrence of a pandemic.

1.2 Coordination and implementation of procedures so as to delay or contain human-to-human infection within a limited hotspot.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Ensure maximum political support for ongoing and potential interventions.

Activate the procedures aimed at collection of additional resources.

Activate cooperation and control in the territory of the Republic.

Locate operational teams.

Ensure cooperation with the neighbouring countries, exchange of information and coordination in cases of emergency action.

Identify the needs for international assistance.

If no diseased persons have been registered in the territory of the Republic:

Activate the Plan.

Identify possible needs for international assistance.

2. Situation Monitoring and Assessment

Specific objectives:

2.1 To assess the possibilities for transmission from one human-to-human transmission.

2.2 To investigate primary and secondary contacts (including identification of risk factors and other additional information concerning disease spreading, where required by the WHO).

2.3 To assess the threat for human health and the impact of all containment measures, as well as to identify the means needed in order to reinforce disease control.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Urgently report of cases and clusters.

In accordance with the Guide, implement all protective measures.

Describe and assess the epidemiological, virological and clinical characteristics of the infection and identify possible sources.

Expand the activities already implemented in Phase I and, where necessary, adjust case definitions.

Assess the sustainability of interhuman transmission.

Carry out clinical research in order to establish an optimal treatment protocol.

Forecast possible impact of disease spreading in the population.

Assess the impact of containment measures on the course of the outbreak; in the event of failure, forthwith submit a report to the WHO with recommended updates.

Improve surveillance capacities.

If no diseased persons have been registered in the territory of the Republic:

Improve surveillance, particularly if there are strong tourism and trade relations with countries at risk, as required by the International Health Regulation and the currently applicable WHO recommendations.

3. Prevention and Containment

Specific objectives:

3.1 To contain or delay human-to-human virus transmission.

- 3.2 To reduce the disease and mortality rates linked with human infection.
- 3.3 To review possible wider application of antivirals in a later phase.
- 3.4 To increase the level of preparedness for the production of a vaccine in the country and for its distribution.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Apply adequate measures contemplated in the Plan, taking into account any new WHO recommendations.

Assess the efficiency of these measures through cooperation with the WHO.

Use antivirals in early treatment of cases, as well as in prophylaxis for close contacts with a case, based on risk assessment, and with severe forms of the disease in humans.

Assess the efficiency of prophylaxis in the attempt to contain the outbreak.

Administer vaccines in accordance with the prioritization strategy adopted in advance.

If no diseased persons have been registered in the territory of the Republic:

In accordance with the currently applicable WHO recommendations, introduce increased health surveillance measures applied by border sanitary inspectorates to international passengers.

Asses the need for redistribution of drug reserves in the whole territory of the Republic.

4. Health System Response

Specific objectives:

- 4.1 To prevent hospital and laboratory infections.
- 4.2 To ensure availability of capacities and their optimal use in infected areas.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Update and expand the recommendations for health care institutions to reexamine diagnosed cases of influenza and to notify the competent institutes and public health centres of their findings.

Update case definitions, protocols, drug application, infection containment and surveillance in accordance with the Guide.

Identify alternative strategies for case isolation and treatment.

Improve the capacities and, if public health centres and other departments are found to be understaffed, implement the Plan by engaging previously trained volunteers.

Increase the stocks of personal protective equipment.

If no diseased persons have been registered in the territory of the Republic:

Launch the activities planned for this phase.

5. Communications

Specific objectives:

5.1 To ensure smooth exchange of adequate information between health authorities, relevant public sectors, health care workers and other stakeholders.

5.2 To prepare the public for possible rapid progression of the pandemic.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Reinforce and intensify key messages for the prevention of interhuman virus transmission.

Inform the public of the necessity of implementation of anti-outbreak measures and of any subsequent steps.

Distribute brochures on personal and general protective measures.

Provide instructions for self-protection and treatment of lighter cases, so as to reduce the pressure on health care institutions.

If no diseased persons have been registered in the territory of the Republic:

Provide information concerning the national and international epidemiological situation and known characteristics of the disease on an ongoing basis.

Update the Communication Plan.

Increase prevention measures in the community, health care institutions and collective accommodation facilities.

Phase V

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

1. Planning and Coordination

Specific objectives:

1.1 To coordinate and maximally increase the efforts made to contain or delay spread, to possibly avert a pandemic, and to gain time to implement pandemic response measures.

