# PROGRESS REPORT

## IMPLEMENTATION PLAN OF THE PANDEMIC INFLUENZA PREPAREDNESS FRAMEWORK´S PARTNERSHIP CONTRIBUTION

2022–2023

World Health Organization

Eastern Mediterranean Region

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# CONTENTS

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **CFR** | case–fatality ratio |
| **CPHL** | central public health laboratory |
| **DGR** | dangerous goods regulations |
| **EMARIS** | Eastern Mediterranean Acute Respiratory Infection Surveillance |
| **EMFLU** | Eastern Mediterranean Flu Network |
| **EQAP** | External Quality Assessment Project |
| **GISRS** | Global Influenza Surveillance and Response System |
| **HLIP II** | Partnership Contribution (PC) Preparedness High-Level Implementation Plan II 2018–2023 |
| **IATA** | International Air Transport Association |
| **ILI** | influenza-like illness |
| **IPPP** | influenza pandemic preparedness plan |
| **MERS** | Middle East respiratory syndrome |
| **MERS-CoV** | Middle East respiratory syndrome coronavirus |
| **NIC** | national influenza centre |
| **ORV** | other respiratory virus |
| **PC** | Partnership Contribution |
| **PCR** | polymerase chain reaction |
| **PIP** | Pandemic Influenza Preparedness |
| **PISA** | Pandemic Influenza Severity Assessment |
| **PIVI** | Partnership for Influenza Vaccine Introduction |
| **PRET** | Preparedness and Resilience for Emerging Threats |
| **RCCE** | risk communication and community engagement |
| **RSV** | respiratory syncytial virus |
| **RT-PCR** | reverse transcription polymerase chain reaction |
| **SARI** | severe acute respiratory illness |
| **SOPs** | standard operating procedures |
| **US CDC** | United States Centers for Disease Control and Prevention |
| **WHO** | World Health Organization |

# INTRODUCTION

The Eastern Mediterranean Region is currently facing an extremely alarming situation, with 11 of its 22 countries and territories in crisis. These countries are experiencing significant challenges that pose a threat to the sustainability and functionality of their influenza and other respiratory diseases surveillence systems surveillance systems.

The ongoing crises in the Region have affected every country, particularly low-income and lower middle-income countries, and have been further exacerbated by the COVID-19 pandemic and its consequences. Conflict, disease outbreaks, natural disasters, economic decline and poverty have plagued many nations, leading to an urgent need for humanitarian assistance. The number of people requiring support in the Region has more than doubled during the reporting period (2022–2023), indicating the magnitude of the challenges faced.

Despite these difficulties, frontline health workers and officials have demonstrated immense courage and resilience in addressing the needs of their communities, with support from the World Health Organization (WHO) and its partners.

# FACTS from the Eastern Mediterranean Region

**11** of the **22** **countries/territories of the Region** have experienced ongoing conflict

WHO has documented and responded to **166 disease outbreaks** (including COVID-19) from 2018 to 2022. Many countries have also been affected by natural and manmade disasters

In 2022, WHO responded to **60 emergencies**, while in 2023 WHO responded to **58**

The number of people needing humanitarian assistance in the Region more than doubled, from **63 million** in 2018 to **127 million** in 2022

The Region is home to just **9%** of the world's population but **38%** of its humanitarian burden

**7** of the **10** PIP countries are in crisis

Afghanistan, Iraq, Lebanon, Sudan, Somalia, Syrian Arab Republic, Yemen

The PIP PC supported **10 countries** in 2022 - 2023 as part of HLIP II, which are

Afghanistan, Iraq, Lebanon, Jordan, Egypt, Sudan, Somalia, Syrian Arab Republic, Morocco, Yemen

**19** out of the **22** countries/territories have a sentinel surveillance system

(except Djibouti, oPt, Kuwait)

**21** out of the **22** **countries/territories** have a national influenza centre or a national influenza laboratory

**18 countries** in the Region are reporting SARS-Cov2 and influenza data through GISRS

**21** out of **22** countries/territories have capacity to conduct genomic sequencing for COVID-19 and **15** for influenza

All countries received WHO technical support to conduct influenza surveillance and all countries have **rapid response teams**

# Pandemic Influenza Preparedness (PIP) Framework

In 2011, the World Health Organization's (WHO) World Health Assembly adopted the Pandemic Influenza Preparedness (PIP) Framework through resolution WHA64.5, with the goal of enhancing preparedness and response for future influenza pandemics. This unique public-private partnership framework comprises three major components: virus sharing, benefit sharing and governance.

The PIP Framework aims to ensure that international responses to pandemic influenza are rapid, flexible, effective and equitable. It has been globally recognized for equipping Member States with the knowledge, plans, and tools necessary to respond to epidemics and pandemics. Support provided includes guidance on surveillance measures, testing and community engagement, as well as a well-established platform and a group of skilled experts who can be rapidly deployed to respond to crises (1).

The first PIP Framework Partnership Contribution high-level implementation plan was carried out in 72 countries, including seven in the Eastern Mediterranean Region. Building on this progress and to further guide the investment priorities of the PIP Framework, a second implementation plan, High-Level Implementation Plan II (HLIP II), was developed for the period 2018–2023, covering 10 countries. In 2023, the third implementation plan (HLIP III) was developed for the period 2024–2030, with an additional two countries selected to benefit from the Partnership Contribution.

Funds from the PIP Partnership Contribution strengthen capacities in six critical areas: laboratory and surveillance capacity, knowledge of the burden of disease, regulatory affairs capacity, planning for the deployment of pandemic response supplies, risk communication and and influenza pandemic preparedness planning. The specific goals for each area were detailed in the PIP Partnership Contribution Preparedness High-Level Implementation Plan II 2018–2023 and are presented in Table 1 below.

**PIP PC Preparedness Outcome:**

Influenza surveillance systems, knowledge and capacities for a timely and appropriate response to pandemic influenza are established and strengthened .

**Output 1: National influenza laboratory and surveillance systems contribute to GISRS for timely risk assessment & response measures**

**Output 2: Influenza disease burden estimates are used for public health decisions**

**Output 3: Timely access to quality-assured pandemic influenza products is supported**

**Output 4: Tools and guidance are available for countries to enhance influenza risk communication and community engagement**[1]

**Output 5: Plans for effective and efficient deployment of pandemic supplies are optimized**

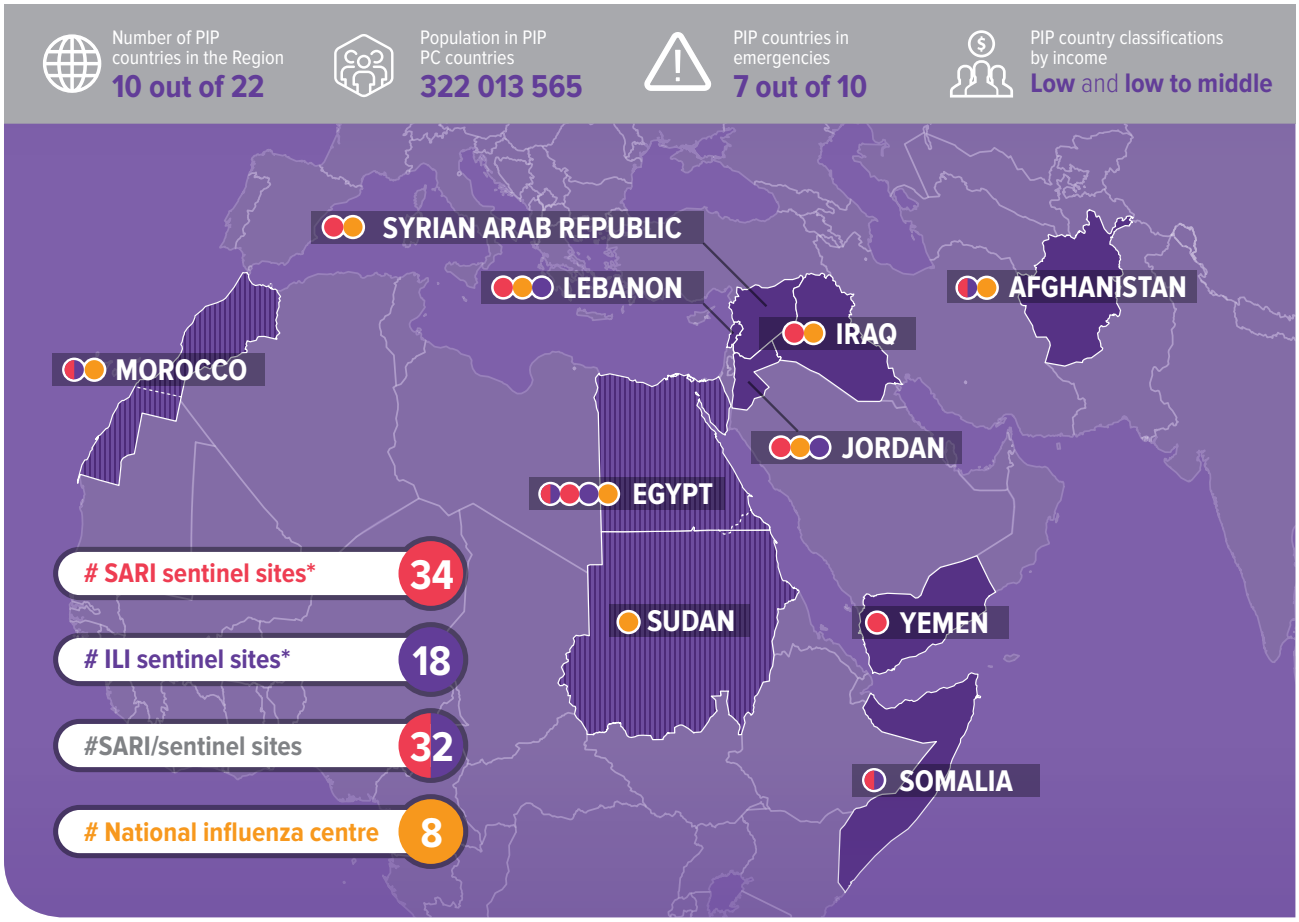
**Output 6: National pandemic influenza preparedness and response plans are updated in the context of all-hazards preparedness and global health security.**

1 World Health Organization. «Pandemic influenza preparedness framework for the sharing of influenza viruses and access to vaccines and other benefits.» (2021).

### Brief about the PIP Framework in the Eastern Mediterranean Region

Ten countries from the Eastern Mediterranean Region are recipients of the PIP Partnership Contribution: Afghanistan, Egypt, Iraq, Jordan, Lebanon, Morocco, Sudan, Syrian Arab Republic, Somalia, and Yemen. These countries were chosen based on their geographic distribution in influenza transmission zones, development status and the need to enhance their influenza epidemiological and laboratory surveillance capacities.

Fig. 1 illustrates the 10 PIP Partnership Contribution (PC) countries and indicates the number of sentinel sites and laboratories supported by the PIP PC fund.




* **SARI:** Severe acute respiratory illness **ILI:** Influenza-like illness

**Fig. 1.** Number of sentinel sites and laboratories in the 10 countries supported by PIP PC funding

# About this report

Under the Pandemic Influenza Preparedness (PIP) Framework, and in line with the Partnership Contribution (PC) Preparedness High-Level Implementation Plan II 2018–2023 (HLIP II),2 considerable progress has been made in improving surveillance and response capacities for pandemic influenza and other respiratory viruses (ORVs) in the Region. A strong emphasis has been placed on establishing robust surveillance systems, enhancing laboratory capabilities, promoting virus and data sharing, estimating the influenza burden of disease and protecting communities.

This report presents the major milestones and achievements of PIP Framework implementation in the Region during the period 2022–2023, showcasing the positive impact of PIP PC investments. From the establishment of sentinel surveillance systems and rapid response teams in all countries to the enhancement of genomic sequencing capacities and laboratory functionality, substantial improvements have been made. However, many challenges – such as virus sharing in countries in crisis and the sustainability and accessibility of services – still need to be addressed.

The report also highlights the integration of end-to-end surveillance, from sentinel site case enrolment and sampling to the eventual sharing of virus sequence data, contributing to a comprehensive understanding of respiratory infections in the Region. Furthermore, the WHO Regional Office for the Eastern Mediterranean continues to prioritize the tackling of disease outbreaks and the institutionalization of prevention and response systems for influenza and ORVs, particularly in humanitarian settings.

The PIP financial data included in this report indicate a high implementation rate of 98% for the regional plan, the highest in recent years, despite the various challenges faced. The report also features stories from the 10 countries in the Region supported by PIP PC funding, capturing the main areas of work and demonstrating the impact of the funding on the sustainability and functionality of the preparedness and response system.

The WHO Regional Office expresses its gratitude to the PIP Framework Secretariat and all partners for their support during 2022–2023. The Organization looks forward to collaborative efforts and advancements in tackling infectious respiratory disease, striving to improve the situation across the Region.

2 Partnership Contribution (PC) Preparedness High-Level Implementation Plan II 2018–2023 (HLIP II). Geneva: World Health Organization; 2019 (https://iris.who.int/bitstream/handle/10665/326292/WHO-WHE-IHM-PIP-2018.1-Rev1-eng.pdf?sequence=1, accessed 10 June 2024).

# IMPLEMENTATION OF THE PIP FRAMEWORK, 2022–2023

# PROGRESS ON TECHNICAL IMPLEMENTATION, 2022–2023

The WHO Regional Office for the Eastern Mediterranean has systematically implemented the PIP Framework in partnership with national partners. The US$ 3 million received from the PC in 2022–2023 enabled countries in the Region to invest in capacity-strengthening for pandemic influenza preparedness.

The technical implementation of the PIP Framework has resulted in several significant advances in the global pandemic influenza preparedness landscape. The groundwork/foundations were laid prior to 2020 supported in COVID-19 and other outbreak response capacities.

### PIP indicator results for the 10 PC recipient countries in the Eastern Mediterranean Region, 2023

| Indicator | Result |
|---|---|
| Number of countries that have functional national influenza centre (NIC) | 8 |
| Number of countries with influenza cases sharing influenza viruses with pandemic potential (influenza virus isolates or clinical specimens) with Global Influenza Surveillance and Response System (GISRS) | 4 |
| Number of countries reporting to FluNet (sustainability indicator) | 8 |
| Number of countries reporting to FluID | 8 |
| Number of countries reporting to EMFLU | 9 |
| Number of countries participating in the WHO External Quality Assessment Project (EQAP) | 3 |
| Number of countries that have developed or updated an influenza vaccination policy | 2 |
| Number of countries that have developed or updated an influenza pandemic preparedness plan (IPPP) (drafted after 2014) | 8 |
| Number of countries that have conducted a simulation exercise to test their IPPP | 2 |

* These data are presented to inform the development of activities to strengthen preparedness capacities, acknowledging that each country faces its own unique challenges, with many in complex humanitarian emergencies that can limit the progress made and sustained against specific indicators.

Following is a detailed summary of the main technical achievements under the six PIP HLIP II outputs.

