WHO EMRO | The H1N1 influenza pandemic of 2009 in the Eastern Mediterranean Region: lessons learnt

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Short communication

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الوبا ء العالمي لإنفلونزا H1N1 عام 2009 في شرق المتوسط : الدروس المستفادة والاستراتيجية المستقبلية

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: ظهرت في المكسيك سلالة جديدة من سلالات فيروس الإنفلونزا A هي H1N1 فيالخلاصة
أبريل / نيسان من عام 2009 ، وسرعان ما انتشرت في جميع أنحاء العالم، محولة الوباء المحلي
إلى وباء عالمي . وفي غضون شهرين أعلنت منظمة الصحة العالمية حالة طوارئ صحية دولية
ورفعت مستوى التهديد من المستوى الخامس إلى السادس، أي : من الاحتواء إلى التلطيف . وفي
خلال هذه الفترة عمل مكتب منظمة الصحة العالمية لشرق المتوسط عن كثب مع البلدان
الأعضاء والأطراف المعنية الأخرى والمقر الرئيسي لمنظمة الصحة العالمية من أجل
معالجة الوضع . يقوم هذا التقرير بتقييم الخطوات التي اتُّخذت في إطار هذه الاستجابة .
فقد استُعرضت وثائق البرنامج وأجريت مقابلات مع الموظفين الرئيسيين لأجل هذه الدراسة .
وكان من السمات المميزة لهذه الاستجابة إنشاء مركز العمليات الصحية الاستراتيجي
ليجمع خبراء من خلفيات تقنية مختلفة على المستوى الإقليمي . ولقد كانت هناك العديد من
الدروس التي يمكن أن توفر قاعدة لإجراءات التشغيل المعيارية والبروتوكولات والدلائل
الإرشادية المتعلقة بالأحداث الطارئة في المستقبل .

ABSTRACT A novel strain of influenza A virus H1N1 surfaced in Mexico in April 2009 and quickly spread across the globe, turning an epidemic into a pandemic. Within two months, the World Health Organization (WHO) declared an international health emergency and raised the threat bar from level V to level VI, i.e. containment to mitigation. During this time, the WHO Regional Office for the Eastern Mediterranean worked closely with its Member States, other stakeholders and WHO headquarters to manage the situation. This report examines the steps taken as part of this response. Programme documents were reviewed and key personnel interviewed for this study. A hallmark of the response was the establishment of the Strategic Health Operations Centre to bring together experts from different technical backgrounds at regional level. Several lessons were learnt that can provide the basis for standard operating

1 / 11

procedures, protocols and guidelines for emergency events in future.

La grippe pandémique H1N1 de 2009 dans la Méditerranée orientale : enseignements tirés et stratégie future

RÉSUMÉ Une nouvelle souche du virus de la grippe A H1N1 est apparue au Mexique en avril 2009 et s'est rapidement propagée au monde entier, transformant l'épidémie en pandémie. Dans les deux mois qui ont suivi, l'Organisation mondiale de la Santé (OMS) a déclaré une urgence sanitaire de portée internationale et est passée au niveau d'alerte supérieur, c'est-à-dire de la phase 5 (endiguement) à la phase 6 (atténuation). En parallèle, le Bureau régional de l'OMS pour la Méditerranée orientale a travaillé étroitement avec les États Membres, les autres partenaires et le Siège de l'OMS sur la gestion de la situation. Le présent article dresse le bilan des mesures prises dans le cadre de cette riposte. Les documents du programme ont été passés en revue et les membres clés du personnel ont été interrogés dans le cadre de cette étude. Une des caractéristiques principales de cette riposte à été l'instauration d'un Centre stratégique d'opérations sanitaires afin de réunir au niveau régional des experts issus de différents domaines techniques. Plusieurs enseignements ont été tirés qui pourront servir de base pour les modes opératoires normalisés, les protocoles et les directives pour les situations d'urgence dans le futur.

