

Report on the

**Intercountry meeting on regional tools for
estimating the burden of influenza in the
Eastern Mediterranean Region**

Marrakech, Morocco
27–29 August 2012

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1. INTRODUCTION

The WHO Regional Office for the Eastern Mediterranean organized an intercountry meeting on regional tools for estimating the burden of influenza in the Eastern Mediterranean Region during the period 27–29 August 2012 in Marrakesh, Morocco. The meeting was held in follow-up to a recommendation of a previous consultative meeting on developing tools for estimating the burden of influenza in the Region, held during 15–17 May 2012 in Cairo, Egypt.

The purpose of the meeting was to build consensus among the Member States on the importance of establishing a national influenza programme. Introducing the influenza burden estimation tool for generating scientific evidence on the extent and burden of seasonal influenza and using the evidence for setting national policies were the major focus of the meeting. Specific objectives of the meeting were to:

- present the Regional Influenza Burden estimation Tool (IBET) to the national influenza Focal Points and Directors of Communicable Disease Control Departments (CDC) in the Region;
- discuss methods for using the tool and interpreting the data; and
- discuss the methods for translating the burden of influenza into policies (evidence for policy)

Participating in the meeting were 43 national influenza focal points, directors of communicable disease control in the Region and selected epidemiologists from outside the ministries of health of 17 countries of the Region. Also in attendance were WHO staff from selected country offices, the Regional Office and headquarters, experts from the United States Centers for Disease Control and Prevention (CDC) and the U.S. Naval Medical Research Unit no. 3 (NAMRU-3) along with WHO Temporary Advisers from academia and ministries of health of Pakistan, Sudan and United Kingdom.

2. OVERVIEW OF INFLUENZA SURVEILLIANCE

2.1 WHO approach to influenza surveillance

Dr Anthony Mounts, WHO headquarters

Seasonal influenza and pandemic influenza preparedness are interrelated. Actions addressing seasonal influenza will synergistically help with pandemic influenza preparedness, and vice-versa.

Influenza surveillance can be categorized into two types of activities. Early warning surveillance is surveillance for unusual events that require immediate response while routine or indicator-based surveillance is designed to collect baseline information on epidemiology of disease and type of the virus circulating. Although the specific types of activity involved in each are different, they are closely related and complementary.

The most appropriate approach to routine national influenza surveillance is the establishment of a sentinel system. A few carefully selected, representative sentinel sites can provide useful baseline information about influenza. It is not necessary to have large amounts of data from a nationwide system and in fact, such data are often unreliable and difficult to interpret. A sentinel system will also provide infrastructure and baseline data that will be used in an early warning system for a pandemic

In severe acute respiratory infection (SARI) sentinel surveillance, the primary focus is on hospitalized cases as they represent the severe end of the disease spectrum and result in the greatest burden on health care systems. SARI sentinel surveillance provides country specific information on persons at risk for severe disease and because it is generally conducted in a controlled environment, in hospitals, allows higher quality data collection. When combined with data collected from surveillance systems for influenza-like illnesses (ILI), it provides the full picture of influenza disease from mild to severe cases.

The basic influenza surveillance strategy of WHO is year-round sentinel data collection particularly in tropical resource-limited countries. In temperate countries where the seasonality of influenza is well understood, routine surveillance data collection could be limited to the season although event-based surveillance, which monitors for outbreaks, should go on year-round. Simple clear case definitions and defining the minimum data set to capture data on influenza cases as well as other co-morbidities are essential elements of the system.

The concepts of thresholds and baselines along with existing gap in knowledge on influenza severity, current situation of influenza surveillance information reporting on FluID (the influenza integrated database) were discussed. Defining the usual baseline activity of influenza in a country is a critical step in subsequent estimation of severity and impact of unusual seasons, outbreaks, or future pandemics.

