

Summary report on the

# Second intercountry meeting on the Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) network

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Sharm el-Sheikh, Egypt  
24–27 November 2013



**World Health  
Organization**

Regional Office for the Eastern Mediterranean

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## Contents

1.	Introduction.....	1
2.	Summary of discussions .....	3
3.	Recommendations.....	7

## **1. Introduction**

Acute respiratory infections (ARI) are the second leading cause of global illnesses resulting in over 4 million deaths annually. Evidence suggests that respiratory syncytial virus and influenza are associated with the majority of episodes of ARI, especially in children and the elderly. The burden of ARI in the Eastern Mediterranean Region of WHO is limited by the paucity of consistent and representative data available across countries.

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 Programme of the U.S. Naval Medical Research Unit no. 3 (NAMRU-3) since 2006 to establish and enhance the surveillance system for influenza and severe acute respiratory infections (SARI) in the Region. The current focus of this collaboration is to: a) improve the quality of both epidemiological and virological surveillance data collection and analysis; b) strengthen use of surveillance data to better understand the epidemiology, seasonality and risk factors for influenza and SARI; and c) develop supportive policies for introduction and increased use of seasonal influenza vaccines. As a result of this collaboration, the countries of the Region have made substantial progress to establish and strengthen surveillance systems for SARI. Despite different stages of development and variability in the surveillance systems, the countries have also gained substantial capacity in using the epidemiological surveillance data to better understand the influenza epidemiology in the Region. The contribution of the national influenza centres (NICs) for identification, detection and characterization of seasonal influenza virus have also been well recognized. However, a number of key challenges remain. As the surveillance system for SARI in the countries is sentinel based,

ensuring its sustainability through integrating these sentinel systems within the routine disease surveillance and reporting systems of the countries is the major challenge.

The emergence of novel respiratory virus in the Region in 2012, now called the Middle East respiratory syndrome coronavirus (MERS-CoV), serves a stark reminder that novel respiratory viruses will continue to appear and present risks to national, regional and global health security. The public health threat posed by MERS-CoV, in addition to the ongoing threats from the avian influenza A (H5N1) in the Region, heightens the need to further enhance the surveillance system for SARI. Such a system, when functional, effective and responsive, can early detect, identify and recognize any influenza outbreak or a suspected cluster of severe acute respiratory infection caused by a novel virus. In recognition of this need, the WHO Regional Office for the Eastern Mediterranean organized an intercountry meeting of the Eastern Mediterranean Acute Respiratory Infection Surveillance network at Sharm El Sheikh, Egypt from 24 to 27 November 2013. The objectives of the meeting were to:

- review and evaluate the influenza/SARI surveillance programme in the Region;
- offer a forum for sharing epidemiological and virological data on influenza activities in the Region;
- support further development of the EMARIS network in the Region for enhancing integration of epidemiological and virological surveillance for influenza and SARI; and
- discuss and prepare a roadmap for strengthening the infection prevention and control programme for acute respiratory diseases.

The meeting participants included national focal points for influenza and SARI surveillance and national influenza centres of the ministries of health from 18 countries in the Region, experts from WHO collaborating centres and other international health agencies.

## **2. Summary of discussions**

### *2.1 SARI surveillance and use of data*

The surveillance system for SARI collects epidemiological, clinical and virological data from sentinel hospital sites. The current outbreaks of human infections caused by MERS-CoV in many countries in the Region where SARI surveillance is functioning, there has been heightened need to revisit the design of such surveillance system, specially selection of sentinel site for data collection, quality of data collection and the catchment population of these sentinel sites in order to ensure its representativeness and responsiveness. In many countries, surveillance data could not be used to measure disease incidence and other determinants for its transmission in the general population as demographic information and other population data were missing. Selection of sentinel sites in places where population data are known would permit calculation of population-based estimates of disease rates according to age and other demographic variables. Such population-based estimates and other related information on influenza epidemiology may provide sufficient evidence that appropriate control strategies need to be developed and embedded in a public health programme for influenza. It is also important that high quality surveillance data are collected through such a system for measurement of disease incidence and severity as this may help in assessing or measuring the severity or potential impact of influenza during the early stage of an emerging pandemic. Apart from the problem related

to catchment population of sentinel sites for influenza and SARI surveillance, other issues that need to be addressed to improve the quality of the system include lack of collaboration between the clinicians and public health workforce, lack of standardization of surveillance data elements that do not allow comparison across countries, absence of thresholds to measure severity, and absence of a unified system in the Region for data entry and data sharing platforms.