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Introduction and Background

Influenza viruses have a unique capacity for adapting and mutating to cause fulminant infection (1), especially among vulnerable populations. In April 2009, a novel strain of influenza A virus H1N1 containing swine, avian and human elements (2) surfaced in Mexico and the United States of America, quickly spreading across many parts of the globe and turning an epidemic into a pandemic (3). Unlike the seasonal influenza strains which cause inflammation in the

upper airway, the initial cases of pandemic influenza 2009 attacked the lower airways, especially the alveoli, resulting in more severe illness (4–5). It was reported that the illness, especially in vulnerable individuals, was causing acute lung injury leading to severe hypoxaemia requiring artificial ventilation to save lives (4–5).

Virus transmission was so fast that by the time the World Health Organization (WHO) was notified and had an opportunity to respond, geographical containment was not possible and WHO had to declare an early mitigation phase (3). WHO notified the situation as an international health emergency, and raised the threat bar from level V (containment) to level-VI (mitigation) within 2 months (6). This rapid emergence and spread was a phenomenon characterized by uncertainties about the likely route and pace of mutation of this new virus. The estimation by WHO and local authorities on the proportions of the population that may get infected or die due to this virus has been widely debated (7–11).

Uncertainties notwithstanding, a response to this emergency was required urgently. The international outbreak of severe acute respiratory syndrome (SARS) in 2003 and the influenza A virus infecting birds and humans in 2005 had already stimulated the finalization of the International Health Regulations (IHR) which took effect in 2007 (10). These regulations helped governments develop their preparedness plans and WHO to oversee the implementation of those plans (9,11). During the pandemic, the WHO Regional Office for the Eastern Mediterranean worked closely with the health departments of member countries to put these plans into operation and address the situation (12). The number of H1N1 cases in the Region started low (19 in total) in May 2009, rising to 10 346 in October and peaking at 17 668 in November, after which it rapidly declined, with only 669 new cases in January 2010. During this time some areas requiring improvement were also identified to address similar threats in the future (13).

Although the level of concern has diminished during the past 4–5 years, vigilance and the need to learn from these experiences remain critical (11,14,15). This report summarizes the achievements as well as the issues faced by the Region during this pandemic.

Published articles and reports along with unpublished materials from the Region and elsewhere were examined for this study. Key WHO personnel involved in dealing with the emergency and health departments in the countries of the Region were consulted. Two members of the study team examined the reports and analysed the interview transcripts. The content analysis resulted in themes and subthemes, which are presented below.

Findings

Challenges faced

Overview

A number of challenges were faced in the Region owing to multiple factors, including the evolving nature of the problem, inadequate human resource capacity and poor infrastructure. However, the bigger challenges stemmed from the ongoing conflict in some of the countries in the Region, which had led to poverty and displacement of populations. The increased travel for trade and for religious purposes in affluent countries of the Region also added to the list of challenges. A summary of these challenges is presented below.

Nature of the issue

The pandemic was rapidly evolving, overwhelming the timeliness and appropriateness of actions. Algorithms developed by WHO for better decision-making could not be adapted and validated according to country contexts because of the lack of time and resources. Similar constraints also implicated the pretesting of the information, education and communication materials, a step that improves the acceptability of materials and the chances of achieving desired objectives. Mass vaccination was required but there were deficiencies in both the local production and the supply from outside the Region. Moreover, the communities needed to be convinced about this immunization, which required data to be communicated about the populations at risk—information that was entirely missing at the time.

Capacity

The systemic capacity issues included limited financial resources, slow influx of information from Member States, limited capacity of member countries to carry out surveillance according to the IHR, and the poor archiving of the technical products and services. The epidemiology of influenza was poorly understood in many countries. As a result, it was difficult to assess the impact of H1N1 2009 on the health system in most countries of the Region. Additionally, there were issues related to communications capacity, including the difficulty in simplifying the complicated technical information into easy-to-understand messages for public consumption.

Regional contextual issues

Although the concept of a response centre was in place before the pandemic, the terms of reference of its staff and the standard operating procedures for its functions were yet to be developed. Speculation about an alliance with pharmaceutical companies were also a challenge. Moreover, the information technology-based materials had minimal penetration in the communities owing to low computer literacy. In some countries there was a lack of acceptance of immunization activities among certain communities. Lack of transparency in some countries also posed a challenge. Many countries were already undergoing humanitarian crises while some did not have a WHO Country Office. Lastly, the Region and member countries lacked a

comprehensive media strategy.