# OUTPUT 1

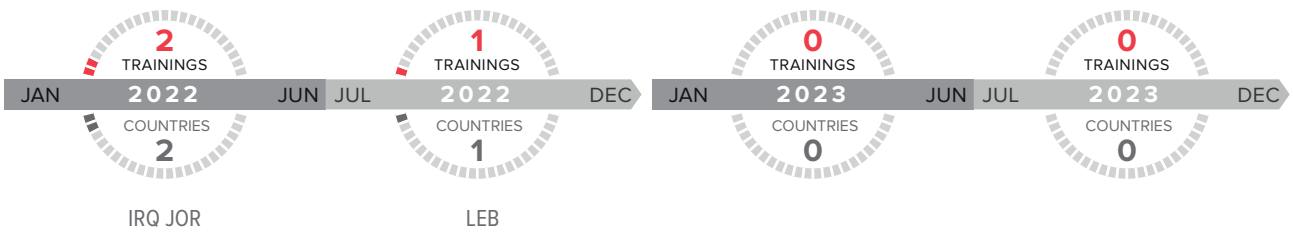
# LABORATORY AND SURVEILLANCE

## National influenza laboratory and surveillance systems contribute to GISRS for timely risk assessment and response measures

### DELIVERABLE A

**Risk and severity of influenza, including at the human–animal interface, are routinely assessed**

**Milestone 1** **Pandemic Influenza Severity Assessment (PISA) trainings completed**



## Milestone 2 Outbreak detection and response trainings completed (e.g. rapid response trainings) or operations of surveillance sites (e.g. trainings on sample collection, storage and shipment/ transportation or meeting to assess influenza trends with the ministry of health)

| JAN–JUN 2022 | JUL–DEC 2022 | JAN–JUN 2023 | JUL–DEC 2023 |
|---|---|---|---|
| 18 TRAININGS | 23 TRAININGS | 5 TRAININGS | 1 TRAININGS |
| COUNTRIES 4 | COUNTRIES 9 | COUNTRIES 4 | COUNTRIES 1 |
| EGY IRQ MOR SOM | AFG EGY IRQ JOR MOR SOM SUD SYR YEM | AFG EGY LEB MOR | AFG |

## Milestone 3 Meetings, trainings, workshops, joint investigations or risk assessments conducted to strengthen human–animal interface

| JAN–JUN 2022 | JUL–DEC 2022 | JAN–JUN 2023 | JUL–DEC 2023 |
|---|---|---|---|
| 10 MEETINGS | 3 MEETINGS | 5 MEETINGS | 4 MEETINGS |
| COUNTRIES 5 | COUNTRIES 3 | COUNTRIES 22 | COUNTRIES 3 |
| IRQ JOR MOR SYR SOM | MOR SOM EGY | ALL | EGY LEB SYR |

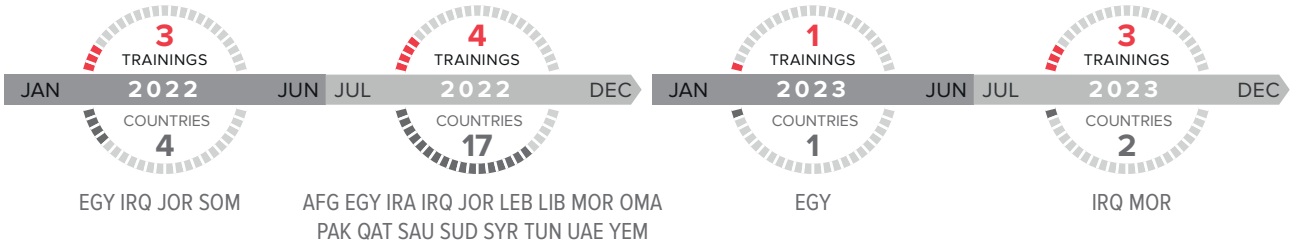
## HIGHLIGHTS

- Lebanon completed a training session on the Global PISA tool.
- Two countries in the Region (Egypt and Oman) participated in the global PISA meeting in the fourth quarter of 2023 to review and update global indicators.
- Outbreak detection and response training sessions are critical for pandemic influenza readiness. In 2022–2023, many outbreak detection and response trainings were conducted in 10 countries. These activities strengthen influenza detection and response readiness.
- Lebanon updated its national thresholds at the end of 2022 and has been sharing PISA findings with WHO global platforms on a regular basis.

## DELIVERABLE B

### Quality influenza virus detection capacity is sustained

**Milestone 1** **Laboratory trainings and technical support missions/visits provided to countries**




**Milestone 2** **EQAP status**

**PIP indicator | Output 1, Deliverable B, Milestone 2**

| | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Percentage of countries/territories that participated and were 100% correct for non-seasonal polymerase chain reaction (PCR) EQAP | 100% (12/12) | 92% (11/12) | 92% |
| Percentage of countries/territories that participated and were 100% correct for seasonal PCR EQAP | 92% (11/12) | 92%(11/12) | 92% |

| EQAP (non-seasonal) | | EQAP (seasonal) | |
|---|---|---|---|
| PIP Country | Not PIP Country | PIP Country | Not PIP Country |
| **Did not participate** | | | |
| **AFG EGY JOR SOM SUD SYR** | DIJ IRN KUW | **AFG EGY JOR SOM SUD SYR** | DIJ IRN KUW |
| **Participated but not 100% correct** | | | |
| **YEM** | | | QAT |
| **Participated and 100% correct** | | | |
| **IRQ LEB MOR** | BAH LIB OMA PAK QAT SAU TUN UAE | **IRQ LEB MOR** | BAH LIB OMA PAK QAT SAU TUN UAE |

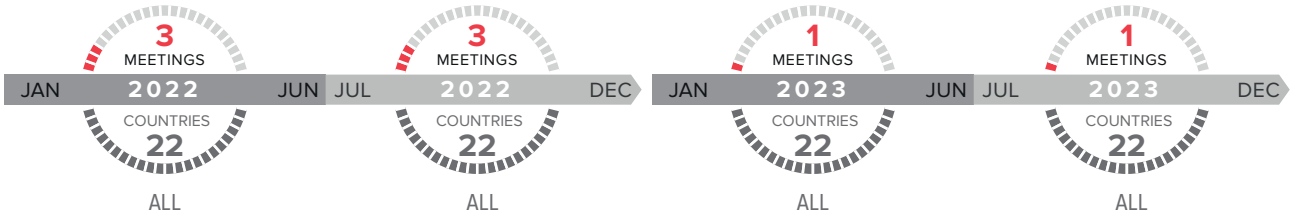
## HIGHLIGHTS

- In 2022–2023, The NIC was newly recognized by WHO in Saudi Arabia, bringing the total number of NICs in the Region to 18 in 17 countries. In addition, 19 countries benefited from five laboratory training activities related to respiratory pathogen characterization, sequencing and infectious substances shipping training. The WHO Regional Office helped coordinate the participation of Member States in the GISRS EQAP for SARS-CoV-2 and influenza detection by reverse transcription PCR (RT-PCR) in 2022.
- Nineteen countries in the Region participated in the EQAP, which covered nine PIP countries (Somalia did not participate).
- The EQAP panel round 21 was conducted between 29 June and 23 September 2022.
- Seven PIP countries submitted results for analysis (the central public health laboratory (CPHL) in Sana'a in Yemen participated, but the one in Aden did not), while Afghanistan and Sudan did not submit results.
- The average turn-around time for all PIP laboratories participating in round 21 (in 2022) was approximately 21 days.
- All countries/territories that submitted EQAP results showed concordant scores for the non-seasonal proficiency samples, and 78.5% scored 100% for seasonal virus identification.
- The WHO Regional Office coordinated with countries/territories to participate in round 22 of the GISRS EQAP.
- In 2023, all countries/territories of the Region expressed interest in participating in round 22 between early August and the end of September 2023, and assessment of results and reporting back is still ongoing.
- In 2023, all countries, including PIP countries, received EQAP panels 22 and tested them for result submission. In Yemen, the CPHL in Sana'a was not able to receive the panels due to logistic challenges, but the CPHL in Aden successfully received it.
- Countries in the Region, including PIP countries, have expanded their molecular diagnostic capacity and have gained access to genomic sequencing capacity.
- WHO has developed a regional genomic surveillance sequencing strategy to utilize genomic sequencing data to help inform public health actions.

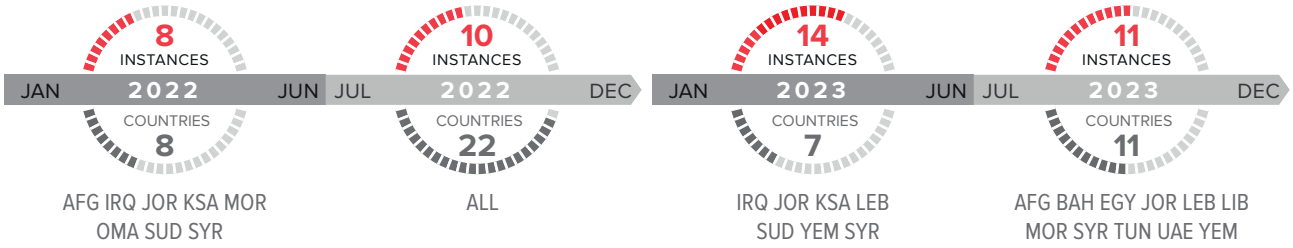
## DELIVERABLE C

### Countries are supported to consistently report influenza data to global platforms

**Milestone 1** **Regional influenza meetings (e.g. NIC meetings) held to improve global influenza surveillance system strengthening**



## Milestone 2 Technical assistance and support for surveillance provided to countries (for data management, data reporting, IT, etc.) and for bulletin development




**PIP indicator | Output 1, Deliverable C, Milestone 2**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Percentage of PC recipient countries reporting to FluNet | 78% (7/10) | 80% (8/10) | 93% |
| Percentage of PC recipient countries reporting to FluID | 90% (9/10) | 80% (8/10) | 100% |

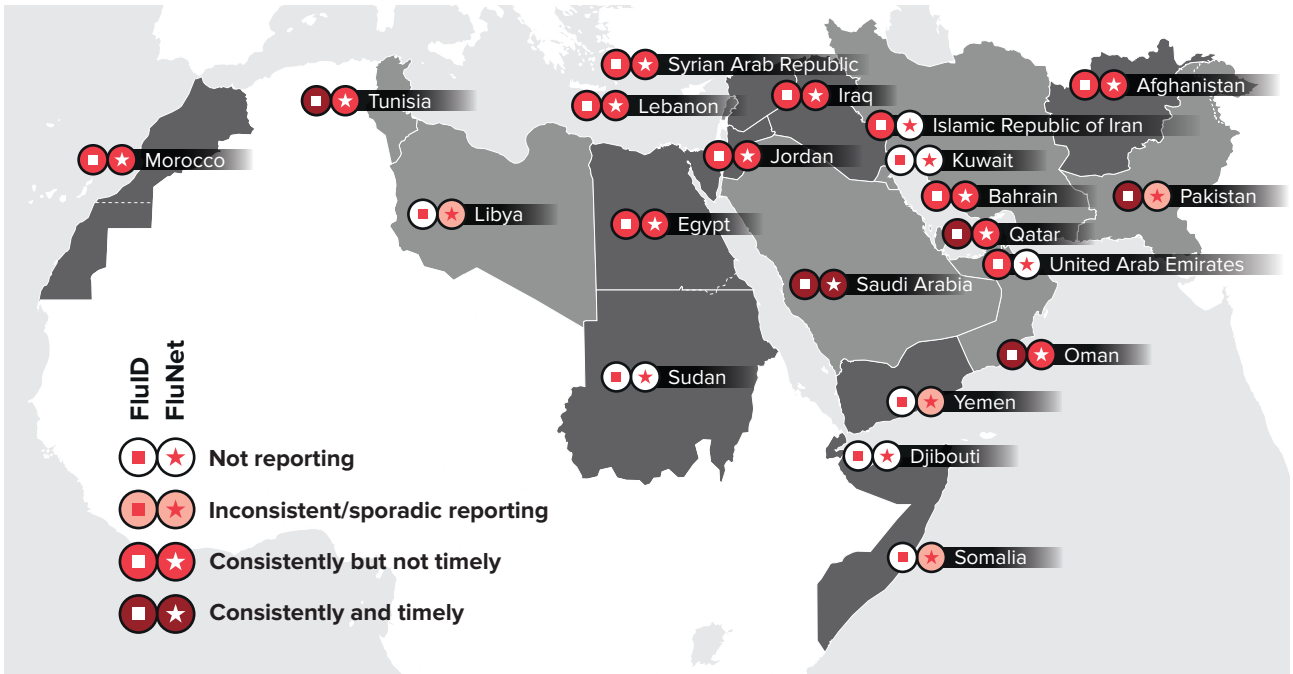



**Fig. 2.** Percentage of PC recipient countries reporting to FluNet and FluID

## Milestone 3 Regional bulletins published


## HIGHLIGHTS

- Twenty-one countries in the Region have functioning influenza surveillance systems.
- Of these 21 countries, on average 18 reported to the global platform (FluNet) and/or the regional platform (EMFLU).
- As of December 2023, 18 countries have integrated SARS-CoV-2 and respiratory syncytial virus (RSV) into their influenza sentinel surveillance systems and have used an established platform to share SARS-CoV-2 data. This increases the efficiency of preparedness and response.
- A virtual regional webinar was conducted in October 2022 to share WHO guidance on preparing for the 2022–2023 influenza season, facilitate discussions among key stakeholders and identify any gaps that may require WHO support.
- Several missions were carried out in countries in the Region to provide support and assess their sentinel influenza surveillance systems. Additionally, training on the WHO regional platform EMFLU 2.0 was rolled out in Iraq, Morocco, Oman, Saudi Arabia, Somalia, Syrian Arab Republic and Yemen.
- A workshop was conducted to introduce EMFLU 2.0 and to facilitate its implementation in four countries: Lebanon, Morocco, Tunisia and Yemen.
- Weekly and monthly updates on influenza reporting status to EMFLU and FluNet have been published regularly. The influenza bulletins entail multiple stages of production, including data preparation, verification, analysis and visualization through tables, graphs and maps. Example in the photo below.

## DELIVERABLE D

### Countries are supported to share timely representative influenza samples with WHO collaborating centres

**Milestone 2** **Shipments made using the Shipping Fund Project**

**PIP indicator | Output 1, Deliverable D, Milestone 2**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Percentage of countries/territories that have sent at least two timely shipments | 29% (6/22) | 29% (6/22) | N/A |

**Shipments (virus sharing)**

| PIP country | Non PIP country |
|---|---|
| **No shipment** | |
| AFG IRQ JOR SOM LIB SUD YEM | DIJ KUW |
| **Shipments made (but non-timely or less than 2 timely shipments)** | |
| MOR SYR | IRN PAK QAT SAU |
| **At least 2 timely shipments** | |
| EGY LEB | BAH OMA TUN UAE |

## HIGHLIGHTS

- In 2022–2023, 15 countries shared influenza viruses/clinical specimens at least once with WHO collaborating centres (26 shipments with over 3000 specimens in 2022). This was an increase of almost 44% compared with 2021 (18 shipments with fewer than 2000 specimens). This is a marked increase in influenza sample sharing compared with previous years during the COVID-19 pandemic, when there were significant disruptions.
- In 2022–2023, Sudan and Yemen shared virus isolates with WHO collaborating centres for the first time in many years.
- The WHO Regional Office sponsored the participation of a regional laboratory officer in a training of trainers workshop on the transport of infectious substances by air according to the International Air Transport Association (IATA) dangerous goods regulations (DGR), in particular as per IATA DGR 1.5 and IATA dangerous goods training. The workshop was held in Singapore on 5–9 December 2022. The officer successfully completed and has since provided national training in the Region for laboratory professionals on the transport and shipping of infectious substances by air.
- The WHO Regional Office provided three 5-day training sessions: two in Yemen, in Aden and Sana'a, and the third in Damascus, Syrian Arab Republic. The sessions covered the shipping of infectious substances in line with IATA regulations. The Yemen training took place on 9–13 July in Aden and on 27–31 August 2023 in Sana'a, and the training in Damascus was held on 17–21 December 2023. The training content covered both theoretical and practical components.