A good and representative sentinel surveillance system also has a value in establishing the necessary infrastructure or platform for an early warning system of disease outbreaks caused by a novel influenza or respiratory viruses. Such a system can also provide a platform for better understanding of the epidemiology of acute respiratory infections caused by the commonly circulating respiratory pathogens. Even though, such sentinel systems are not population-based and are meant only to produce high quality epidemiological, clinical and virological data on SARI, such systems need to be integrated within the routine surveillance programme or reporting system of a country. The recent threat from MERS-CoV has also highlighted the need for strengthening epidemiological and laboratory surveillance, detection and response capacities in countries for SARI to better prepare them for any novel respiratory viruses. This will eventually help the Region to be better prepared, collectively, for prevention, control, detection and appropriate response to influenza epidemic and other epidemic-prone acute respiratory infections. Owing to the special situation in the Region such as the ongoing threats from avian influenza A (H5N1), whose pandemic potential still exists, the complex and humanitarian emergencies confronted by many countries and the annual mass gatherings events such as pilgrimages, it is prudent that the capacity of countries for early detection and response to any new and emerging respiratory pathogen is enhanced for the sake of public



health security in the Region. Otherwise these situations may provide an opportunity for rapid international spread of new and emerging respiratory pathogens.

## *2.2 Laboratory strengthening for influenza and SARI surveillance*

The laboratory component of SARI surveillance system in most countries in the Region is very weakly integrated with the epidemiological component of the system. One of the major limitations of the functions of the NICs is that laboratory specimens are collected from suspected influenza or hospitalized SARI cases for the purpose of detecting influenza types and sub-types for vaccine strain selection only. These laboratory data are not embedded or incorporated into other surveillance data elements-epidemiological and demographic data for analysis or reporting purpose. This limits the system not only to calculate or estimate influenza disease incidence, severity and risk factors, but such system does not always allow description of epidemiological features or characteristics of the disease caused by different types of influenza viruses.

As the NICs are also not testing other circulating respiratory viruses routinely, these laboratories lack the capacity to detect any novel respiratory viruses. This also limits the sentinel surveillance system of SARI to measure the burden of acute respiratory infections among different population age groups. Non-availability or short supply of primers and reagents, lack of cross-sectoral collaboration and communication between the laboratory and epidemiological surveillance staff and the clinicians working in the hospital are other factors limiting the optimal use of NICs for enhanced capacity of the countries for detection and response to novel influenza and respiratory viruses.

### *2.3 MERS-CoV and health facility preparedness*

The emergence of MERS-CoV infections have once again highlighted the importance of health facilities preparedness for acute respiratory infections in order to prevent exacerbation and amplification of nosocomial infections. Strengthening of infection prevention and control measures as part of health facility preparedness may play a major role in preventing amplification of nosocomial outbreaks from acute respiratory infection in health-care settings. Absence of an infection prevention and control (IPC) infrastructure in the health care settings as an integral part of national IPC programmes, lack of compliance of health care workers with standard precautions and lack of capacity to conduct an effective risk assessment are some of the determinants for nosocomial transmission of acute respiratory infections that are associated with health care. The experience from the reported nosocomial transmission of MERS-CoV in some countries in the Region has underscored the urgency of the need for organization and implementation of infection prevention and control programmes in health care in coherence with other public health services and interventions. Infection prevention and control are also among the core capacities required for implementation of IHR (2005) by the Member States.

### *2.4 Future directions*

Despite the fact that acute respiratory infection is the second leading causes of global illness, currently no strategy exists to reduce its burden and control its impact. Apart from causing high morbidity and mortality, the experiences with SARS and MERS-CoV have highlighted the risk that acute respiratory infections caused by a novel respiratory pathogen may also trigger a global emergency and cause

significant challenges to global health. As these novel infections are mostly of animal origin, their emergence remain unpredictable and they can spread rapidly across the globe, causing high fatalities in the most productive age groups. As these novel respiratory viruses clearly present a danger to health security if not contained at their source, identifying, predicting and containing the threats and risks of acute respiratory infections of potential concern require a strategic, coordinated and systematic approach for control and prevention. A strategic framework for control of such emerging, new and unknown respiratory pathogens is required for protecting regional and global health security.