Activities aimed at achievement of objectives:

Declare infected areas.

Assist in ongoing evaluation of measures undertaken in the field.

Increase staff capacities at all levels of health care and public services.

Adjust and maximally increase the efforts and resources applied in order to reduce the number of diseased persons and to contain or reduce the pace of the infection.

2. Situation Monitoring and Assessment

Specific objectives:

2.1 To determine the risk of a pandemic and to reduce the possibility of its spreading to other countries or regions and, if this happens, to identify the cases and to forthwith notify the WHO.

2.2 To implement prevention and containment measures.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Expand and adjust the activities envisaged for Phase II to the maximum extent possible.

Notify the WHO of any increase of the territory caught by the pandemic.

Introduce resource utilization control (expert staff, vaccines, laboratory diagnostics equipment and supplies, personal protective equipment, disinfectants, necessary medicinal products, specific equipment and devices used in the treatment of severe cases).

Implement increased surveillance of respiratory diseases (by phone or by means of a questionnaire) based on daily reporting.

Assess the impact of containment measures in the event of failure of the measures and forthwith submit a report to the WHO with updates for the recommendations.

Monitor possible development of antiviral resistance to antivirals.

Ensure functioning of public utilities, particularly in the hotspot, and, where necessary, reallocate the resources.

If no diseased persons have been registered in the territory of the Republic:

Increase the supervision of preventive measures to the maximum possible extent.

3. Prevention and Containment

Specific objectives:

3.1 To make maximum efforts in order to implement all necessary measures to contain and avoid the outbreak of the pandemic.

3.2 To reduce disease and mortality rates.

3.3 To assess the possibilities for application of antivirals.

3.4 To assist in the preparation and mass production of the monovalent vaccine.

3.5 To analyze first experiences with vaccine application.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Carry out interventions in accordance with the updated Plan.

Apply antivirals in accordance with the updated instructions.

Assess the efficiency of measures applied in order to contain the outbreak.

Apply the seasonal and the monovalent vaccine.

If no diseased persons have been registered in the territory of the Republic:

If necessary, redefine the reserves of antivirals and distribute them towards the local level.

Taking into account the experiences of countries where cases have been registered, redefine the strategy of application of antivirals.

Ensure maximum capacities for the production of the vaccines.

Adjust the vaccine distribution plan to the identified priorities.

4. Health System Response

Specific objectives:

4.1 To intensify the activities of health services; to adjust triage services and treatment to the identified priorities.

4.2 To prevent hospital spreading of the virus and to maintain biosafety in laboratories.

Activities aimed at achievement of objectives:

If diseased persons have been registered in the territory of the Republic:

Complete mobilization of health services and urgent and full application of the Plan in the infected area, including coordination with other departments.

Initiate triage services and other emergency procedures needed for an efficient use of health care capacities.

Full implementation of the plan on urgent redeployment of health care workers.

Recommendations for home isolation and self-treatment of light cases and meeting of the needs of persons in such situations through the involvement of social welfare centres, the Red Cross and other non-governmental organizations.

Involvement of additional human and material resources; alternative health care redistribution, based on the current forecast of needs and on the Action Plan.

Application of procedures for burial of deceased persons in accordance with the law.

Application of antivirals in cases of professional exposure, if monovalent vaccine is unavailable as yet.

If no diseased persons have been registered in the territory of the Republic:

Emergency involvement of health coordination committees at all levels.

Safekeeping, distribution and application of medicaments on the basis of a protocol.

5. Communications

Specific objectives:

5.1 To prepare the public and other stakeholders for possible rapid spread of the outbreak, for application of additional measures to contain infection and for deterioration of normal living.

5.2 To ensure smooth exchange of adequate information between health authorities, relevant public sectors, health care workers and other stakeholders.

Activities aimed at achievement of objectives:

Redefinition of key messages.

Informing of the public of the necessity of measures applicable in the event of a pandemic (restriction of movement, prohibition of public meetings, closing of schools and preschool activities etc.) and the need to use health care services in accordance with the priority level.

PANDEMIC PERIOD

Phase VI

The overall objective is to reduce the devastating impact of the pandemic on the health of the total population and on the social and economic function of the social community.

1. Planning and Coordination

Specific objectives:

1.1 To carry out coordination of multisectoral resources in order to reduce the disease and mortality rates, to preserve the efficiency of the health care system, to prevent social deterioration and to reduce the impact of the pandemic on the economy of the social community.

