

Implementation of the

Pandemic Influenza Preparedness Framework

EASTERN MEDITERRANEAN REGION



2018–2019

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ABBREVIATIONS

ARI	acute respiratory infection
BOD	Burden of disease (HLIP II Output 2)
CPHL	central public health laboratory
DEP	Planning for deployment (HLIP II Output 5)
EMARIS	Eastern Mediterranean Acute Respiratory Infection Surveillance
EMR	WHO Eastern Mediterranean Region
EMRO	WHO Regional Office for the Eastern Mediterranean
EQA	external quality assessment
EQAP	WHO External Quality Assessment Project
EWARN	Early Warning Alert and Response Network
GISRS	WHO Global Influenza Surveillance and Response System
HLIP	High-Level Implementation Plan
IHR	International Health Regulations (2005)
ILI	influenza-like-illness
IPC	infection prevention and control
IPPP	Influenza pandemic preparedness planning (HLIP II Output 6)
ISST	Infectious Substances Shipping Training (course)
L&S	Laboratory and surveillance capacity-building (HLIP II Output 1)
MERS	Middle East respiratory syndrome
MERS-CoV	Middle East respiratory syndrome coronavirus
NIC	national influenza centre
NIPPP	national influenza pandemic preparedness plan
PIP	Pandemic Influenza Preparedness
PISA	WHO Pandemic Influenza Severity Assessment (tool)
RCCE	Risk communication and community engagement (HLIP II Output 4)
RCCE	risk communication and community engagement
REG	Regulatory capacity-building (HLIP II Output 3)
RRT	rapid response team
rRT-PCR	real-time reverse transcriptase polymerase chain reaction
RSV	respiratory syncytial virus
SARI	severe acute respiratory infection
US CDC	United States Centers for Disease Control and Prevention
WHOCC	WHO collaborating centre

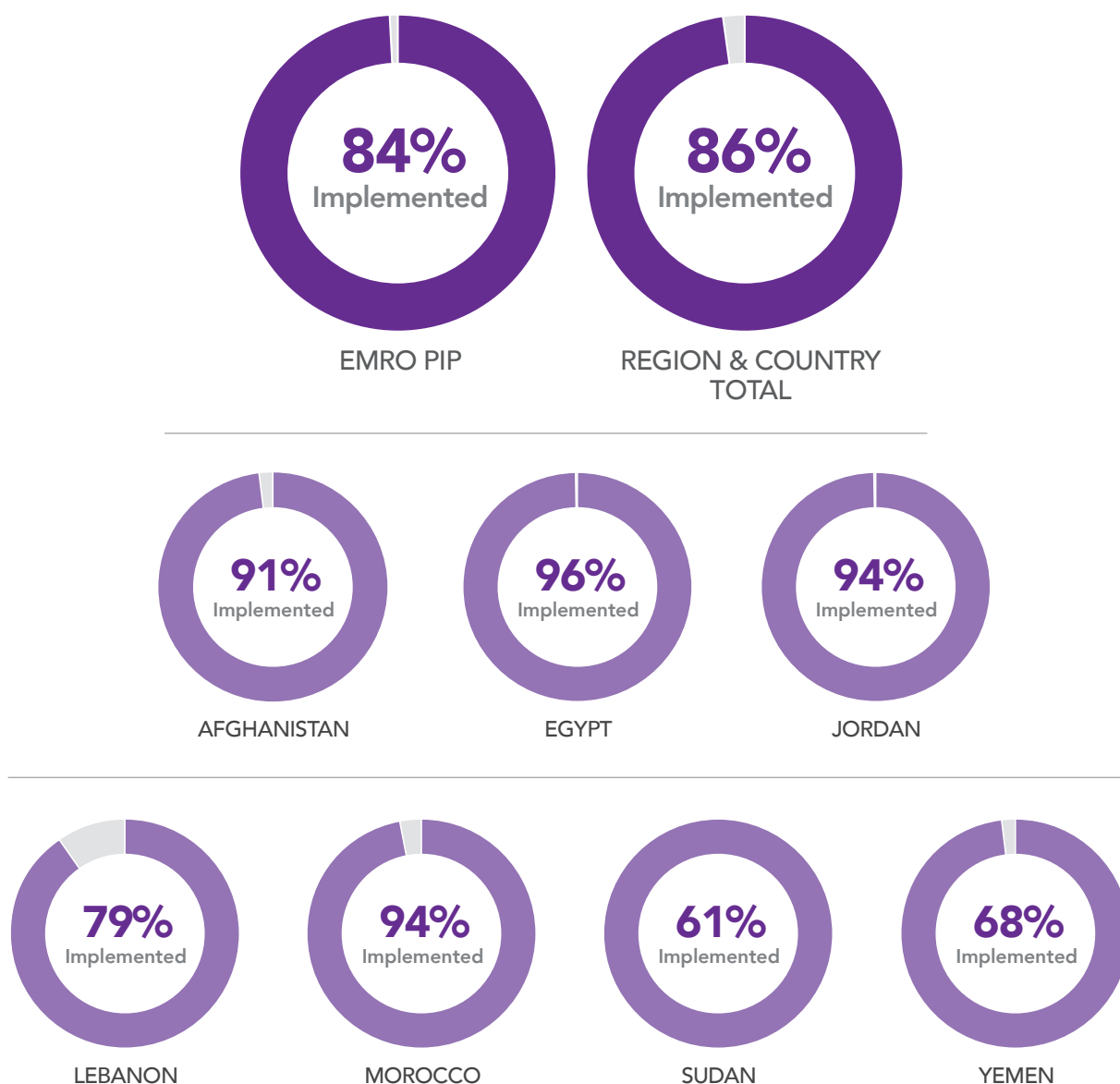
OVERVIEW

PIP Framework funding implementation

The PIP Framework Partnership Contribution funds allocated to the Region in the 2018–2019 biennium were considerably increased compared to the funds allocated in the previous biennium. The PIP Framework Secretariat allocated a total of US\$ 3 758 234 to WHO EMRO and the seven EMR countries (see [Annex 1](#)) in order to implement the activities planned under four of the outputs of HLIP II.

The utilization and implementation of PIP Framework funding in the Region also improved substantially during the 2018–2019 biennium, with 98% of funds utilized overall ([Fig. 1](#)). This level of implementation represented more than US\$ 3.67 million of the total funds.

Fig. 1: Funding implementation status by region and country



INTRODUCTION

Influenza and other respiratory infections represent a major public health problem in the WHO Eastern Mediterranean Region (EMR). However, the burden of influenza and other respiratory infections in some EMR countries remains poorly understood.

Following the 2009 H1N1 influenza pandemic and in light of the continuing threat of highly pathogenic avian influenza, countries in the Region have made a strong political commitment to expanding and strengthening routine influenza surveillance capacity. Having effective and high-quality influenza surveillance systems – encompassing both epidemiological and virological surveillance – will enable countries to better understand influenza disease incidence and severity, identify circulating influenza virus subtypes and quickly assess their pandemic potential, and allow for the implementation of appropriate prevention and control strategies.

In May 2011, the Pandemic Influenza Preparedness (PIP) Framework was adopted by the 64th World Health Assembly – born out of the lessons learnt from previous outbreaks and pandemics. This international Framework provides the foundation for countries, WHO and key partners to collaborate in vital pandemic preparedness and response activities, and allows for the sharing of influenza viruses, access to vaccines and other benefits. The Framework aims to improve global pandemic influenza preparedness and response capacities, including through access to the PIP Benefit Sharing System which is financed by an annual Partnership Contribution to WHO from influenza vaccines, diagnostics and pharmaceuticals manufacturers that use the WHO Global Influenza Surveillance and Response System (GISRS). Since the inception of the PIP Framework, significant progress has been made in building up national and global preparedness for future influenza pandemics, thereby strengthening global health security against emerging infectious diseases. Under the PIP Framework, the WHO Regional Office for the Eastern Mediterranean (EMRO) works with countries in the Region and partners to strengthen respiratory surveillance systems, particularly for seasonal and novel influenza viruses.

Significant headway has been made in increasing pandemic influenza response capacities, sharing influenza viruses with pandemic potential, increasing access to vaccines, and increasing access to necessary supplies for pandemic preparedness and response. Such information is also used to facilitate vaccine development and deployment, which are essential components of global efforts to reduce influenza-related morbidity and mortality.

The first PIP Framework Partnership Contribution High-Level Implementation Plan (HLIP I) was implemented in 72 countries across all six WHO regions and focused on five areas of work: laboratory and surveillance; burden of disease; regulatory capacity-building; risk communication; and planning for deployment of pandemic supplies. Seven EMR countries were chosen to receive Partnership Contribution support to enhance their surveillance and laboratory capacities and a final report on the progress made was published in 2018.¹

To build on the progress made under HLIP I and further guide the investment priorities of the PIP Framework, a second Partnership Contribution High-Level Implementation Plan (HLIP II) for the period 2018–2023 was developed.² HLIP II outlines the following six priority outputs supported by PIP Framework Partnership Contribution funds:

- **Output 1: Laboratory & surveillance capacity-building (L&S)**
- **Output 2: Burden of disease (BOD)**
- **Output 3: Regulatory capacity-building (REG)**
- **Output 4: Risk communication and community engagement (RCCE)**
- **Output 5: Planning for deployment (DEP)**
- **Output 6: Influenza pandemic preparedness planning (IPPP).**

¹ Pandemic Influenza Preparedness Framework: Partnership Contribution High-Level Implementation Plan I. Final Report 2014–2017. Geneva: World Health Organization; 2018 (Document WHO/WHE/IHM/PIP/2018.3; https://www.who.int/influenza/ipp/partnership_contribution/hlipi_final_report/en/, accessed 17 September 2020).



Each of the above outputs is associated with specific deliverables and activities. To monitor the progress made towards achieving these deliverables and completing activities, each output is linked to key indicators or milestones. During the 2018–2019 biennium, WHO EMRO and the seven designated priority countries³ were responsible for the implementation of activities related to the four outputs L&S, BOD, RCCE and IPPP, while the REG and DEP outputs were the responsibility of WHO headquarters in coordination with WHO EMRO. The PIP Framework Partnership Contribution funds allocated to WHO EMRO and the seven participating countries were therefore utilized in the implementation of specific activities related to the four outputs specified above. The current report summarizes the implementation of those activities during the 2018–2019 biennium.

The Region faces a number of considerable challenges in strengthening its pandemic preparedness and response capacities. Notably, political instability, conflict and complex humanitarian emergencies continue to affect several countries in the Region. These events are often associated with forced migration, resulting in significant and sizable communities of refugees and internally displaced people. Such dynamics, along with a lack of resources and other factors, lead to fragile health systems.

Despite such challenges, regional efforts have progressed during the 2018–2019 biennium and, with PIP Framework funding support and through strong partnership with regional governments, significant headway has been made in increasing pandemic influenza response capacities, sharing influenza

viruses with pandemic potential, increasing access to vaccines, and increasing access to necessary supplies for pandemic preparedness and response. Significant enhancement of SARI/ILI surveillance systems has also been made possible through PIP Framework funding. This document is the cumulative report of these activities, and includes summaries of the milestones described in semi-annual updates to the PIP Secretariat, along with reports of other activities in support of the objectives of the PIP Framework programme.