- The Aden training workshop was attended by 18 national laboratory professionals (8 females, 10 males), and the Sana'a event involved 15 national laboratory professionals (9 females, 6 males).
- The Syrian Arab Republic training workshop was attended by 31 participants (22 females, 9 males).
- The WHO Regional Office supported countries/territories with logistic and financial assistance through the Shipping Fund Project to share representative samples with WHO collaborating centres.

## DELIVERABLE E

### Influenza candidate vaccine viruses, virus detection protocols and reagents, and reference materials are routinely updated - Global Indicator

**Milestone 1** **Protocol and guidance reviewed, including translations. Vaccine composition meetings consultations completed, new candidate vaccine viruses proposed**

## HIGHLIGHTS

- The WHO Regional Office organized virtual workshops on the updated NIC terms of reference as part of seasonal influenza viruses global launch on 4 and 14 September 2023.

# OUTPUT 2

# BURDEN OF DISEASE

## Influenza disease burden estimates are used for public health decisions

### DELIVERABLE A

**Representative national, regional and global disease burden estimates are available**

**Milestone 1** **Number of countries in each burden of disease estimate development stage**

**PIP indicator | Output 2, Deliverable A, Milestone 1**

**Number of Member States with published disease burden estimates based on data collected since 2011**

| WHO Member State | Published estimates |
|---|---|
| BAH DIJ IRQ KUW LEB PAK SOM SYR UAE YEM | No plan and estimates available/Information not available |
| AFG JOR MOR SUD | Implementation plan established/plan for estimating-collecting denominators |
| SAU | Estimates done but not published |
| EGY IRN LIB OMA QAT TUN | Estimates published |

### HIGHLIGHTS

- Six countries in the Region have estimated and published their influenza burden of disease findings since 2011 (Egypt, Islamic Republic of Iran, Lebanon, Oman, Qatar and Tunisia).[1]
- In September 2022, the WHO Regional Office conducted a subregional burden of disease training workshop for three countries (Egypt, Lebanon and Saudi Arabia). The training aimed to support Ministry of Health officials in estimating the incidence of influenza-associated severe acute respiratory illness (SARI) hospitalization at SARI sentinel sites, extrapolating incidence rates to the national level using the WHO recommended methodology, and estimating the national influenza disease burden pyramid using the WHO pyramid web tool.
- Lebanon successfully published its burden of disease estimates in a peer-reviewed journal[2] and presented the results during the Sixth Meeting of the Eastern Mediterranean Acute Respiratory Infection Surveillance (EMARIS) Network, held in Muscat, Oman, in March 2023.

1 These findings can be accessed at the following links. Egypt: https://pubmed.ncbi.nlm.nih.gov/27714745/; https://onlinelibrary.wiley.com/doi/full/10.1111/irv.12974. Islamic Republic of Iran: https://iris.who.int/bitstream/handle/10665/260093/EMHJ_2016_22_07_432_439.pdf; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7500421/; https://onlinelibrary.wiley.com/doi/epdf/10.1111/irv.13061. Lebanon: https://onlinelibrary.wiley.com/doi/full/10.1111/irv.12527?af=R; https://onlinelibrary.wiley.com/doi/epdf/10.1111/irv.13138. Oman: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4671710/; https://onlinelibrary.wiley.com/doi/full/10.1111/irv.12500. Pakistan: https://onlinelibrary.wiley.com/doi/epdf/10.1111/irv.13125. Tunisia: https://applications.emro.who.int/emhj/v22/07/EMHJ_2016_22_07_459_466.pdf.

2 Farah Z, El Naja HA, Tempia S, Saleh N, Abubakar A, Maison P, et al. Estimation of the influenza-associated respiratory hospitalization burden using sentinel surveillance data, Lebanon, 2015–2020. Influenza Other Respi Viruses. 2023;17(4):e13138 (https://doi.org/10.1111/irv.13138).

- Egypt is in the final stages of data analysis and drafting a manuscript related to influenza burden of disease estimate.
- Saudi Arabia is receiving close follow-up and support from WHO to finalize the analysis phase.
- A second subregional burden of disease training workshop for six countries was organized in September 2023. The participating countries were Afghanistan, Bahrain, Jordan, Morocco, Tunisia and United Arab Emirates.
- Fourteen out of 22 countries/territories in the Region have a national seasonal influenza vaccination policy, with four of these being PIP countries.
- Among the countries with a policy, seven have updated their national policy, including two PIP countries.

# OUTPUT 3

# REGULATORY CAPACITY-BUILDING

## Timely access to quality-assured pandemic influenza products is supported

### DELIVERABLE A

**National regulatory capacity for pandemic influenza products is strengthened**

**Milestone 2** **Benchmarking and institutional development plan follow-up missions**

**PIP indicator | Output 3, Deliverable A, Milestone 2**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Number of countries/territories that have implemented a defined regulatory approach that enables timely approval for use of pandemic influenza products | 6 | 6 | N/A |
| Number of countries/territories that have strengthened national regulatory capacity to oversee pandemic influenza products as per WHO benchmarking and Institutional development plan implementation | 1 | 1 | N/A |

# OUTPUT 4

# RISK COMMUNICATION AND COMMUNITY ENGAGEMENT

## Tools and guidance are available for countries to enhance influenza risk communication and community engagement

### DELIVERABLE A

**Countries and front-line responders have access to resources for influenza risk communication, community engagement and social science-based interventions**

**Milestone 2** **Advocacy and marketing completed to promote use of OpenWHO influenza-relevant modules.**

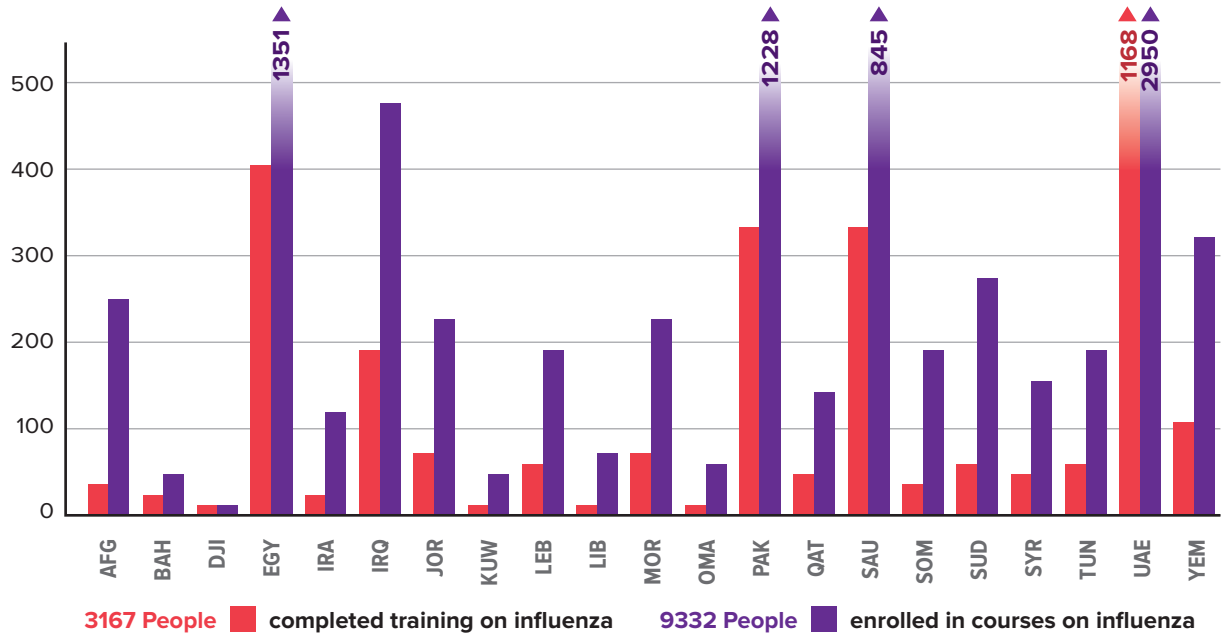



**Fig. 3.** Number of users from target audiences who completed learning modules on influenza and related risk communication and community engagement (RCCE) content on the OpenWHO platform

## DELIVERABLE B

### Technical assistance is provided to countries to plan and exercise influenza risk communication and community engagement

**Milestone 1** **Technical support provided to countries**

**PIP indicator | Output 4, Deliverable B, Milestone 1**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Number of countries/territories that have utilized RCCE support for influenza preparedness or response | 13 | 18 | N/A |
| Number of pilot countries that have active social digital listening for acute respiratory infections | 4 | 4 | N/A |

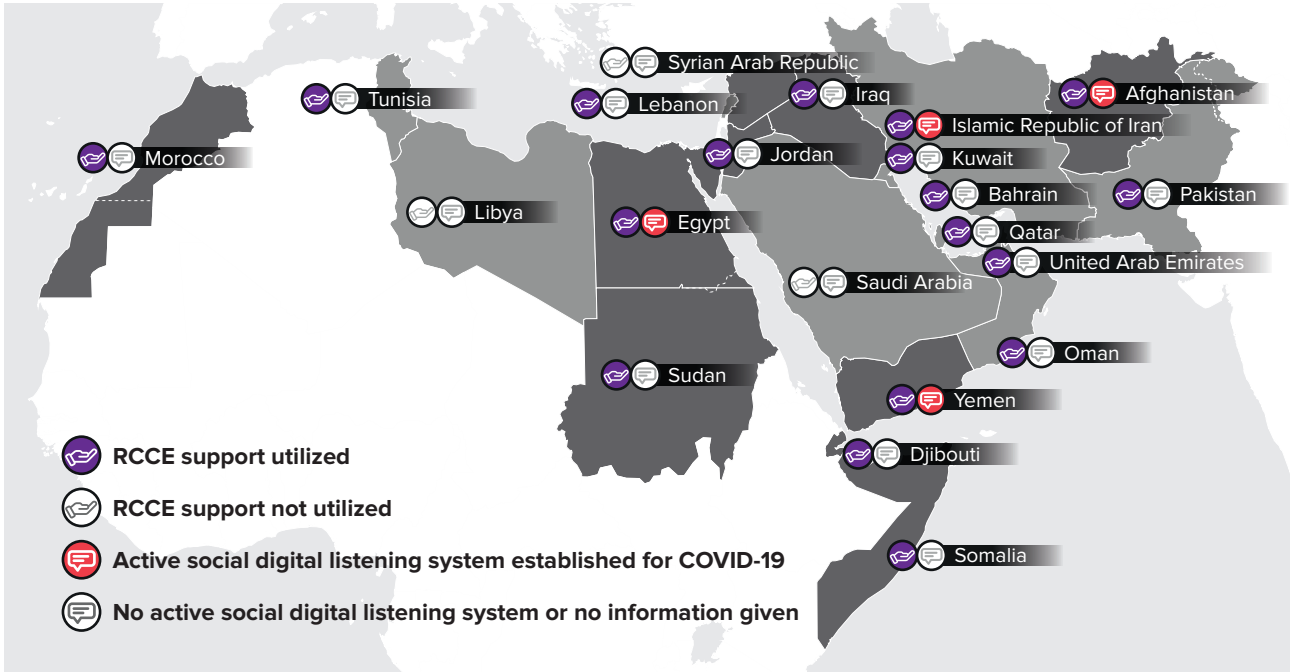



**Fig. 4.** Number of countries/territories that have utilized RCCE support and have active social digital listening for acute respiratory infections

# OUTPUT 5

# PLANNING OF DEPLOYMENT

## Plans for effective and efficient deployment of pandemic supplies are optimized

### DELIVERABLE B

**National deployment planning process is revised and updated**

**Milestone 2** **Technical support provided to countries to update their national deployment plan as part of their influenza pandemic preparedness**

**PIP indicator | Output 5, Deliverable B, Milestone 2**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Annual simulation exercise conducted to test global deployment of pandemic influenza vaccines and other products | 1 | 1 | - |

# OUTPUT 6

# INFLUENZA PANDEMIC PREPAREDNESS PLANNING

## National influenza pandemic preparedness and response plans are updated in the context of all-hazards preparedness and global health security

### DELIVERABLE A

**Countries are supported to develop, test and update their influenza pandemic preparedness plan**

**Milestone 1** **IPPP development/revision stage in cycle**

**PIP indicator | Output 6, Deliverable A, Milestone 1**

| PIP indicator | 2022 results | 2023 results | Percentage of biennial target achieved |
|---|---|---|---|
| Number/percentage of PC recipient countries that have developed or updated an IPPP since 2014 | 80% (8/10) | 80% (8/10) | 80% |
| Number/percentage of PC recipient countries that exercised their IPPP in 2022–2023 (revised indicator) | (10%) 1/10 | 20% (2/10) | 29% |

| IPPP written/revised | |
|---|---|
| No IPPP or information not provided | DIJ LIB PAK SOM SUD TUN UAE |
| IPPP pre-2014 | BAH OMA SAU |
| IPPP 2014 onward | AFG EGY IRN IRQ JOR KUW LEB MOR QAT SYR YEM |
| **IPPP process** | |
| Planning meeting held/workshop completed | JOR |
| IPPP written or revised | IRN IRQ |
| **IPPP exercised (No. of exercises done)** | |
| IPPP exercised | LEB MOR |

### HIGHLIGHTS

- Of the 10 PC recipient countries in the Region in the 2022–2023 biennium, eight now have an IPPP based on WHO guidance. Two of these countries updated their plan in 2022–2023.
- Two countries exercised their IPPPs in 2022–2023, focusing on outbreak response and multisectoral coordination. These exercises were supported by a simulation exercise package developed by WHO to test national procedures and policies on multisectoral coordination, RCCE and triggers for decision-making. These exercises will support iterative improvements of emergency preparedness and response protocols, taking into account lessons from the COVID-19 response.
- A virtual regional webinar was conducted in September 2022 to discuss pandemic preparedness planning in order to promote an integrated approach in preparedness, in light of lessons learned from the COVID-19 pandemic response.
- A quick survey was conducted prior to the webinar, with a response rate of 91% (exceptions were Djibouti and Tunisia).
- Of the 20 countries that responded, 18 confirmed the existence of an IPPP, with Iraq and Somalia preparing for the development of their national plans.
- Bahrain, Egypt, Islamic Republic of Iran, Jordan and Lebanon are in the process of revising their plans, taking lessons from the COVID-19 pandemic into account.
- Lebanon and Morocco conducted a tabletop simulation exercise to update their plans.
- Twelve countries have expressed interest and are preparing to review and update their respiratory infection pandemic preparedness plans, which include influenza.

The WHO Regional Office has conducted two separate missions to Lebanon and Saudi Arabia to support these countries in integrating respiratory pathogens. One full day of each three-day mission was dedicated to national respiratory infection pandemic preparedness planning, promoting the Preparedness and Resilience for Emerging Threats initiative.

