Bosnia and Herzegovina Healthcare System Preparedness for Pandemic Influenza as of 2010

Almir Begić², Aida Pilav³, Lejla Džananović¹, Semra Cavaljuga¹

Department of Epidemiology and Biostatistics, Faculty of Medicine, University of Sarajevo, Bosnia and Herzegovina¹

Cantonal hospital Zenica, Bosnia and Herzegovina²

Ministry of health, Federation of Bosnia and Herzegovina, Bosnia and Herzegovina³

Corresponding author: Prof. Semra Cavaljuga, MD, PhD. Department of epidemiology and biostatistics. Faculty of Medicine, University of Sarajevo. Cekalusa 90, 71000 Sarajevo, Bosnia and Herzegovina. Email: semra.cavaljuga@mf.unsa.ba

ABSTRACT

Objectives: To determine if Bosnia and Herzegovina healthcare system is prepared for influenza pandemic; and to indicate strengths and weaknesses in planed resolution of pandemic influenza in Bosnia and Herzegovina healthcare system. **Methodology:** qualitative systematic review, comparing established elements of healthcare systems with WHO's guidelines on pandemic preparedness. Critical evaluations of available findings on preparedness of healthcare system of Bosnia and Herzegovina (B&H) compared in details to preparedness of healthcare system of United Kingdom (UK) but in certain elements with some other European countries. **Results and Discussion:** analysis of preparedness plans of B&H and UK are presented in details, with comparison of B&H with eight other countries by WHO guidelines categories and phases of pandemic preparedness and contingency plans. **Conclusions:** Disregarding the obstacles in B&H health care system policy Bosnia and Herzegovina has preparedness plans, that are made based on WHO's guidelines but unlike all other analyzed countries does not have contingency plan. This can be seen as strength while weaknesses of B&H's healthcare system are: late forming of preparedness plan with poor implementation of set activities, and lack of contingency plan.

Key words: Health Care System in B&H, Pandemic Influenza.

1. INTRODUCTION

The single biggest threat to human kind dominance on the planet is the virus - (Joshua Lederberg, Nobel Laureate 1958).

As seen in history, when influenza pandemic occurs, many millions of people around the world become ill and a proportion die. Depending on the virulence of the (re)emerged influenza virus, the susceptibility of the population and the effectiveness of countermeasures, up to half the population could have developed illness. In the absence of early or effective interventions, society is also likely to face much wider social and economic disruption, significant threats to the continuity of essential services, lower production levels, shortages and distribution difficulties. Difficulties in maintaining business and service continuity will be exacerbated if the virus affects those of working age more than other groups, and fear of infection, illness, and care providing responsibilities, stress, bereavement and potential travel disruption are likely to lead to higher levels of absence. Staffing is therefore the critical element in business and service continuity plans. High levels of public and political concern, general scrutiny and demands for advice and information are also inevitable

at all stages of an influenza pandemic. For example; in UK, one illustrative assessment suggests that illness-related absence from work of 25% of employees over the course of pandemic (only half of what may be expected in a widespread pandemic) could reduce the year's gross domestic product (GDP) by between £3 billion and £7 billion. Additional premature deaths could cause a further reduction of between £1 billion and £7 billion. In the longer term the impact of premature deaths could reduce future lifetime earnings by between £21 billion and £26 billion at a low case fatality rate and by between £145 billion and £172 billion at a high case fatality rate (2).

Past pandemics have varied in scale, severity and consequence, although in general their impact has been much than that of even the most severe winter epidemic. It is not possible to forecast the precise characteristics, spread and impact of a new influenza virus strain. Modelling suggests that from the time it begins in the country of origin it may take as little as two to four weeks to build from a few to around 1,000 cases. Within one to two weeks, it is likely to spread to all major population centres, with its peak possibly only 50 days from initial entry.

Vaccination or mass treatment with antiviral medicines can be expected to modify this profile of pandemic (2).

In order to prepare a health care system for potential influenza pandemic, all UN member countries got guidelines from WHO that contain all objectives and activities that should be done in every stage of influenza pandemic (5). It should be done by preparing the preparedness and contingency plans for each of countries separately. *Preparedness plan* contains all the instruction on which measures should be taken during pandemic influenza, while *contingency plan* should acknowledge more detailed implementation of the measures from preparedness plan.

Healthcare system: represents group of different elements that are interrelated. Healthcare system is one of the biggest systems in general. Its major characteristics are: openness (interaction between community, population and environment), complexity (made of more subsystems) and dynamics (continuous process of ensuring and using healthcare services) (3).