WHO EMRO has prioritized capacity-building in countries to facilitate early detection, data sharing (including virological data) and data analysis in order to enhance regional understanding of the burden of disease, risk factors and transmission dynamics.

² Partnership Contribution (PC) Preparedness High-Level Implementation Plan II 2018–2023. Geneva: World Health Organization; 2019 (Document WHO/WHE/IHM/PIP/2018.1 Rev.1; <https://apps.who.int/iris/bitstream/handle/10665/326292/WHO-WHE-IHM-PIP-2018.1-Rev1-eng.pdf>; accessed 17 September 2020).

³ Afghanistan, Egypt, Jordan, Lebanon, Morocco, Sudan and Yemen.

Laboratory & surveillance

Laboratory capacity and surveillance mechanisms are the cornerstones of pandemic preparedness and response. These vitally important elements allow for the early detection of novel influenza viruses with pandemic potential. Building these capacities prior to a pandemic is crucial, particularly in fragile and under-resourced settings.

L&S output activities aim to ensure that national epidemiological and laboratory surveillance activities contribute to GISRS to support timely risk assessment and response measures. Allocated PIP Framework resources under this output supported the implementation of priority activities to improve influenza laboratory and surveillance system capacities, and to actively contribute to GISRS. Improving such capacities will enhance virus and information sharing, inform risk and severity assessment (including at the human-animal interface) and improve response measures.

The following sections provide an account of the milestones reached in each of the following deliverables of the L&S output of HLIP II:

1

DELIVERABLE A: ROUTINE ASSESSMENT OF RISK AND SEVERITY OF INFLUENZA, INCLUDING AT THE HUMAN-ANIMAL INTERFACE

2

DELIVERABLE B: QUALITY INFLUENZA VIRUS DETECTION CAPACITY IS SUSTAINED

3

DELIVERABLE C: COUNTRIES ARE SUPPORTED TO CONSISTENTLY REPORT INFLUENZA DATA TO GLOBAL PLATFORMS

4

DELIVERABLE D: COUNTRIES ARE SUPPORTED TO SHARE TIMELY REPRESENTATIVE INFLUENZA SAMPLES WITH WHOCCS

Laboratory & surveillance



ROUTINE ASSESSMENT OF RISK AND SEVERITY OF INFLUENZA, INCLUDING AT THE HUMAN-ANIMAL INTERFACE

Pandemic influenza Severity Assessment (PISA) training completed

ACHIEVEMENTS



To help ensure the routine assessment of risk and severity of influenza, including at the human–animal interface, three key milestones were addressed and are reported on below.

The first milestone involved the provision of technical support and training to countries regarding the application of the Pandemic Influenza Severity Assessment (PISA) tool. PISA was developed following the 2009 H1N1 pandemic, during which it became evident that there was a pressing need for a standardized and efficient method of assessing the severity of an influenza pandemic. The PISA framework allows for the examination of both seasonal and pandemic influenza severity in terms of virus transmission, seriousness of disease and impact.

During the 2018–2019 biennium, eight training courses and 21 support activities in relation to PISA were conducted to support priority countries in the Region. Highlights of these activities include the provision of direct technical support to all 21 countries and a regional training workshop on determining influenza baselines for PISA attended by 14 countries. Additional training courses provided to individual countries included a workshop on severity assessment using the PISA framework, and another on the PISA-guided estimation of baselines and thresholds.

WHO EMRO also developed a user-friendly tool to be used by countries to facilitate data sharing and data management including the calculation of baseline, seasonal and epidemic threshold values. Currently, Afghanistan, Egypt, Iran (Islamic Republic of) Iran, Morocco and Oman are sharing PISA results with WHO through the global WHO FluMart platform. WHO EMRO also continued to advocate for and support the regular updating and improving of weekly reporting of PISA indicators by countries in the Region; with many countries now providing the required information via global online WHO platforms.

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HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Crosscutting

WHO EMRO conducted a training workshop on Determining Influenza Baselines and Thresholds for PISA in Tunis, Tunisia, 1–4 October 2018. The objectives of the workshop were to understand the concept of PISA and how surveillance data can be used to assess the severity of influenza, and to build national capacities for calculating influenza baselines and threshold values from surveillance data. One representative from each of the following 15 EMR countries attended: Afghanistan, Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, occupied Palestinian territories (oPt), Qatar, Saudi Arabia and Tunisia. As a result of the training workshop, five new countries took the initiative to estimate their influenza burden, and seven countries calculated their baseline and threshold values.

Afghanistan

In November 2018, Afghanistan became the first EMR country to implement PISA in order to describe the epidemiological situation and assess the severity of an influenza epidemic based on available information. To date, Afghanistan continues to provide timely and regular reports of PISA thresholds and other epidemiological data through the GISRS platform.

Jordan

WHO EMRO conducted a mission to Jordan on 13–15 October 2019 to review the implementation of the PIP Framework with a focus placed on the influenza surveillance system. The review assessed the current national influenza surveillance system, laboratory capacity and estimation of disease burden associated with seasonal influenza in Jordan, as well as the approaches used to define the denominator. An evaluation was conducted that covered the influenza surveillance

system, the national PIP Framework 2020–2021 workplan, collaboration at the human–animal interface, the national pandemic preparedness plan, and the national rapid response mechanism. The evaluation involved visits to one influenza-like-illness (ILI) surveillance site and one severe acute respiratory infection (SARI) surveillance site, as well as to the national influenza centre (NIC). Recommendations on improving the gaps identified were shared with the Ministry of Health, with the WHO Country Office in Jordan providing support for the implementation of these recommendations.

Lebanon

With WHO EMRO support, a mission was conducted in 2018 to provide technical assistance to the epidemiological surveillance unit at the Ministry of Public Health in estimating influenza severity. The mission team and unit staff reviewed all available sources of surveillance data, selected the most suitable indicators and defined the necessary thresholds for estimating influenza severity in the country. The mission also supported the capacity-building efforts of the Ministry of Public Health in relation to the use of the moving epidemic method for setting epidemic thresholds and monitoring indicators. Based on the training provided, the Ministry of Public Health prepared selected suitable indicators in an appropriate format, integrated into the following three PISA indicators:

- transmissibility – based on the weekly counts of reported acute respiratory infection (ARI) cases;
- impact – based on the weekly counts of ARI medical reports received; and
- severity – based on the number of deaths with ARI indicated in the cause of death.

The above three indicators are currently included in a weekly influenza bulletin, published on the Ministry of Public Health website, and are regularly shared with the WHO global PISA platform through FluMart⁴.

⁴ See: <https://www.who.int/influenza/resources/flu/mart/en/>

2018–2019 SUCCESSES

Increased estimation of burden of disease



During the 2018–2019 biennium, WHO EMRO provided technical support to EMR countries in estimating BOD and PISA. Seven countries conducted BOD studies and published the findings and recommendations in peer-reviewed journals. Three countries – Egypt, Iran (Islamic Republic of) and Morocco – published their PISA findings.



Laboratory & surveillance



ROUTINE ASSESSMENT OF RISK AND SEVERITY OF INFLUENZA, INCLUDING AT THE HUMAN-ANIMAL INTERFACE

Outbreak response training completed or operations of surveillance sites assisted

ACHIEVEMENTS



In recent years, WHO EMRO has prioritized and invested in efforts to enhance the capacity of EMR countries to rapidly investigate and respond to potential outbreaks of emerging infectious diseases. The second milestone for the routine assessment of the risk and severity of influenza involves outbreak detection and response training and the provision of assistance in the operations of surveillance sites. Outbreak investigation is a fundamental element of pandemic preparedness and response, and among the core capacities for public health emergency preparedness set out in the 2005 International Health Regulations (IHR, 2005). Rapid investigation allows for early detection and early intervention, thus reducing onward virus transmission and associated morbidity and mortality, through the identification of cases earlier in their clinical course.

During the 2018–2019 biennium, 46 training courses, 10 assessment and investigation visits, and four meetings were conducted, involving a total of 21 EMR countries. The overall focus of the training was on enhancing outbreak investigation response capacity at national and subnational levels. Other topics included enhancement of SARI/ILI surveillance via refresher training directed towards sentinel site focal points, medical staff, paramedics and others. Such refresher training covered but was not limited to active and passive surveillance, case definitions, risk management, community awareness and engagement, and sample collection, storage and transportation.

To support effective responses to outbreaks in general through the enhancing of national outbreak capacities, WHO EMRO also conducted a series of technical missions, as well as coordination conference calls with country, regional, and global team members. These activities focused on the management of outbreaks of high-threat pathogens such as dengue in Pakistan and Yemen; Crimean-Congo haemorrhagic fever in Afghanistan; Middle East respiratory syndrome (MERS) in Oman, Qatar, Saudi Arabia and

the United Arab Emirates; and cholera, diphtheria, Rift Valley fever, dengue, and chikungunya in Sudan. Support was also provided to country outbreak control activities by mobilizing resources, addressing logistical needs and supporting surge deployments. By the end of the biennium, all 22 countries in the Region had trained rapid response teams (RRTs) at the national level ready for deployment, while 15 countries also had trained RRTs at the subnational level. However, maintaining strong RRT capacity at national and subnational levels will also be imperative through ongoing training and mentoring.

WHO EMRO in collaboration with the Field Epidemiology Training Program in Pakistan supported national and subnational RRT training between November and December 2018, with more than 112 rapid response personnel trained. Simulation-based exercise material based on an emerging respiratory disease outbreak model was used during the training. Pakistan is the most populous country in the Region, and has experienced numerous natural and man-made disasters in recent years. The country also experienced multiple disease outbreaks in 2018, including avian influenza in poultry, dengue, chikungunya, extensively drug-resistant typhoid fever and others. Trained national and provincial RRTs played a vital role in conducting timely outbreak investigations and responses.

WHO EMRO also supported and facilitated two RRT training workshops in Saudi Arabia (23–27 July 2018 and 1–5 July 2019) as part of preparedness activities for the Hajj season. Fifty four participants from different regions were trained in the detection of, and response to, emerging respiratory infection clusters and outbreaks, with a specific focus placed on the context of mass gatherings. Trained RRT personnel were deployed to health facilities serving the pilgrims. The Hajj season 2018 and 2019 ended successfully with no major infectious outbreaks reported.

WHO EMRO provided technical support to the Ministry of Health of Libya in conducting two RRT training courses for national and subnational level personnel (12–16 November 2018 and 19–23 November 2018). Seventy four health cadres from different regions were trained in the timely detection of, and effective interventions for, respiratory disease outbreaks. Libya has been experiencing recurring disease outbreaks due to protracted and complex emergencies, and the destruction of health systems.

In addition, WHO EMRO actively supported the global Rapid Response Teams Knowledge Network throughout the 2018–2019 biennium. This included provision of direct technical support to network members, working with partners to update training materials, and participation in meetings and conferences related to outbreak investigations and RRTs. In July 2019, WHO EMRO facilitated a workshop in Tunisia entitled “Rapid Response Teams Knowledge Network: Present and Future”. The aim of this workshop was to lay the foundations of the strategic direction of the Rapid Response Teams Knowledge Network and related RRT training activities during 2019 and 2020.