# PIP FRAMEWORK SECRETARIAT

## OUTPUT

## The PIP Secretariat leads, manages and supports implementation of the PIP Framework

### DELIVERABLE B

**Collect, monitor and report data on implementation ofthe Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Implementation Plan**

### HIGHLIGHTS

- Eighty-five (85) monitoring visits, both in-person and virtual, were conducted, with discussions focused on progress achieved and sustaining HLIP II implementation.
- Five "Stories from the field" were published in the WHO influenza newsletter and on the Infectious Hazard Prevention website. The stories shed light on the impact of PC investments at the country, regional and global levels, including the collateral benefits that they have had for the COVID-19 response.

- The WHO Regional Office has continued its efforts to establish and expand well-structured and sustainable influenza vaccination programmes in the Region.
- Collaboration with partners is being supported to offer more assistance to countries in the Region, with the Partnership for Influenza Vaccine Introduction (PIVI) being one of the key partners.
- In early 2023, Egypt, Jordan and Lebanon joined PIVI to enhance their seasonal influenza vaccination activities. These three countries have finalized their PIVI workplans, received initial funding and commenced implementation.
- A subregional meeting was held by the WHO Regional Office and PIVI in Jordan in August 2023 to review progress and plan for future support. Egypt, Jordan and Lebanon presented their plans and activities, together with challenges and ways forward.
- Jordan was selected from among the countries/territories in the Region to pilot the Behavioural and Social Drivers survey for seasonal influenza vaccines. The regional WHO infectious hazard prevention and preparedness programme and the WHO Regional Office, along with WHO headquarters, the United States Centers for Disease Control and Prevention (US CDC), the Task Force for Global Health, PIVI, the Jordan WHO Country Office and the Jordanian Ministry of Health were finalizing preparations for piloting the survey before the end of 2023.

# PROGRESS ON FINANCIAL IMPLEMENTATION 2022–2023

Funds allocated under the PIP Framework Partnership Contribution aim to enhance pandemic influenza preparedness and response.

The PIP Framework Secretariat allocated a total of US$ 3 050 927 to the WHO Regional Office for the Eastern Mediterranean and countries of the Region in order to implement activities planned under Output 1 and 6, covering the period from 2022 to 2023.

The implementation rate of the PIP Framework funding Biennial budget 2022–2023: US$ 3 050 927 is 95% of fund distributed.

# FINANCIAL REPORT

Funds allocated under the PIP PC aim to enhance pandemic influenza preparedness and response.

The PIP Framework Secretariat allocated a total of US$ 3 050 927 to the WHO Regional Office for the Eastern Mediterranean and countries of the Region in order to implement activities planned under outputs 1–6, covering the period from 2022 to 2023 (Table 1). At the end of the period, 95% of the PIP PC funds had been distributed.

**Table 1. PIP PC Financial report, 2022-2023**

| Country/territory | Aproved Budget | Funds Distributed | Award Budget | Expenditures | % Implementation of Approved Budget |
|---|---|---|---|---|---|
| **WHO Health Emergencies Programme** | 869,500 | 869,500 | 869,500 | 862,725 | 99% |
| **Afghanistan** | 252,000 | 252,000 | 252,000 | 242,217 | 96% |
| **Egypt** | 206,750 | 206,750 | 202,778 | 202,777 | 98% |
| **Iran** (Islamic Republic of)* | 14,500 | 14,500 | 14,500 | 14,500 | 100% |
| **Iraq** | 126,000 | 126,000 | 126,000 | 108,905 | 86% |
| **Jordan** | 263,500 | 226,141 | 263,500 | 247,662 | 94% |
| **Lebanon** | 312,000 | 312,000 | 311,797 | 307,815 | 99% |
| **Morocco** | 352,180 | 352,100 | 352,180 | 323,600 | 92% |
| **Somalia** | 65,000 | 65,000 | 59,701 | 59,700 | 92% |
| **Sudan** | 334,000 | 334,000 | 334,000 | 315,208 | 94% |
| **Syrian Arab Republic** | 133,000 | 133,000 | 133,000 | 119,261 | 90% |
| **Yemen** | 129,000 | 129,000 | 129,000 | 128,084 | 99% |
| **Total** | **3,057,430** | **3,019,991** | **3,047,956** | **2,932,453** | **95%** |

* Islamic Republic of Iran received funding from the PIP PC to support the development of its IPPP.

# STORIES FROM THE FIELD:

## IMPACT OF PIP PC FUNDING ON THE EASTERN MEDITERRANEAN REGION

# Exceptional leadership and dedication during multiple emergencies in the Region

The COVID-19 pandemic is not the only pandemic the Eastern Mediterranean Region has faced in the past few years. It faced concurrent emergencies in 2022–2023 (Fig. 1 and Fig. 2), including outbreaks of cholera, measles and dengue, which mainly affected countries supported by the PIP PC. These outbreaks presented challenges to the implementation of the PIP Framework and led to shifts in countries' priorities and distracted from the implementation of strategies and programmes. However, due to the presence of a trained team on the ground – who showed great resilience, flexibility and adaptability in addressing emergencies – and to robust surveillance systems, WHO was able to effectively manage these outbreaks while simultaneously maintaining the functionality of influenza surveillance systems in the affected countries.

In 2022, a total of 60 infectious outbreaks were reported by 20 countries/territories in the Region, which was almost twice as many as the 31 outbreaks reported by 19 countries/territories in 2021. Major outbreaks included acute watery diarrhoea/suspected cholera, COVID-19, Crimean-Congo haemorrhagic fever, dengue fever, malaria, measles, Middle East respiratory syndrome (MERS), mpox and poliomyelitis.

As of 15 October 2023, 19 countries in the Region had reported 58 outbreaks of infectious diseases, excluding COVID-19: measles and mpox were each reported by 12 countries; acute watery diarrhoea/cholera by eight countries; dengue fever by six countries; malaria by five countries; Crimean-Congo haemorrhagic fever and Legionnaires' disease, each from three countries; MERS, wild poliovirus and circulating vaccine-derived poliovirus type 2, each from two countries; and diphtheria, influenza B and HIV, each from one country.

The unique situation in the Region, where seven of the 10 PIP-supported countries are in crisis, presents additional challenges to the implementation of the Framework.

Access to some countries is challenging for political reasons, making it difficult to provide necessary and timely support. To overcome these challenges, WHO has deployed technical consultants to support these fragile countries in activating or enhancing their sentinel surveillance systems. This kind of consultancy provides hands-on training and technical assistance to improve the integration of SARS-CoV-2 and ORVs of epidemic and pandemic potential into existing surveillance systems. For example, technical missions were conducted in Iraq, Sudan and Yemen, resulting in the successful reactivation of sentinel surveillance systems in the first two countries and improved surveillance processes in the third.

WHO has also found alternative ways to provide support to countries in need where there are security issues and restrictions on access. For example, in Libya virtual support was provided through national training sessions and ongoing technical assistance through regular calls. This demonstrates the commitment of the team at WHO to ensure that every country in the Region receives the necessary support, regardless of the challenges faced.

# Investment, partnership and sustainability: keys to effectively addressing and avoiding future pandemics

In collaboration with the PIP Framework and the Influenza Division of the US CDC, WHO has been dedicated to strengthening respiratory infection surveillance systems in all 22 countries/territories of the Region, with a particular focus on influenza viruses. This partnership has been in effect for more than a decade, after WHO joined forces with the US CDC and partners in the PIP Framework to establish and improve influenza surveillance systems. The main objective has been to prioritize the establishment of severe acute respiratory illness (SARI) and influenza-like illness (ILI) sentinel sites, with further objectives being the collection and timely reporting of surveillance data related to influenza and the shipping of samples of viruses with pandemic potential to GISRS.

Over the past 10–15 years, with the support provided by the US CDC and partners in the PIP Framework, the WHO Regional Office has made significant progress in expanding and strengthening the sustainability of influenza surveillance systems across all countries in the Region. This has simultaneously contributed to enhancing regional capacity to detect and respond to influenza and other respiratory pathogens with epidemic and pandemic potential.

The influenza surveillance systems established by WHO, in collaboration with its partners, have proven to be crucial not only in responding to the COVID-19 pandemic but also to previous epidemics such as MERS and H5N1. Countries in the Eastern Mediterranean Region have been able to leverage existing epidemiological and virological influenza surveillance systems to help combat the COVID-19 outbreak. These efforts and support provided by partners have played a crucial role in strengthening national influenza surveillance systems and overall pandemic preparedness and response capacities.

In 2022, to further strengthen the partnership and explore avenues for effective influenza prevention and control and pandemic preparedness, annual strategic meetings were held in Amman from 25 to 27 May 2022 and Cairo from 6 to 7 June 2022 between the WHO Regional Office and the US CDC, and in between PIP countries in the Region and PIP secretariat. These meetings served as a platform to discuss ongoing collaborative efforts and identify ways to enhance the partnership at all levels. From 3 to 5 July 2023, for the first time, a management meeting was conducted between the PIP secretariat, US CDC and the WHO Regional Office, where all parties agreed on a roadmap to enhance national, regional and global coordination mechanisms at and assure complementarity between different plans to strengthen collaboration between the partners and harmonize their work.

In an example of the progress made on enhancing coordination, the WHO Regional Office and the US CDC conducted a joint assessment mission in Jordan from 27 July to 1 August 2022, utilizing the US CDC's updated tools. This mission aimed to evaluate existing systems and identify potential areas for improvement. Another joint mission was conducted in Morocco by the regional WHO infectious hazard prevention and preparedness programme and the US CDC Influenza Division to assess and review the integration process in the country. These joint assessments and review missions demonstrate the commitment of both organizations to continually enhance the effectiveness and efficiency of influenza surveillance systems in the Eastern Mediterranean Region.

Another important partner in advancing pandemic preparedness is PIVI. PIVI works to accelerate the development, production and distribution of pandemic influenza vaccines globally. Through its partnerships with governments, manufacturers and other stakeholders, PIVI aims to ensure equitable access to safe and effective vaccines during a pandemic.

In collaboration with PIVI and to complement the ongoing US CDC and PIP-supported programmes, WHO has been able to support countries in developing their capacity for vaccine production and distribution. This has involved providing technical expertise, training and assistance to help establish regulatory frameworks and quality control measures. The partnership has also facilitated access for vaccine research and development, as well as technically building manufacturing capacity. This includes coordinating with global vaccine allocation and supply chain management efforts to ensure that vaccines reach the countries and populations that need them the most.

The collaboration between WHO and PIVI has led to progress in pandemic preparedness, specifically in the area of vaccination. With support from PIVI, Egypt, Jordan and Lebanon have been able to develop policies and integrate influenza vaccines into their national immunization programmes. A memorandum of understanding was signed between WHO, PIVI and the Ministry of Public Health in Lebanon to strengthen the Ministry's capacity to prevent influenza through vaccination programmes. A regional survey was conducted to gather information on influenza vaccination coverage and programme implementation in the Region, and the results were published in a journal. A workshop was also organized to discuss best practices and considerations in developing and implementing influenza vaccination policies and programmes in the Region.

WHO has collected data on health worker experiences with vaccination and updated national vaccine deployment plans in some countries.

Efforts are being made to strengthen partnerships and coordination with various stakeholders. A Regional roadmap to scale up the uptake and utilization of vaccines in the Eastern Mediterranean Region (2022–2026) has been drafted to guide the implementation of influenza vaccination activities in the Region. WHO is also collecting data on seasonal influenza vaccination to better understand the needs of each country. Five priority countries (Egypt, Iraq, Jordan, Lebanon and Pakistan) have been identified for targeted support in accelerating their influenza vaccination agendas. WHO is closely working with these countries on implementing their workplans and, additionally, is piloting the new behavioural and social norm survey for seasonal influenza vaccination in Jordan.

The partnership between WHO, PIP Secretariats US CDC and PIVI has been instrumental in strengthening respiratory infection surveillance systems in the Region, particularly those for influenza and other respiratory viruses. The support and efforts provided by partners in recent years have led to substantial advancements in expanding and sustaining influenza surveillance systems across countries in the Region. These efforts have helped not only in the response to the COVID-19 pandemic but also in addressing other epidemics and outbreaks. The annual strategic meetings, joint assessment missions and joint development of plans serve as platforms to further strengthen collaboration and identify areas for improvement in influenza prevention and control and pandemic preparedness. Continued investment and collaboration are essential to ensure that the Region is better prepared to prevent, detect and respond to future pandemics.

# WHO takes proactive measures to adapt to the changing landscape of pandemic preparedness

## Innovative policies and strategies in practice in the Eastern Mediterranean Region

The lessons learned from the COVID-19 pandemic have highlighted the need for changes in the landscape of pandemic preparedness. Governments and organizations worldwide have recognized the importance of proactive planning and swift action to mitigate the impacts of any future pandemics caused by respiratory viruses, and they have developed regional and global policies and strategies in response.One such example is the integration of multi-pathogen surveillance within existing influenza sentinel surveillance systems. This approach has been widely adopted as a global roadmap following the COVID-19 pandemic and is in line with WHO's efforts to enhance and expand GISRS to include ORVs with epidemic and pandemic potential. The WHO Regional Office has developed an operational framework to guide the integration process, including harmonizing data collection; analysis and reporting; enhancing virological testing capacities; monitoring and evaluation; and coordinating with existing surveillance systems.

To facilitate the implementation of integrated surveillance, the WHO Regional Office conducted a regional expert consultation meeting on integrated surveillance of influenza and other respiratory viruses in June 2022. The meeting was attended by country representatives and representatives from partner organizations and resulted in the adoption of an integrated surveillance framework. Subsequently, an operational plan was developed to assist countries in the implementation process. Iraq, Lebanon, Morocco and Saudi Arabia were selected as pilot countries for targeted support in integrating surveillance.

Furthermore, WHO has been supporting countries in the Region to review and update their national influenza pandemic preparedness plans. The International Health Regulations (2005) require countries to fulfil their obligations in pandemic preparedness. Given the global call to integrate SARS-CoV-2 and ORVs of epidemic and pandemic potential, it is crucial to update influenza pandemic preparedness plans accordingly. In September 2022, WHO organized a regional webinar to discuss pandemic preparedness planning in the Region. The webinar aimed to promote an integrated approach to preparedness based on lessons learned from the COVID-19 pandemic. Representatives from ministries of health, WHO headquarters (the Global Influenza Programme), WHO country offices and partner organizations participated in the webinar and shared experiences and best practices in integrated preparedness planning.

These policies and strategies guided by WHO emphasize the need for integrated surveillance of multiple respiratory viruses and the updating of existing pandemic preparedness plans to effectively respond to any future pandemics. Following these policies and plans will make it possible to enhance coordination, data sharing and response capabilities in the face of future pandemics, as well as collaboration between countries/territories, WHO and partner organizations in implementing practical measures and ensuring effective preparedness. However, the practical implementation of these strategies requires strong commitment, investment and collaboration at the regional and national levels.

# Innovation, technology and research play a crucial role in pandemic preparedness

Evidence generation is a crucial aspect of any prevention and response programme, and WHO has made this a priority in its work. In particular, it has focused on generating evidence related to the response to and preparedness for influenza and ORVs. This dedication to evidence generation is reflected in the numerous articles that have been developed and published by the WHO Regional Office in peer-reviewed journals during the period 2022–2023.

These articles have provided valuable insights into various aspects of influenza and ORV response and preparedness. They have contributed to the existing body of knowledge in these areas, enabling health care professionals, policy-makers and researchers to make informed decisions and formulate effective strategies.

