

Jordan is an upper-middle-income country with a population of 6.459 million (2013)<sup>1</sup>. Its per capita gross national income (GNI) is US\$ 4.950 (2013)<sup>1</sup> and with a Human Development Index rank 100 out of 186 countries (2012)<sup>2</sup>.

Emergency preparedness and response plans for avian and pandemic influenza are in place and are well-developed. Severe acute respiratory infection and influenza-like illness surveillance was implemented through collaboration with NAMRU-3 in 2008. Both systems are based on a plan that was elaborated by NAMRU-3. The country has had outbreaks of influenza A(H1N1)pdm09 and MERS-CoV in recent years.

The Central Public Health Laboratory in Amman has been recognized as a National Influenza Centre since 2012. Virus isolation, polymerase chain reaction and serology already exist and are functioning well at the laboratory. Sequencing is in process and the laboratory will soon have the capacity to generate sequencing data. The Molecular Biology Unit of the Central Public Health Laboratory sends a yearly shipment of influenza isolates to the WHO collaborating centre for vaccine update. Data are shared with the Ministry of Health and WHO through FluNet.

## **Strengths**

During the avian influenza and the pandemic influenza (2009) outbreaks, health directorates in Jordan coordinated with all types of media and religious leaders to submit the correct health messages to the public. Based on WHO guidance, a national communication strategy, including resource mobilization activities, was developed at the beginning of these two outbreaks.

Respiratory diseases surveillance is done through an influenza-like illness and severe acute respiratory infection sentinel surveillance system. Each of the two systems have 3 sentinel sites (see table below) that are distributed in the country, one in the south, one in centre and one in the north.

Jordan has a well-functioning National Influenza Centre, and with support from Partnership Contribution funds the capacity of the centre can be further expanded for genetic characterization (sequencing) of influenza viruses. It has the potential to become a regional reference laboratory in the areas of diagnostics and distribution of diagnostic reagents as it did previously. The Partnership Contribution funds would also help Jordan to scale up its current

sentinel based surveillance system for severe acute respiratory infection and influenza-like illness and provide good quality representative data on influenza epidemiology.

## **Gaps and recommendations**

Existing national emergency preparedness and response plans developed in Jordan during the avian influenza outbreak and the pandemic influenza (2009) should be expanded to cover other events to comply with the International Health Regulations (2005). Jordan has to improve its preparedness for any unexpected influenza epidemic in the coming winter season and to develop appropriate strategies for specific pharmacologic and non-pharmacologic interventions.

It is crucial to strengthen intra/intersectoral collaboration between major stakeholders, among which communicable disease surveillance and laboratory, infection prevention and control and animal health programmes are highlighted. There is an urgent need to strengthen Ministry of Health capacity in policies and practices in regard to outbreak communication, social mobilization and behavioural change for effective risk communication with the public, including health-care workers during outbreaks.

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