Many EMR countries continue to be affected by complex humanitarian emergencies and in several countries these are protracted humanitarian crises. WHO EMRO continued to focus on Early Warning Alert and Response Network (EWARN) surveillance systems, which allow for the rapid deployment of RRTs. EWARN systems continued to be maintained in Afghanistan, Iraq, Libya, Somalia, Sudan, the Syrian Arab Republic and Yemen to facilitate the rapid detection, verification and investigation of epidemic-prone diseases. In all countries experiencing complex humanitarian emergencies, the detection of SARI and ILI are prioritized in the EWARN surveillance system.

A workshop was conducted on 21–24 October 2019 to review the EWARN evaluation protocol and to develop performance benchmarks for EWARN in emergencies. Countries shared their experiences and lessons learnt in implementing and evaluating their EWARN systems and contributed towards reviewing the protocol. The workshop was conducted by WHO EMRO in collaboration with the United States Centers for Disease Control and Prevention (US CDC), and included participants from Afghanistan, Djibouti, Libya, Pakistan, Somalia, the Syrian Arab Republic and Yemen. Additional activities included the provision of technical support, including information technology assistance, to Libya, Somalia, Sudan and Yemen to address the challenges facing their EWARN systems. The electronic EWARN system in Yemen was fully upgraded and modernized to address gaps in the performance of the system and generate automatic reports. Technical support was also provided in finalizing the systematic evaluation of the Afghanistan EWARN system to ensure that the system effectively meets its objectives.

By the end of the biennium, the PIP Framework had partnered with every country in the Region in conducting rapid response and outbreak investigation training, thereby markedly improving the preparedness and response capacities of each country. Trained RRT members in PIP Framework priority countries in EMR actively participated in the field investigations and responses to outbreaks of seasonal influenza, avian influenza (H5N8) in poultry and wild birds, and to other infectious disease outbreaks.

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Crosscutting

Several RRT training courses were conducted in 2019 to build national and subnational capacity to respond effectively and efficiently to suspected disease outbreaks. Such training was conducted in Egypt, Iran (Islamic Republic of), Iraq, Kuwait, Oman, Saudi Arabia, Sudan, the Syrian Arab Republic and Yemen.

One training workshop conducted by WHO EMRO in Cairo, Egypt, 22–25 July 2019 involved subregional training for RRTs in the outbreak investigation of MERS and other emerging respiratory disease epidemics and clusters. Twenty nine participants from seven countries (Egypt, Iraq, Kuwait, Oman, Saudi Arabia, Sudan and the Syrian Arab Republic) attended the workshop. Countries were selected based on the national risk of MERS and other emerging respiratory diseases, and the availability of functioning RRTs. To ensure the building of multi-disciplinary RRTs, the workshop included participants from diverse sectors including epidemiology/public health, surveillance, infection prevention and control (IPC), and One Health. The training methodology was based on in-service training and adult learning principles to ensure the active involvement of the participants.



2018-2019 SUCCESSES

Increased rapid response capacities



Based on an assessment of Ebola preparedness capacities in 2014, only three countries in the Region reported having functioning RRTs. WHO engaged with Member States and partners to fill this gap. All 22 countries in the EMR now have national RRT capacities which have been strengthened and operationalised during this biennium. In addition, 58% of countries also enhanced their subnational RRT capacities.

Laboratory & surveillance



ROUTINE ASSESSMENT OF RISK AND SEVERITY OF INFLUENZA, INCLUDING AT THE HUMAN-ANIMAL INTERFACE

Meetings, training courses, workshops, joint investigations or risk assessments conducted to strengthen collaboration at the human-animal interface

ACHIEVEMENTS



In order to establish and enhance routine assessment of the risk and severity of influenza, Milestone 03 of Deliverable A focuses on activities conducted to strengthen collaboration at the human-animal interface.

As a result of PIP Framework support, participants from 10 countries took part in a total of 20 meetings, seven training courses and two risk assessments during the 2018–2019 biennium. These activities represent a robust degree of collaboration between ministries of health, ministries of agriculture, the animal sector and other partners, and exemplify the One Health approach to improving public health outcomes.

One activity highlighted here was an expert meeting on the One Health Framework for Emerging Zoonotic Infections held in 2018, and attended by participants from Egypt, Jordan, Pakistan, Saudi Arabia and the United Arab Emirates. The meeting reviewed the framework in order to improve the efficiency and coordination of the One Health approach among the human health, animal health and environmental sectors, with the goal of improving efforts to prevent or detect emerging zoonotic infections and respond accordingly.

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Egypt

Following the development of the WHO/FAO/OIE Tripartite Zoonoses Guide and associated Joint Risk Assessment Operational Tool, the Ministry of Health of Egypt together with other ministries conducted a One Health Zoonotic Disease Prioritization Workshop in 2019 with the aim of prioritizing the list of potential zoonotic diseases. Additionally, the WHO Tool for Influenza Pandemic Risk Assessment (TIPRA) was used to conduct a timely risk assessment of the pandemic potential of the H5N1 influenza virus in Egypt.

Jordan

In 2018, WHO EMRO supported the Jordanian Ministry of Health in establishing a technical One Health committee. Members of the committee include the Ministry of Health, Ministry of Agriculture, Ministry of Environment, the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE) Veterinary Services, Royal Scientific Society (RSS) and the Hashemite Fund for Development of Jordan Badia. WHO participates in and supports the strengthening of the committee, which now meets regularly to coordinate implementation of the One Health approach in Jordan.

Laboratory & surveillance



QUALITY OF INFLUENZA VIRUS DETECTION CAPACITY IS SUSTAINED

Laboratory training and technical support missions/visits provided to countries

ACHIEVEMENTS



The quality of influenza virus detection capacity was enhanced and sustained through the provision of laboratory training and technical support to countries.

The ultimate goal is to have a functioning NIC or influenza laboratory in each country in the Region that has the capacity to detect and identify seasonal influenza viruses and novel influenza viruses with pandemic potential. PIP Framework funds have significantly contributed to the remarkable progress made in improving regional and national capacities for virological surveillance in the last 2 years. By the end of the 2018–2019 biennium, all seven EMR countries supported through PIP Framework funds had maintained adequate capacity to detect and isolate both seasonal influenza viruses and novel respiratory viruses.

During the biennium, 14 training courses and five technical support missions or visits were conducted as a direct result of PIP Framework support. Training covered a broad range of subjects, including polymerase chain reaction (PCR) testing, virus isolation, viral sequencing, bioinformatics, biosafety and biosecurity. Importantly, seven of the training courses specifically covered real-time reverse transcriptase PCR (rRT-PCR) methodology, thereby reinforcing the fundamental capacity for virus detection and identification.

In collaboration with US CDC, WHO EMRO organized a four-day training workshop in Muscat, Oman from 29 October to 1 November 2018 to enhance the capacities of selected NICs in the Region to conduct advanced influenza testing using rRT-PCR. The workshop was aimed at influenza laboratory experts from selected countries in which such capacities are currently limited and need to be enhanced and maintained. One participant from each of the following 13 countries took part: Afghanistan, Bahrain, Djibouti, Iraq, Kuwait, Lebanon, Libya, occupied Palestinian territories (oPt), Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates and Yemen. Training focused on developing knowledge and skills in basic

and advanced laboratory techniques using RT-PCR applications as the primary testing method for influenza virus detection and subtyping. Using US CDC influenza virus panels, participants gained hands-on experience of influenza virus detection and subtyping, including influenza virus characterization using a standard testing protocol. Knowledge was also acquired of standardized influenza testing approaches that best fit with laboratory testing flows, surveillance needs and the judicious use of US CDC diagnostic panels. Skills were also gained in the interpretation of test results, troubleshooting RT-PCR assay issues and platform-specific data analysis. As a follow-up activity to evaluate their resulting performance levels, all of the laboratories committed to participate in the 2019 US CDC Influenza Molecular Quality Assessment Panel.

In October 2019, a subregional training workshop was jointly facilitated by experts from US CDC and WHO EMRO in Muscat, Oman. The purpose of the workshop was to build and enhance the capacity of NICs in the Region to conduct influenza virus sequencing and molecular phylogenetic analyses, identify and interpret influenza virus sequence mutations, and upload the results to public databases such as GISAID. The workshop was attended by laboratory managers and technicians from 11 countries of the Region – Bahrain, Egypt, Iran (Islamic Republic of), Lebanon, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates.

WHO EMRO also organized a two-day meeting for the directors of NICs and other national influenza laboratories in Casablanca, Morocco on 16–17 November 2019. The meeting was held to bring together NIC directors from the Region with representatives from the WHO collaborating centres (WHOCs) and other experts to discuss issues, challenges and solutions related to the laboratory surveillance of both seasonal influenza viruses and avian and other influenza viruses with pandemic potential. The meeting was attended by directors of NICs and other national laboratories from all 22 countries of

the Region. During the meeting, the status of functioning NICs was reviewed, and support provided to strengthen collaboration and information-sharing among countries. The meeting served as a forum for identifying current needs, creating solutions and sharing best practices for strengthening and maintaining regional laboratory capacity for the detection of influenza viruses.

WHO EMRO further organized a visit by two laboratory technicians from Djibouti to the NIC Morocco for 14 days (18–31 May 2019) to acquaint them with the functions and terms of reference of an NIC so that they could play a more active role in GISRS. WHO EMRO also organized an exchange visit (from 25 November to 6 December 2019) for one laboratory staff member from occupied Palestinian territories (oPt) to the WHOCC for Reference and Research on Influenza at the Francis Crick Institute, London, the United Kingdom to receive training in molecular diagnostics, virus isolation and characterization of circulating influenza viruses.

With PIP Framework support, these and other training courses and meetings allowed for essential capacity-building activities in laboratory diagnostics and virus characterization to be undertaken, with significant regional improvements made in these areas.

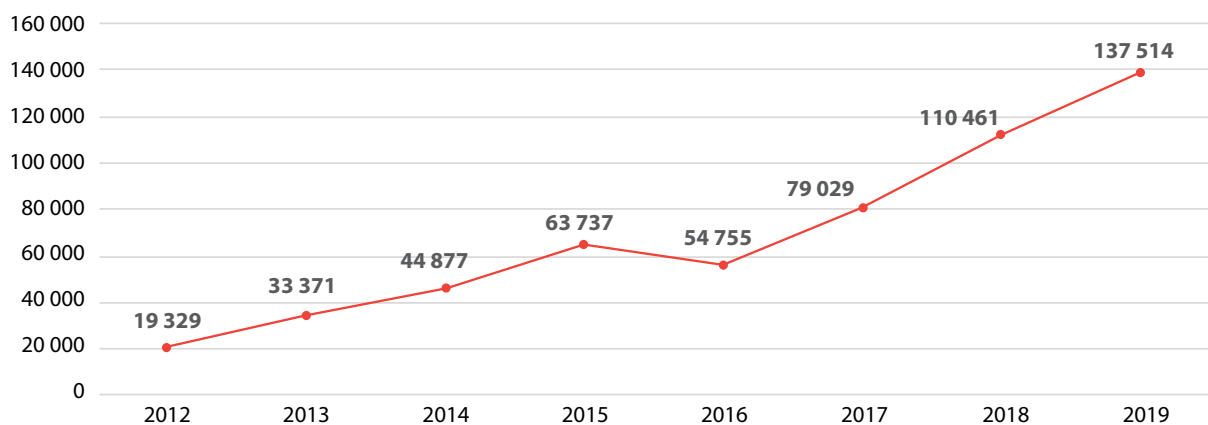
In addition to its training activities, WHO EMRO also worked to improve laboratory capacities by providing assistance in the procurement of quality laboratory supplies. To ensure the optimal and efficient functioning of the EMR laboratory network, WHO EMRO continued to work with NICs and other national influenza laboratories to ensure the availability of reagents, supplies and diagnostic kits, either through the US CDC International Reagent Resource or commercially. WHO EMRO also procured laboratory reagents, supplies and sample-collection kits on a continual basis

to maintain the capabilities of NICs in low-resource countries and countries experiencing complex emergencies, and provided related support based on the needs of each country. In some cases, WHO EMRO advised NICs on which reagents, supplies or diagnostic kits to purchase, while in other cases, particularly involving countries experiencing complex emergencies, WHO EMRO prepared lists of necessary supplies or directly established reagent stockpiles. For items not listed in the WHO catalogue, supplies listed in supplier offers were checked for compliance. WHO EMRO also facilitated the shipment of supplies to countries experiencing emergencies and other priority countries.