Pandemic influenza type A (H1N1) 2009

On June 11, 2009, the World Health Organization (WHO) signalled that a global pandemic of novel influenza A (H1N1) was underway by raising the worldwide pandemic alert level to Phase 6 (4).

At the time, more than 70 countries had reported cases of novel influenza A (H1N1) infection and there were ongoing community level outbreaks of novel H1N1 in multiple parts of the world. Since the WHO declaration of a pandemic, the new H1N1 virus has continued to spread; with the number of countries reporting cases of novel H1N1 nearly doubled. (4).

Official statistics account up to 360 persons with confirmed diagnosis of new influenza infection died till the first half of January 2010 in UK. Mortality rate was 26 per 100.000 people (1).

This study has following objectives:

- To determine if Bosnia and Herzegovina healthcare system is prepared for influenza pandemic;
- To indicate strengths and weaknesses in planned resolution of pandemic influenza in Bosnia and Herzegovina healthcare system.

2. METHODOLOGY

The applied methodology is based on qualitative systematic review, comparing established elements of healthcare systems with WHO's guidelines on pandemic preparedness. Based on this comparison (primarily through contingency and preparedness plans) it will be possible to acknowledge level of preparedness of Bosnia and Herzegovina healthcare system.

Starting point is: whether healthcare system of a country (Bosnia and Herzegovina) is prepared for pandemic influenza?

In order to obtain objectives it is necessary to critically evaluate available findings on preparedness of healthcare system of Bosnia and Herzegovina (B&H) compared in details to preparedness of healthcare system of United Kingdom (UK) but in certain elements with some other European countries.

To conduct this systematic review, preparedness plans of the two mentioned countries have been reviewed in details – as UK plan has been the most extensive preparedness system as stated by the WHO and B&H with its formal preparation system. Literature review was facilitated by electronic bases of relevant online search engines. Manual review of relevant journals was also used. Main goal was to increase effectiveness of the review.

3. RESULTS AND DISCUSSION

WHO Guidelines

In 2005, WHO presented new Global Influenza Preparedness Plan; it updates, significantly revises and replaces the *Influenza pandemic plan. The role of WHO and guidelines for national and regional planning* published by WHO in 1999. It contains recommendations for all member countries (5).

This plan redefines the phases of increasing public health risk associated with the emergence of a new influenza virus subtype that may pose a pandemic threat. Redefinition of the phases was needed to address the public health risks of influenza infection in animals, link phase changes more directly with changes in public health response, and focus on early events during a "pandemic alert" period when rapid, coordinated global and national actions might help to possibly contain or delay the spread of a new human influenza strain (5).

In order to accomplish the public health goals for each phase, the specific objectives and actions to be taken by WHO, and those recommended for national authorities, are divided into five categories:

- Planning and coordination
- Situation monitoring and assessment
- Prevention and containment
- Health system response
- Communications (5).

A National Framework for responding to an influenza pandemic of United Kingdom (UK)

In October of 2007 government of UK passed new National framework for respond on pandemic influenza. It established main goal (to take every practical step to assure highest possible level of preparedness of UK for pandemic influenza), as well as strategic objectives based on which main goal will be accomplished. Both Contingency and Preparedness plan were made based on WHO's guidelines (2).

There are 11 strategic objectives covering all aspects of citizens protection, risk management, organization of health and social care system to adept to provide treatment and support for large numbers of likely to suffer from Influenza or its complications and other relevant issues for an adequate preparedness strategy (2).

Achieving these strategic objectives will require the development, maintenance, testing and when necessary implementation of operational response arrangements (2).

An influenza pandemic requires flexible plans based on a combination of strategies to develop an effective and sustainable response. Detailed medical or pharmaceutical countermeasures, combined with public health and personal infection control initiatives, and possible application of additional measures to reduce social mixing, form the basis of the UK's mitigation strategy are given in the section covering *Contingency measures* (2).

As an influenza pandemic will result in intense and sustained pressure on all parts of the health and social care system, it is expected to limit the scope for mutual aid and threatening the overwhelm services at its peak (2).

Section on *health care system respond* contains in details instructions on surveillance to detect the emergence of a novel virus strain, monitoring its spread and health impact with providing prompt access to reliable diagnostics tests, as well as normal patient pathways and service delivery arrangement and all other issues related to this (2). (Table 1).