1.2 To ensure rational allocation of all resources, including supplies of medicinal products and vaccines.

1.3 To evaluate on a daily basis the effects of specific responses and interventions.

1.4 To establish and maintain trust between all agencies and organizations on the one hand and the public opinion on the other, through direct and clear actions.

1.5 To gain knowledge through ongoing actions, to improve strategic responses and to provide information concerning future actions.

Activities aimed at achievement of objectives:

If no diseased persons have been registered in the territory of the Republic:

Updating of the crisis committees and coordination network in order to prepare for a possible state of emergency.

Final harmonization of official guides and recommendation.

Implementation of nationwide recommendations in all sectors and evaluation of interventions applied.

If diseased persons have been registered in the territory of the Republic:

Activation of crisis health committees and organizations in accordance with the internal organization of the coordination network.

Application of all relevant elements of the Action Plan for influenza pandemic, including coordination in the application of specific interventions (declaration of a state of emergency, restriction of movement, prohibition of public meetings, closing of schools and preschool activities etc.), planned allocation of vital resources and use of health services in accordance with the strict prioritization.

Daily assessment and communication of current and cumulative impacts of the pandemic.

Receding (postpandemic period or reduced incidence between new waves)

Identification of needs for additional resources and strengthening of the community between subsequent pandemic waves.

Declaration of the end of the state of emergency.

Support for the establishment of vital community functions; rotation of rest periods and work activities for the staff.

Critical evaluation of the plan based on experience.

Evaluation of psychological impacts.

Exchange of experiences in combating with the disease between all actors and managers, including the public.

Consideration of possible provision of assistance to countries in which disease-fighting measures are underway.

2. Situation Monitoring and Assessment

Specific objectives:

2.1 Monitoring of epidemiological, virological and clinical characteristics of the disease, of their course and of the impact of the pandemic at the Republic level in order to forecast trends and to enable optimal use of limited resources.

2.2 Evaluation of effectiveness of interventions applied in a defined period of time for the purposes of prescribing future actions.

Activities aimed at achievement of objectives:

If no diseased persons have been registered in the territory of the Republic:

Continuation of intensified surveillance measures.

Monitoring of the global situation (vaccination, availability of antivirals, good practice recommendations).

Evaluation of the impact of vaccination programs and application of antivirals in other countries (safety, efficaciousness, antiviral resistance).

If diseased persons have been registered in the territory of the Republic:

Monitoring of the geographical spreading of the influenza from the hotspot, i.e. from the first recorded cases.

Intensified monitoring of zero reporting in order to identify the initial case, contacts and territorial spread path.

Monitoring of possible changes in the epidemiological, virological and clinical characteristics of the disease.

Monitoring and evaluation of impact at the Republic level (incidence, mortality, work absenteeism, defined local and regional hotspots, incidence in different groups, accessibility of health care workers, bed occupation rates, increases in the number of requests for hospitalization, use of alternative health care institutions, capacities of mortuaries).

Assessment of needs for emergency measures, e.g. ambulances, application of legal procedures, maintenance of essential public services etc.

Assessment of adequacy of resource supplies; forecasting of pandemic trends and course and its economic consequences.

Ongoing assessment of effectiveness of applied measures (vaccination, treatment, undesirable effects of antivirals and resistance to such medicinal products).

Simultaneously with the rapid spread of the disease, broad surveillance shall be adjusted, virological surveillance shall be discontinued, individual cases shall not be reported and there shall be cumulative reports by predefined age categories of diseased persons and fatal cases.

Receding (postpandemic period or reduced incidence between new waves)

Evaluation of the needs for additional resources and strengthening of the community between subsequent pandemic waves.

Identification of the most efficient type of surveillance and containment measures to be applied in the period between two pandemic waves.

Presentation of acquired knowledge.

Reintroduction of increased surveillance for the purposes of early detection of any new waves.

Exchange of experiences with the World Health Organization.

3. Prevention and Containment

Specific objectives:

3.1 Containment and putting off of the outbreak spread through interventions of the Ministry of Health.

3.2 Reduction of disease incidence and mortality through rational use of available vaccines and antiviral and other medicinal products.

Activities aimed at achievement of objectives:

The achievement of the above objectives requires all other activities to be implemented; depending on the size of the disease spread area, it shall be necessary to ensure supplies of the monovalent vaccine, which shall be distributed and administered in accordance with the predetermined priority list, subject to the requirements relating to the cold chain.