As a result of these and other efforts, more clinical specimens were tested by NICs in the Region than in any previous biennium. More specifically, the number of influenza specimens tested and reported to FluNet or the EMFLU Network by participating NICs and influenza laboratories increased from 19 329 in 2012 to 134 990 in 2019.

Furthermore, increasing the frequency and number of influenza-positive clinical specimens or influenza virus isolates shared with GISRS WHOCCs is one of the priorities of the PIP Framework. Such sharing allows for the prompt antigenic characterization and genetic analysis of circulating viruses, and contributes to the seasonal influenza vaccine strain selection process. As a result of PIP Framework investment, the number of NICs and other influenza laboratories in the Region sharing positive specimens or virus isolates with WHOCCs has increased significantly in recent years. For example, the number of influenza-positive specimens shared in 2012 was 174 – by 2018, this figure had increased to 71 473. In addition, over the course of the 2018–2019 biennium the number of influenza specimens or viral isolates shared increased by 200% compared with the previous biennium.

Fig. 2: Number of influenza specimens tested and reported to EMFLU/Flunet in EMR, 2012–2019



2018–2019 SUCCESSES

Increased influenza testing



During the 2018–2019 biennium, EMR countries increased the number of specimens tested for influenza (Fig. 2). The number of influenza specimens tested and reported to FluNet or EMFLU from participating NICs or other laboratories increased from 19 329 in 2012 to 134 990 in 2019.

Laboratory & surveillance



QUALITY OF INFLUENZA VIRUS DETECTION CAPACITY IS SUSTAINED

WHO PCR External Quality Assessment Project (EQAP) results shared with participating laboratories

ACHIEVEMENTS



The WHO External Quality Assessment Project (EQAP) facilitates the quality control of GISRS influenza laboratories as they work to identify ever-changing influenza viruses. Milestone 2 of Deliverable B therefore focuses on EQAP results shared with participating laboratories. During the biennium, 18 countries returned their laboratory EQAP results and received feedback on their performance.

WHO EMRO supports and facilitates the participation of these EMR influenza laboratories as part of its annual monitoring of the quality and performance of influenza virus diagnosis and detection in the Region. In 2019, 88.9% of EMR participants reported all-correct results for EQAP Panel 18, which was higher than the global average (Table 1).

In 2019, WHO EMRO conducted a second run of the external quality assessment (EQA) for the detection of Middle East respiratory syndrome coronavirus (MERS-CoV) by PCR with the aim of improving laboratory capacity and performance in the Region. The panel was sent to 32 participating reference laboratories in the WHO African Region (12 laboratories) and EMR (20 laboratories). Laboratories in EMR demonstrated high levels of proficiency in detecting MERS-CoV, with all laboratories reporting correct results for all specimens.

In addition, during the biennium, two additional NICs were established in EMR following their designation by national authorities in occupied Palestinian territories (oPt) and the United Arab Emirates.

Table 1: Performance of EMR national laboratories – EQAP Panel 18 (2019)

	Invited	Participated	Result returned	All correct	All correct (%)
EMR	20	19	18	16	88.9%
Global	198	188	184	159	86.4%

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Afghanistan

WHO EMRO organized an exchange visit for laboratory staff from the central public health laboratory (CPHL) Afghanistan to the CPHL Oman on 9–18 June 2019. The main objectives of this exchange were to provide orientation on the complete process of PCR testing for influenza and other respiratory viruses and on the key biosafety and biosecurity measures required for laboratories receiving samples of high-threat pathogens.

PIP Framework activities in Afghanistan were also focused on building surveillance system and laboratory capacity, including through the provision of the necessary training and equipment to NICs. As a result, Afghanistan was able to achieve a perfect EQAP Panel 18 score in 2019.

Morocco

With PIP Framework support, WHO EMRO organized an exchange visit for two laboratory staff members from NIC Oman (7–18 October 2019) and two laboratory staff members from Morocco and Pakistan (4–15 November 2019) to the WHOCC for Reference and Research on Influenza in Melbourne, Australia for a two-week training-of-trainers course on the isolation and characterization of influenza viruses.

Sudan

During the biennium, NICs in Sudan improved and enhanced their capacities. In particular, the capacity of staff working at NICs within the National Public Health Laboratory to test SARI/ILI clinical specimens for seasonal and potentially pandemic influenza viruses (both types A and B) were strengthened. This was made possible through WHO support, provided under the PIP Framework, involving the supply of reagents, kits and equipment according to need, and regular training sessions for laboratory staff.

By the end of the biennium, three influenza surveillance sites in Khartoum were testing an average of 40–45 specimens each week and reporting the results through the EMFLU Network. Regular reporting was achieved through the training of sentinel site and laboratory personnel, as well as through the provision of information technology equipment. The procurement of PCR equipment further enhanced capacity for specimen sharing and timely reporting, and the NIC is now part of GISRS and participates in EQAP.

In April 2019, WHO supported the NIC by arranging for the shipment of 10 clinical specimens to the GISRS WHOCC in London, the United Kingdom to support risk assessment and vaccine development. The virus was successfully isolated and characterized from two of the specimens, allowing for vaccine preparation. With PIP Framework support, Sudan will now share viruses each year as part of its routine influenza surveillance activities.

Yemen

Despite significant logistical challenges and ongoing civil unrest and instability in the country, WHO EMRO was able to provide the NIC Yemen with the influenza testing reagents, testing kits and other essential supplies needed to resume SARI sample testing following its cessation due to acute supply shortages. Consequently, the CPHL was able to consistently report on all tested influenza samples to FluNet on a weekly basis. In addition, WHO EMRO also supported the Ministry of Public Health and Population through the provision of nasal swab kits for specimen collection and conducted two training sessions on influenza rRT-PCR methodology for 30 CPHL staff members in Aden, Hadramout, Hodeida, Sana'a and Taiz governorates. At the end of the training, laboratory technicians were able to:

- extract and purify RNA material for influenza;
- prepare reagents for amplification and detection;
- enter the protocol of the influenza kit into rRT-PCR machines;
- conduct patient and specimen data entry;
- interpret rRT-PCR testing results;
- troubleshoot common issues with rRT-PCR testing.

2018–2019 SUCCESSES

Designation of National Influenza Centres



During the 2018–2019 biennium, two new NICs were designated in occupied Palestinian territories and the United Arab Emirates.



Laboratory & surveillance



COUNTRIES ARE SUPPORTED TO CONSISTENTLY REPORT INFLUENZA DATA TO GLOBAL PLATFORMS

Regional influenza meetings held to improve global influenza surveillance system strengthening

ACHIEVEMENTS



Pandemic preparedness and response requires a global understanding of disease patterns and dynamics. Reporting influenza data to a global platform is an essential element in enabling such a global understanding and is the central theme of Deliverable C. WHO EMRO continued to engage in advocacy activities during technical missions, meetings and training courses to promote the importance and benefits of information reporting and management through regional and global platforms. The purpose of such advocacy was to increase the number of countries using the regional EMFLU Network⁵, and/or the global FluNet⁶ and FluID⁷ platforms and to help countries share data in a timely and consistent manner. Throughout the biennium, online technical support was provided by WHO EMRO to all countries implementing the regional EMFLU Network platform. WebEx and WhatsApp groups were used to provide users with solutions to any technical problems

encountered during the data-entry process. These efforts contributed to increased levels of influenza data reporting in the Region and to an enhanced understanding of the influenza situation.

Due to high rates of staff turnover in countries, especially in sentinel surveillance sites, WHO EMRO continued to provide technical support for EMFLU Network implementation through in-country or online training for new users. In-country refresher training courses for EMFLU Network users working in national sentinel sites and laboratories were held in Kuwait and the United Arab Emirates. Training covered the use of the EMFLU Network platform to enter/upload data and to produce the required data outputs and reports. The national team then implement a follow-up mechanism whereby reported cases are reviewed and approved through the portal in a timely and consistent manner.

WHO EMRO also continued to provide technical support for the integration of data between the EMFLU Network platform and the global FluNet and FluID platforms based on the automatic synchronization of data. By the end of the 2018–2019 biennium, following data integration, there was a significant increase in the number of EMR countries reporting through at least one of the three platforms (Table 2). All PIP Framework supported EMR countries now regularly report through the EMFLU Network.

Table 2: Number of EMR countries sharing data with the EMFLU Network, FluNet and FluID

	EMFLU Network	FluNet	FluID
Number of countries reporting	18	16	11
Countries	Afghanistan, Bahrain, Egypt, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, occupied Palestinian territories (oPt), Qatar, Saudi Arabia, Sudan, the Syrian Arab Republic, Tunisia, the United Arab Emirates and Yemen	Afghanistan, Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, occupied Palestinian territories (oPt), Qatar, Saudi Arabia, Tunisia, and Yemen	Afghanistan, Bahrain, Egypt, Iran (Islamic Republic of), Jordan, Lebanon, Morocco, Oman, occupied Palestinian territories (oPt), Qatar and Saudi Arabia

⁵ See: <https://emflu.emro.who.int>

⁶ See: https://www.who.int/influenza/gisrs_laboratory/fluNet/en/

⁷ See: https://www.who.int/influenza/surveillance_monitoring/fluID/en/

Regional influenza meetings held in order to improve global influenza surveillance system strengthening

During the 2018–2019 biennium, representatives from all 22 countries of the Region participated in two such meetings.

One of these meetings – the fifth Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) meeting, held in conjunction with the second Scientific Conference on Acute Respiratory Infections – was a success that would not have been possible without PIP Framework funding. Held in Casablanca, Morocco on 12–15 November 2019, these meetings aimed to document progress made in the Region in the areas of strengthening national surveillance and response capacities for seasonal and pandemic influenza viruses, MERS-CoV and other emerging respiratory viruses. The theme of the EMARIS meeting and Scientific Conference was *Better data, Better policy, Better action* with the meeting outcomes intended to support data-driven public health policy-making. Over 4 days of presentations and discussions, the specific objectives of the EMARIS meeting were:

- **to review the achievements of countries**, and challenges faced, in strengthening surveillance and response capacities for seasonal and pandemic influenza in the Region;
- **to share evidence and best practices emerging from the Region** on: (a) the use of influenza surveillance data for severity assessments; and (b) outbreak detection;
- **to discuss how surveillance data on influenza** and other respiratory diseases could be translated into the setting of policies and programmes for influenza prevention and control;
- **to document and showcase new scientific achievements** and operational research findings on the prevention, detection and response to seasonal, novel and other emerging respiratory viruses; and
- **to enhance the knowledge and skills of young researchers** in selected technical and topical areas relevant to the theme of the meeting.