**Journal articles written by WHO Regional Office staff on influenza and other respiratory viruses response and preparedness in 2022–2023**


- Abou El Naja H, Tempia S, Barakat A, Elkholy A, Aman A, Khan W, et al. Influenza activity in the Eastern Mediterranean Region (EMR) in 2020–2021 amid the COVID-19 pandemic. BMJ Glob Health. 2022;7(Suppl 4):e008506 (https://doi.org/10.1136/bmjgh-2022-008506).
- Abubakar A, Khan W, Naja HAE, Ariqi LA, Bélorgeot VD, Hauck SJ. COVID-19 pandemic response in the WHO Eastern Mediterranean Region. BMJ Glob Health. 2022;7(Suppl 3):e008782 (https://doi.org/10.1136/bmjgh-2022-008782).
- Attia R, Abubakar A, Bresee J, Mere O, Khan W. A review of policies and coverage of seasonal influenza vaccination programs in the WHO Eastern Mediterranean Region. Influenza Other Respir Viruses. 2023;17(3):e13126 (https://doi.org/10.1111/irv.13126).
- Brennan RJ, Memish ZA, Rashidian A, Abubakar A, Khan W, Ghaffar A. Learning from COVID-19 to prevent and prepare for pandemics in the Eastern Mediterranean Region. BMJ Glob Health. 2022;7(Suppl 4):e009912 (https://doi.org/10.1136/bmjgh-2022-009912).
- Chughtai AA, Mohammed S, Al Ariqi L, McCarron M, Bresee J, Abubakar A, et al. Development of a road map to scale up the uptake and utilization of influenza vaccine in 22 countries of Eastern Mediterranean Region. Vaccine. 2022;40(45):6558–65 (https://doi.org/10.1016/j.vaccine.2022.09.051).
- Mathieu E, Alam N, El Naja HA, Khan W. Rapid assessment of case recruitment tools to inform integrated surveillance of influenza and other respiratory viruses in Eastern Mediterranean countries. Influenza Other Respir Viruses. 2023;17(4):e13132 (https://doi.org/10.1111/irv.13132).

- Memish ZA, Brennan RJ, Rashidian A, Abubakar A, Khan W, Ghaffar A. COVID-19 pandemic response in one of the world's most complex and vulnerable settings. BMJ Glob Health. 2022;7(Suppl 3):e009911 (https://doi.org/10.1136/bmjgh-2022-009911).
- Rashidian A, Wu K, Ariqi LA, Aly E, Mandil A, Barakat A, et al. WHO's support for COVID-19 research and knowledge management in the Eastern Mediterranean Region. BMJ Glob Health. 2022;7(Suppl 3):e008737 (https://doi.org/10.1136/bmjgh-2022-008737).
- Tempia S, Naja HAE, Barakat A, Abubakar A, Khan W. Integrated surveillance for high-impact respiratory viruses: a necessity for better epidemic and pandemic preparedness. BMJ Glob Health. 2022;7(Suppl 4):e009018 (https://doi.org/10.1136/bmjgh-2022-009018).


A special issue of the journal Influenza and Other Respiratory Viruses was published in 2023, capturing scientific knowledge, practical experiences and the discussions that took place at the EMARIS Conference. This special issue featured peer-reviewed articles covering a wide range of topics relating to respiratory pathogen surveillance in the Region. Topics included epidemiological and virological surveillance of influenza, MERS and ORVs, lessons learned from the COVID-19 pandemic, disease burden estimation, respiratory disease outbreak investigations, vaccine policy and programmes (including vaccine hesitancy, data, coverage and effectiveness), biosafety and biosecurity measures, the human–animal interface, respiratory disease epidemic and pandemic preparedness, and RCCE in respiratory disease outbreaks and pandemics.

The special issue was edited by renowned experts in the field and included 16 conference submissions, encompassing original research, case studies, qualitative research, evaluation studies, evidence synthesis and reviews.[1] Additionally, summaries of conference proceedings were published, along with editorials and selected commentaries, contributing to a comprehensive and informative resource for the global respiratory health community.

Furthermore, WHO has been actively disseminating information through its influenza bulletins and updates. These updates are made available on a weekly and monthly basis on the WHO website and are shared through professional networks.[2] This commitment to sharing information ensures that relevant stakeholders have access to the most up-to-date information regarding influenza and its impact.

As the influenza season for the northern hemisphere began in 2022–2023, WHO produced bi-weekly influenza executive briefs for its senior management at all levels. These briefs aimed to provide an overview of the current influenza situation in the Region and to update senior management on the actions being taken by the Organization, as well as recommendations for further actions. Importantly, these briefs were also shared with the WHO Global Influenza Programme and US CDC, allowing for collaboration and coordination on a global scale.

1 The special issue can be accessed at https://onlinelibrary.wiley.com/doi/toc/10.1111/(ISSN)1750-2659.emaris2023.
2 The updates can be accessed at https://www.emro.who.int/health-topics/influenza/influenza-seasonal.html.

# Adopting the EMFLU 2.0 platform in Iraq: commitment to enhancing public health surveillance and response measures

The implementation of the EMFLU 2.0 platform in Iraq is an important step towards enhancing the timely reporting of sentinel influenza data in the country. As recommended by the WHO review mission in 2022, Iraq has transitioned from a paper-based reporting system to an electronic one, utilizing the regional WHO platform. This transition allows for rapid identification and monitoring of changes in circulating respiratory viruses, as well as the assessment of emerging strains with epidemic and pandemic potential.

Timely capture, analysis and reporting of multi-pathogen data are crucial for prompt response measures at the country level. By adopting the EMFLU 2.0 platform, Iraq is better equipped to capture and analyse these data, enabling a more efficient and effective response to influenza and ORVs. During the implementation process, participants from sentinel sites, the NIC and the Ministry of Health central-level team received training on how to use the platform.

The training focused on various aspects, including data entry, validation rules and navigation of the dashboard. Participants also learned how to produce and publish reports, ensuring that high-quality data are collected. The implementation of standardized and timely data collection allows for the establishment of seasonal baselines for influenza and ORVs. This not only aids in the detection of unusual events over time but also facilitates the calculation of baseline thresholds for assessing the severity of future influenza seasons.

The sentinel surveillance system in Iraq has several strengths, including well-established processes and coordination mechanisms, as well as ongoing implementation of an integrated approach within all levels of the surveillance system. Additionally, there is a strong laboratory capacity at the NIC. These strengths contribute to the effectiveness and reliability of the sentinel surveillance system in Iraq.

# Progress made on EMFLU 2.0 roll-out

EMFLU, the Eastern Mediterranean Flu Network, is a regional platform developed in 2016 by the WHO Regional Office. It serves as a tool for collecting and sharing epidemiological and virological data on influenza and other respiratory viruses in the Region. EMFLU was created in line with the HLIP II under the PIP Framework.

In 2019, an upgraded version of EMFLU, known as EMFLU 2.0, was developed with the latest technological updates. This upgrade aimed to capture data on ORVs and accommodate emerging respiratory pathogens. The emergence of SARS-CoV-2 in 2019 further accelerated the need to upgrade EMFLU to identify factors associated with severe COVID-19. EMFLU 2.0 includes functionalities, such as multi-pathogen laboratory data capture and sharing, coinfection tracking, and flexible data capture at the country level in a standardized manner, either at the individual or aggregate level. It also allows for different data uploading processes to accommodate countries with limited Internet access. The upgraded version features a user-friendly interface and provides new tools for data analysis, including interactive and advanced reports.

The collection of epidemiological data at the individual level is a fundamental component of sentinel surveillance in every country. It allows for the monitoring of changes in the seasonality, epidemiology and virological characteristics of influenza and other circulating respiratory viruses. EMFLU 2.0 aligns with WHO's regional and global approach of integration.

Currently, of 22 countries/territories in the Region with functional influenza sentinel surveillance systems, 18 are reporting sentinel data to EMFLU. In 2022, the piloting stage of EMFLU 2.0 began in four countries – Oman, Saudi Arabia, Somalia and Syrian Arab Republic. Feedback from these countries, along with regular follow-up meetings and integration with the upgraded global platform, RespiMart,[3] part of the Global Influenza Programme, has led to many enhancements being applied to EMFLU 2.0.

RespiMart is a flexible and reliable database that stores data on influenza and respiratory viruses. The user collects different data sets from FluNet and FluID platforms, and generates various outputs based on the available applications. Currently, 177 countries are reporting influenza data to FluNet and 178 countries are reporting to FluID.

EMFLU 2.0 plays a pivotal role in the WHO Regional Office's plan to achieve integrated surveillance of a range of respiratory viruses with epidemic or pandemic potential. To date, it has been rolled out in five countries: Iraq, Oman, Saudi Arabia, Somalia and Syrian Arab Republic. The roll-out phase will continue throughout 2023–2024 in order to transition smoothly from EMFLU to EMFLU 2.0. The platform facilitates data reporting, informs decision-making on prevention and control measures and contributes to integrated surveillance of respiratory viruses with epidemic potential.

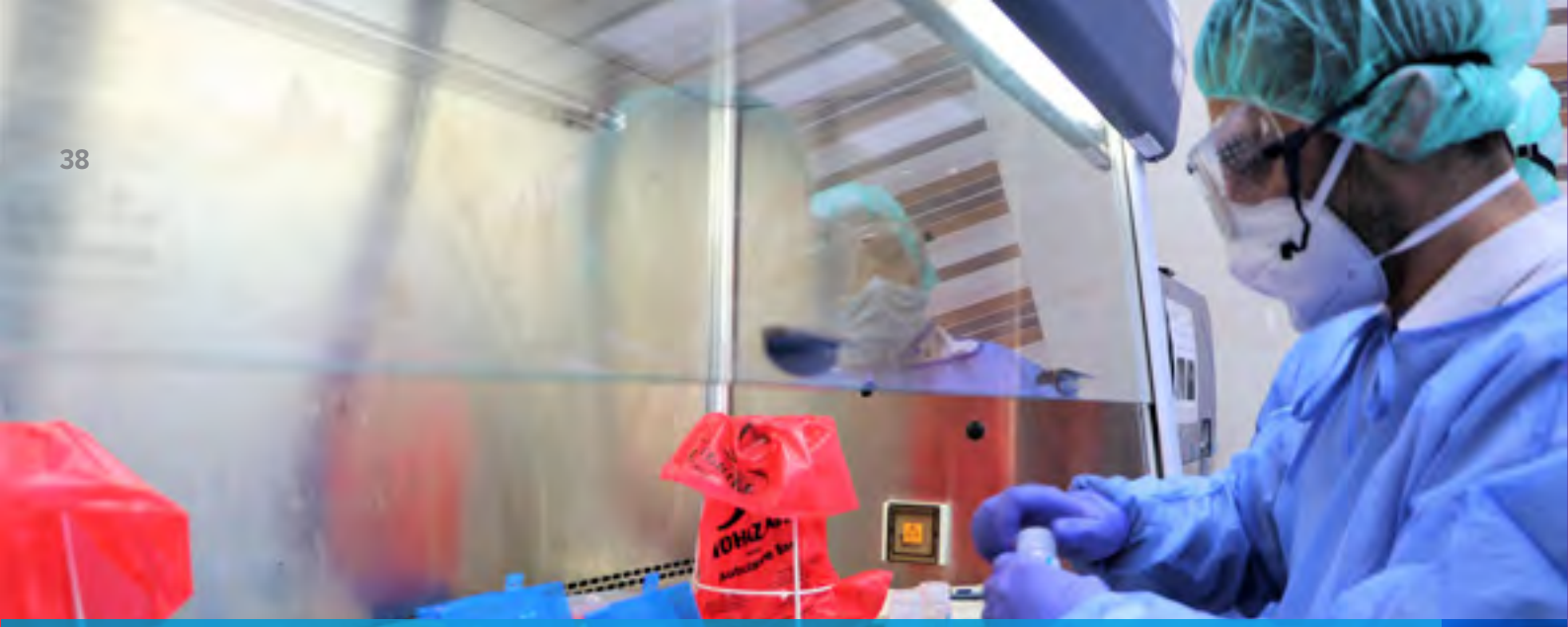
In strategic plans for the next biennium, WHO's main objective is to successfully complete the implementation of EMFLU 2.0 across all countries in the Region. The WHO Regional Office also has a strong focus on optimizing the collection and sharing of timely sentinel influenza data. It intends to re-examine the SARI/ILI forms to ensure a seamless integration and explore the potential of automated reports. Additionally, it plans to develop a regional dashboard with advanced data visualization capabilities, as well as introduce data-driven public health messages.

To ensure efficient data integration and synchronization, EMFLU 2.0 will be synchronized with RespiMart. The WHO Regional Office is also committed to reviewing and enhancing the existing monitoring and evaluation reports available in the EMFLU 2.0 system.

To enhance capacity, the WHO Regional Office has outlined plans to conduct a regional meeting or training workshop on data management. This training will equip country-level stakeholders with the necessary skills to effectively utilize data for informed public health decision-making. Moreover, the WHO Regional Office will also provide training to national end-users on EMFLU 2.0 and data analysis. Furthermore, capacity-building efforts will focus on enabling countries to utilize influenza and ORV sentinel data to estimate the burden of disease and monitor the severity of influenza seasons.

To date, EMFLU 2.0 has been successfully rolled out in five countries, with ongoing training sessions being conducted in Afghanistan, Kuwait, Libya and Tunisia, with the aim of having all countries in the Region fully transitioned to EMFLU 2.0 by June 2024.

3 Further information on the RespiSmart platform can be accessed at https://www.who.int/tools/RespiMart.



# Project management of the PIP Framework's PC Implementation Plan

The PIP Framework is a global initiative aimed at improving preparedness for and response to influenza pandemics. It serves as a mechanism for funding and coordinating efforts globally and focuses on helping countries develop and implement their national influenza pandemic preparedness plans effectively. Since the management of national PIP plans is a crucial component in plan management and tracking of implementation, the WHO Regional Office has exerted substantial effort into enhancing capacity in project and programme management, through training, consultation meetings and data sharing.

For example, in preparation for the upcoming PIP cycle (2024–2030), a country selection exercise was conducted in the Region in February 2023. The objective was to determine the countries eligible for funding based on their commitment and ability to implement the PIP workplan. The WHO Regional Office decided to continue funding the existing countries (Afghanistan, Egypt, Iraq, Jordan, Lebanon, Morocco, Somalia, Sudan, Syrian Arab Republic and Yemen), and two new countries, Tunisia and Pakistan, have been included in the list, recognizing their potential to contribute effectively to the PIP objectives. Later, a series of consultative meetings was conducted to develop evidence-based plans for the next biennium with partners and experts at the WHO Regional Office and headquarters, and a monitoring and evaluation framework was developed.

Moreover, focal points have been introduced to project and financial management skills and to tools to support the financial management of the plan. Periodic coordination meetings have been conducted at the country and regional levels to maintain coordination and data sharing.

To enhance the effectiveness of PIP PC funding and to strengthen accountability, the Region is transitioning from manual tracking to a digital approach. This digital transformation aims to improve project management, decision-making and accountability processes within the Region. The Eastern Mediterranean Region PIP Framework Tracker, a digital online tool specifically developed for this purpose, will play a vital role in this transition.

The Eastern Mediterranean Region PIP Framework Tracker will serve as a comprehensive project management system, with features tailored to meet the unique needs of countries in the Region.