If no diseased persons have been registered in the territory of the Republic:

Apply adequate measures envisaged by the Plan.

Review and update recommendations for the use of antivirals based on the experiences of countries with influenza outbreaks, clinical studies and resistance records; application of WHO recommendations and availability of resources.

Check the plans for distribution of personal protective equipment, disinfectants, medicinal products, vaccines and antivirals.

If diseased persons have been registered in the territory of the Republic:

Implementation of relevant recommendations contained in the Plan, including any new WHO recommendations.

If possible, evaluate the efficiency of the measures.

Reevaluate the use of antivirals on the basis of clinical studies, recorded resistance and modified WHO recommendations.

Receding (postpandemic period or reduced incidence between new waves)

Examine critically the effectiveness of treatment and accompanying measures; update protocols, guides and statistical programs.

Evaluate the application of antivirals.

Assess vaccination coverage, effectiveness and monitoring of adverse reactions.

4. Health System Response

Specific objectives:

4.1 Optimal treatment of patients with limited resources.

4.2 Curbing of the overall impact of the pandemic on public health (incidence and mortality).

4.3 Organization of activities and coordination of the health care system in order to maintain full accountability.

Activities aimed at achievement of objectives:

If no diseased persons have been registered in the territory of the Republic:

Full functionality of the system shall be maintained in accordance with the principle of urgency and in accordance with the responsibility chain.

Respect of case definitions; keeping of protocols and maintenance of statistical programs; control of adequate use of antibiotics; treatment of bacterial infections; containment of inspections in hospitals; surveillance updated in accordance with the latest WHO Guide.

Keeping health care workers prepared for detection of disease outbreak or clusters.

Insist on urgent reporting and rapid recognition of the commencement of pandemic activity.

Insist on the use of protective equipment in the activities of health care workers and in prevention and containment of hospital infections.

Survey the stocks and the status of all capacities identified in the Plan, replenishing them where necessary.

If diseased persons have been registered in the territory of the Republic:

Fully apply the activities envisaged for the health care system in all phases of the Plan in the whole territory of the Republic; in the hotspot there should be health surveillance, adjustment of triage services where necessary, additional recruitment of volunteers, staff assistance should be ensured, there should be both medical and non-medical assistance for the diseased and alternative, non-health institutions should be involved if necessary; there should

be social and psychological help organized for health care workers, victims and the community through social welfare centres and the Red Cross.

Collect data and exchange them with other countries where no diseased persons are registered and with the WHO.

Carry out campaign vaccination, taking due account of the priority list.

Publicize data concerning the effectiveness of all applied measures and exchange experiences with other countries and with the WHO.

Receding (postpandemic period or reduced incidence between new waves)

Ensure adequate rest periods for health care workers who carried the burden of the pandemic.

Replenish the reserves of medicinal products, medical supplies and basic equipment.

Reexamine the Plan for the forthcoming influenza wave.

Involve all relevant public services.

Adjust case definition, protocols and statistical programs.

Carry out continuous immunization, in accordance with the plan, the defined priorities and the availability of additional quantities of the vaccine.

5. Communications

Specific objectives:

5.1 To ensure accessibility of regularly updated data concerning the effects of the pandemic in order to produce accurate and consistent information concerning the pandemic, as envisaged for this phase by the Plan.

5.2 To maintain open and accessible contact for public advice and support in connection with specific issues (restriction of travels, social gatherings etc.).

5.3 Ensure public support for the implementation of anti-outbreak measures.

5.4 Ensure swift exchange of information concerning pandemic progress between health authorities, other competent public bodies and the stakeholders.

Activities aimed at achievement of objectives:

If no diseased persons have been registered in the territory of the Republic:

Maintain permanent contacts with the media and with the public, thus keeping them informed of the course of the pandemic in other countries.

Inform the public of the interventions that might be applied in the course of the pandemic, explain the prioritization in the use of health care services, travel restrictions, lack of basic comfort etc.

If diseased persons have been registered in the territory of the Republic:

Prepare the public to accept information on the course of the pandemic in the country and in the world.

Implement all activities envisaged in all phases of the Plan.

Recognize public panic, grief and distress linked with the pandemic.

Communication activities should provide adequate answers and information concerning future plans related to the pandemic.

Receding (postpandemic period or reduced incidence between new waves)

Evaluate communication responses made in the earlier phases; capitalize on lessons learnt.