Response to challenges

We provide an outline of how various challenges were addressed. While many steps were taken, the most important of these was the activation of the Strategic Health Operations Centre (SHOC).

Strategic Health Operations Centre (SHOC)

While many steps were taken to respond to the pandemic, the most important was the activation of the Strategic Health Operations Centre (SHOC). The SHOC was immediately activated on 24 April 2009 when WHO declared the pandemic a public health emergency. This facility was the mainstay of the response to the pandemic providing a platform for the coordination with WHO headquarters, Member States and WHO country programmes. Professionals from various disciplines (epidemiology, communicable diseases, emergency preparedness, telecommunications, media and communications) representing different units within the WHO Regional Office for the Eastern Mediterranean formed a team equipped with state-of-the art technology to provide expertise throughout the pandemic response process. They carried out the following activities:

daily (including weekends) in-house meeting as well as a daily 14:00 teleconference with WHO headquarters;

weekly teleconference with WHO Representatives for the Member States;

sharing of information through SharePoint;

accrual of US $600 000 from WHO headquarters and distribution to 16 Member States for:

preparing and distributing guidelines for training of trainers on pandemic (H1N1) 2009 response;

providing financial support for national training of health workers on response and control of pandemic (H1N1) 2009;

follow-up and monitoring of national training activities on pandemic (H1N1) 2009 infection.

Rapid response and teamwork

The issues arising from the rapidly evolving situation were addressed via the close liaison between partners at global, regional and local levels and effective use of communications technology to enhance the information flow. The IHR 2005 platform and the WHO-coordinated Global Influenza Surveillance and Response System were promptly utilized. Multiple challenges were addressed as the Region worked quickly to put in place the SHOC-related standard operating procedures and terms of reference. The collective thinking, teamwork and flexibility of SHOC helped address the complex evolving emergency. Capacity issues were addressed through effective prioritization in making the best use of available resources and adopting, ad interim, internal peer review protocols for the development and finalization of technical guidelines and services. Communications issues were minimized by organizing a training workshop on outbreak communications to enable country programmes to improve ways of dealing with communication challenges, and to keep the media and the population informed through regular press events, both physical and virtual.

Pragmatic approach

Continued contact with Member States helped improve transparency. Some countries successfully adapted materials but could not evaluate their effectiveness since the relevant tools were not available. To address linguistic and cultural diversity, the visuals and messages on the information, education and communication materials were kept simple, with no cultural, gender or religious references, so that they could be easily adapted locally. Missions were arranged for countries with humanitarian crises and effective networks were built, even in politically charged environments.

Lessons learnt

Overview of regional response

The regional response to the influenza pandemic in 2009–2010 provided substantial understanding of the way the Region and the world could better prepare for influenza epidemics in the future. Categorized into the subthemes of health policy, health system and social environment, these lessons can guide future strategies towards improving the overall response to influenza.

Health policy

The experience of mass immunization during the pandemic suggests that recommendations for immunization need to be based on evidence drawn from locally generated surveillance data. National governments need to inform the communities on the proportions affected, the risks of influenza infection, and the benefits of receiving vaccination. A comprehensive policy by the member countries on surveillance, reporting of data to relevant audiences, mass immunization and timely and appropriate health education, needs to be developed and updated on a periodic basis.

Policies need to stimulate equitable distribution of influenza vaccines in at-risk populations in the Region. For instance, in 2009, only 2 countries, Egypt and the Islamic Republic of Iran, received grants from WHO for influenza vaccine development. However, over time, these and other countries may be reluctant to invest further in developing or enhancing their production capacity. In the event of a global shortage of pandemic influenza vaccine, middle-income and low-income countries in the Region may not have access to vaccines. In order to bridge any anticipated gaps between demand and sustained supply in future influenza pandemics, supportive public health strategies should be in place to ensure equitable access and distribution of vaccines.

Health system

There is a need for virological surveillance for influenza and its integration with routine epidemiological surveillance. Sustaining and possibly expanding the existing capacities of the national influenza centres, maintaining quality standards and improving their capacities for viral sequencing and monitoring antiviral susceptibilities are required.