The meeting concluded with a call for improving the quality of influenza and SARI surveillance in the Region in a way that population-based estimates of influenza disease incidence and severity of illness can be measured, estimated and compared across countries and across different seasons, and the capacities of countries are enhanced systematically to effectively identify, detect, prevent and respond to any influenza epidemic or acute respiratory diseases of novel origin.

### **3. Recommendations**

#### *To Member States*

1. Establish or strengthen a functional surveillance system for influenza-like illness (ILI) and SARI by:
  - integrating the epidemiological and laboratory surveillance component and bridging between the sentinel system for influenza and SARI surveillance and the national routine surveillance system for greater sustainability;

- using the ILI/SARI surveillance data to estimate disease burden associated with influenza in order to better understand the seasonality and epidemiology of influenza in the Region that can guide effective strategy for prevention and control of influenza;
  - linking the surveillance system to a programme for influenza prevention and control with defined goal, objectives and targets;
  - sharing of epidemiological data on influenza globally and regionally in the existing electronic platform (example FluID);
  - making sure that in the event of emergence of novel respiratory pathogen causing severe acute respiratory illnesses, the sentinel-based surveillance system is flexible and rapidly scalable to include other important sites (i.e. intensive care units) in order to collect data from more severely hospitalized patients. In addition, the surveillance system for SARI should serve as a platform for early warning system rapid detection and identification of cases or cluster of cases of unknown illness that may have been caused by any novel respiratory pathogen.
2. Strengthen the functions of the current NICs in a way that in addition to performing their designated role in sharing influenza viruses for vaccine strain selection, the NICs can effectively participate in the laboratory surveillance for SARI by use of molecular diagnostic test and develop the capability to detect influenza caused by a new subtype or a novel respiratory virus.
  3. Ensure NICs regularly share influenza virological surveillance data regionally and globally with the existing electronic platforms such as FluID and FluNet for better understanding of the circulating influenza viruses in the Region.

4. Strengthen and re-activate the non-functioning NICs.
5. For countries currently affected by MERS-CoV infections and other novel respiratory viruses, consider implementing or participating in multi-country studies (i.e. sero-epidemiological surveys, case-control studies) for which protocols are available in order to improve the current knowledge on source of infection and exposure risk.
6. Review and assess the preparedness of health facilities for any novel respiratory infections through conducting a comprehensive risk assessment using the tools recently developed by WHO.
7. Strengthen infection prevention and control measures in health facilities as an integral part of the national programme for infection prevention and control and periodically monitor and evaluate the measures in accordance with the monitoring and evaluation framework.

*To WHO*

8. Develop a strategic framework for control of acute respiratory infection with epidemic and pandemic potential.
  - assist countries in establishing/enhancing surveillance system for ILI/SARI as the platform for using the data for developing programme for prevention and control of influenza and other acute respiratory infections of epidemic potentials;
  - assist countries in periodic assessment of its surveillance system for ILI/SARI to make it more representative and to monitor progress using some standardized tools;
  - provide support and forge collaboration with other international partners and technical networks in the region to strengthen prevention and control programme for influenza and other acute respiratory infections with epidemic potentials;

- provide advocacy and assist in gaining political support through presenting the strategic framework for ARI and getting endorsement in the Regional Committee.
9. Revise and update the terms of reference of the NICs. The centres should be reviewed every 2 to 3 years and a process of re-designation should be initiated to ensure their competency, sustainability and commitment to support in the national ILI/SARI surveillance system.
  10. Map regional resources to identify and designate at least a regional reference laboratory for acute respiratory infection among the existing NICs in order to assist Member States in detection of novel respiratory viruses as well as with advanced training, investigation, developing standard operating procedures and launching external quality assurance programmes.
  11. Assist countries in establishing and strengthening the national programme for infection prevention and control to promote appropriate IPC measures in health facilities for prevention of nosocomial transmission of acute respiratory infections caused by a novel virus.
  12. Convene a meeting with international health partners and interested countries affected by MERS-CoV infections to provide guidance on investigations (multinational case-control study, sero-epidemiological study, etc) for MERS-CoV and other respiratory diseases.



World Health Organization  
Regional Office for the Eastern Mediterranean  
P.O. Box 7608, Nasr City 11371  
Cairo, Egypt  
[www.emro.who.int](http://www.emro.who.int)