More than 180 people, including representatives from all 22 countries of the Region, participated in the meeting. Country participants included SARI/ILI surveillance focal points, directors of epidemiology and communicable disease departments, and CPHL/NIC directors. In addition, 46 experts from various organizations attended to provide global, regional and country level expertise across nine thematic areas: epidemiological surveillance, virological surveillance, influenza burden estimation, respiratory disease outbreak investigation, MERS and other emerging respiratory infections, influenza vaccines, biosafety and biosecurity, the human–animal interface and pandemic influenza preparedness. Additionally, 50 regional researchers participated in the meeting by presenting their scientific abstracts during plenary

sessions and one poster exhibition event. Meeting participants were updated on the epidemiological and virological characteristics of influenza in EMR, and provided with up-to-date information on the global and regional situation regarding seasonal, avian and novel influenza virus subtypes. The major successes of GISRS and solutions to the challenges it has faced over the past several decades were also presented.

In line with the regional context, influenza preparedness and response activities in the context of complex emergencies were also discussed. A workshop was held regarding pandemic influenza preparedness in fragile contexts, focusing on Afghanistan, Somalia and Yemen. Experiences and lessons learnt from the field were shared to guide the formulating of practical advice on influenza-related activities in complex emergency settings. In the areas of surveillance, laboratory capacity, data management and rapid response, participants discussed how best to leverage existing infrastructure and systems as the foundations and starting point for further strengthening.

Examples of research topics presented orally or during poster sessions by researchers from the seven PIP Framework supported EMR countries included:

- **Afghanistan** – epidemiological surveillance and pandemic preparedness (defining influenza baseline and threshold values).
- **Egypt** – epidemiological surveillance; the human–animal interface; vaccination; and MERS and other respiratory infections.
- **Jordan** – burden of disease estimation.
- **Lebanon** – the human–animal interface; and virological and epidemiological surveillance.
- **Morocco** – vaccination; biosafety; pandemic preparedness (WHO PISA tool); and outbreak investigation.
- **Sudan** – biosafety; and burden of disease estimation.
- **Yemen** – epidemiological surveillance.

Special awards were given in recognition of the most innovative abstract, and the best oral and poster presentations given, while acknowledging and recognizing the crucial support and contributions of WHOCCs and donors. Supported by PIP Framework funding and guidance, this meeting exemplified the vital importance of collaboration and knowledge sharing among the countries of the Region.

SPOTLIGHT

EMARIS Conference



The fifth Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) meeting in November 2019 was attended by more than 180 representatives of 22 countries.

- Objectives were to share evidence and best practices emerging from the region, review achievements and challenges in strengthening influenza preparedness and response capacities, discuss translating influenza data to programs and policies and document scientific achievements
- Participants were updated regarding epidemiological and virological characteristics of influenza in the Eastern Mediterranean Region, as well as other topics such as successes of GISRS and influenza preparedness and response in the context of humanitarian emergencies
- Regional researchers presented scientific abstracts throughout plenary sessions as well as one poster exhibition



Laboratory & surveillance



COUNTRIES ARE SUPPORTED TO CONSISTENTLY REPORT INFLUENZA DATA TO GLOBAL PLATFORMS

Technical assistance for surveillance provided to countries

ACHIEVEMENTS



To further support the consistent reporting of influenza data to regional and global platforms, WHO EMRO also provided technical assistance to countries on surveillance. Overall, significant improvements were made during the biennium to existing national surveillance and response capacities for seasonal influenza and other respiratory diseases. NIC laboratory capacities were significantly developed through the provision of training and supplies, facilitation of quality assurance and exchange visits with WHOCCs. The improvement and enhancement of SARI/ILI and overall respiratory surveillance and response capacities will be an asset to the next pandemic and continue to be further enhanced.

To improve understanding of influenza epidemiology and influenza-associated disease burden, WHO EMRO strengthened regional capacities to estimate, document and better understand disease burden and baseline/threshold values by conducting training courses and developing user-friendly tools for use by countries. Multisectoral rapid response capacities were also improved during the biennium, allowing for the early detection of and effective response to outbreaks of novel influenza viruses with pandemic potential, as well as other emerging infectious diseases.

In support of these activities, WHO EMRO conducted numerous technical missions to countries in 2018–2019, including:

- **Bahrain (March 2018)** – to assess the status, performance and challenges of the national influenza surveillance system, and provide recommendations on improving epidemiological and laboratory capacities; recommendations included the continuation of surveillance advocacy, annual refresher training for SARI/ILI surveillance staff, updating the national influenza pandemic influenza preparedness plan (NIPPP), enforcing health care worker vaccination policy and increasing the regularity of reporting to WHO platforms.
- **Oman (12–13 May 2019)** – to review national capacities for the detection of and response to MERS and support the Ministry of Health in determining the related epidemiological studies needed; the national MERS guidelines for health care workers were also reviewed. Through intensified efforts covering all health facilities dealing with SARI cases, MERS surveillance was integrated into national ARI surveillance. Mechanisms were also put in place to ensure prompt RRT activation and deployment to health facilities following the detection of MERS cases. Recommendations included the enhancement of human–animal interface coordination based on the One Health approach.

- **Saudi Arabia (7–14 August 2019)** – to support the Ministry of Health in ensuring that public health preparedness measures were in place to prevent potential disease outbreaks during the Hajj pilgrimage season. Specific activities included: (a) support in piloting the newly developed Health Early Warning System for detecting potential health threats; (b) monitoring the investigation of public health alerts or potential outbreaks by RRTs during the Hajj; (c) supporting the implementation of appropriate public health measures for the prevention and control of epidemic-prone infectious diseases amongst the Hajj pilgrims; and (d) supporting and overseeing the implementation of health facility assessment surveys.
- **Saudi Arabia (15–17 September 2019)** – to determine how best WHO could further support efforts to mitigate the risk of MERS and other novel respiratory pathogens at all three levels of the Organization. In addition, national capacities for the detection and response to novel influenza viruses and other emerging respiratory viruses were reviewed, including through discussions with the senior health sector leadership. A joint workplan was subsequently developed with an emphasis placed on capacity-building in technical areas relevant to the detection of and response to novel influenza and other emerging respiratory viruses. These areas included the One Health approach, IPC, risk communication and community engagement, laboratory support and visual triage. The establishment and enhancement of multidisciplinary RRTs was also recommended, along with the development and implementation of simulation exercises, training and online courses.
- **Iraq (16–18 September 2019)** – to strengthen the influenza surveillance system, and national pandemic influenza preparedness activities, by assessing laboratory capacity and identifying potential sentinel surveillance sites. The assessment was carried out through a combination of field visits to the CPHL and potential sentinel sites, a two-day consultative workshop with key Ministry of Health and Environment focal points and feedback discussions with the WHO Country Office.
- **Saudi Arabia (30 September to 3 October 2019)** – to conduct a disease-prioritization exercise and orient participants on best practices in this area. Outcomes included agreement on roadmaps for conducting the exercise and for establishing a WHOCC. The Ministry of Health agreed to designate a multidisciplinary steering committee to lead the prioritization

exercise, and WHO agreed to provide expert advice throughout the process. Support was also given in organizing the fourth International Conference on Mass Gathering Medicine held in Jeddah on 10–13 December 2019. The recently developed Health Early Warning System for detecting and responding to public health emergencies during religious mass gatherings was presented during this conference, and global and regional experiences in the development and implementation of early warning systems shared.

- **Tunisia (7–11 October 2019)** – to conduct, in collaboration with other partners, an influenza surveillance capacity assessment in order to obtain a clearer understanding of the status of the national surveillance system and to identify system strengths, while also providing recommendations for improvement. The comprehensive International Influenza Surveillance Assessment Tool was completed and guidance and troubleshooting advice provided. A report was then produced summarizing the system design and strengths, key recommendations and areas for improvement. Specific recommendations focused on improving surveillance, data quality assurance and monitoring, and integration of laboratory and epidemiological data.
- **Qatar (26–29 October 2019)** – to provide support for the integration of respiratory syncytial virus (RSV) surveillance into routine influenza surveillance and for the revision of the NIPPP. Mission outcomes included the adaptation of the notification system for reporting SARI cases, coordination of discussions between sentinel sites regarding sampling strategy, and specimen collection and storage while RSV laboratory capacity and external quality assessment were being established. Qatar fulfilled all requirements for enrolment into the WHO Global RSV surveillance initiative. In addition, following discussion, the revision of the NIPPP was identified as a priority activity for 2020.

In total, PIP Framework funding in relation to this milestone allowed for 43 support activities and five training courses to be carried out, involving the participation of 20 countries in the Region. Training highlights included a workshop on the development of a protocol for monitoring and evaluating sentinel-based influenza surveillance systems in EMR, attended by participants from 13 countries. Support activities were conducted both in person and remotely via the internet, and will continue to be an important element in promoting the consistent reporting of data by countries to regional and global platforms.

The improvement and enhancement of SARI/ILI and overall respiratory surveillance and response capacities will be an asset to the next pandemic and continue to be further enhanced.

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Jordan

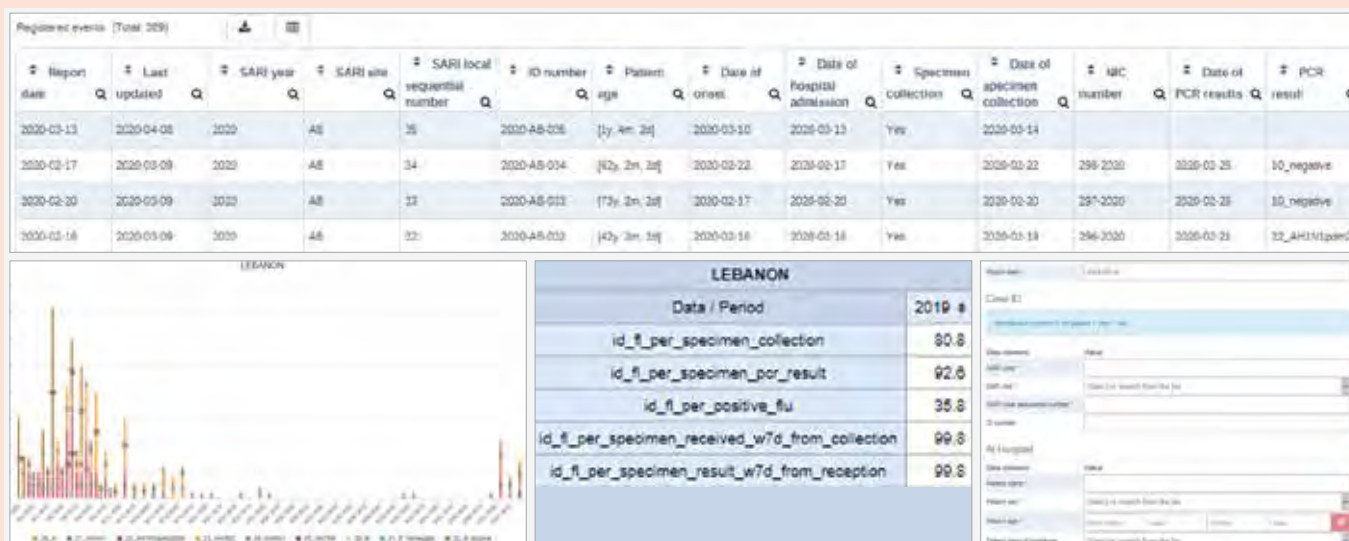
WHO EMRO conducted a mission to Jordan on 13–15 October 2019 to review and evaluate the implementation of PIP Framework activities with a focus on the influenza surveillance system. The review covered the national influenza surveillance system, related laboratory capacity, the estimation of disease burden associated with seasonal influenza and the way in which the denominator was being defined. Evaluation was then made of the influenza surveillance system, the national PIP Framework 2020–2021 workplan, collaboration at the human–animal interface, the NIPPP and the national rapid response mechanism. The assessment involved visits to one ILI and one SARI surveillance site as well as to the NIC.