The difficulty or tardiness that some countries displayed towards adoption of the guidelines suggests that their involvement in the process for development and finalization of these guidelines could have minimized this reaction. The guidelines for various aspects of the emergency should be developed on an interim basis, bearing in mind country capacities, and should be periodically revised and approved. A process for publishing interim guidelines also needs to be introduced to institutionalize the resources and to incorporate comments.

Communication and social environment

Bearing in mind the regional context of increased international travel, poverty and on-going political instability in many countries, it was realized that better coordination was required among the Member States. Actions such as travel advisories or quarantine by countries individually can be avoided through such collaboration.

Over 50 million people in the Region live in complex emergency situations, and over 10 million of these live in displaced and refugee settings. This is a unique challenge that must be considered when designing a policy response for influenza and other epidemic- and pandemic-prone acute respiratory diseases. Additionally, the Region is home to some of the world's largest annual mass gatherings. During religious pilgrimages, crowd density may reach 7 people per square metre, a factor that considerably increases the likelihood of virus transmission. Such gatherings require special attention in the event of influenza epidemics or other outbreaks of infectious diseases.

There is a need for effective partnerships with media and keeping it sympathetic to the programme in an emergency. A risk communication strategy should be in place to address media challenges in emergency situations. Additionally, evaluation of the processes as well as the outcomes and documentation of lessons learnt from health education campaigns in the wake of a pandemic are necessary. A mechanism for rapid editing and publication of technical and information products within the existing WHO guidelines should be established.

Discussion and recommendations

Our study unravelled several important factors, foremost among which is that even in an unexpected pandemic, a holistic response is possible to address the challenge in an effective way. Collective thinking, shared vision and strong coordination among several different sectors were key to the response. The establishment of SHOC, which functioned 24 hours throughout the pandemic and ensured coordination with all stakeholders, was the peak of this response. However, we also found that epidemiological and laboratory surveillance, followed by translation of the findings into the development and implementation of public policy, needs improvement in the Region. Moreover, being able to communicate effectively on the spread of infection and educate communities about immunization is another area for improvement, as is the need to keep in mind the context of several migrant populations in the Region.

Through the Regional Office, WHO supported member countries by providing technical advice and educational materials as well as monitoring events through the IHR 2005 platform and the WHO-coordinated Global Influenza Surveillance and Response System network (16). This global role of WHO helped reduce the impact and pervasiveness of the influenza pandemic in 2009 (17).

In the post-H1N1 pandemic period, the adoption of the Pandemic Influenza Preparedness (PIP) Framework in 2011 heralded a new era for global preparedness and response for future

influenza pandemics. Developed and adopted by WHO member countries in 2011, the Framework aims to improve sharing of viruses having pandemic potential and to enhance access of developing countries to vaccines and pandemic supplies. Member States in the Region are also benefitting from the Partnership Contribution mechanism established under the PIP Framework to strengthen systems and capacities (18). Effective implementation of the PIP Framework and optimal utilization of the benefits offered by this global public–private partnership would help enhance preparedness and response for the next pandemic.

The foremost lesson learnt by WHO is that plans should be in place for a number of scenarios well in advance. Greater scrutiny and refinement of standard operating procedures within the institutional framework of WHO is also required to improve measures for addressing future threats. Moreover, there needs to be revision with regard to the situation where countries find disincentives for disease-related reporting and few incentives for timely reporting. For the Member States, there is a need to build national and local capacities for investigation and early detection of severe or unusual cases of severe acute respiratory disease. Specifically, improving virological surveillance for monitoring the virus should be prioritized, including for mutation and antiviral resistance. Countries also need to reinforce infection prevention and control practices for acute respiratory diseases in health care settings.

It has been suggested that the 2009 pandemic may not be as dangerous or widespread as was feared, but subsequent waves may lead to a pandemic as lethal as that of Spanish influenza in 1918 (9,19,20). The response to the H1N1 pandemic was a learning experience from which capacities can be built and strengthened for future events in the Region. The SHOC systematic response operations can provide a foundation upon which standardized operating procedures, protocols and guidelines can be developed for emergency events in the future.