2.2 Influenza surveillance in the Region: strengths and gaps

Dr Mamunur Rahman Malik, WHO Regional Office for the Eastern Mediterranean

Countries of the Region are classified into three categories based on the influenza surveillance systems: those that are conducting surveillance for SARI; those that are conducting surveillance for ILI, and those reporting on acute respiratory infections (including through early warning system for disease outbreaks). The features of influenza surveillance in the Region can be described as predominantly passive and disintegrated from the routine disease surveillance system, with different reported denominators, reporting with no linkage to the thresholds, and limited transparency. There are 16 existing national influenza centres (NICs), some of which are nonfunctional at present which weakens the virological surveillance of influenza. Challenges to influenza surveillance include influenza not being a reportable health condition in most countries, under-utilization of generated information, inadequate and timely transparency and the large number of internally displaced populations and refugees.

2.3 The EMARIS network: overview and future development

Dr Bill Olander, Naval Medical Research Unit No.3

The Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) is a network of country-based surveillance programs, developed for comprehensive surveillance and understanding of respiratory infection in the Eastern Mediterranean Region. The Global Disease Detection and Response Program at NAMRU-3 in Cairo, Egypt, supports countries in the EMARIS network by building laboratory and epidemiological capacity in SARI sentinel surveillance using a standardized approach.

Currently, NAMRU-3 is working with EMARIS partners in quality assurance/quality control testing of influenza samples, monitoring and evaluation of surveillance and implementation of the new EMARIS case form and data entry database. The new EMARIS case form uses the WHO's case definition for SARI. It also contains the entire "essential" and "desirable" data listed in the WHO manual for estimating the burden of influenza with the exception of mid-year population of the catchment area for the sentinel site and the crude birth rate.

Future plans for the EMARIS network include activities in several areas. Currently, a web-based database which will be capable of generating real-time surveillance reports is being developed. NAMRU-3 will continue to provide support to capacity-building through data management and epidemiological analysis training, scientific writing training and through continued laboratory training. As appropriate and feasible, NAMRU-3 can work with country partners to develop special and in-depth studies including sequencing of influenza virus samples, retrospective laboratory studies on banked specimens and health utilization surveys.

While the nature of assistance and collaboration depends status of each countries surveillance system and the availability of resources, NAMRU-3 welcomes countries interested joining the EMARIS network. Relevant to this conference, NAMRU-3 has the potential to support countries in using the data for estimating the burden of influenza or assisting countries in setting up the surveillance systems and data collection activities to generate this data.

2.4 Influenza disease burden rationale

Dr Anthony Mounts, WHO headquarters

Respiratory disease is the second most common cause of death in low-income countries, accounting for 2.86 million deaths per year, or 10% of all deaths. Influenza virological surveillance has been conducted globally for >50 years. Information from the system has been used to identify dominant virus strains, choose vaccine strains, detect novel influenza viruses, and define influenza seasonality. However, historically surveillance has been primarily virological and has not provided information about the health and economic impact of influenza or risk factors for severe disease. The current strategy for influenza surveillance involves sentinel site SARI surveillance and includes both epidemiological and

virological data collection. This strategy, when combined with ILI epidemiological data, gives a picture of a broad spectrum of disease and provides data that can be used to estimate the fraction of influenza disease burden which is related to severe disease.

Influenza's impact or burden is difficult to measure directly for a variety of reasons. Much of the serious health impact of influenza results from development of secondary complications such as pneumonia, heart failure, exacerbation of underlying illness, etc. At the same time, only a fraction of diseases such of these disease syndromes are related to influenza. To get around this problem, a number of modelling approaches have been developed to estimate influenza mortality. These typically involve choosing a biologically appropriate group of diseases to monitor or study, such as "pneumonia and influenza" (ICD-9480–487) or "all-cause" mortality and making a statistical comparison between disease rates when influenza viruses are in circulation to periods when influenza viruses are not circulating. However, the data for these modelling approaches are often not available in lower resourced countries as they require registration of deaths along with cause of death. In addition, the models were developed for temperate areas of the world with distinct seasonality and may not be applicable in countries where seasonality is not distinct or where there are multiple annual epidemics and year-round transmission. Finally, the impact of other factors such as malnutrition, other infections, weather, and lack of adequate medical care is unknown. To deal with these limitations, WHO has developed a tool to extrapolate data from sentinel SARI sites to produce national estimates of influenza-associated hospitalization. These estimates have the advantage of being based on direct observation, rather than modeling, making them more intuitive. By focusing on hospitalizations rather than deaths they also demonstrate the impact of influenza on health care systems and allow an analysis of the cost/benefit ratio of intervention strategies such as vaccination. These estimates will allow decision-makers to put influenza in context by allowing a direct comparison to other disease causing agents in the country and answer some of the crucial questions around the interaction of influenza transmission and country-specific characteristics such as climate, social practices and the prevalence of chronic illness.