Lebanon

In collaboration with the Epidemiological Surveillance Unit at the Ministry of Public Health and the NIC located in the Rafik Hariri University Hospital, Beirut, WHO EMRO continued to provide support for SARI surveillance activities at eight sentinel sites, including through:

- the procurement of reagents and consumables, and selected laboratory equipment;
- the production of updated information, education and communication (IEC) materials, including SARI informational posters, brochures, standard operating procedures and materials targeting health professionals;
- the development of a monitoring and evaluation protocol;
- the development of a data dashboard for monitoring and evaluating SARI quantitative variables (Fig. 3); and
- the training of 20 staff from the NIC, sentinel sites, and Ministry of Public Health (central and peripheral personnel) in the monitoring and evaluation of sentinel-based influenza surveillance systems.

Fig. 3: Monitoring and evaluation data dashboard for SARI variables in Lebanon

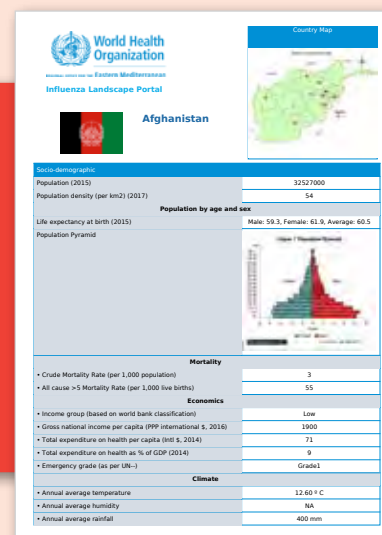


2018-2019 SUCCESSES

Facilitation of influenza landscape analyses



During the 2018-2019 biennium, 14 countries in the Region completed detailed landscape analyses of their influenza situation, and an online portal to compile the required influenza data was created.



Laboratory & surveillance



COUNTRIES ARE SUPPORTED TO CONSISTENTLY REPORT INFLUENZA DATA TO GLOBAL PLATFORMS

Regional bulletins published

ACHIEVEMENTS



Regional bulletins are published to share information on the influenza situation with EMR countries and with the outside world, and to help countries to consistently report influenza data to the global platforms (Fig. 4).

In collaboration with EMR countries, WHO EMRO continued to produce and disseminate weekly and monthly bulletins on regional influenza activity, circulating influenza subtypes, and the reporting status of countries reporting epidemiological and virological surveillance data to EMFLU, FluNet and FluID. During 2018–2019, WHO EMRO produced the monthly influenza bulletins throughout the year – with weekly bulletins produced during the influenza season.

In the weekly bulletin, the following data are shared:

- number and percentage of positive cases by week, compared with the previous year;
- types of virus circulating as percentages of total positive cases;
- types of virus detected during the previous 4 weeks;
- age group distribution by virus subtype;
- reported cases by country.

In the monthly bulletin, the following data are shared:

- overall influenza activities in the Region;
- proportion of positive and negative cases;
- circulating subtypes;
- geographical spread by subtype;
- significant activity by subtype.

WHO EMRO also assisted EMR countries with functioning SARI/ILI surveillance in the development of weekly or monthly national bulletins. Such bulletins are published using data extracted from EMFLU and FluMart. During the 2018–2019 biennium, an additional bulletin – the Weekly Epidemiological Monitor – was published covering relevant topics in relation to the PIP Framework.

The publication of all these bulletins with PIP Framework funding support encourages countries to consistently report data and to prioritize information sharing.




2018–2019 SUCCESSES

Enhanced reporting mechanisms & data sharing

A new version of EMFLU was launched for enhanced reporting and data sharing. PIP Framework priority EMR countries sustained their reporting through EMFLU and other WHO platforms.

Fig. 4: Sample EMR regional bulletin



World Health Organization
REGIONAL OFFICE FOR THE Eastern Mediterranean

WHO-EM/CSR/245/E

December 2019

Epidemiological weeks: 49–52/2019

Influenza monthly update

In December 2019, many countries reported data to FluNet and EMFLU, namely Afghanistan, Bahrain, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Morocco, occupied Palestinian territory (oPt), Oman, Pakistan, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen.

The proportion of tested cases for influenza in the Region was 96.7% out of 18 910 enrolled cases; 26.6% of cases tested positive and 73.4% negative.

Influenza activity by sub-type

- In Northern Africa, Morocco and Tunisia reported predominantly detection of influenza B viruses.
- In Western Asia, Bahrain, Iraq, Jordan, Oman, oPt, Qatar, Saudi Arabia and Syria reported co-circulation of influenza types A and B, with influenza A(H1N1)pdm09 circulating predominately in Iraq and Jordan. While Kuwait reported exclusive circulation of influenza B viruses and Yemen reported predominant A(H1N1)pdm circulation with sporadic A(H3N2) viruses.
- In the Southern Asia transmission zone, the Islamic Republic of Iran reported high co-circulation of influenza types A and B, while Afghanistan and Pakistan reported low detection of influenza A and B.

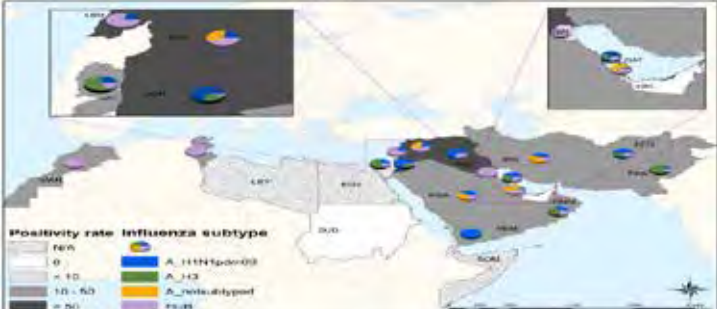
Source of transmission zones:
http://www.who.int/csr/disease/swineflu/transmission_zones/en/

Circulating influenza viruses by sub-type

- During December 2019, national influenza centres and influenza laboratories in the Region tested a total of 18 285 specimens for influenza viruses, of which 4856 tested positive (26.6%).
- The average percentage of positive rates was 26.6%, with the highest positive rates recorded in Iraq, Jordan and Lebanon.
- Of the viruses tested, 3579 (74%) were influenza A viruses, including 1637 (34%) influenza A(H1N1)pdm09 virus, 374 (8%) were influenza A(H3) virus and 1568 (32%) were influenza A (not subtyped) virus. Influenza B (lineage not determined) virus accounted for 1183 (25%).

Source of data: FluNet and EMFLU

Geographic Spread



Positivity rate Influenza subtype

0	A (H1N1)pdm09
< 10	A (H3)
10 - 50	A (not subtyped)
> 50	B (lineage not determined)
	B (Victoria lineage)
	B (Yamagata lineage)

Disclaimer: The representation of material on the maps contained herein does not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authority of frontiers or boundaries. Dotted lines on maps represents approximate border lines for which there may not be full agreement.

Weekly Positive Cases

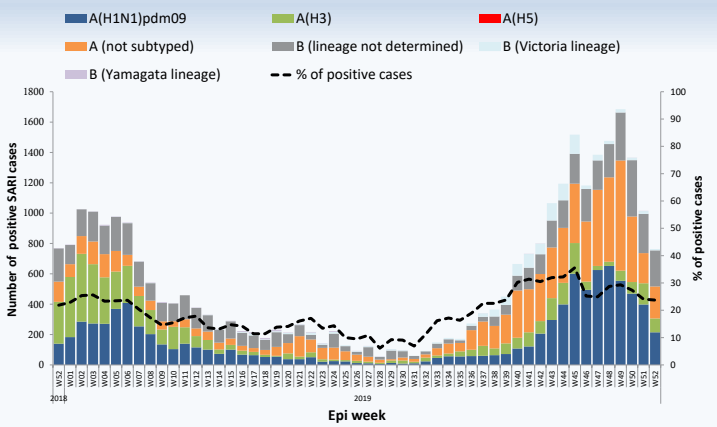
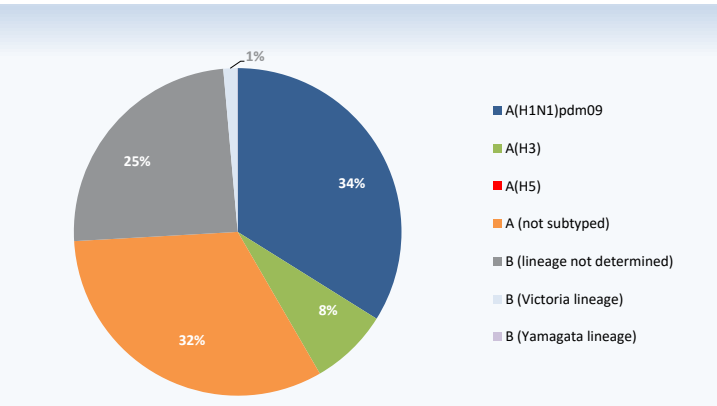


Fig. 2. Weekly positive cases of influenza by subtype, weeks 52/2018–52/2019

Circulating Viruses



Sub-type	Percentage
A(H1N1)pdm09	34%
A(H3)	8%
A (not subtyped)	32%
B (lineage not determined)	25%
B (Victoria lineage)	1%
B (Yamagata lineage)	1%

Fig. 3. Circulating influenza viruses by sub-type during December 2019

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Figure 5: Sample EMR regional bulletin

Influenza situation in the Eastern Mediterranean Region W52 / 2019 (from 22/12/2019 to 28/12/2019)



Source of data: EMFLU Network and FLUMART

Figure 1. Number of positive influenza cases and influenza positivity rate per week, 2018-2019

