

PUBLIC HEALTH PREPAREDNESS FOR TWO MASS GATHERING EVENTS IN THE CONTEXT OF PANDEMIC INFLUENZA (H1N1) 2009 - SERBIA, JULY 2009

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Preparedness planning for two large mass gatherings events were considered in Serbia in the context of pandemic influenza (H1N1) 2009. Planning included approaches to prevention, detection and response in order to mitigate the situation at this early stage of the epidemic in Serbia. Cases of influenza A(H1N1)v were identified nationally immediately prior to the mass gatherings but also identified in association with both events, as expected in the context of the pandemic situation. This article describes the experiences of planning and the epidemiological situation during the period of the mass gathering events.

Introduction

Mass gatherings present a particular challenge for public health. Unusual population increases, high crowd density, international visitors, temporary catering and accommodation facilities, are some factors that may contribute to increased risk for communicable diseases and consequently demands on local health services [1]. Therefore preparations for mass gatherings may also require public health planning. In the context of the current pandemic influenza (H1N1) 2009, preparedness becomes even more important, especially for a country not affected at the time of planning. In this rapid communication we report on experiences in preparedness planning for two mass gatherings in Serbia.

Background

During July 2009, Serbia hosted two large international mass gatherings. Firstly, the 25th Universiade, an international sporting event for young university athletes, took place from 1 to 12 July, involving 53 sites in nine locations (Belgrade, Indjija, Lazarevac, Novi Sad, Obrenovac, Smederevo, Stara Pazova, Vrsac, Zrenjanin), with 8,600 athletes from 143 countries, 10,000 volunteers, 5,000 staff and an estimated 500,000 spectators [2]. This sporting event included both indoor and outside venues, and a restricted-entry accommodation and hosting facility site 'Universiade village' for all the delegations that included a medical clinic. Secondly, the 10th EXIT music festival held at Petrovaradin fortress, Novi Sad, Autonomous Province of Vojvodina. This was held from 9 to 12 July (closing 13 July 05:00), with an estimated 190,000 visitors [3], including 20,000 from abroad. The open-air festival included

over 12 stages within the fortress. Visitors were hosted in local hotels, hostels, private accommodation and a dedicated campsite for 6,000 persons.

Risk assessment and considerations for pandemic influenza (H1N1) 2009

Following international reporting of the new influenza virus in April 2009 [4], considerations for preparedness for these mass gathering events were included in the regular meetings of the National Working Group on Pandemic Planning, under the coordination of National Institute of Public Health (IPH) and Ministry of Health of Serbia. Recommendations were then implemented by Military Medical Academy (providing medical support to the Universiade event), Institutes of Public Health and healthcare facilities in the districts where mass gathering sites were located. By early June, when preparedness activities for the two mass gathering events were being finalised, no case of influenza A(H1N1)v had yet been identified in Serbia. However, with global travel to and from affected areas and continuing spread worldwide, cases were anticipated to be detected at any time, irrespective of the mass gathering events.

As the circulating strain was considered mild-moderate at declaration of the pandemic by the World Health Organization (WHO) [5], and containment in Serbia was regarded unfeasible, a mitigation approach was implemented both as national policy and towards the mass gathering events. Overall key objectives were to detect first cases wherever they may appear, reduce possible spread of infection where possible, monitor the epidemiological situation and mitigate morbidity and mortality through timely diagnosis and treatment of cases according to national guidelines.

In addition, further prevention actions were taken for the first mass gathering, Universiade, because no cases had yet been reported in Serbia one month before the event and the delegations were a reachable population. Information was sent on 4 June 2009 to delegations recommending persons to reconsider travel to Serbia if presenting with any influenza-like symptoms. Criteria for recommending cancellation of Universiade were also set in

case of a rapidly evolving situation. These criteria were: 1% of the attending population diagnosed with influenza A(H1N1)v, a case of acute respiratory distress, or a death in a confirmed case.

Detection and management of influenza A(H1N1)v cases

National approach

According to pandemic plans, enhanced national surveillance for influenza A(H1N1)v was implemented with daily reporting of confirmed cases by the national reference laboratory 'Torlak' integrated with information reported from district IPH on individual case assessments. Guidelines were produced by the National IPH on requirements and procedures for reporting cases using case definition for influenza A(H1N1)v according to WHO case definition as of 27 April 2009 [6]. At the national level reported cases were categorised as travel-related or domestic (no travel abroad known during the incubation period, or contact with a confirmed case in Serbia). Influenza-like illness (ILI) surveillance was continued after week 20 in accordance with recommendation of WHO.

Strategies to detect cases included:

- Posters and information leaflets on symptoms and phone numbers for arriving travellers at airports on when and where to seek medical help;
- Communication to the general public through media and posters on prevention measures and when to seek medical help;
- Sensitising medical facilities and health care workers in all districts to the presentation, management and reporting of cases through cascade of training from national IPH to district IPHs and to health facilities;
- 24/7 on duty and epidemiology mobile teams to respond to queries about suspected cases to assess and triage persons to be tested.