2.5 Overview of the WHO manual for estimating disease burden associated with seasonal influenza in a population

Dr Harish Nair, WHO Temporary Adviser

In response to the need for reliable disease burden estimates especially from low and middle income countries to provide a better understanding of the impact of influenza in their countries WHO has developed a manual for estimation of burden of disease associated with seasonal influenza in a population. The manual is currently in its final shape and at the end stages of editing.

The manual outlines the standardized tools for influenza disease burden estimation in WHO member states. It is targeted at epidemiologists and data analysts with basic epidemiological training who should work as a team responsible for data analysis and interpretation at the influenza sentinel surveillance sites and the national surveillance office or Ministry of Health. Though this manual is for all WHO Member States, it has been

developed with a focus on low-income and middle-income countries. The manual needs to be used in adjunction to the WHO Interim Global Epidemiological Surveillance Standards for Influenza.

The manual is limited to estimating the disease burden associated with the respiratory manifestations of influenza (i.e. ILI and SARI or hospitalized severe acute lower respiratory infections). Its focus is on estimating the burden from severe disease presenting to a health facility.

The manual is structured in six parts. As countries of the Region will be using the SARI surveillance data three parts of the manual will apply: Part I preparation of data related to disease burden estimation; Part II on SARI sentinel surveillance data; and Part VI on interpretation and communication of key findings. If countries opt to estimate the burden of influenza at the national level they should also use Part V.

A spread sheet model has also been developed to help the users in routine influenza disease burden estimation.

2.6 Estimating incidence and mortality: using the 2009 pandemic as an example

Dr Maria D Van Kerkhove, WHO Temporary Adviser

At the start of the 2009 influenza H1N1 pandemic, Member States were initially reporting all laboratory-confirmed cases and deaths to WHO. Within 1–2 months, however, early affected countries were overwhelmed with the demand for testing and lower resourced countries were never able to test a significant portion of cases. As a result, in June 2009, WHO issued new guidance asking that testing be limited to fatal and severe cases with continued reporting of fatal cases. As a result, the reported number of deaths (~18 800) does not represent, or even approach, reality. This has resulted in quite a bit of confusion among the public and even well-informed members of the press.

WHO initiated a project with the overall aim to estimate the global burden related to the 2009 influenza pandemic and ultimately, seasonal influenza. This actually includes several projects with different objectives (below).

- Estimate H1N1pdm mortality during the first year of the pandemic for which there are two teams working in parallel, CDC and the Netherlands Institute for Health Services Research (NIVEL)
- Pooled estimate of cumulative incidence of H1N1pdm using serologic data from all available countries
- Economic impact analysis
- Long range plan to produce similar data on season influenza to place pandemic into context.

The first global estimates of mortality during the first year of the 2009 H1N1 pandemic have been published by CDC (reference Dawood et al. *Lancet* 2012) and the NIVEL estimates are expected by the end of the year.

2.8 Group work: influenza surveillance and reporting

The participating countries were divided into two groups. They discussed the following questions and reported back in the plenary session.

- Do you have influenza surveillance systems in your countries? If yes, what types?
- When these systems established?
- How do you use the surveillance data?
- Are you connected globally? Are you sharing these data with others?