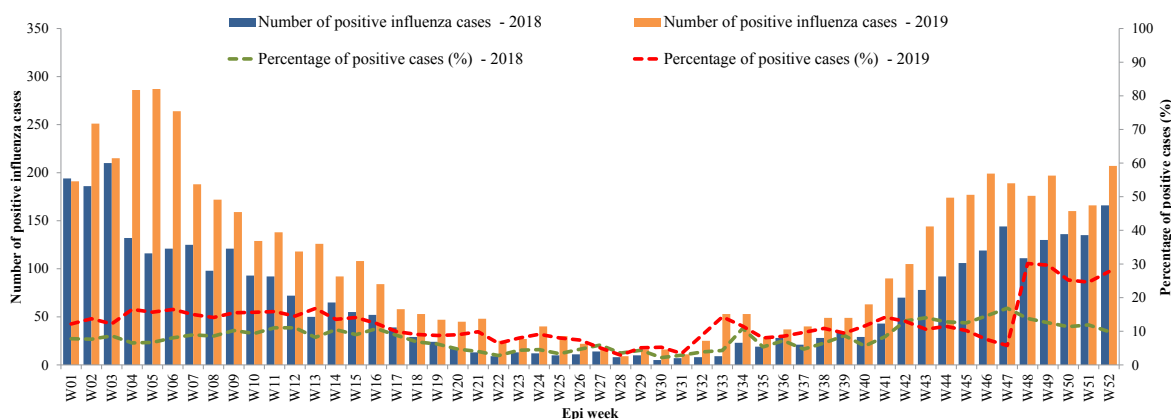


Figure 2. Percentage of circulating virus type by positive influenza cases

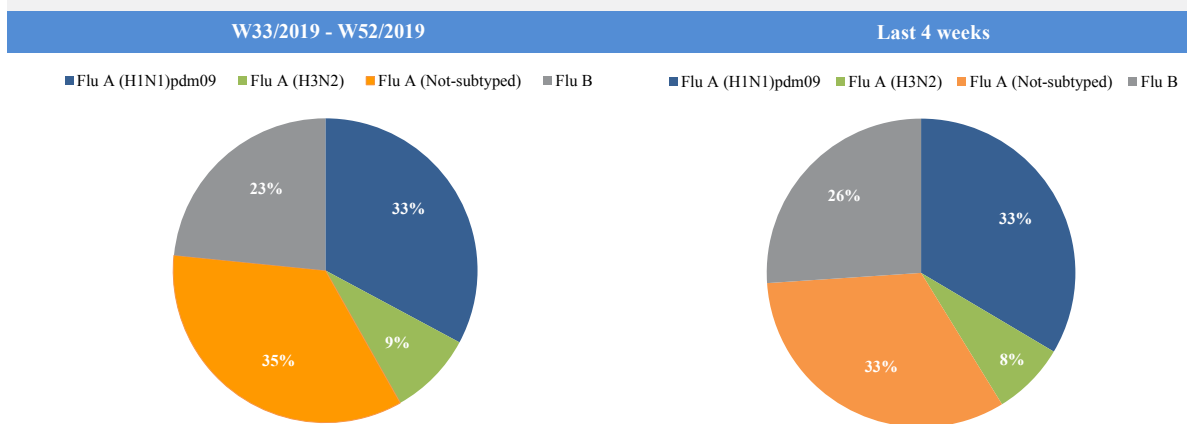


Table 1. Type and Number of influenza viruses detected from W33/2019 to W52/2019 and during last four weeks

Virus type	W33/2019-W52/2019	Last 4 weeks
	Number (%)	Number (%)
Flu A (H1N1)pdm09	5629 (33)	1643 (34)
Flu A (H3N2)	1539 (9)	377 (8)
Flu A (Not-subtyped)	5962 (35)	1604 (33)
Flu B	4013 (23)	1277 (26)
Total	17143	4901

Laboratory & surveillance



COUNTRIES ARE SUPPORTED TO SHARE TIMELY REPRESENTATIVE INFLUENZA SAMPLES WITH WHOCCs

Infectious substances Shipping Training (ISST) completed

ACHIEVEMENTS

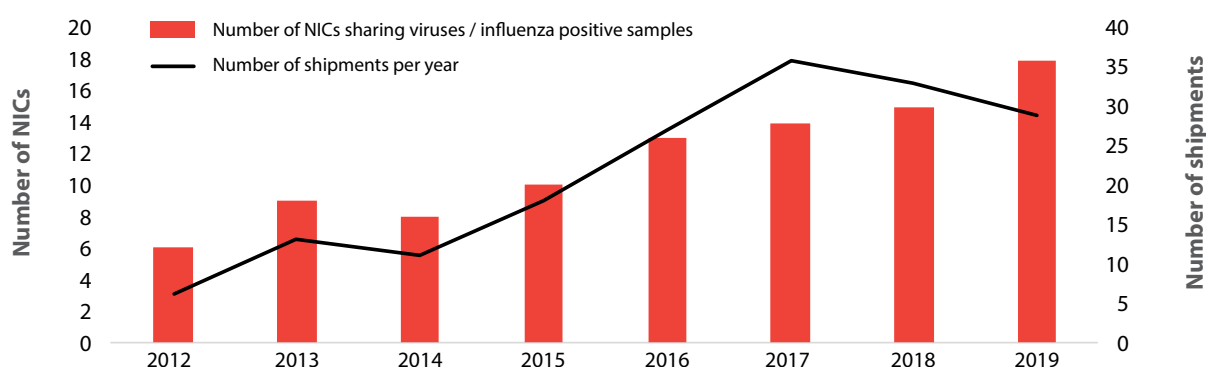


As an intrinsic part of GISRS, and in accordance with their terms of reference, all NICs are expected to share representative influenza-positive clinical specimens collected from SARI/ILI patients with GISRS WHOCCs. The sharing of these samples is expected to be timely and to take place throughout the year. Once the samples have been received by the WHOCC they are subjected to comprehensive analysis, including antigenic and genetic characterization. Based on the knowledge gained from the analysis of circulating influenza virus strains, WHOCCs then make informed recommendations regarding antiviral drug susceptibility and the optimal composition of influenza vaccines.

Because WHOCCs deal with evolving strains of influenza viruses, the shipping of the selected samples is an essential element in pandemic preparedness and response. However, to facilitate the safe sharing of virus samples, designated personnel in countries need to complete an Infectious Substance Shipping Training (ISST) course. Such training is crucial for improving the knowledge and skills of the designated focal points in relation to sample handling, transportation and shipment both within the country and internationally. Trained focal points are recognized with IATA shipping certification and the certification of designated focal points following successful completion of ISST is the focus of Milestone 01 of Deliverable D.

During the 2018–2019 biennium, regional efforts to enhance this essential and globally important activity were prioritized and subsequently implemented with PIP Framework funding support. Eight training courses were held, involving staff from seven countries. In addition, to those countries that were already sharing viruses, Iraq and Sudan were able to share samples with a WHOCC for the first time.

Fig. 6: NICs sharing influenza viruses / positive samples with WHOCC vs. number of shipments per year



2018–2019 SUCCESSES

Increased virus sharing



As a result of PIP Framework support, the number of positive specimens or virus isolates shared with WHOCCs was higher than ever before during this biennium (Fig.6). The number of positive influenza specimens shared increased from 174 in 2012 to 71 473 in 2018. Virus sharing increased by 200% during this biennium compared to the previous biennium. NIC Sudan shared the first influenza-positive samples with a WHOCC for the first time, thereby contributing to the global vaccine selection process.

Risk communication & community engagement

Risk communication and community engagement (RCCE) is an essential component of pandemic response and involves the sharing of information in order to protect lives, promote healthy practices and behaviours, and foster good relations and trust between authorities and the public.

Output 4 of the PIP Framework HLIP II involves capacity-building in the area of RCCE.

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR



WHO EMRO provided support to Egypt, Iran (Islamic Republic of) and Jordan in the development of risk-communication messages intended to increase awareness and mitigate concerns around seasonal influenza. WHO EMRO conducted two training workshops in Jordan (15–18 July 2019) and Morocco (9–12 December 2019) to train RCCE national focal points, map national RCCE capacities and develop national plans for influenza-related RCCE in relation to pandemic influenza. These represented the first three steps of a five-step package that would be followed by testing of the resulting plans through simulation exercises before their adoption by national authorities for implementation.

Jordan

WHO organized a four-day workshop in Jordan on Emergency Risk Communication and Community Engagement attended by over 30 participants from various relevant fields (epidemiology, infectious hazard management and pandemic preparedness and response, immunization, emergency response and communication) from the Ministry of Health, Ministry of Agriculture, Ministry of Interior, the National Center for Security and Crisis Management, the Jordan National Red Crescent Society, international agencies and other stakeholders. The workshop was a first step towards the development of risk communication guidelines for pandemic influenza and other hazards in Jordan.

Morocco

After receiving a score of 2 out of 5 for risk communication systems in the 2016 Joint External Evaluation, it became evident that Morocco needed to strengthen its RCCE capacities. During the 2018–2019 biennium, Morocco continued to take the initiative in strengthening these capacities.

In partnership with WHO, a four-day workshop was organized in December 2019 to further reinforce national RCCE capabilities for both seasonal and pandemic influenza. The workshop was supported by WHO EMRO and would not have been possible without PIP Framework funding support. During the workshop, 35 participants were trained using a range of approaches, including the presentation of communications concepts, practical learning using case studies, group exercises, role playing and the application of learnt concepts to develop national RCCE plans for seasonal and pandemic influenza, as well as for Ebola and other hazards. The RCCE plans were designed to foster trust among the general public, vulnerable populations, health care workers and others based on engagement, transparency, public communication and coordination, and the use of effective channels of communication.

In addition, intensive efforts were made during the workshop to adapt existing RCCE tools to the Moroccan context using training materials from the five-step package translated into French. This was the first time these particular tools had been translated for use by French speakers, and will be made available for use in other French-speaking countries of the Region.



2018–2019 SUCCESSES

Enhanced emergency risk communications

During the 2018–2019 biennium, emergency risk communication was enhanced in the Region. Jordan and Morocco conducted emergency risk communications training using a five-step capacity-building package developed by WHO.

Influenza pandemic preparedness planning

The PIP Framework was adopted in May 2011 by the 64th World Health Assembly – born of the lessons learnt from previous outbreaks and pandemics which had resulted in significant morbidity, millions of deaths, and severe socioeconomic damage.

In order to prepare for and efficiently respond to a potential or emerging influenza pandemic, countries require a systematic and overarching national plan. Such an overarching national plan will facilitate the multisectoral responses required. Previous pandemics and other emergencies have highlighted the need for robust coordination among all sectors as no sector is affected in isolation.

Preparing for an influenza pandemic is a continuous process of planning, testing, exercising, and revising, and of translating the national plan into action steps at subnational levels. In recent decades, WHO has provided up-to-date evidence-based guidance to support countries in developing or revising their NIPPPs, with the aim of enhancing national capacities to prevent, prepare for and respond to the threat of an influenza pandemic. Taking into consideration the lessons learnt from the 2009 H1N1 influenza pandemic, WHO updated its pandemic preparedness guidelines, checklists and other guidance resources, and all countries have been advised to update their NIPPP accordingly. Despite this, only five EMR countries have updated their national plan in the last 3 years, while 9 countries have not updated their plan since 2009.