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References

1. Zimmer SM, Burke DS. Historical perspective—emergence of influenza A (H1N1) viruses. N Engl J Med. 2009 Jul 16;361(3):279–85. PMID:19564632

2. Dawood FS, Jain S, Finelli L, Shaw MW, Lindstrom S, Garten RJ, et al. Emergence of a novel swine-origin influenza A (H1N1) virus in humans. N Engl J Med. 2009;361(1):1–10.

PMID:19423869

3. Strengthening response to pandemics and other public-health emergencies: Report of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to pandemic (H1N1) 2009. Geneva: World Health Organization; 2011.

4. Maines TR, Jayaraman A, Belser JA, Wadford DA, Pappas C, Zeng H, et al. Transmission and pathogenesis of swine-origin 2009 A(H1N1) influenza viruses in ferrets and mice. Science. 2009 Jul;325(5939):484–7. PMID:19574347

5. Munster VJ, de Wit E, van den Brand JMA, Herfst S, Schrauwen EJA, Bestebroer TM, et al. Pathogenesis and transmission of swine-origin 2009 A(H1N1) influenza virus in ferrets. Science. 2009 Jul 24;325(5939):481–3. PMID:19574348

6. Chan M. World now at the start of 2009 influenza pandemic. Geneva: World Health Organization; 2009 (http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/, accessed 3 March 2016).

7. A pandemic of hindsight? Nature. 2010 Jun 24;465(7301):985. PMID:20577162

8. Gostin LO. Influenza A(H1N1) and pandemic preparedness under the rule of international law. JAMA. 2009 Jun;301(22):2376–8. PMID:19509384

9. SteelFisher GK, Blendon RJ, Bekheit MM, Lubell K. The public's response to the 2009 H1N1 influenza pandemic. N Engl J Med. 2010 Jun;362(22):e65. PMID:20484390

10. Shetty P. Preparation for a pandemic: influenza A H1N1. Lancet Infect Dis. 2009 Jun;9(6):339–40. PMID:19475786

11. Fineberg HV. Pandemic preparedness and response—lessons from the H1N1 influenza of 2009. N Engl J Med. 2014 Apr;370(14):1335–42. PMID:24693893

12. Report on the Response to pandemic (H1N1). Cairo: World Health Organization; 2009 (EM/CSR/040/E).

13. Report on Pandemic H1N1 and progress on the response by Regional Office for the Eastern Mediterranean. Cairo: World Health Organization; 2009 (EM/RC58/INF.DOC.7).

14. Fraser C, Donnelly CA, Cauchemez S, Hanage WP, Van Kerkhove MD, Hollingsworth TDi, et al. Pandemic potential of a strain of influenza A (H1N1): early findings. Science. 2009 Jun;324(5934):1557–61. PMID:19433588

15. Penn C. Future perfect? Improving preparedness through the experiences of the influenza A (H1N1) 2009 pandemic. Bull World Health Organ. 2011 Jul;89(7):470. PMID:21734756.

16. World Health Organization. Influenza Surveillance & Monitoring. (http://www.who.int/influenza/gisrs_laboratory/en/, accessed 25 May 2016)

17. Pandemic Influenza H1N1: Donor Report March 2011. World Health Organization (http://www.who.int/csr/resources/publications/swineflu/h1n1_donor_032011.pdf, accessed 25 May 2016).

18. Influenza: partnership contribution. World Health Organization (http://www.who.int/influenza/pip/benefit_sharing/partnership_contribution/en/, accessed 25 May 2016).

19. Pandemic influenza preparedness: sharing of influenza viruses and access to vaccines and other benefits. World Health Organization; 2012 (http://apps.who.int/gb/ebwha/pdf_files/EB132/B132_16-en.pdf, accessed 3 March 2016).

20. Franco-Paredes C, Carrasco P, Preciado J. The first influenza pandemic in the new millennium: lessons learned hitherto for current control efforts and overall pandemic preparedness. J Immune Based Ther Vaccines. 2009;7(2):1–6. PMID:19664217

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