Strengths	Weaknesses
Formation of coordinating body	Preparedness plan formed to late (after emerging of pandemic influenza)
Preparedness plan	
Accepting WHO's guidelines	
Adaptation to society	Lack of contingency plan

Table 1. Strengths and weaknesses of B&H's Healthcare system preparedness for pandemic influenza

Communication and public engagement emphasise the significance of cooperation of all authorities involved in Influenza pandemic preparedness (governmental, public, business, non-governmental, voluntary and individuals) This part main aims among others are to improve general awareness and understanding of influenza amongst the population and promote good hygiene and other general precautionary measures; prepare the country for the probable emergence of a new or re-emerging influenza virus; mobilise the population as partners at the response phase; etc. (2)

Preparedness and control plan for pandemic influenza in Bosnia and Herzegovina

B&H shares international borders with Croatia to the north, south and west, and Serbia and Montenegro to the east; consists of two entities and one district: the Federation of Bosnia and Herzegovina (FB&H), Republic of Srpska (RS) and the independently administered Brcko District. There is **no** national mandate for health care financing and provision in B&H. Health care finance, management and organization in B&H is the responsibility of each entity, and Brcko District runs a health care system under its own authority. B&H has thirteen ministries of health for a population of less than 4 million – one for Republic of Srpska, one for Brcko District, and within FB&H: one for FB&H and ten cantonal ministries (one for each canton).

Acknowledging the threat that pandemic influenza represents on both global and national level and because of request from WHO to all member countries, Council of Ministers, based on clause 17 of Law of Council of Ministries (*"Official Gazette B&H"*, number 30/03, 42/03), and on suggestion from Ministry of Civil Affairs, passed *Preparedness and control plan for pandemic influenza in Bosnia and Herzegovina* (6).

Surveillance system for human seasonal influenza in B&H is part of routine passive surveillance of communicable diseases. This is based on mandatory registration influenza patients. Sporadic cases are registered individually, and during the epidemics they are registered collectively weekly (6).

Since there is no sentinel surveil-

lance in B&H, by the Preparedness and control plan routine surveillance of acute respiratory infections (ARI) and influenza-like illness (ILI) will be strengthen in city centers with corresponding network of passive surveillance. Also, information exchange and common active surveillance between veterinary and human sector will intensify (6). As of 2012, when this paper is finalized, there is no sentinel surveillance for influenza established in any part of B&H.

Contingency measures: To limit spreading of influenza there are pharmaceutical and non-pharmaceutical measures. In lack of specific vaccines and antiviral medicines, important part in contingency have non-pharmaceutical measures (veterinary contingency measures, limitation of human travel in affected areas, use of personal preventive means, general and personal hygiene etc) (6).

There is no routine vaccination program against influenza in B&H. Vaccines are gathered for so called risk groups. Since it is not part of mandatory vaccination there is no constant secure founding for procurement of seasonal vaccines (estimated need for 500.000 vaccines). Average annual usage of seasonal vaccines is 150.000 doses (6).

Until the moment that this article is being written, B&H *remains only country from this region that does not have contingency*

WHO'S GUIDELINES		B&H	UK	FRANCE	AUSTRIA	HUNGARY	ITALY
Interpandemic period	Phase 1	Planning and Coordination	+	+	+	+	+
		Monitoring and Evaluation	+	+	+	+	+
		Prevention and Contingency	+	+	+	+	+
		Healthcare system respond	+	+	+	+	+
		Communication	+	+	+	+	+
	Phase 2	Planning and Coordination	+	+	+	+	+
		Monitoring and Evaluation	+	+	+	+	+
		Prevention and Contingency	+	+	+	+	+
		Healthcare system respond	+	+	+	+	+
		Communication	+	+	+	+	+
Attention period	Phase 3	Planning and Coordination	+	+	+	+	+
		Monitoring and Evaluation	+	+	+	+	+
		Prevention and Contingency	+	+	+	+	+
		Healthcare system respond	+	+	+	+	+
		Communication	+	+	+	+	+
	Phase 4	Planning and Coordination	+	+	+	+	+
		Monitoring and Evaluation	+	+	+	+	+
		Prevention and Contingency	+	+	+	+	+
		Healthcare system respond	+	+	+	+	+
		Communication	+	+	+	+	+
Stage Phase	Planning and Coordination	+	+	+	+	+	
	Monitoring and Evaluation	+	+	+	+	+	
	Prevention and Contingency	+	+	+	+	+	
	Healthcare system respond	+	+	+	+	+	
	Communication	+	+	+	+	+	
Pandemic	Phase 6	Planning and Coordination	+	+	+	+	+
		Monitoring and Evaluation	+	+	+	+	+
		Prevention and Contingency	+	+	+	+	+
		Healthcare system respond	+	+	+	+	+
		Communication	+	+	+	+	+
Detailed Contingency Plan		-	+	+	+	+	+