Some of its notable features are as follows:

- Plan management: The digital tracker will provide a platform to manage PIP workplans efficiently and will facilitate the tracking of plan progress.
- Decision-making: The tracker will offer real-time data and insights, enabling informed decision-making at various levels. This will help to identify gaps and allocate resources effectively.
- Accountability: With the tracker, focal points and stakeholders in the Region can closely monitor the implementation of PIP workplans. It will promote mutual accountability among countries and create a transparent system for reporting and evaluating progress.

Before the full-scale implementation of the Eastern Mediterranean Region PIP Framework Tracker, a pilot phase will be conducted in selected countries. This phased approach will ensure the tool's effectiveness and provide an opportunity for feedback and necessary adaptations. The goal is to build the capacity of PIP focal points and stakeholders, ensuring a smooth transition from manual tracking to the digital framework.

# Estimating influenza burden of disease in the Region: a roadmap for preparedness and prevention

Influenza is a highly contagious respiratory illness that affects millions of people worldwide. WHO has recognized the importance of understanding the influenza burden of disease, especially in low- and middle-income countries, where this information is often lacking. In the Eastern Mediterranean Region, WHO is taking steps to estimate the influenza burden of disease and provide support to countries/territories, especially in vulnerable communities or subpopulations, such as young children and people aged 65 years and older, to guide prevention measures.

Currently, six out of 22 countries/territories in the Region have estimated their influenza burden of disease in previous years and published the results in peer-reviewed journals. However, there is still much work to be done in order to provide a comprehensive understanding of this burden in the Region. To address this gap in knowledge, the WHO Regional Office conducted a subregional meeting in September 2022 to provide technical support to Egypt, Lebanon and Saudi Arabia.

During the three-day training, participants were able to identify available sources of data and data gaps in their existing sentinel surveillance systems for SARI. They also assessed the quality and suitability of their own data and developed country-specific protocols and analytical approaches for estimating the influenza burden of disease. The participants were introduced to various tools provided by WHO to estimate the incidence of influenza-associated SARI hospitalization and extrapolate these data to the national level. The ultimate goal was to estimate the national influenza burden of disease, categorized into mild/moderate illness, hospitalization and death, using the WHO pyramid web tool.

In addition to the subregional meeting, a workshop on estimating influenza burden of disease was conducted during the EMARIS conference in Oman in March 2023. The workshop aimed to build capacity and familiarize participants with concepts and tools related to influenza burden of disease. Participants included influenza focal points, heads of epidemiological surveillance programmes and heads of communicable disease control departments from ministries of health in the Region.

The support provided by WHO is aimed at helping countries to obtain a comprehensive understanding of the influenza burden. This knowledge will be crucial in later stages, such as conducting cost-burden studies and cost–effectiveness analyses, ultimately informing decision-making on vaccine introduction or increased uptake. WHO will continue to support countries in the Region in estimating the influenza burden of disease, as this is one of the main priorities in the regional roadmap for influenza preparedness. A second subregional workshop involving six countries in the Region is planned for the future, in collaboration with WHO headquarters and CDC teams.

# Preparing for influenza and other respiratory viruses pandemic prevention and response interventions is the responsibility of all sectors

The Preparedness and Resilience for Emerging Threats (PRET) initiative recognizes that the same systems, capacities, knowledge and tools can be leveraged and applied for groups of pathogens based on their mode of transmission (respiratory, vector-borne, foodborne, etc.). PRET incorporates the latest tools and approaches for shared learning and collective action, established during the COVID-19 pandemic and other recent public health emergencies. It places the principles of equity, inclusivity and coherence at the forefront. PRET provides a platform for national, regional and global stakeholders to collaborate to strengthen preparedness.

Significant progress has been made towards achieving a collaborative approach in preparing for prevention and response interventions across sectors. One notable initiative in this regard is the development of the Pandemic Preparedness Resource Pack, which is being undertaken by a joint WHO headquarters/Regional Office committee based at the Regional Office. This resource pack aims to leverage existing preparedness documents and lessons learned from the COVID-19 pandemic to enhance preparedness for future respiratory disease pandemics.

Several countries in the Region have taken concrete steps towards adopting a collaborative approach in their pandemic preparedness efforts. Lebanon, for instance, conducted a multilevel, multisectoral simulation exercise at the end of 2022 to update its pandemic preparedness plan. The exercise incorporated lessons learned from the COVID-19 pandemic and aimed to ensure a more comprehensive and effective response to future outbreaks.

The Ministry of Health and Medical Education in Islamic Republic of Iran has adopted a comprehensive approach to drafting and updating its IPPP. This approach involves multiple sectors and disciplines, with a focus on capacity-strengthening at various levels. WHO experts participated in consultative workshops in the country in June 2022 to contribute to the development of this plan. The experience of Islamic Republic of Iran serves as an example of how a national approach can be devised, building on real-time lessons from the COVID-19 pandemic response.

To further promote the collaborative approach, the WHO Regional Office developed a case study on Islamic Republic of Iran's experience in updating its IPPP. This case study has been shared on both regional and global platforms, thereby facilitating knowledge-sharing and encouraging other countries to adopt a similar approach to pandemic preparedness and providing valuable insights for those facing similar challenges.

Looking ahead, the Regional Office is planning to conduct a regional workshop on the PRET initiative in the first quarter of 2024. This workshop aims to introduce and promote collaborative efforts across sectors at the country level, further emphasizing the importance of a coordinated and holistic approach in pandemic preparedness.

**Table. 2 Eastern Mediterranean Region IPPP situation analysis up to December 2022**

| Country | Available IPPP* | Year of IPPP development | Revised plan | Year of last revision | Plan to review/ develop plan |
|---|---|---|---|---|---|
| Sudan | Yes | 2007 | No | NA | Yes |
| Afghanistan | Yes | 2009 | Yes | 2016 | Yes |
| Iraq | No | NA | NA | NA | Yes |
| Syrian Arab Republic | Yes | 2021 | No | NA | Yes |
| Jordan | Yes | 2017 | Yes | 2021 | Yes |
| Yemen | Yes | 2019 | No | NA | Yes |
| Somalia | No | NA | NA | NA | Yes |
| Egypt | Yes | 2007 | Yes | 2018 | Yes |
| Lebanon | Yes | 2007 | Yes | 2022 | 2023–2024 |
| Morocco | Yes | 2009 | Yes | 2019 | 2023–2024 |
| Bahrain | Yes | 2009 | Yes | 2022 | In process |
| Iran (Islamic Republic of) | Yes | 2008 | Yes | 2021 | Yes |
| Kuwait | Yes | 2009 | Yes | 2015 | – |
| Libya | Yes | 2005 | No | NA | – |
| Oman | Yes | 2019 | No | NA | – |
| Occupied Palestinian territory | Yes | 2009 | Yes | 2018 | – |
| Pakistan | Yes | 2004 | No | NA | – |
| Qatar | Yes | 2019 | No | NA | Yes |
| Saudi Arabia | Yes | 2009 | Yes | 2019 | 2023–2024 |
| United Arab Emirates | Yes | 2009 | Yes | 2019 | - |
| Tunisia | Unknown | Unknown | Unknown | Unknown | Unknown |
| Djibouti | Unknown | Unknown | Unknown | Unknown | Unknown |

The following findings are the output of a regional survey conducted in preparation for a regional webinar for respiratory infection pandemic preparedness that took place on 15 September 2022.

- The response rate for that regional survey was 91%, with only two countries not responding (Djibouti and Tunisia).
- Eighteen of the 20 countries/territories responding to the survey confirmed the availability of an IPPP, with only two countries (Iraq and Somalia) still preparing and planning for the development of their national plans.
- Five countries (Bahrain, Egypt, Islamic Republic of Iran, Jordan and Lebanon) are in the process or have initiated the revision phase of their plans, taking into account lessons learned from the COVID-19 pandemic.
- Lebanon and Morocco conducted a tabletop simulation exercise to update plans.
- Twelve countries have documented interest and are preparing to review and update their respiratory IPPPs.
- The WHO Regional Office has copies of IPPPs from seven countries only (Afghanistan, Egypt, Jordan, Lebanon, Sudan, Syrian Arab Republic and Yemen).
- Workshops to promote the PRET initiative have been conducted in both Lebanon and Saudi Arabia (along with the laboratory and surveillance integration missions targeting these countries in May 2023).

Significant progress has been made towards achieving a collaborative approach in preparing for prevention and response interventions across sectors. The development of the Pandemic Preparedness Resource Pack, the adoption of comprehensive approaches by countries such as Islamic Republic of Iran and Lebanon and the regional workshop on PRET all indicate a commitment to working together to enhance preparedness for future outbreaks.

# LEBANON CONDUCTS A SIMULATION EXERCISE TO UPDATE ITS IPPP

In Lebanon, disease risk reduction, including preparedness for and response to outbreaks of disease with epidemic and pandemic potential, is a national priority. Following the COVID-19 pandemic, major gaps in intersectoral preparedness were identified; consequently, from the beginning of 2022, efforts were made to update the national pandemic preparedness plan.

Simulation exercises are a vital element of the preparedness plan, as they strengthen capacities to prepare for, detect and respond to public health emergencies. They can help to validate plans, which should be frequently tested so that they can be evaluated, adjusted and updated before and after an emergency occurs. They also play a role in developing staff competencies by allowing health workers to practise their roles in the plan.

Accordingly, on 18 August 2022, the WHO Country Office and the Lebanese Ministry of Public Health held a one-day tabletop simulation exercise in Beirut on preparedness for respiratory infections of pandemic potential. The simulation exercise was designed to validate and complete the national multidimensional and multisectoral preparedness and response plan; to map out the involved national authorities and communication mechanisms; to understand coordination and triggers for decision-making at the national level; to reinforce and clarify roles and responsibilities between multiple entities and stakeholders; and to assess RCCE capacities at the national level. The exercise was attended by stakeholders from the public and private sectors who were directly involved in preparedness and response for major public health events at the national and subnational levels (including ministries, United Nations agencies, international nongovernmental organizations and hospitals).

The scenario depicted an evolving outbreak of a novel acute respiratory infection virus, starting in a country on a different continent and progressively causing a local influenza pandemic. The exercise was very well received and helped to address and highlight some of the major multisectoral coordination challenges at the national level. Among these, the results showed that decision-making and authorities at the national level are still opaque, with roles and responsibilities between multiple entities and stakeholders unclear at some points in the exercise. In addition, the participants highlighted the importance of communication for public awareness, as well as the importance of implementing a system to catch rumours in a timely fashion and rectify any misinformation. In light of these results, different recommendations were proposed, such as the need to improve multisectoral coordination at the national and subnational levels in order to respond to public health emergencies. It is also important to clarify the roles and responsibilities of the different entities involved in the pandemic preparedness plan and to strengthen the availability of reliable and validated sources of information for risk communication.

In order to improve preparedness, it was recommended that future simulation exercises should have more tangible plans with detailed scenarios and deliverables and that regular refreshers should be provided at local and municipal levels.

Finally, the next steps will be to continue to align work in the country with recent WHO guidance focusing on the transmission modes of diseases.


# Enhancing proper shipping of infectious substances by air

A major challenge facing the Region is the proper transport of samples within countries and the shipment of potentially infectious substances by air to WHO collaborating centres. One of the key obstacles identified is the limited availability of certified regional instructors who are well versed in IATA regulations and capable of providing training in local languages to laboratory professionals and focal points. To address this, a regional laboratory officer participated in a training of trainers workshop held in Singapore from 5 to 9 December 2022. The workshop covered the shipment of dangerous goods, as per IATA DGR 1.5 and IATA dangerous goods training. This technical officer successfully received certification and has provided national training for laboratory professionals in the Region on the transport and shipping of infectious substances by air.

To aid national laboratory professionals in Syrian Arab Republic and Yemen in effectively sharing influenza and other respiratory virus specimens with WHO collaborating centres and transporting representative specimens for testing, the certified regional instructor conducted three comprehensive training sessions in 2023: two in Yemen and one in Damascus, Syrian Arab Republic. The Yemen training took place at the CPHLs in Aden and Sana'a. The first workshop was held in Aden from 9 to 13 July 2023, with the second in Sana'a from 27 to 31 August 2023. The Aden training workshop was attended by 18 national laboratory professionals (8 females, 10 males), while the Sana'a event involved 15 national laboratory professionals (9 females, 6 males). The third training was attended by 31 Syrian national professionals from different backgrounds, including laboratory professionals, from different governorates of the country (22 females, 9 males). The training enabled participants to accurately identify, classify, pack, label and document infectious substances in compliance with the applicable regulations for air transportation. The training also covered essential shipping documentation requirements such as the shipper's dangerous goods declaration.

At the end of each training workshop, participants underwent a competency assessment to evaluate their theoretical knowledge and practical skills. Of the 18 participants in Aden, 11 (61%) successfully passed the assessment examination, while seven of the 15 participants (47%) in Sana'a passed. In Syrian Arab Republic, 14 participants successfully passed the post-assessment examination (45%). Successful participants were awarded a certificate of completion, recognizing their ability to properly handle the shipping of infectious substances by air in accordance with the IATA regulations.

# Progress in enhancing laboratory capacity for respiratory pathogen surveillance in the Eastern Mediterranean Region

Working towards the end-to-end integration of a respiratory pathogen surveillance approach – and capitalizing on existing influenza sentinel surveillance systems – technical missions, support and advocacy are being undertaken to provide technical inputs for laboratory SOPs and the updating of laboratory detection algorithms, including the use of multiplex diagnostic methods. For proper and standardized implementation of such an approach, the WHO Regional Office has developed an operational framework to guide the development of a formal process of integration, including the harmonization of data collection, analysis and reporting, the enhancement of virological testing capacities, the establishment of effective monitoring and evaluation programmes, and coordination with other existing surveillance systems.

In collaboration with the three established regional genomic sequencing hubs and international partners, countries have had access to a wide range of regional and international sequencing and bioinformatic experts. Jointly with the US CDC, in November 2022 the WHO Regional Office provided a training workshop on next-generation sequencing for influenza and SARS-CoV-2 genomic sequencing, which

was held in Oman and was attended by 25 participants from 19 countries in the Region. Participants were trained on the assembly of consensus sequence data from raw sequence reads and on the submission of sequences to the Global Initiative on Sharing All Influenza Data, thus strengthening the surveillance capacity and capability of GISRS by enhancing genetic surveillance and data sharing on influenza and ORVs with epidemic and pandemic potential. Enhanced laboratory testing capacity and the inclusion of genomic sequencing capacity were aided by procurement of the Oxford Nanopore Technologies sequencing platform and sequencing reagents and supplies, the provision of technical trainings and consultative calls to implement sequencing testing within the test algorithm, and the use of sequencing data to inform proper public health actions.

To further complement activities for end-to-end integration, and in collaboration with the Rockefeller Foundation's Pandemic Prevention Institute, the WHO Regional Office drafted a regional genomic sequencing surveillance strategy with a focus on creating a genomic surveillance network to establish a regional community of practice, with an emphasis on strengthening bioinformatics analysis and on capacity-building and data sharing for informed decision-making. To discuss the outline of the strategy, a first meeting, titled "Genomics Technical Workshop to Explore a Strategy and Roadmap for the Creation of a Sequencing Surveillance Network in the Region for Emerging and Re-Emerging Infectious Diseases" took place in Amman, Jordan, on 1 February 2023.