The presentations by the groups in the plenary session confirmed the following:

- Countries of the Region are at different levels of influenza surveillance development, from none or event-based surveillance to well established ILI/SARI surveillance.
- The majority of existing surveillance systems for influenza have been established after the avian influenza threat.
- None of the countries has used influenza surveillance data for estimation of burden of disease associated with influenza. The main use of influenza surveillance data has been discovering the pandemics. This has resulted in overlooking the seasonal influenza in the countries in a sense that it is not considered as a public health problem.
- The influenza surveillance data have not been used for initiating any well organized influenza programme in the Region.
- The majority of reporting countries share their surveillance data with WHO through FluID and FluNet; however, some countries are sharing influenza surveillance data with their partners and not WHO. Countries were encouraged to share influenza surveillance data with WHO as their contribution to the global health.
- The countries requested the Regional Office to standardize the regular routine information that is required to be reported.

3. ESTIMATING INFLUENZA BURDEN: METHODS AND TOOLS

3.1 Influenza burden estimation: methods and tools

Dr Harish Nair, WHO Temporary Adviser

The influenza burden of disease manual was presented in detail, along with the electronic tool for the disease burden estimation which is intended to be used as an adjunct to the manual. There are different data requirements for disease burden estimation, including essential and desirable data, depending on the analysis to be done.

It is important to assess the data for quality and relevance before undertaking any formal disease burden estimation. The catchment population for a sentinel surveillance site can be estimated using the administrative method (hospital admission survey).

Users first need to familiarize themselves with the burden of disease manual before launching into the electronic tool. Instructional videos for using the electronic tool are available on YouTube at the following URLs.

- Introduction: http://www.youtube.com/watch?v=Kqt9zy_UJro&feature=youtu.be
- SARI sentinel site: <http://www.youtube.com/watch?v=k3d9FrSCQ1k&feature=youtu.be>
- Laboratory data and seasonality:
<http://www.youtube.com/watch?v=Opb2gZiukdQ&feature=youtu.be>
- Import data: http://www.youtube.com/watch?v=PWnrKR38_978&feature=youtu.be

3.2 Role of epidemiologists in estimation of influenza burden of disease

Dr Rana Jawad Asghar, WHO Temporary Adviser

The process of epidemiological data collection has been transformed from simple death and birth number collection to very comprehensive data collection involving multiple resources (many outside health sector) for better understanding of public health challenges of the area.

The newly described concepts of “health situation awareness” and “public health grid” help show that the process is more complex and requires properly qualified and experienced epidemiologists in order to decipher all information resources pouring in stream of data.

Field epidemiologists are required to do these estimations. It is very important to reiterate this because with the availability of high end computers and software, decision-makers sometimes forget that the critical person in this whole process is an epidemiologist who can make sense of “imperfect data” and provide logical conclusions for decision-makers.

3.3 Overview of available sentinel SARI surveillance information in the Region

Dr Ali R. Mafi, WHO Regional Office for the Eastern Mediterranean

During a consultative meeting in May 2012 in Cairo, Egypt, the Regional Office adopted the tool for estimation of burden of disease associated with seasonal influenza using the SARI sentinel surveillance information. The estimation demands availability of a set of essential data on total number of new SARI cases admitted to the sentinel site (by month), total number of SARI cases in whom clinical samples were collected for virological diagnosis and number of new SARI cases positive for influenza (by month).

An online checklist was developed and sent to all 23 countries of the Region to study the availability of appropriate data for estimation of influenza burden of disease. The checklist was structured in 4 groups of questions to answer the following.

- Is influenza surveillance conducted throughout the entire year?
- Is the seasonality of influenza known and accepted?
- Are the cases representatives of the catchment population?
- Has laboratory confirmation of influenza been conducted in at least a proportion of the cases?

