EMPHNET
The Eastern Mediterranean
Public Health Network

DISEASE SURVEILLANCE

▶ GHD I EMPHNET: working together for better health

OUR APPROACH

Assessing Threats Facing Countries

Conducting comprehensive **evaluations** to identify and analyze public health threats, guiding evidence-based interventions, conducting **assessments** of surveillance systems in place.

Supporting Integrated Surveillance

Implementing **a One Health approach** to unify disease surveillance across human, animal, and environmental health sectors, strengthening **event-based surveillance (EBS)** and indicator-based surveillance (IBS) for a more comprehensive and responsive system, involving **communities** in surveillance efforts to enhance early detection, reporting, and response to public health threats.

Enhancing Laboratory Capacity

Improving **diagnostic capabilities and laboratory networks** to support timely and accurate disease detection.

Digitizing Surveillance Systems

Enhancing **data accuracy and timeliness** by digitizing surveillance systems.

Strengthening Cross-Border & Regional Collaboration

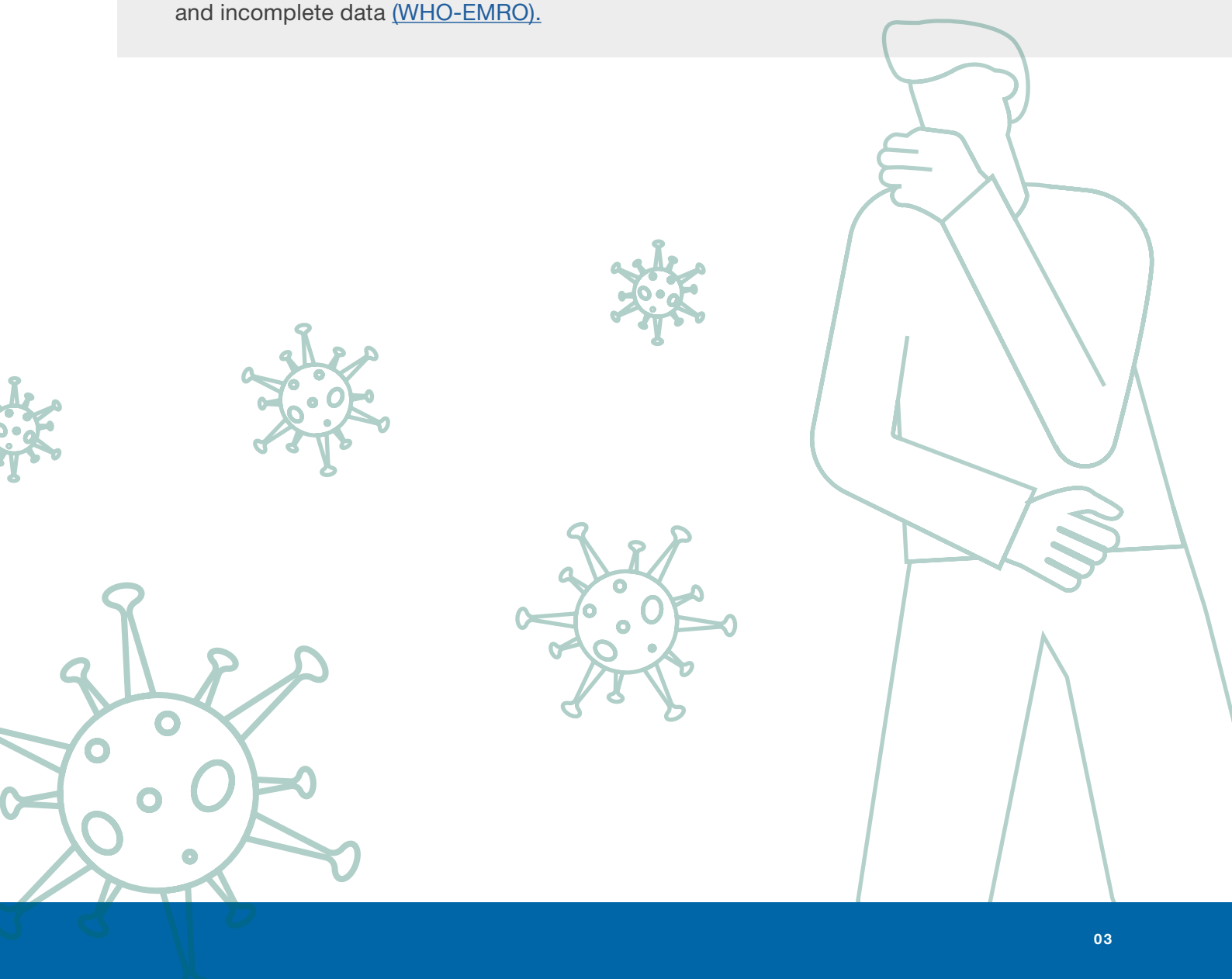
Fostering **regional partnerships and cross-border cooperation** to improve surveillance and coordinated responses to public health threats.