Many countries in the Region are facing challenges with procurement, especially given the limited presence of manufacturers and suppliers of laboratory-related items, which raises a risk of laboratory stockouts of required supplies. The laboratory team has therefore been supporting laboratories to procure the supplies they need, including reagents for the characterization and diagnosis of influenza and other respiratory pathogens. Close coordination, as well as technical and financial support, has helped to provide the reagents required to secure testing capacity.

The WHO Regional Office has continued to provide countries/territories with required technical, logistic and funding support through the Shipping Fund Project, which is used to transport representative influenza specimens to WHO collaborating centres for testing and confirmation. In order to support countries with technical guidance on the proper shipment of dangerous goods according to IATA regulations, the Regional Office sponsored the participation of a regional laboratory officer in a training of trainers workshop on the transport of infectious substances by air, as discussed in the previous section.

The WHO Regional Office also coordinated the participation of countries in the Region in the WHO External Quality Assessment Project (EQAP for the detection of SARS-CoV-2 and influenza viruses, using RT-PCR as a basic component and phenotypic/genotypic antiviral susceptibility testing as an optional component. The 21st round of the EQAP took place during 2022 (the panel took place between 29 June and 23 September 2022) and WHO continues to support countries/territories to participate in the currently ongoing 22nd round.

Additionally, a twinning initiative has been established between the Smorodintsev Research Institute in Russia and the Syrian CPHL. This initiative aims to provide technical training and mentoring for laboratory professionals, with the goal of enhancing the quality, reliability and timeliness of test results.

Overall, numerous efforts are under way to enhance respiratory pathogen surveillance systems in the Region, with an emphasis on integration, laboratory testing capacity, sequencing capabilities, technical trainings, coordination and support for countries/territories.

# Advancing respiratory infection surveillance in the Region

# Insights from EMARIS 2023 Conference

The threat posed by emerging and re-emerging respiratory pathogens in the WHO Eastern Mediterranean Region is a significant concern for global public health security. Acute respiratory infections rank among the top causes of illness and death in the Region, impacting both health and economic development. In response to this challenge, the Eastern Mediterranean Acute Respiratory Infection Surveillance network (EMARIS) was established in 2006, with a focus on enhancing surveillance and response capacities for ARIs, particularly influenza. EMARIS holds biennial meetings to share best practices, track progress, address knowledge gaps, and learn from public health preparedness and response. The sixth EMARIS meeting, held in Muscat, Oman, in March 2023, brought together over 250 participants from all 22 countries/territories in the Region, as well as international attendees. The conference, supported by PIP PC and other partners, featured presentations, panel discussions and workshops covering various topics related to respiratory infections, including surveillance, disease burden, COVID-19 lessons, vaccines, and the human-animal interface.

The conference emphasized the need for collaborative action between Member States and WHO to implement these recommendations and effectively combat respiratory infections in the Region. While progress has been made, further efforts are required to enhance pandemic preparedness, surveillance systems, and health care access for all. With continued collaboration, the Region can effectively mitigate the impact of respiratory infections on health and development.

The EMARIS 2023 conference provided actionable recommendations for enhancing influenza detection, prevention and control, emphasizing the need for collaborative action and strategic interventions from Member States and WHO. While progress has been made, there is a continued need to enhance pandemic preparedness, improve surveillance and data sharing and ensure health care access for all and promoting multisectoral collaboration, and integrating One Health priorities.


# PIP Framework supports translation of Infodemic Management 101 course in Arabic on OpenWHO platform

The COVID-19 pandemic has had a profound impact on communities worldwide, and its effects will continue to be felt for the foreseeable future. In order to strengthen public health responses, health systems and global health security, it is crucial to improve the management of our information ecosystem. This means ensuring that individuals have access to accurate health information in the right format, from trustworthy sources and at the appropriate time. Such efforts are essential in promoting healthy behaviours and resilience against health misinformation.

However, the overwhelming amount of information, coupled with information gaps and confusing messages, has created what is now known as an "infodemic". This infodemic makes it difficult for individuals to find reliable information and know how to protect themselves and their communities. As a result, people may engage in risky behaviours, while trust in experts, health authorities and epidemic mitigation strategies declines, ultimately prolonging the pandemic.

To address these challenges, WHO has developed an online course called Infodemic Management 101. This course, available for free on the OpenWHO platform, is divided into an introduction, five modules and three skills labs.[1] It provides an overview of the COVID-19 infodemic, provides strategies and tools to navigate through it, highlights tactics employed by malicious actors and offers guidance on building resilience against misinformation and disinformation.

Recognizing the need to enhance capacity in the Region and responding to requests from countries/territories, the PIP PC has supported the translation of the course into Arabic. This initiative will enable more Arabic-speaking experts to benefit from the resources provided by WHO and apply their knowledge in practice. By equipping health experts with the necessary skills and tools for infodemic management and response interventions for influenza and other respiratory viral diseases, this translation has contributed to strengthening the Region's health care response during the pandemic.

1 The course, available in Arabic, English, French and Spanish, can be accessed at https://openwho.org/courses/infodemic-management-101.

# COUNTRY EXPERIENCES

# AFGHANISTAN

## Influenza surveillance system demonstrates resilience and determination in the face of challenging circumstances

Afghanistan has adopted an integrated approach to the detection of influenza and other respiratory pathogens, contributing to the sustainability of the surveillance system, as promoted by GISRS. This commitment to an integrated approach has played a crucial role in sustaining the country's influenza surveillance system.

PIP PC funding has been instrumental in supporting the influenza surveillance system, particularly following the regime change in August 2021 and the subsequent freezing of funds by external sources.

This funding has been used for capacity-building initiatives, especially for the NIC, providing resources and training to optimize laboratory functioning. Additionally, the PIP Framework has successfully convinced national health authorities to continue influenza surveillance activities, ensuring the necessary support for human and non-human resources.

Significant achievements have been made through the PIP Framework in terms of surveillance and laboratory capacity-building. The development of national guidelines for an integrated sentinel surveillance system for influenza and SARS-CoV-2, along with the establishment of SOPs for sample collection and case identification, has strengthened the surveillance system. The integration of virological and epidemiological surveillance has also been a noteworthy achievement. Furthermore, laboratory capacity has been enhanced with improved capabilities in RT-PCR, culture/virus isolation and participation in external quality assurance panels.

Despite these accomplishments, the influenza surveillance system in Afghanistan still faces several challenges. Donor dependency remains a significant concern, as influenza surveillance is not included in the Ministry of Public Health's budget. Additionally, the interruption of international flights has affected the shipment of essential supplies, as well as influenza virus samples to be sent to the US CDC in Atlanta. Lengthy government procedures for releasing kits from customs and logistic challenges further hinder the smooth operation of the system.

To overcome these challenges and ensure the sustainability of influenza surveillance activities, it is crucial to continue PIP support. Establishing a multisectoral committee that includes representatives from both the human and animal health sectors can foster collaboration and improve preparedness. Activation of influenza virus sequencing capacity at the NIC will further enhance the system's capabilities in detecting and monitoring influenza strains. Additionally, revising and updating the IPPP, expanding the sentinel site network and distributing information, education and communication materials are essential next steps.

# EGYPT


## Milestones achieved in COVID-19 and influenza surveillance

In an effort to combat the COVID-19 pandemic and to strengthen the country's influenza surveillance system, Egypt has made significant advancements. The country has successfully integrated COVID-19 surveillance into its existing influenza surveillance system, utilizing its influenza sentinel sites as surveillance sites for influenza, COVID-19 and RSV. This achievement showcases the country's commitment, with the Ministry of Health and national counterparts ensuring the sustainability of this programme.

Egypt has had ILI surveillance in place since 1999, and SARI surveillance has been operating effectively since 2007. With the availability of long-term data, Egypt already published a study on the burden of influenza.. Currently, in coordination with WHO headquarters and Regional Office for the Eastern Mediterranean, Egypt is preparing a manuscript with a proposed title: The burden of influenza-associated respiratory illness across levels of severity in Egypt, 2016-2019. Moreover, it is exploring the possibility of publishing a manuscript on the burden of disease in the country, with support from consultants for data analysis and report writing. The country's open access agreement with medical journals enables it to publish its findings free of charge.

Notably, Egypt has made strides in its laboratory capabilities. A consultant has been employed to support the NIC in enhancing sequencing capacity and interpreting sequence data. As a result, NIC staff can now

independently interpret and upload influenza sequence data, a significant milestone. Additionally, the laboratories operating at the sentinel sites now conduct PCR testing instead of transporting samples to the NIC. Recognizing the importance of continuous improvement, an official request has been made to the Ministry of Health for a comprehensive review and assessment of these labs.

Egypt's commitment to a comprehensive health approach is evident in the launch of its national One Health strategy, developed in collaboration with relevant ministries and international organizations. Currently, the country is working on an action plan for this strategy to address various health challenges holistically. Furthermore, with the support of the WHO Regional Office, the rapid response team is developing a monitoring and evaluation framework, and piloting is already in progress.

Egypt's achievements in COVID-19 and influenza surveillance demonstrate its dedication to public health and its determination to continually improve its capabilities. These efforts contribute to the overall global fight against infectious diseases and set an example for other countries to follow.

# IRAQ

## Building resilience – the ongoing battle against avian influenza

The planning and preparation of an IPPP in Iraq has been ongoing since the establishment of the country's NIC in 2005. The efforts of the NIC were recognized by WHO in 2010, and Iraq has become a member of the GISRS.

In March 2021, an outbreak of the H5N8 strain of avian influenza occurred in poultry farms in Salah al-Din governorate, located 157 km north of Baghdad. The majority of the affected farms were producing eggs, and the outbreak resulted in significant economic losses. The national veterinary hospital conducted a thorough investigation and determined that the diagnosis was H5N8. The health authorities were immediately notified of the outbreak.

In response, health authorities initiated an investigation to ascertain the possibility of animal–human transmission. Specimens were collected from poultry farm workers and tested at the NIC. The tests confirmed the presence of H5, but the N subtype was not defined due to the unavailability of testing kits. Over 100 samples were taken from farm workers as well as the contacts of five confirmed cases, and all were found to be negative. The confirmed cases experienced mild symptoms and were successfully treated with antiviral medication.

WHO took a proactive approach in collaborating with the Ministry of Health to conduct a joint mission to investigate this event. This joint effort aimed to shed light on the outbreak and determine appropriate response measures.

The process of IPPP development has had a positive impact on the country's preparedness and response capabilities. Funds have been allocated to reactivate and expand

the sentinel-based surveillance system. An integrated surveillance system for both SARS-CoV-2 and influenza has been successfully established. Five sentinel surveillance sites have been strategically established across Iraq, with three dedicated to SARI and two to ILI. Refresher and updating training workshops have been conducted to enhance the capacity of health care workers and experts in the field.

Data collection and sharing have been maintained and sustained, aided by the provision of Internet services to sentinel sites. Epi Info software has been utilized to collect and manage influenza and ORV surveillance data, which are then sent to the provincial level as an Excel sheet for entry into EMFLU. To further support these efforts, training on EMFLU 2.0 implementation was conducted for health care workers, ensuring full functionality of the platform by June 2023.

The NIC has received continuous support through the provision of diagnostic kits, reagents and viral transport medium. Additionally, human capacity-building for genomic surveillance and virus isolation has been carried out through training programmes for laboratory health workers. Health messages related to prevention have been disseminated through social media platforms, contributing to public awareness.

Despite these achievements, challenges remain. Trained staff may relocate, impacting the continuity of operations. Logistic support at the governorate level remains minimal, hindering the smooth functioning of response efforts. Additionally, the shipping of samples to reference labs and vaccine hesitancy pose ongoing challenges. Sharing representative positive influenza clinical specimens by shipping them to the WHO CC/UK is essential for national and global surveillance, but this may encounter logistic obstacles.

# JORDAN

## National ownership has emerged as a crucial factor in the sustainability and success of influenza surveillance systems

The COVID-19 pandemic has highlighted the critical importance of surveillance systems in detecting and monitoring infectious diseases. In Jordan, sentinel surveillance sites have been established to collect data and samples from patients with ILI and SARI. However, due to the unprecedented challenges posed by the pandemic, the surveillance system faced a number of obstacles. Jordan made strenuous efforts to reactivate the SARI sentinel surveillance system, learning from best practices.

The reactivation of the SARI surveillance system involved several key activities. The first step was the identification and selection of potential sites for surveillance. These sites were carefully chosen based on their ability to provide accurate and representative data. Once a site was selected, a scheduled mechanism for specimen collection and transportation was established to ensure timely and efficient sample collection.

The process for transporting specimens to the NIC was streamlined to prevent delays and maintain the integrity of the samples. Furthermore, a robust tracking system was implemented to monitor data flow, including on collection, enrolment and results. This facilitated the dissemination of results and the generation of bi-weekly situation reports, providing valuable insights for decision-makers.

Moreover, the development of recommendations was crucial in reactivation efforts. By collaborating with various stakeholders, including health care professionals and authorities, the surveillance site system aimed to align its activities with the national health care agenda and ensure the implementation of recommended measures effectively.

Despite the reactivation efforts, several challenges were encountered. The first was the need to update SOPs, both in terms of surveillance and laboratory testing. The evolving nature of infectious diseases requires continuous refinement of case definitions and testing algorithms to ensure accurate identification and monitoring.

Additionally, the perceived purposes of sentinel surveillance needed to be clarified to improve engagement and participation. Proper communication and awareness campaigns became essential in explaining the importance of surveillance and its role in public health responses.

Cost-effectiveness was another challenge faced during the reactivation process. Given the financial constraints in the health care sector, finding a balance between resource allocation and the effectiveness of surveillance activities required careful planning and prioritization.

Lastly, the lack of proper engagement with referral physicians posed a challenge in achieving comprehensive and high-quality surveillance. Collaborative efforts with health care providers were crucial to ensure proper reporting and enrolment of patients into the surveillance system.

# LEBANON

## Major achievements in PIP Framework implementation

Lebanon has made significant progress in implementation of the The Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Implementation Plan, with two major achievements standing out. These accomplishments demonstrate the country's commitment to enhancing its surveillance and response capabilities in the face of public health emergencies.

The first noteworthy achievement was the successful reactivation of the country's SARI sentinel surveillance sites after the COVID-19 pandemic. This crucial step enabled Lebanon to identify and select potential sites for surveillance and establish efficient mechanisms for specimen collection and transportation, as well as ensuring smooth data flow throughout the system. By re-establishing

this vital infrastructure, Lebanon has significantly bolstered its ability to monitor and respond to respiratory diseases effectively.

The second major achievement was the development of a PIVI programme. Under this initiative, Lebanon developed a comprehensive roadmap, conducted assessment missions and engaged in proactive activities with key stakeholders. . As a result of the collaborative work, a detailed PIVI activity workplan was formulated.  This strategic blueprint outlines the necessary steps and timelines for efficiently distributing and administering influenza vaccines to the population. By proactively planning for the introduction of vaccines, Lebanon is aiming to mitigate the impact of influenza outbreaks and safeguard public health.

Furthermore, Lebanon has made considerable progress in other important areas of public health preparedness. Efforts were made to generate robust evidence related to the burden of disease, providing a solid foundation for targeted interventions. The country also embraced a One Health approach, strengthening collaborations across the human, animal and environmental health sectors, recognizing the interconnectedness of various factors in disease outbreaks.