Warn the public against possible reoccurrence of outbreak waves and repeated initiation of all necessary measures.

Appendix I
Coordination Network for the activities and regulation in the implementation of the Plan
for Pandemic of the new Flu Virus Subtype

Coordination	Activities	Regulation
Government, competent line ministries	At proposal from the Ministry of Health, the competent ministries shall undertake actions to activate additional resources and production; the Ministry shall send requests for international assistance and propose measures for community revitalization after the pandemic.	Law on Protection of the Population from Infectious Diseases
Ministry of Health, Republic Commission on Protection of the Population from Infectious Diseases, Republic commission on Hospital Infections, Provincial Secretariat of Health and Social Policy – Commission on Infectious Diseases, Ministry of Agriculture, Forestry and Water Management, Ministry of Science and Environmental Protection, Ministry of Education and Sports, Ministry of Public Administration and Local Self-government, Ministry of Trade, Tourism and Services, Institute of Public Health of Serbia, Republic Veterinary Institutes, “Torlak” Immunology and Virology Institute, Serbian Agency for Medicinal Products and Medical Supplies, Ministry of Home Affairs, Red Cross of Serbia, Serbian Medical Society, WHO and OIE	The Ministry of Health shall, in cooperation with the Health Protection Institute, monitor the epidemiological situation in the country and in the world, carry out assessments and provide information to activity coordinators. In accordance with their respective competences, all of the aforesaid coordinators shall monitor the situation, give proposals for amendments of the Plan, adopt good practice guides, organize education of managing structures and educators, introduce different types of disease surveillance, evaluate the applied measures, collect all relevant data in the region/district, control Plan implementation through inspection services, in particular as regards the availability, distribution and consumption of personal protective equipment, medicinal products and vaccines; through the border inspection, these coordinators shall control the goods and passengers, assess the risk and propose measures to the Government; they shall also control the operations of reference health institutions and exchange information with the WHO and OIE.	Law on Protection of the Population from Infectious Diseases
Ministry of Health, Institute of Public Health of Serbia, Institute of Public Health of Novi Sad, Institute of Public Health of Nis, Institute of Public Health of Kragujevac, Belgrade City Institute of Public Health, clinic and hospital centres, associations of health care professionals.	The Ministry of Health shall, in cooperation with the Health Protection Institute, control the operations of large health care systems, carry out health and sanitary inspections, propose district-level operational plans, assess the risk and evaluate system readiness, cooperate in the resolution of vital communal infrastructure problems and implement additional district-level measures based on epidemiological indications.	Law on Protection of the Population from Infectious Diseases
Public Health Institutes/Offices, Health Centres, Centres for Health and Social Protection of Persons with Special Needs, General Hospitals, stationeries, 160 “health houses”, private medical, veterinary and pharmaceutical practitioners, the Red Cross.	Health Care Institutes and Offices shall adopt operational plans for their respective territories, propose the adoption and control the application of action plans, organize procurement, safekeeping, distribution and administering of vaccines at vaccination points, control the application of the good practice guide, particularly in hospital environments, organize collection and sending of surveillance data from the local communities, propose dislocation of resources where necessary, organize education of volunteers, cooperate closely with communal inspection authorities, cooperate with health inspectors and sanitary inspectors, provide information for their respective districts, cooperate with health care institutions and public utility companies, set up emergency teams in the event of water supply failure, disturbances in the supplies of food items or disruptions of waste removal and collect data from municipalities concerning additional capacities in terms of manpower and bed funds. Each institution shall adopt its action plan. The “health houses” shall organize vaccination through fixed and mobile points, cooperate with the veterinary inspectorate in identification of diseased animals and initiate private medical and pharmaceutical services in schools and nursery schools, institutions accommodating persons with special needs and public utility companies; they shall set up emergency teams for possible cases of communal and social disturbances, collect data from municipalities concerning additional capacities in terms of manpower and the number of retirees, pupils and students who can be additionally recruited to care for the diseased and to carry other logistic activities, collect data concerning alternative bed funds and persons in home care, set up teams to assist households occupied only by elderly persons and organize social support. Each institution shall organize educated volunteer groups which will provide logistics in the distribution of planned resources, control of public supplies, alleviating of panic, assist the elderly and exhausted and monitor the regularity of burials	Law on Protection of the Population from Infectious Diseases Health Protection Law