Supporting Surveillance for Noncommunicable Diseases

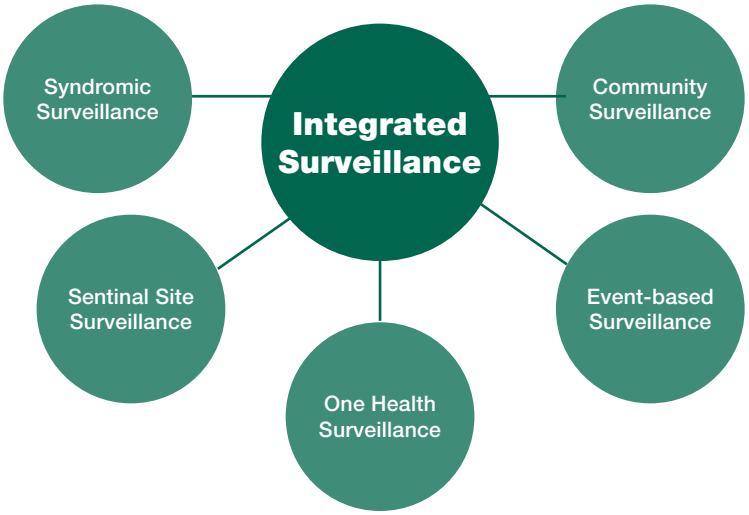
Expanding support to surveillance **beyond infectious diseases** to include noncommunicable diseases, ensuring informed policy and strategic planning.

WHY EMPHNET IS INVOLVED

- Disease surveillance systems in several EMR countries are decentralized, operating within separate disease-specific programs. These systems are primarily funded by external donors and rely on designated financial resources (Saad et al 2021)
- Various assessments, including the Joint External Evaluation (JEE), have shown moderate capacity for interoperable, interconnected, and electronic real-time reporting systems (WHO-EMRO).
- A 2018 analysis of 14 JEEs completed in the Region highlighted the need for more investments in laboratory quality systems (WHO-EMRO)
- Most countries have yet to fully leverage ICT advancements, leaving systems manual, fragmented, and non-standardized. Limited data sharing, weak human resources, and minimal use of data for action persist (Doe & Smith, 2024)
- The lack of comprehensive electronic systems for data collection and storage leads to gaps and incomplete data (WHO-EMRO).



INTEGRATED SURVEILLANCE



Different types of surveillance integrated for enhanced public health monitoring

ONE HEALTH
FOR ANTIMICROBIAL RESISTANCE (AMR)

Southeast Asia

Year: 2020

Overview

Joined a multi-regional and multi-country collaboration, the Partnership for AMR Surveillance Excellence (PARSE), to assess AMR surveillance capacities across four regions: East and Southern Africa, Southeast Asia, South Asia, and West Africa.