Ten countries participated in the survey (response rate=43.5%), of which four countries informed availability of SARI sentinel surveillance data for over 3 years. 20 sites reported recognized seasonality of influenza in their area. All sentinel sites reported ability of estimating the catchment population of the hospitals. 21 out of 24 reported sites (87.5%) had access to national influenza centres or other virology laboratories, however only 10 sites reported conducting laboratory confirmation for influenza in at least a proportion of the SARI cases referred to their hospital. The proportion of SARI cases from whom clinical specimens were collected varied, from none of the cases (3 sites) to 100% (12 sites). 18 sites (75%) had employed systematic sampling and only 8 sites (33%) had adjusted for missing data.

The study has shown great diversity in availability and quality of existing data and portrays the extent of the work required for preparation of data at the country level for estimation of influenza burden of disease.

3.4 Group work: implementation of influenza burden of disease tool

Participating countries were divided into two groups based on their responses to the survey and availability of SARI sentinel surveillance data. The group of countries with SARI surveillance data available discussed the steps that should be taken for estimation of influenza burden of disease in their countries. The second group discussed the steps to be taken for improving the influenza surveillance with a focus on SARI surveillance in their countries. Both groups devised a plan with timeline and required support for implementation of the plans.

Both groups emphasized the importance of establishing political will in their countries. The participants requested a communication from the WHO Regional Director addressed to the ministers of health on the importance of estimation of influenza burden of disease and requesting their political commitment and support. The subject also requires mention in the next session of the WHO Regional Committee for the Eastern Mediterranean. This will sensitize the ministers of health on the importance of the issue. The countries were advised to start matching available surveillance data with the requirements of the tool. The details of the plans will be developed in due course and will be shared with countries.

3.5 Regional implementation mechanisms

The secretariat convened separately on Day 3 to discuss mechanisms for ensuring swift implementation of the influenza burden of disease estimation project. The meeting proposed establishment of a Regional Oversight Committee and a roster of experts, who are epidemiologists, who know the burden of disease manual and can be a source of technical support to Member States when required. The detailed terms of reference and list of the members for both groups will be prepared for approval.

4. GENERAL ISSUES IN PROGRAMMING

4.1 Considerations for development of influenza programme

Dr Zuhair Hallaj, WHO Temporary Adviser

All countries have their own competing priorities and will not be able to establish programmes for everything. Estimates of burden of disease associated with influenza from other parts of the world has shown that influenza is a public health problem and they have established influenza programmes in the countries accordingly; however, due to lack of evidence on the burden of influenza in the Region the decision-makers are yet to be convinced for establishing influenza programmes.

Definition of a programme in its simplest form is “a systematic approach using proven public health interventions to achieve set *targets* in the control of a public health problem”.

The *systematic approach* means identifying what must be done, when to be done, who is going to do it and what resources are required for the work to be done. Strategic approaches for intervention in communicable diseases are composed of three major elements.

- Case management: while developing a programme for a specific disease the treatment of cases, isolation of the diseased or eradication of non-human cases should be taken into account. In planning for case management one should take into consideration early diagnosis and values of screening, proper treatment, preventing premature death, promoting quality of life and preventing disability.
- Environmental interventions: available public health interventions related to the environment include water sanitation, waste disposal, vector control, healthy dwellings and clean air.
- Increasing the defenses of the healthy: including personal hygiene, non-specific defenses, immunization (passive or active) and chemoprophylaxis.

During planning a public health programme one should decide on the priority interventions to implement. In this process evidence-based values, cost effectiveness of the intervention, equitable access, acceptability and feasibility as well as availability of resources play the main role.

The next step would be setting the *targets* for the programme. Generally a target is a time-bound desired level of improvement. Target-setting indicates areas of high priority and help to define agreed action. It focuses the attention and resources on achieving the target, motivates the staff and provides a way to involve the community.

There are two types of targets: reduction (impact) target and process (operational – performance) target. To set the targets, a clear definition of the present situation and its epidemiological features along with clear definition of the desirable outcome and the measures to express it are required. Identification of interventions for achieving the targets,

challenges, interim or intermediate targets, indicators of monitoring and evaluating the process and time span are among others.