Appendix 2

List of priorities for immunization using monovalent vaccine, chemotherapy with antivirals including assessment of the capacity of domestic vaccine manufacturers

Having in mind the general susceptibility of the population to the new influenza virus, ideal prevention would encompass the entire population. Vaccination of Priority Groups 1 and 2 enables the treatment of those affected by the disease and protection of vital functions of the community, while the broadening of the list to Priority Groups 3 and 4 reduces the number of serious complications caused by influenza and mortality. Vaccination is carried out using 2 doses of vaccine. Chemoprophylaxis with antiviral medicines is done in later phases of the Plan, after exposure to new influenza virus is confirmed, if vaccination was not done. It is not planned for therapy with present resources, since it is efficient only during the first 48 hours from the onset of disease. Resistance has been confirmed for antiviral groups amantadine and rimantadine, therefore zanamivir and oseltamivir (Tamiflu) are recommended.

Priority Group	Target population	No. of doses (2 each)	Chemoprophylaxis and treatment with antivirals	No. of doses for 15 days of treatment
Group 1 Health care workers exposed to risk	Personnel directly involved in check-ups and treatment of the ill in: wards of communicable diseases, community health care centers, hospitals, homes for pensioners, field operatives of Institute of Public Health/Department of Public Health, sanitary, health, and veterinary inspectors	110.000	Pre-exposure prophylaxis for professional risk	25.000 doses
Group 2 Individuals working in basic community functions	Manufacturing and distribution of medicines, food, water, electricity, police operatives, firefighters, members of the Parliament and the Government, public transport, burial services, baby accommodation and kindergarten staff, staff in schools, telecommunications, garbage disposal.	269.420	Post-exposure prophylaxis for exposure to animal bird influenza virus	6.000 doses
Group 3 Persons in continuous group accommodation	Homes for pensioners, homes for pupils and students, social and healthcare institutions for children and adolescents in permanent care	62.500		
Group 4 Chronically ill persons	Serious respiratory disturbances, chronic cardiovascular diseases, chronic renal diseases, patients on dialysis, diabetics, immunodeficiency	250.000	Post-exposure prophylaxis of exposed chronically ill patients Treatment of first suspicious cases	6.000 doses

Group 5 Persons over 65 years of age		1.960.000		6.000 doses
Group 6 School children aged 6 – 14 years		345.000		
Total for Priorities 1-4		691.920		
Total for Priorities 1-5		2.651.920		
Grand total		3.005.920		43.000 doses

The assessed quantities of required vaccines and antivirals will be revised after preparation of operational and action plans. The only domestic manufacturer of influenza vaccines, the Institute for Immunology and Virology "Torlak" could, under present manufacturing conditions, prepare 100.000 doses of monovalent vaccine in 6 months. If a new centrifuge is acquired, it could produce 500.000 doses of monovalent vaccine. If "Torlak" had a strategic partner and built a new facility in accordance with WHO standards, the capacity could be 5.000.000 to 30.000.000 doses of vaccine.

Appendix 3

Plan of available health care workers and beds

Health service	Health care institution	No. of doctors	No. of technicians + senior technicians	No. of cleaners	No. of beds
Out-patient treatment and vaccination	Community health care centers	8860	155530	108	
Disease surveillance, eradication and vaccination	Health care departments and institutes	209	691		
Isolation of first cases and serious cases	Departments for communicable diseases	138	472	30	986
In-patient treatment of influenza complications	General hospital departments for internal diseases, pneumphthisiology, tuberculosis, geriatrics, rheumatology	5336	17406	253	7850
In-patient treatment of influenza complications in children	Children's units, children's rehabilitation	1983	3100	94	1182
In-patient treatment of influenza complications expanded list	Venereal diseases, general rehabilitation, gastroenterology	389	920	26	3287
Total		16915	38119	511	13305

If the need should arise to increase the number of health care workers, additional staff will be engaged for triage, treatment of less serious cases, and vaccination.

If large numbers of patients should appear within a short period of time, as an alternative, the number of health care workers could be increased by pensioned and unemployed doctors, as well as medical students on their final year (approx. 2000), and students of final years of high and higher medical schools (approx. 6500). The number of beds could be multiplied severalfold by using hotel capacities (92.460 beds), beds in homes for students and pupils (24.330 beds). Elementary and high school have 44.000 rooms, which could be used for medical offices for triage, and check-ups of less serious cases.