Table 2. Comparison of preparedness plans of B&H's and other European countries' healthcare systems with WHO's guidelines

plan. Since contingency plan represents guide for implementation of preparedness plan, the lack of one, decreases general preparedness of B&H's healthcare system. The reason for the lack of contingency plan is multifactorial. But economy is probably not to blame, since all the neighboring countries, that are not economically much more advanced have one. For example Serbia (7), Croatia (8) and FYR of Macedonia (9) have detailed and well prepared contingency plans, with clear instruction of how to implement measures from preparedness plan. So most likely, that the reason is actually because of specifics of organization of B&H's healthcare system. Since contingency plan should be made on national level, but healthcare decisions are being made on entity level, it is very difficult to make unique contingency plan that needs great deal of practical data.

Also majority of the other European countries have preparedness plans as well as detailed contingency plans – France (10), Austria (11), Hungary (12) Italy (13).

Qualitative analysis of the influenza pandemic preparedness plans of eight countries

Detailed analysis of the preparedness plans of several European countries' health care systems and Bosnia and Herzegovina by the WHO guidelines elements by phases is presented in Table 2. It can be observed that all analyzed countries – B&H included – covered all elements of influenza pandemic preparedness in their preparedness plans; and all countries but B&H have had contingency plans.

4. CONCLUSIONS

After the presented analysis, it is possible to conclude that disregarding the obstacles in B&H health care system policy Bosnia and Herzegovina has preparedness plans, that are made based on WHO's guidelines. This can be seen as strength in the influenza pandemic preparedness. And while other analysed countries besides preparedness has also contingency plan, B&H still has to work on making one. Based on that fact, one can say that UK's, France, Austria, Hungary, Italy, Croatia, Serbia and Montenegro healthcare systems are better prepared for pandemic influenza, than B&H's.

Weaknesses of B&H's healthcare system are late forming of preparedness plan, and lack of contingency plan. Implementation of activities stated to be establish by the preparedness plan in 2009 has never being done (e.g. sentinel surveillance, vaccination policy etc) Although preparedness plan exists it is in need for constant urging on fulfilling of activities and objectives in

all categories (planning, monitoring, contingency, respond and communication) in every stage of pandemic.

REFERENCES

1. Radovanović Z. Grip. Arhipelag. Beograd, 2010: 24-48.
2. Pandemic Flu; A national framework for responding to an influenza pandemic; Cabinet Office; Department of Health. London October, 2007.
3. Nikšić D. Praktikum socijalne medicine sa teoretskim uputama. Medicinski fakultet Univerziteta u Sarajevu, 2007.
4. <http://www.niaid.nih.gov/topics/flu/h1n1/generalinfo/Pages/Default.aspx>; web site accessed on June the 23rd 2010 at 19.25 h
5. WHO global influenza preparedness plan; The role of WHO and recommendations for national measures before and during pandemics. Epidemic alert & response. 2005.
6. Plan pripravnosti i kontrole pandemijske influence u Bosni i Hercegovini; revidirani dokument – zadnja revizija 19. 5. 2009. godine. Ministarstvo civilnih poslova Bosne i Hercegovine, 2009.
7. Kon P. Implementation of the Pandemic Preparedness in Serbia: Where are we now? Special working group Ministry of Health. Belgrade, September, 2008.
8. Aleraj B, Draženović V. Influenza surveillance and pandemic preparedness in Croatia. Croatian National Institute of Public Health. Zagreb, 2009.
9. Karadzovski Z. National pandemic influenza preparedness plan surveillance of seasonal influenza and ewarn. Ministry of health Republic of Macedonia, Skopje.
10. National "Influenza Pandemic" Prevention and Response Plan; October 2011; http://www.sante.gouv.fr/IMG/pdf/PlanPandemieGrippale-Version_Anglais.pdf web site accessed on May 17th 2013 at 21:00 h
11. Influenza Pandemic Plan, Strategy for Austria, English translation of 3rd edition, Federal Ministry of Health, Family and Youth; Austria, 2010.
12. http://bmg.gv.at/cms/home/attachments/3/6/8/CH1205/CMS1126084167391/pp_englisch.pdf web site accessed on May 17th 2011 at 21:00 h
13. Székely T. National Influenza Pandemic Preparedness Plan; Ministry of Health, Republic of Hungary, Office of the Chief Medical Officer; July, 2008.
14. National Plan for Preparedness and Response to an Influenza Pandemic;
15. http://www.salute.gov.it/imgs/C_17_pubblicazioni_511_allegato.pdf web site accessed on May 17th 2011 at 21:00 h.