Summary report on the

Third intercountry meeting on the Eastern Mediterranean Acute Respiratory Infection Surveillance network

WHO-EM/CSR/104/E

Amman, Jordan
14–16 September 2015

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1. Introduction

Public health preparedness for epidemic and pandemic influenza requires robust public health surveillance systems for prevention, early detection and rapid response to novel influenza and other emerging respiratory pathogens. The emergence and continued transmission of Middle East respiratory syndrome coronavirus (MERS-CoV) in the countries of the WHO Eastern Mediterranean Region, since its detection in 2012, and the surge of human infections from avian influenza A(H5N1) in Egypt necessitate the importance of establishment and enhancement of surveillance systems for acute respiratory infections in the countries of the Region.

The WHO Regional Office for the Eastern Mediterranean has been collaborating with the United States Centers for Disease Control and Prevention (CDC) and the Global Disease Detection and Response Program of the U.S. Naval Medical Research Unit no 3 (NAMRU-3) since 2006 to establish and enhance the surveillance system for seasonal influenza and severe acute respiratory infections (SARI) in the Region. The third intercountry meeting of Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) network was held in Amman, Jordan from 14 to 16 September 2015. The biannual meeting is part of the ongoing collaboration between WHO, CDC and NAMRU-3 to improve the quality of data collection on seasonal influenza and acute respiratory infections, strengthen use of the surveillance data for evidence generation and prepare supportive policies for introduction and use of seasonal influenza vaccines.

The meeting was attended by national focal points for respiratory infections and representatives of national influenza centres from 15 countries in the Region, along with staff members from WHO, CDC and NAMRU-3. The objectives of the meeting were to:

- identify means to improve the quality and effectiveness of surveillance for severe acute respiratory illness (SARI) and influenza-like illness (ILI);
- review the findings in selected countries to estimate the influenza burden; and
- agree on a plan for further development of the EMARIS network.

2. Summary of discussions

SARI and ILI surveillance system

Currently, 15 out of 22 countries in the Region have established sentinel-based surveillance systems for severe acute respiratory infection (SARI) and influenza-like illness (ILI). The cooperative agreement of the Regional Office with CDC for strengthening surveillance and response for seasonal influenza and the pandemic influenza preparedness (PIP) framework support countries in the Region to establish and strengthen sentinel based surveillance systems for SARI and ILI. Despite substantial progress achieved over the years in the countries in maintaining the surveillance systems for SARI and ILI, recent assessments indicate that surveillance data from the sentinel systems for SARI/ILI are not being used for generating better evidence on the epidemiology of influenza, seasonality and risk factors for influenza and influenza-associated illnesses from the Region.

In 2011, the International Health Regulations (2005) review committee set up for pandemic influenza asked WHO to formulate severity measures for influenza epidemics to be updated annually. The tool called the pandemic influenza severity assessment, measures three main indicators: transmission, severity of disease and impact. It is being pilot-tested in 12–13 countries.

Epidemics of seasonal influenza are detected mainly through the indicator-based national surveillance systems by comparing the trend of SARI/ILI cases with those reported during the past corresponding time interval. In the majority of countries in the Region, private sector hospitals are currently not included in the SARI/ILI surveillance systems. The event-based surveillance system complements the indicator-based surveillance system by detecting unreported cases and unusual respiratory disease events which otherwise would not have been reported through the formal reporting system. Use of hotlines and designating people in the community, such as community health care workers and community leaders, to report any unusual events can result in timely detection of unusual health events caused by respiratory diseases, especially in remote areas.

Data on influenza can be used to generate population-based estimates of disease burden, which give the decision-makers the evidence necessary for formulating public health policies on influenza prevention and control. WHO has recently published a manual on estimating disease burden for influenza and influenza-associated illness using SARI sentinel surveillance data which is a useful tool for estimating disease burden associated with influenza and ILI.

Currently, working is in progress in a number of countries in the Region to estimate disease burden estimation using the SARI sentinel surveillance data, although absence of some key information such as population denominator of the SARI sentinel site, lack of representativeness of the sentinel sites as well as poor quality data collection and collation are proving to be a major hindrance. The pandemic influenza preparedness framework supports countries in estimating disease burden associated with influenza where the SARI surveillance system is functioning.

Some of the important gaps were identified for SARI/ILI surveillance in the Region which need to be addressed urgently in order to enhancing the system.

- Lack of standardization of data collection tool for SARI/ILI with the major focus on minimal and essential data collection from the sentinel site in accordance with the nationally defined objectives for SARI/ILI surveillance;
- Low awareness among health care workers on the case definition for SARI/ILI cases;
- Under-utilization of the SARI/ILI surveillance data to assess severity of influenza in a given season;
- Lack of understanding of the epidemiology of influenza, seasonality and risk factors for influenza;
- Need for integration of virological and epidemiological components into the SARI/ILI surveillance system;
- Lack of sampling strategy for collection of clinical samples from the SARI and ILI cases that meet the surveillance case definition;
- Need for integration of the SARI/ILI surveillance system into the national disease surveillance system;
- Unavailability of a user-friendly manual for conducting health-facility utilization survey in order to calculate the catchment populations of SARI sentinel sites;
- Need for an online platform for automated data entry and analysis from the sentinel sites integrating both epidemiological and virological surveillance data for SARI and ILI;
- Lack of an event-based surveillance system for detecting unusual influenza events or acute respiratory infection events of potential concern.