4.2 Group work: influenza programmes – an option or a must?

In breakout sessions, three groups of countries discussed the main topic and three following questions:

- Influenza programme: an option or a must?
- What is the added value of the programme?
- What are the challenges for establishment of the programme and solutions

In their discussions, groups considered the interventions that are available in the countries, the interventions that have been used in the country and the assistance they would require for establishing an influenza programme in their countries.

- Most countries referred to the lack of current evidence available on the burden of disease associated with seasonal influenza; however, the general feeling was that an influenza programme is required. Strengthening the influenza surveillance system is crucial in that surveillance data feed into generating the evidence for decision-making as well.
- Minimizing the impact of influenza in a population, preparedness, timely detection of novel/pandemic viruses, stimulation of research, increasing community awareness and responding to International Health Regulations obligations were the added values.
- Available interventions differ from country to country; however, influenza surveillance (epidemiological and laboratory), case management and preventive measures (chemoprophylaxis and vaccination of identified high risk groups), communication strategy and imperfect vaccination policies are currently available in countries at different levels of development. These interventions have not been implemented in a systematic way.
- Countries referred to availability of resources and vaccines, political commitment, insufficient public awareness, lack of evidence that influenza is a public health problem, involvement of stakeholders, acceptability of influenza vaccination, functional surveillance system and access to target population as their main challenges.
- Countries need assistance from WHO in developing their technical capacities and advocacy.

4.3 CDC international flu programme: objectives and role of cooperative agreements

Dr Margaret McCarron, U.S. Centers for Disease Control and Prevention

Begun in 2004, the CDC international flu programme was a reaction to avian influenza pandemic threat. Since then the programme has evolved and continues to evolve towards more global vision about understanding, control and preventing influenza illness and its mortality.

The first phase of cooperative agreements during the period 2004–2008 was aimed to help the countries with H5N1 activity with the primary goal of enhancing global efforts to detect and respond to cases/outbreaks of avian, novel and pandemic influenza. Enhancement of laboratories (national influenza centres), strengthening surveillance and response teams as well as setting relevant programmes were among areas of collaboration.

The second phase (2010–2015) is mainly focused on reducing the threat of pandemics and reducing the burden of influenza with three main objectives:

- Reducing the threat of future pandemics through rapid detection, accurate confirmation and effective response to novel influenza viruses;
- Establishing estimates of preventable disease burden and make evidenced-based decisions on vaccine introduction;
- Increasing vaccine production and introduction to advance seasonal and pandemic prevention of influenza.

Accomplishing these goals depends on the partnering with all players in the field. This requires alignment of goals, continued capacity development, ensuring availability of sufficient data and making appropriate use of the information. Establishing influenza surveillance and establishing the influenza burden are key issues that need to be considered.

4.4 Group work: public health interventions at the country level

In breakout sessions the participating countries discussed the steps that should be taken for estimation of influenza burden of disease and for improvement of influenza surveillance in their countries along with the timelines and required support. The countries also sketched plans of action for establishment of national influenza programmes in their countries corresponding to the level of their influenza surveillance development. The countries requested WHO support for sensitization of policy-makers in their countries and reiterated the need for assistance in mobilizing resources for implementation of influenza prevention and control activities.

5. RECOMMENDATIONS

To Member States

1. Establish and/or strengthen influenza surveillance systems in general, and SARI surveillance in particular, in accordance with the WHO Global Epidemiological Surveillance Standards for Influenza¹.
2. Start with assessing the quality of their existing influenza surveillance data and make necessary improvements in order to estimate the burden of disease using the standard

¹ Accessible on http://www.who.int/influenza/resources/documents/influenza_surveillance_manual/en/index.html

methods described in the WHO Manual for Estimating Disease Burden Associated with Seasonal Influenza in a Population.