Influenza pandemic preparedness planning



COUNTRIES ARE SUPPORTED TO DEVELOP, TEST AND UPDATE THEIR INFLUENZA PANDEMIC PREPAREDNESS PLAN

IPPP development / revision stage in cycle

ACHIEVEMENTS



Output 6 of HLIP II requires that NIPPPs are updated in the context of all-hazards preparedness and global health security. Of the 14 EMR countries that reported having an NIPPP, 6 are in receipt of PIP Framework funding support. In addition, countries in the Region are at various stages of NIPPP revision. During the 2018–2019 biennium, with PIP Framework funding support, 12 meetings and workshops were held in the Region to facilitate NIPPP revision.

WHO EMRO, in collaboration with US CDC and Abt Associates, organized a four-day participatory workshop on influenza pandemic planning preparedness in Tunisia on 13–15 August 2019 to strengthen the NIPPPs of selected countries in the WHO African Region and the WHO Eastern Mediterranean Region. Thirty five representatives from 5 priority countries (Ghana, Morocco, Oman, the United Republic of Tanzania and Tunisia) participated in the workshop. Facilitators used a range of WHO guidance tools⁸ which had been instrumental in developing the structure and content of the workshop. At the end of the workshop, participants better understood the status of their current NIPPP and were able to identify both areas of strength and areas for improvement. Accordingly, participants updated their NIPPP using the available expertise and background information, and developed a plan of action for its finalization. Participants also better understood the importance and process of ongoing planning, and undertook to update and test their NIPPP going forward upon returning to their country.

WHO EMRO also provided support to the Saudi CDC in organizing a two-day workshop (18–19 September 2019) on updating the NIPPP. All relevant sectors and partners attended the workshop, which aimed to highlight the importance of reviewing and updating the NIPPP and the methodology to be used for this. A roadmap for updating the NIPPP was developed and it was agreed that WHO EMRO would provide technical support during its revision and updating.

Morocco completed a revision of its NIPPP in November 2019, while WHO EMRO also provided support to Afghanistan, Iran (Islamic Republic of) and Qatar in reviewing and updating their NIPPPs using the standard WHO checklist. During this process, gaps in the plans were identified and technical support provided to address these.

⁸ Essential Steps for developing or updating a national pandemic influenza preparedness plan. Geneva: World Health Organization; 2018 (<https://apps.who.int/iris/bitstream/handle/10665/272253/WHO-WHE-IHM-GIP-2018.1-eng.pdf?ua=1>, accessed 24 September 2020); and: A checklist for pandemic influenza risk and impact management: building capacity for pandemic response. Geneva: World Health Organization; 2018 (http://www.who.int/influenza/preparedness/pandemic/PIRM_Checklist_update2018.pdf, accessed 24 September, 2020).

HIGHLIGHTS FROM THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK PRIORITY COUNTRIES IN EMR

Crosscutting

A simulation exercise was facilitated by WHO EMRO in September 2019 to assess participating country capacities to detect and respond to an outbreak of a novel respiratory virus. The main objective of the exercise was to test response coordination, communication and information exchange. The overarching scenario was a zoonotic novel respiratory virus outbreak in a fictitious country and its subsequent spread to each of the participating countries. Thirteen countries in the Region participated in the exercise: Bahrain, Djibouti, Egypt, Iran (Islamic Republic of), Jordan, Lebanon, Libya, Morocco, Oman, occupied Palestinian territories (oPt), Sudan, Tunisia and the United Arab Emirates. The exercise tested all of the planned key IHR (2005) functions and provided insights to participants and facilitators regarding the state of country readiness to respond to events of public health concern.

Egypt

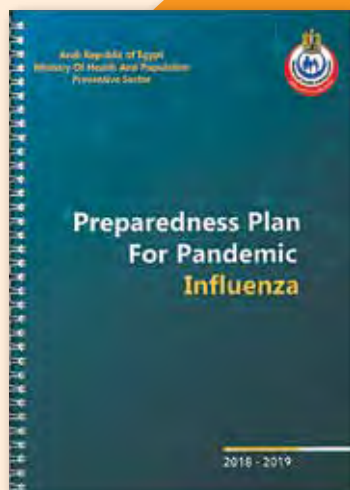
WHO EMRO coordinated with the WHO Country Office in Egypt to support the Ministry of Health and Population in organizing an influenza pandemic table top simulation exercise on 25 September 2019. The exercise was designed to validate policies, plans and procedures for event detection, alert and response capacities, and evaluate the roles of relevant stakeholders in addressing the pandemic. The exercise involved 40 participants representing different sectors and departments of the Ministry of Health and Population.

The exercise was implemented as a standard participatory event consisting of a series of injects based around an

evolving scenario provided as a PowerPoint presentation. The simulation covered a period of 3 months and depicted the chain of events of a fictional influenza pandemic divided into: (a) detection of a human case of infection with a new influenza virus strain circulating in a neighbouring country; (b) spread to several countries; (c) WHO declaration of a global pandemic; (d) detection of multiple cases of the new influenza strain in Egypt; (e) overwhelming of hospitals and clinics in Egypt as people sought medical attention; (f) intense media interest with press releases; (g) public anxiety; (h) spread of rumours; (i) recommendations made by WHO and national authorities.

Each part of the scenario was delivered in a separate session and consisted of eight injects as follows: (1) planning, coordination and resources; (2) legal and policy issues; (3) points of entry; (4) risk communication and community engagement; (5) rapid response; (6) preventive and curative measures; (7) medical countermeasures (pandemic influenza vaccine); and (8) non-pharmaceutical interventions. Exercise facilitators delivered each inject and its related questions to stimulate responses and discussion among participants. Evaluators then documented the answers and discussions throughout the exercise. At the end of the exercise, a debriefing session was held to enable the exercise management team to discuss issues arising from the simulation and identify key follow-up actions by relevant stakeholders.

The exercise objectives were met, with participants interactively reviewing their roles and responsibilities during the simulation. Ministry of Health and Population stakeholders were given the opportunity to identify strengths, gaps and areas for improvement in the NIPPP and recommendations were made for consideration during the updating of the plan. It was highly recommended that an action plan be developed that included actionable activities, timelines and responsibilities to guide implementation of the recommendations made.



2018–2019 SUCCESSES

Enhanced planning for influenza pandemic preparedness



With new PIP Framework funding support, the quality of national influenza pandemic preparedness plans has been improved. During the 2018–2019 biennium, 12 meetings and workshops were held across the Region to facilitate the revision and updating of NIPPPs. Fourteen countries reported having plans, six of which are PIP supported countries. Of these, nine plans were desktop reviewed and 13 were tested during a simulation exercise.

CHALLENGES

The WHO Eastern Mediterranean Region continues to face many challenges that have profoundly damaging effects on public health and pandemic preparedness.

Challenges faced during the implementation of PIP Framework activities during the 2018–2019 biennium included, but were not limited to:

- **Complex and increasingly fragile operational contexts** due to conflicts, outbreaks and natural disasters.
- **Limited access to the most vulnerable people**, particularly migrants, refugees and displaced people due to ongoing hostilities that continue to exhaust or limit resources, severely restrict access to people in need and hinder the ability of those people to access health care.
- **Limited community engagement in dealing with emerging infectious disease outbreaks** despite strong evidence that communities can effectively contribute to the investigation of and response to health emergencies.
- **Lack of preparedness planning**, including publicly available pandemic influenza preparedness plans.
- **High turnover of ministry of health staff** in several countries, hindering the implementation of planned activities.
- **Limited information sharing among countries** regarding outbreaks with cross-border and pandemic potential.
- **Limited use and uptake of vaccines** due to vaccine hesitancy, political barriers, industry constraints and operational challenges.
- **Humanitarian crises, political instability, large populations of refugees and internally displaced people, and natural disasters** have all affected the Region during the 2018–2019 biennium, and these and many other challenges will persist.

In addition to these external challenges, there are also challenges specific to influenza pandemic preparedness. Such preparedness has not been prioritized through political support and funding. In addition, epidemiological capacities vary widely among countries in the Region, again related to a lack of prioritization and resources. Data management and integration within countries also requires additional emphasis and capacity-building as these are key to onward data sharing both regionally and globally.

THE WAY FORWARD

Despite the challenges faced, significant progress has been made in EMR, largely due to the support and direction provided by the PIP Framework and PIP Framework Partnership Contribution.

In the 2018–2019 biennium, funding utilization for PIP Framework programming was better than ever before, reflecting increased engagement and newly built capacities which will allow for the further development of pandemic preparedness and response capacities. In addition, PIP Framework priority countries strengthened their influenza surveillance systems through the expansion of SARI and ILI sentinel sites. For example, with PIP Framework funding support, Sudan reactivated its SARI/ILI sentinel sites and NIC operations, while Yemen maintained functioning SARI sentinel sites despite the complex context due to conflict. In addition, all of the PIP Framework priority countries increased their testing capacity along with the number of influenza-positive specimens shared with WHOCCs. During the biennium, more NICs also participated in the WHO EQAP. PIP Framework priority countries also maintained regular levels of reporting through EMFLU and other WHO platforms.

In planning for strengthened pandemic influenza preparedness in the coming years, the priorities will be:

- continued enhancement of SARI/ILI surveillance, including event-based surveillance;
- further enhancing of national and regional data sharing, for example through FluNet;
- enhancing preventive capacities, for example by improving seasonal influenza vaccination programmes and investing in non-pharmaceutical preventive measures;
- increased virus sharing with WHOCCs, and participation of NICs in the yearly WHO EQAP;
- provision of technical assistance to PIP Framework Partnership Contribution recipient countries and other countries in the Region to review and update NIPPPs based on current WHO guidance;
- assisting countries in updating and testing NIPPPs and in facilitating the subsequent incorporation of the lessons learnt into the revision of national plans;
- development of vaccine deployment plans;
- expanding initiatives to estimate the burden of influenza;
- advocating for greater political will for improved animal welfare and animal disease surveillance, including through the development of mechanisms for cross-sectoral integration;
- facilitating the integration of IPPP and other national disease preparedness initiatives to ensure the resilience of planning within the health system and to promote a whole-of-society approach;
- strengthening national and regional partnerships for influenza surveillance; and
- leveraging influenza activities to strengthen capacities for other diseases and pathogens, particularly in fragile contexts.

ANNEX 1

Fund allocation and expenditure for staff and activities 1 January 2018 to 31 December 2019

Major office / Budget centre	Revised allocation 2018-2019 (Activities + Staff salary)			Funds distributed 2018-2019	Expenditure 2018-2019	Implementa- tion of 2018- 2019 approved budget (%)
	Activities	Staff salary	Total			
REGIONAL OFFICE	941 901	423 227	1 365 128	1 195 003	1 148 359	84%
AFGHANISTAN	341 000	218 318	559 318	534 443	506 999	91%
EGYPT	343 460	45 540	389 000	374 000	373 846	96%
JORDAN	248 772	172 228	421 000	398 875	394 242	94%
LEBANON	376 125	151 129	527 254	489 129	416 400	79%
MOROCCO	248 000	275 885	523 885	483 864	491 407	94%
SUDAN	145 000	–	145 000	145 000	88 795	61%
YEMEN	220 000	–	220 000	220 000	150 612	68%
Total	2 864 258	1 286 327	4 150 585	3 840 314	3 570 660	86%



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