On 22 July there was an alteration in the national testing policy, with suspected cases no longer all being laboratory-tested for influenza A(H1N1)v.

Management of cases

Quarantine measures were not implemented. However, suspected cases were provided isolation at medical facilities until diagnosis, with results aimed to be provided within 24 hours. Furthermore, based on individual medical assessment, confirmed cases were subsequently advised on self-isolation or hospitalised if medical care needed. All confirmed cases were provided antiviral treatment. Masks were not widely distributed to the general public, but used by health care workers as standard infection control practices and provided to suspected or confirmed cases to minimise spread. Contact tracing was undertaken where feasible including medical monitoring, but prophylaxis not given as according to national guidelines.

Mass gathering events

Enhanced daily surveillance was implemented for both mass gathering events for the following diseases: influenza A(H1N1)v, haemorrhagic fever, polio/AFP, diphtheria, measles, botulism, meningococcal meningitis, and all diseases which request urgent reporting in accordance with national law for communicable diseases (cholera, plague, smallpox, yellow fever, malaria) and reporting of outbreaks of acute diarrhoeal syndrome or acute haemorrhagic diarrhoeal syndrome.

At Universiade, the Military Medical Academy provided daily further epidemiological information on cases to both the national

IPH and IPH of Belgrade. Event-based surveillance for influenza and other abovementioned diseases were supplemented through daily epidemic intelligence [7] activities performed by the European Centre for Disease Prevention and Control (ECDC), as done earlier in other international mass gathering events [8,9]. A special edition threat bulletin was developed by ECDC together with IPH Serbia and circulated daily to all district IPHs (24 districts and the city of Belgrade), Military Medical Academy and Ministry of Health.

Strategies to detect cases included:

- posters at Universiade sites in French, English and Serbian about prevention measures and when to seek medical help;
- obligatory daily zero-reporting for suspected cases by all delegation doctors to the Military Medical Academy, that no influenza-like symptoms had been observed in their teams;
- guidelines by Military Medical Academy for diagnosis and referral of suspected cases at the Universiade village clinic to the Military hospital;
- in Novi Sad (site of the EXIT festival), leaflets in English and Serbian provided in public areas such as taxis, bus stops, restaurants, hotels and other locations about prevention measures, symptoms and phone numbers and locations where to seek medical attention;
- information on disease symptoms, prevention measures and contact numbers printed inside the EXIT festival programme;
- mobile teams on site at festival to respond to any suspected case-presentation;
- contact tracing where feasible for cases who could be reached.

Management of cases

- as national approach;
- in Universiade:
 - o an isolation area was available in the clinic at the Universiade village;
 - o referral and transfer of confirmed or seriously-ill suspected cases to isolation facilities at Military Medical Academy hospital;
 - o recommendation to self-isolate in accommodation for confirmed cases not needing hospitalisation;
- for EXIT festival:
 - o basic isolation area in some medical tents at festival site;
 - o mobile medical assessment teams on site at festival and camp;
 - o contact phone numbers to local epidemiology teams for triage of suspected cases;
 - o referral and transfer of suspected cases presenting at festival site or campsite to local health facilities in Novi Sad;
 - o treatment of confirmed cases at health facilities in Novi Sad.

Results

Prior to mass gathering events

On 24 June, six days before the start of Universiade, the first imported case of influenza A(H1N1)v in Serbia was detected and laboratory-confirmed in Belgrade in a returning traveller from Argentina (Figure 1). A further 10 travel-associated cases and two domestic cases (contacts with travel-related cases) were detected nationally, until the first mass gathering event officially opened on 30 June. Among these 13 cases, eight were reported from three of the six districts hosting Universiade events (Belgrade city, South Backa and Srem). By 6 July when the EXIT festival campsite opened, a further eight travel-associated cases (returning residents) were reported, all in the district of South Backa.

Universiade sport event

As of 24 July, six athletes and one volunteer had confirmed influenza A(H1N1)v (Figure 2) with 22 other suspected cases presenting at the Universiade clinic but testing negative. According to incubation periods and contact histories, three cases among athletes were considered as travel-related (Argentina, Australia, Uganda), whereas three athletes (one from France and two from Zambia) and one volunteer were suspected to have been infected

within Serbia. Cases were aged between 20 and 25 years and all experienced mild symptoms.

EXIT music festival

As of 24 July, a total of 62 confirmed cases were identified associated with EXIT festival, including secondary cases to cases exposed at the festival site (Figure 3). Fifteen cases in total were classified as travel-associated (11 from United Kingdom, two from Canada, one from the Former Yugoslav Republic of Macedonia and one from the Netherlands). Ninety-five percent of all cases were aged between 16 and 30 years and all presented with mild symptoms. Fifty-two of the confirmed cases had been referred from the festival to Novi Sad health facilities. A total of 23 confirmed cases associated with the festival were residents from Novi Sad.