3. Use the outcome of the influenza burden estimates to advocate for informed decision-making regarding establishment and/or evaluation of national influenza programmes.
4. Ensure that national influenza programmes take into consideration actions to be taken during special events, e.g. mass gatherings and large epidemics/pandemics.

To WHO

5. Establish a Regional Oversight Committee for estimation of influenza disease burden with membership of all partners to provide technical support, advocacy and assist Member States in resource mobilization for establishing national influenza programmes.

Annex 1**PROGRAMME****Monday, 27 August 2012**

08:30–09:00	Registration	
09:00–09:45	Opening session	
	Message from Dr Ala Alwan, Regional Director, WHO/EMRO	<i>Dr Malik Mamunur, WHO/EMRO</i>
	Message from H.E. Dr El Hossein El Ouardi, Minister of Health, Morocco	<i>Dr A. Ben Mamoun, Ministry of Health</i>
	Introduction to the meeting	<i>Dr Ali R Mafi</i>
	Introduction of participants	
09:45–10:00	Global overview of influenza surveillance and availability of surveillance information	<i>Dr Anthony Mounts</i>
10:00–10:15	Influenza surveillance in the Region: strengths and gaps	<i>Dr Malik Mamunur</i>
10:15–10:30	Country presentation: influenza surveillance	<i>Morocco</i>
11:00–11:15	SARI network in the Region: present situation and potentials for expansion	<i>Mr William Olander</i>
11:15–11:30	Country presentation: SARI sentinel surveillance	<i>Islamic Republic of Iran</i>
11:30–11:45	Country presentation: ILI surveillance	<i>Egypt</i>
11:45–12:00	Q&A	
12:00–12:15	Influenza disease burden: why burden your programme with more influenza? What do we hope to achieve?	<i>Dr Anthony Mounts</i>
12:15–12:45	Overview of the WHO manual for estimating disease burden associated with seasonal influenza in a population	<i>Dr Harish Nair</i>
12:45–13:00	Estimation of influenza burden: experiences in North America	<i>Dr Margaret McCarron</i>
13:00–13:15	Estimation of influenza burden: experiences in the United Kingdom	<i>Dr Maria Van- Kerkhove</i>
13:15–13:30	Q&A	
14:30–15:30	Group work: influenza surveillance and reporting: an option or a must?	
15:30–16:00	Discussion	<i>Plenary</i>
16:00–17:00	Facilitators' meeting	

Tuesday, 28 August 2012

09:00–09:10	Wrap-up of the first day	
09:10–10:30	Influenza burden estimation: methods and tools The contents Use of SARI sentinel surveillance data: Adopted method for the Region Introduction to electronic tool	<i>Dr Harish Nair</i>
11:00–11:15	Role of epidemiologists in estimation of influenza burden of disease	<i>Dr Rana Jawad Asghar</i>
11:15–11:30	Overview of available sentinel SARI surveillance information in the Region	<i>Dr Ali R Mafi</i>
11:30–13:30	Group work: Category A: implementation of influenza burden of disease estimation tool at the country level Category B: improvement of influenza surveillance in general and SARI surveillance in particular Category C: strengthening influenza surveillance	
14:30–16:00	Plenary discussion Group presentation discussions	
16:00–17:00	Meeting of the Secretariat	

Wednesday, 29 August 2012

09:00–09:10	Wrap up of the second day	
09:10–09:30	Considerations for development of influenza programme	<i>Dr Zuhair Hallaj</i>
09:30–09:45	Country experience: influenza programme	<i>Oman</i>
09:45–10:30	Group work: Do we need an influenza programme?	
11:00–11:45	Discussion	<i>Plenary</i>
11:45–12:30	Group work: Public health interventions at the country level	
12:30–13:00	Discussion: influenza programme	<i>Plenary</i>
13:00–13:15	Partnerships and role of CDC collaborative agreements in development and strengthening influenza programmes	<i>Dr Margaret McCarron</i>
13:45–14:30	Recommendations and way forward	
14:30	Closing session	

Annex 2

LIST OF PARTICIPANTS

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