National influenza centres

To date WHO has designated 16 national influenza centres in 15 of the 22 countries in the Region. However, only 11 of these 16 national influenza centres are regularly sharing virological data on influenza to Global Influenza Surveillance and Response System (GISRS). Many of the actively functioning national influenza centres in the Region have optimal laboratory capacity for viral isolation, molecular diagnosis through polymerase chain reaction and sequencing. As part of their mandate, the 11 actively functioning national influenza centres are regularly sharing data on virological surveillance to Flu-Net, shipping influenza specimens or viral isolates to the WHO collaborating centres for vaccine strain selection.

As novel respiratory viruses have the potential to cause pandemics or public health emergencies of international concern, the national influenza centres should go beyond testing for only influenza to regularly identify and detect other circulating pathogens responsible for non-influenza related respiratory infections. Some capacity-building activities for detection and diagnosis of respiratory viruses would be required for this purpose. In addition, there may be a need for conducting a sentinel-based surveillance for respiratory syncytial virus (RSV) on a pilot basis and share the experience on epidemiological data collection and laboratory detection of RSV with rest of the countries before scaling up throughout the Region.

As part of preparedness for pandemic influenza, all the functioning national influenza centres in the Region must maintain a reasonably performing viral isolation unit as well as build and maintain its viral sequencing capacity at any given point in time for determining any genetic change in seasonal influenza virus or for identifying any new influenza strain or sub-type. NAMRU-3 has conducted a series of

trainings on sequencing influenza virus for the countries in the Region. Sending influenza viral isolates or specimens for further testing at WHO collaborating centres is important both for detecting unidentified influenza viruses and also for ensuring quality of clinical sample collected and quality of its test results. The WHO collaborating centres also provide further training on virus isolation, propagation and detection, antigenic and serological analysis, assessment of sensitivity to antiviral drugs and sequence analysis of influenza virus genes.

Some of the important gaps were identified for enhancing optimal performance of the national influenza centres in the Region for detection and diagnosis of influenza and other respiratory viruses.

- Lack of a standard protocol including algorithm which is validated for testing and diagnosis of RSV and other respiratory viruses using multiplex respiratory assays;
- Lack of annual projection on the requirements for reagents and consumable laboratory supplies for detection and diagnosis of seasonal influenza and other respiratory viruses; and
- Low understanding of the relative distribution of patient clinical specimens and influenza viral isolates that need to be shared with the WHO collaborating centres for vaccine strain selection.

EMARIS network: institutional framework and future directions

The EMARIS network should have a written mandate and terms of reference to give it formal standing for Member States. In order to share progress and experience, EMARIS meetings in the future should be attended by the SARI and ILI focal points. Efforts should continue to publish data and other scientific research findings from the countries to help fill the information gap from the Region. Countries are encouraged to submit their scientific abstracts to international conferences for better

representation. The EMARIS might organize its own scientific meetings in future to attract a wider scientific audience from the Region. Twinning projects may also be explored as part of this network. Several countries in the Region are transferring experience, laboratory testing and capacity-building activities to other countries, especially countries with little surveillance and laboratory diagnostic capacity.

Some important gaps were identified for sustaining the long-term functions and activities of the EMARIS network. These include the need for written terms of reference, mandate and functions of the EMARIS network, and for identification of a modus operandi of the network and ways and means to capture the scientific achievements of the countries participating in SARI/ILI surveillance within the network.

Future scientific agenda for SARI/ILI surveillance

The future scientific research agenda was discussed in the meeting in terms of studies needed to better understand the epidemiology of influenza and respiratory diseases in the Region.

- Literature review from the published data on the burden of influenza and circulating respiratory viruses in the Region;
- Bacterial pathogens as aetiological agents for severe pneumonia in the Region and share of bacterial pathogens with influenza and other respiratory viruses causing severe pneumonia; and
- Assessment of severity of infection caused by influenza among viral pneumonia cases by way of determining the need for ventilator use among those people with severe pneumonia admitted to intensive care units.

3. Recommendations

To Member States

1. Share virological and epidemiological data through FluNet and FluID of GISRS regularly, and use the two platforms together for overall understanding of the trends of SARI and ILI.
2. Conduct laboratory testing for pathogens other than influenza virus to identify any other respiratory pathogens that are circulating in the country and regionally.
3. Enhance or establish an event-based surveillance system for detection of unusual influenza or acute respiratory disease events using best examples or practices from other countries who have successfully established such systems.
4. Conduct studies on the burden of influenza, seasonality and risk factors for influenza-associated illness in a standardized way once sufficient and population-based data are available using the WHO manual for disease burden.
5. Enhance the functions of the national influenza centres in the Region for sequencing of influenza virus and for testing and diagnosis of other respiratory viruses.
6. Submit scientific study reports on influenza and respiratory diseases for publication in the peer-reviewed journals and also submit scientific abstracts for presentation at international conferences.

To WHO

7. Standardize the data collection and reporting format for SARI and ILI, with minimum required data variables, to ensure unified, consistent reporting that are comparable across countries in the Region.
8. Develop an online platform for influenza data sharing. The main contributors to the database will be sentinel sites and ministries of health. The database should eventually export data to FluNet and FluID, which will reduce the workload of sentinel sites. An offline application for countries with weak internet connections should also be considered. In countries where mobile phones are widely used, a mobile application of the platform could be programmed as well.
9. Formalize the terms of reference of the EMARIS network. WHO and NAMRU-3 should prepare a clear mandate, which will be shared with Member States for endorsement at future meetings.
10. Plan a scientific meeting under the EMARIS network for presenting interesting scientific data and findings on the epidemiology, seasonality and risk factors for influenza from the Region. Such meetings could be held at the same time as the biannual EMARIS meetings or separately.

World Health Organization
Regional Office for the Eastern Mediterranean
P.O. Box 7608, Nasr City 11371
Cairo, Egypt
www.emro.who.int