An additional 32 probable cases, of whom four were among staff working at the festival site, were identified in Novi Sad after 15 July as likely associated with the festival, as a primary or secondary contact, but were not confirmed due to the new testing policy.

No complications or deaths were reported among any cases.

Discussion

Cases of influenza A(H1N1)v had been detected in Serbia before the mass gatherings occurred but were also associated with these events, as was expected in the context of the pandemic situation. The choice of an overall mitigation approach was in accordance with WHO recommendations at the stage of the global pandemic in June [10]. Preparedness planning assisted towards detecting and responding to the evolving situation in Serbia.

Outbreaks of ordinary seasonal influenza in populations similar in size and age-group structure have been reported at other mass gatherings worldwide [11] thus transmission under these events is not unexpected. Relatively few influenza A(H1N1)v cases were identified among athletes and staff associated with Universiade. Though further cases may have presented among delegations after departure (as reported in Montenegro [12]), this suggests transmission at Universiade was limited which may have been influenced by both the directed travel information as well as health monitoring by delegations. No cases were passively detected or reported among spectators of the Universiade event.

Cases at EXIT festival were first identified among foreign visitors, suggesting importation of the virus to the festival site, however, travel-related cases had been detected in Novi Sad prior to the festival. Though the age groups involved in the festival were similar to Universiade, many more cases were identified in association with EXIT and within a shorter timeframe. This difference could be partly explained by the active contact-tracing undertaken in the local districts. However it might also reflect the characteristics of this mass gathering event including higher person density in specific areas and differences in social interaction.

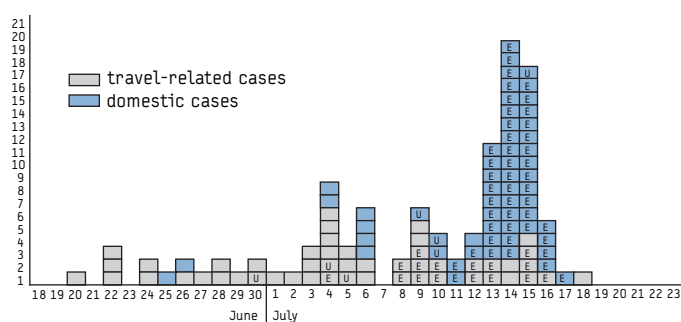
The number of probable cases detected in Novi Sad after the festival suggests local spread. However, it is difficult to assess the impact of either of these mass gathering events on the development of the epidemic in Serbia as the virus was already present in the country and cases may have been under detected nationally.

Conclusions

Both mass gathering events went ahead as planned. Transmission of influenza A(H1N1)v at both events was inevitable due to the nature of the infection, but preparations were put in place to

FIGURE 1

Cases of laboratory-confirmed influenza A(H1N1)v virus infections in Serbia, reported until 24 July 2009, by day of symptom onset (n=109)



U=associated with Universiade, E= associated with EXIT

FIGURE 2

Cases of laboratory-confirmed influenza A(H1N1)v virus infections associated with Universiade 2009 sport event in Serbia, reported until 24 July 2009, by day of symptom onset and import status (n=7)

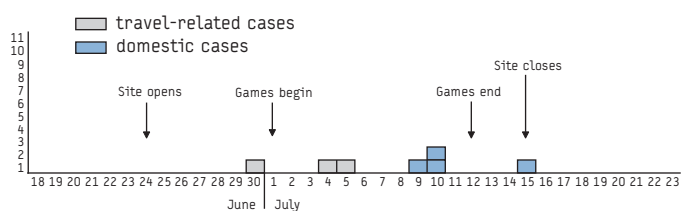
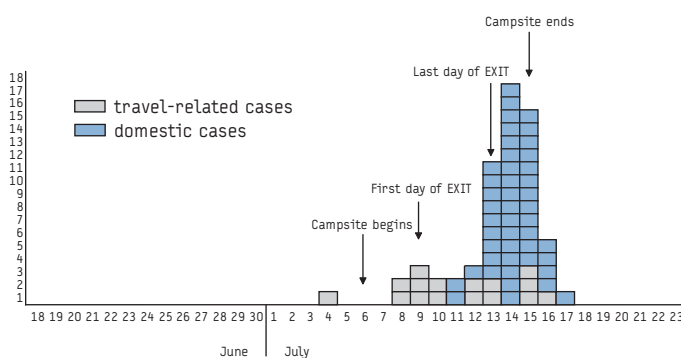


FIGURE 3

Cases of laboratory-confirmed influenza A(H1N1)v virus infections associated with EXIT 2009 music festival in Serbia, reported until 24 July 2009, by day of symptom onset and import status, (n=62)



mitigate the situation, including detection, isolation options and treatment of cases, during this early stage of the epidemic in Serbia.

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