Additional training of volunteers could be done in a short time, via the network of the Institute of Public Health / Department of Public Health.

The forecast of human resources and hospital capacities will be revised after operational and action plans are prepared.

Appendix 4

Plan of medicines and equipment requirements during a pandemic

Based on the latest WHO assessment, projected on the population of Serbia, if there would be no vaccine, a total number of 250.000 to 500.000 of cases can be expected among persons over 18 years of age, and 238.000 to 357.000 among children and adolescents up to 17 years of age, totaling between 488.000 and 857.000 patients in a pandemic. Of this number, it is assessed that 273.000 will use out-patient health services, 5600 persons with serious complications will be treated in hospitals, and 8400 more deaths are expected than during the interpandemic period.

It is expected that the first wave, lasting 2 to 6 months, would require the usual annual quantity of medicines, needed for symptomatic therapy and treatment of influenza complications caused by bacteria.

Medicines required during a pandemic	Quantities in individual original packs		
	Syrups	Tablets/capsules packs	Injections pcs.
erythomycin	282.400	703.000	
3 rd generation cephalosporins	6.500	5.600	590.000
NSAIDs	955.000	12.000.000	1.000.000
aminoglycosides			790.000
metronidazole		300.000	296.000
imipenem			19.000
meropenem			2.800
vancomycin			4.000
clindamycin			3.000
sciprofloxacin		5.000	5.000
cortimoxazole		5.000	1.000
oseltamivir	1.000	5.000	
diuretics		2.970.000	293.000

In addition to medicines, it is assessed that 60.000 bottles of infuson solution, 3.100.000 disposable syringes and needles, and the usual annual quantity of alcohol, sanitary materials, and disinfectants will be required, which will be more precisely defined in action plans of each health care institution.

The treatment of the most serious cases in isolation units required 25 respirators of the newest generation, 40 monitors for vital functions and 25 aspirators.

Forecast quantities of vaccines and antiviral medicines will be revised after operational and action plans are prepared..

Appendix 5

Assessment of requirements for means and equipment for personal protection for health care workers during a influenza pandemic

If it is accepted that the first few waves will last several months (5 months on the average), the following should be acquired for various levels of exposure of health care workers, if there are no additional capacities in temporary facilities:

Health care activity	No. of ordinary disposable multilayer masks	No. of special N 95 masks	No of protective glasses	No. of ordinary disposable gloves	No. of surgical disposable gloves
Community health care centers, Institute of Public Health/Department of Public Health, inspection services	3.670.000			3.670.000	
Laboratories, isolation units		4390	1000		4390
Hospital wards for adults	3.650.250			3.650.250	
Hospital wards for children	780.000			780.000	
Total	8.100.250	4390	1000	8.100.250	4390

The forecast of required quantities of means and equipment for personal protection will be revised after operational and action plans are prepared.

The expert and methodological instruction on the dynamics of use and type of equipment for personal protection will be prepared by the Republic Expert Committee for Hospital Infections of the Ministry of health.

Appendix 6

Action plan and requirements for the Laboratory for Influenza of the Institute of Immunology and Virology "Torlak" and the Sector for Virology of the Institute of Public Health Novi Sad.

Activities of isolation and identification of the pandemic virus require conditions of Level 3 biological safety according to WHO recommendations.

Both laboratories plan sampling and virological processing of 200 samples from persons suspicious of a disease caused by a new strain of the influenza virus.

Following analyses are used:

- Rapid detection test for influenza virus in tissue culture (CELL ELISA and IF test)
- Rapid detection test
- Virus isolation on ova and MDCK cells in cell cultures
- Antigen characterization of the virus using hem agglutination inhibition reaction (HIR)
- Investigation of humoral immunological reaction after vaccination
- Determination of influenza vaccine potency
- Determination of resistance to antiviral influenza medicines

Good Practice guidelines are prepared for:

- Sampling materials for virology investigations
- Virology material handling and transport
- Standard diagnostic test procedures

Quality investigation of the new influenza strain, according to WHO recommendations, requires:

- 3 laminar flow chambers BSL 3 and appropriate pipettes
- hyper immune serum (40ml) and monoclonal antibodies (40ml)
- susceptible tissue cell cultures MDCK (20)
- cell culture nutritive media (8 liters)
- hens eggs containing embryos (400 pieces)
- primers and reagents for PCR
- 2 refrigerators for -70°C