Lebanon has dedicated significant resources to improving its diagnostic capacities, ensuring accurate and timely identification of infectious diseases. By investing in advanced technologies and training health care professionals, the country is better equipped to detect and respond to health threats rapidly.

Finally, Lebanon has formulated a comprehensive influenza vaccine deployment plan.


# MOROCCO

## Strengthening an integrated surveillance system for effective infectious disease control

Since 2014, Morocco has established eight sentinel sites for the epidemiological and virological surveillance of respiratory diseases. This surveillance system was extended to two additional sites in 2022, covering the south of the country (Laayoune) and the Casablanca region. In 2021, the surveillance system was integrated to include influenza, SARS-CoV-2 and RSV, allowing for the comprehensive monitoring of respiratory diseases.

The onset of the COVID-19 pandemic highlighted the importance of the influenza surveillance system in Morocco. It allowed for a rapid response by leveraging existing national laboratory capacities, coordinated by the NIC. The integration and collaboration between influenza and COVID-19 surveillance systems have been pivotal in managing the pandemic effectively.

Morocco has also implemented a PISA system. In October 2018, a regional training workshop was organized by the WHO Regional Office, followed by national training in March 2019. The development of a national PISA protocol and the application of thresholds for transmissibility between March and December 2019 further enhanced the country's preparedness and response capabilities. This biennium, another training workshop was conducted in 2024 with the support of experts in this area from WHO headquarters.

Support for implementation of the rapid response team national action plan has been a focus for Morocco. From 2014 to 2022, 30 rapid response teams were trained under the PIP Framework, with an additional six under the outbreak and crisis response plan. These teams operate at the national, regional and district levels, contributing to surveillance, contact tracing, risk assessment and response. The COVID-19 pandemic has seen rapid response team capacity further expanded at the district level through virtual short training programmes.

One of the key achievements of Morocco's surveillance system has been virus sharing, the isolation of strains and sharing them with WHO collaborating centres for the production of vaccines. This partnership ensures the availability of vaccines tailored to the strains circulating in Morocco. Additionally, data sharing with GISRS strengthens global understanding of influenza trends.

Another important aspect of Morocco's Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Implementation Plan is RCCE. National meetings on strengthening RCCE capacities and the development of an RCCE action plan have been conducted. Leveraging these capacities, Morocco was able to quickly develop a national RCCE COVID-19 action plan to effectively communicate risks and engage communities during the pandemic.

Planning, coordination and data generation are critical components of The Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Implementation Plan  Morocco conducted an evaluation of its IPPP in 2019 and updated it accordingly. The development of a national influenza pandemic vaccine and product deployment plan in 2021, contributes to the continuity of health services for an influenza pandemic, demonstrate the country's commitment to preparedness and response.

Morocco has made efforts to assess the influenza burden of disease by conducting a study at a sentinel site from 2008 to 2012, following WHO methodology. Strengthening capacities among health professionals through training has also been prioritized. Protocols for a second influenza burden of disease study and economic burden assessment were finalized in 2019.

Despite the progress made, Morocco faces several challenges inThe Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Plan Implementation. Sustained commitment from decision-makers is needed to allocate a budget for the influenza programme. Additionally, staff turnover and weak absorption capacities within the Ministry of Health lead to delays in implementation. These challenges need to be addressed for the effective continuation of implementation of the plan.

To address public health challenges efficiently, an advocacy plan based on evidence-based research is essential. Conducting disease outbreak and economic burden studies will provide insight into the impact of diseases on individuals, communities and the economy.

Ensuring the sustainability of integrated surveillance systems entails establishing robust monitoring and evaluation frameworks to continuously assess the system's performance. Encouraging the active involvement of local communities and building their capacity to participate in surveillance activities can also contribute to long-term sustainability. Additionally, cultivating a culture of data-driven decision-making and promoting intersectoral collaboration will contribute to effective surveillance practices.

To maximize the effectiveness of integrated surveillance systems, integration and synergy with other health emergency programmes is crucial. Integration with the IHR (2005) and the One Health approach, together with event-based surveillance and epidemic intelligence, would contribute to the sharing of information, expertise and resources.

# SOMALIA

## Strengthening and sustaining influenza surveillance – challenges, progress and strategies for long-term sustainability

In 2019, a WHO-assessment for influenza surveillance was conducted, identifying three potential sites in three states in Somalia. By September 2021, influenza surveillance had commenced at three sites in two states, supported by two laboratories. The COVID-19 response played a significant role in enabling influenza surveillance through laboratory capacity-strengthening. All sentinel sites were also designated as COVID-19 centres, further enhancing their role in respiratory pathogen surveillance. In subsequent years, protocols, plans and surveillance tools were developed and disseminated, and influenza and other respiratory pathogens were integrated into the Integrated Disease Surveillance and Response system. Capacity-building efforts for frontline health workers and laboratory teams were undertaken, along with the prioritization of zoonotic diseases, including avian influenza. Several state-based laboratories were established, two of which currently support influenza surveillance.

The surveillance sites are technically supervised by the National Institute of Health technical team, with support from WHO. Currently, four sites are functional, with three located in Mogadishu. Each site has a team of health workers led by a coordinator who ensures the proper enrolment of cases according to protocols and the timely transportation of samples to the laboratories. In the

laboratories, technical officers are assigned based on workload, and epidemiological and virological reports are submitted through the EMFLU 2.0 application.

Despite the progress made, there are several challenges in influenza surveillance in Somalia. Insecurity and political uncertainties often impede smooth operations, while high staff turnover affects the continuity and efficiency of surveillance activities. A low level of interest from the Ministry of Health and Human Services and nongovernmental organizations managing high-volume facilities hampers the prioritization and allocation of resources. The majority of activities are either supported by the US CDC or the PIP PC, and there is currently no funding from the national government, which poses challenges to sustainability.

The cost of operations, such as procurement and supply, remains high, and the pressure to expand the surveillance system puts a strain on the available resources. The occurrence of multiple outbreaks and hazards simultaneously further stretches the capacity of the surveillance system. These challenges, coupled with a complete reliance on donor funding, raise concerns regarding the long-term sustainability of the surveillance system. Quality issues in surveillance data and laboratory activities also need to be addressed.

To strengthen and sustain influenza surveillance in Somalia, several actions can be taken. First, the activation of a site in Hargeisa would enhance the geographical coverage of surveillance. Lessons learned throughout the implementation process should be documented and disseminated, including the development of a case study highlighting successful practices. It is important to involve the animal health team in surveillance efforts as part of a One Health strategy, to better understand and respond to zoonotic diseases. Integration of surveillance and response mechanisms should be prioritized to enhance effectiveness and efficiency. Furthermore, including influenza surveillance in the Frontline Field Epidemiology Training Programme would build the capacity of public health professionals in detecting and responding to respiratory pathogens. A thorough evaluation of the current system is needed to identify areas for improvement. Recruitment of national staff would enhance local ownership and the sustainability of surveillance activities. Designating the Mogadishu laboratory as the NIC would further strengthen the laboratory's role in influenza surveillance.

# SUDAN


## Ongoing conflict intensifies humanitarian crisis and impedes influenza surveillance efforts

Sudan is currently experiencing an intense internal conflict, leading to a humanitarian crisis and difficulties in conducting influenza surveillance. The conflict has seen widespread violence and loss of life, forcing many organizations and agencies to suspend their operations in the country. The situation in the densely populated city of Khartoum has raised concerns about a looming humanitarian crisis, with restricted movements of health care professionals, limited access to health facilities and damage to health care infrastructure. Hospitals in Khartoum are facing significant challenges, including shortages of doctors, equipment and medical supplies. Power outages, blocked Internet access and fuel shortages further strain the health care system. Despite these challenges, efforts are under way to find solutions and alternative options for maintaining surveillance and laboratory systems.

Before the conflict, Sudan had established a network of influenza surveillance sites, including hospitals and a NIC. These sites play a crucial role in monitoring and responding to influenza outbreaks in the country. Despite obstacles such as inadequate sample preservation, logistic complications and security concerns, Sudan has made significant progress in influenza surveillance and preparedness.

The hospitals involved in influenza surveillance include renowned institutions such as Alshaab Hospital, Haj Alsafi Hospital and Mohamed Elameen Hamid Pediatrics Hospital in Khartoum. Additionally, the network includes Nyala Teaching Hospital in South Darfur and Port Sudan Teaching Hospital in the Red Sea region. Due to security concerns, the Sudan Ministry of Health has relocated the NIC from Khartoum to Port Sudan to assure the sustainability of the health system.

Staff members at these surveillance sites receive training in PCR testing techniques and genomic sequencing through the support of the Partnership Contribution for influenza

preparedness. Plans are also under way to provide bioinformatics training to strengthen expertise in data analysis and interpretation.

Data sharing is crucial for effective influenza surveillance, and Sudan shares its surveillance data on a weekly basis with the WHO Regional Office team. However, challenges have been faced in transporting positive samples due to inadequate preservation and logistic complications.

To address these challenges, Sudan's influenza surveillance efforts have been reinforced through PIP PC funding. This funding has enabled the replacement of essential supplies in the laboratory, ensuring the continued functionality of the system.

Moving forward, Sudan has outlined various activities to enhance influenza surveillance and preparedness in 2024–2025. These activities include activating and reactivating surveillance sites based on security status, developing and testing an IPPP, supporting the relocation of the NIC, implementing point-of-care testing using LumiraDx devices at surveillance sites, reinforcing influenza surveillance, conducting a study on barriers to influenza vaccine usage among health care workers and promoting RCCE activities.

Despite the challenging circumstances resulting from the conflict, Sudan remains committed to minimizing the impact on public health and remaining vigilant against influenza threats.

# SYRIAN ARAB REPUBLIC

## Strengthening influenza preparedness – implementation of a public health information platform for pandemic coordination

Development of the PIP Framework's PC implementation plan in Syrian Arab Republic has been a crucial step in strengthening influenza preparedness in the country. The National Influenza Committee's multisectoral approach, with representatives from various sectors, has facilitated coordination and leadership in preparedness efforts. The committee's clear structure and regular meetings have ensured effective communication and information sharing among sectors.

One of the key focus areas has been the strengthening of influenza surveillance. This has involved the establishment of a systematic surveillance system and integration with COVID-19 surveillance. Efforts have also been made to provide high-quality surveillance data, increase testing and samples, and expand laboratory capacity. The linkage between surveillance and laboratories has further enhanced the effectiveness of the system.

In addition to surveillance, the implementation of theThe Pandemic Influenza Preparedness (PIP) Framework's Partnership Contribution (PC) Implementation Plan has emphasized the importance of building resilience in influenza preparedness. The development and endorsement of the National Influenza Preparedness Plan in 2021 has defined the roles and responsibilities of different sectors and stakeholders. This has led to increased partnership, policy development and leadership in the preparedness process.

In terms of surveillance, Syrian Arab Republic has five sentinel hospitals reporting to the EMFLU 2.0 system,

with the timeliness of reporting at 52% in 2023. These hospitals have shared influenza viruses with the laboratory of the WHO collaborating centre and have activated three laboratories for testing both SARS-CoV-2 and influenza viruses.

Despite the progress made, there are still challenges that need to be addressed. Limited health care infrastructure, staff turnover and limited resources are among the obstacles that implementation of the plan has encountered. The country's reliance on donors and the presence of multiple emergencies have also posed challenges to preparedness efforts. Additionally, limited access to vaccines remains a concern.

To overcome these challenges, the way forward includes expanding SARI sentinel surveillance, activating ILI surveillance and introducing RSV testing. Capacity-building initiatives and the development of a comprehensive RCCE strategy are also required. Integration of influenza vaccines into the Expanded Programme on Immunization and conducting a knowledge, attitude and practice survey to understand vaccine acceptance are important steps to improve vaccination coverage.

Moving forward, updating the national IPPP and conducting simulation exercises will further enhance preparedness efforts. Procurement of laboratory supplies and reagents, capacity-building initiatives and expansion of sentinel sites for both SARI and ILI surveillance are necessary steps to strengthen laboratory and surveillance systems.

# YEMEN

## Reactivation of the influenza surveillance system – challenges and recommendations

In the midst of the ongoing crisis in Yemen, the country's health system has been severely impacted, including the functionality of the influenza surveillance system and testing capabilities. However, despite these challenges, there have been successful efforts to reactivate the influenza surveillance system in the country, thanks to the continuous support of WHO.

To improve influenza case detection and the monitoring of influenza epidemics, an assessment of the current epidemiological and laboratory capacities of SARI/ILI sentinel sites has been conducted. This assessment revealed that three out of five influenza sentinel sites could be reactivated successfully: Al-Sadaka Teaching Hospital in Aden, Al-Jamhori Hospital in Taiz and Ibin Sayna Teaching Hospital in Hadramout/Mukalla. The hospital management and staff at these sites have shown willingness to work with influenza surveillance, which is a positive development.

However, the assessment also highlighted suboptimal feasibility and sustainability of the chosen facilities. There are several factors contributing to this, including the lack or incompleteness of efficient mechanisms for the collection, storage and transportation of clinical specimens. Additionally, there is a lack of stable and long-term funding to cover hazard pay or incentives for well-trained staff. These challenges need to be addressed to ensure the effective functioning of the surveillance system.

To improve the implementation status of the PIP Framework, a technical consultant from the WHO Regional Office has been deployed by the WHO Regional Office to support the Ministry of Public Health in reactivating the SARI/ILI surveillance system. Various actions have been taken based on the results of this mission, including discussions on the challenges facing the influenza sentinel surveillance system in Yemen and the importance of its functionality.

Coordination between the Expanded Programme on Immunization and laboratories, as well as the integration of surveillance for SARS-CoV-2 and other respiratory pathogens, has been ensured. Additionally, national SOPs, tools and training materials for integrated sentinel surveillance have been refined and put into practice.

Furthermore, an existing COVID-19 electronic Integrated Disease Early Warning System has been adapted for reporting via the SARI/ILI surveillance system at designated sentinel sites. Data are collected by the influenza programme at the Ministry of Public Health, and are then regularly submitted to WHO and uploaded to the EMFLU platform with the support of the regional WHO infectious hazard prevention and preparedness programme and the WHO Regional Office. In addition, the CPHL in Aden has been equipped with sequencing capabilities for influenza testing and subtyping. This allows for the serotyping and sequencing of influenza isolates, providing valuable information for epidemiological studies and future treatments.

Despite the progress made in reactivating the influenza surveillance system, there are still challenges that need to be addressed. One of these is that the Ministry of Public Health in Sana'a is not currently sharing influenza (SARI/ILI) data with WHO. There is also a shortage of the laboratory reagents and supplies required for strengthening national disease surveillance, preparedness and response. The prolonged procurement and logistic process often disrupts the implementation of activities according to the PIP PC workplan. Additionally, the presence of two different governments in the country complicates the implementation of activities, particularly when dual authorities are present in the same governorate.

To address these challenges and further improve the influenza surveillance system in Yemen, several strategic actions and recommendations can be considered. Capacity-building on SARI/ILI for sentinel site focal points through training workshops on case and data management should be prioritized. Strengthening the surveillance programme for influenza and other respiratory infections with adequate supplies and dissemination of IEC materials is essential. Regular monitoring and evaluation field visits should be conducted, in addition to adopting a One Health approach, conducting knowledge, attitude and practice studies on influenza vaccines and providing the CPHL with necessary reagents. The development of a national influenza vaccination plan is also recommended.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