Outcome

- Supported the **development of common protocols and SOPs** for AMR surveillance by mapping and assessing capacities in **Afghanistan.**
- Provided feedback to **Pakistan** and **Bhutan** in the process of drafting their proposed **protocols and SOPS.**

Bangladesh

Year: 2022-2023

Overview

Collaborated with Bangladesh Livestock Research Institute (BLRI) in conducting active surveillance in poultry farms and adjacent premises to understand the burden and ecology of AMR in Bangladesh.

Outcome

- Developed and implemented **a research protocol** for Surveillance of Antimicrobial Resistance in farms and the environment interface.
- Developed **an online dashboard** to share surveillance findings and ongoing AMR surveillance by the BLRI AMR reference laboratory.

DISEASE SPECIFIC
BRUCELLOSIS

Jordan

Year: 2016-2022 in East Amman, Karak, and Mafraq

Overview

Active laboratory-based surveillance of human and animal brucellosis was established using appropriate confirmatory testing in line with the standards of the World Health Organization and the World Organization for Animal Health. This approach enabled the determination of brucellosis incidence rates, identification of risk factors, and characterization of bacterial genotypes.

Outcome

- **400+ professionals trained** in case definition, clinical signs and symptoms, modes of transmission, and treatment as well as diagnostics
- Improved laboratory diagnostic capacities at human and animal levels by introducing ELISA **into provincial public health laboratories and PCR into the Central Public Health Laboratory and Central Veterinary Laboratory**
- **New communication protocols established and adopted** to enhance communication channels between the field and laboratories and between animal and human health sectors

Iraq

Year: 2016-2017 in provinces of Babel, Diala, Maysan and Wasit

Overview

Surveillance, diagnostics, and control of brucellosis were strengthened through the establishment of molecular testing, enabling the determination of the brucellosis burden in targeted provinces.

Outcome

- **280+** professionals trained Rose Bengal, ELISA, and PCR case definition
- **Established epidemiological communication** between human and animal sectors
- **Introduced ELISA into provincial public health laboratories and PCR into the Central Public Health Laboratory and Central Veterinary Laboratory**
- **Sample transport procedures established** from periphery to Central Public Health Laboratory and periphery to Central Veterinary Laboratory

Pakistan Islamabad's Sohan and Tarlai Union Councils

Overview

Implemented capacity-building sessions for laboratory officers and veterinarians on case identification, management, and sample collection to strengthen One Health surveillance for brucellosis.

Outcome

- Surveillance of animal brucellosis was initiated to reduce transmission to humans, in collaboration with the government's National Agricultural Research Council (NARC) and the National Health Institute (NIH).
- Brucellosis sentinel surveillance sites in Islamabad's Tarlai and Sohan union councils were integrated into the country's existing surveillance system.

ANTHRAX

Bangladesh

Year: 2022-2023

Overview

Integrated the anthrax surveillance module in Bangladesh Animal Health Intelligence System (BAHIS) to capture the data from three sentinel sites of Meherpur district, with the other districts' data is captured through the broader BAHIS module.

Outcome

- Developed the **national animal health outbreak investigation guideline**
- Developed **one health outbreak investigation guideline**
- Set up an **enhanced passive surveillance**
- Strengthened field diagnostic laboratory capacity for diagnosing anthrax at Gangni, Meherpur

BURKHOLDERIA PSEUDOMALLEI

Bangladesh

Year: 2024

Overview

Implemented capacity building, diagnostic support, logistic support, data analysis, and training to establish an environmental surveillance system aimed at detecting Burkholderia pseudomallei in Bangladesh.

Outcome

Data collected, analyzed, and compiled into a comprehensive report for stakeholders, policymakers, and field workers, aiming to raise awareness of B. pseudomallei and melioidosis, endemic in Bangladesh since 1988.

EVENT-BASED SURVEILLANCE

EMPHNET supports the integration of event-based surveillance (EBS) to enhance early detection and response across targeted countries.

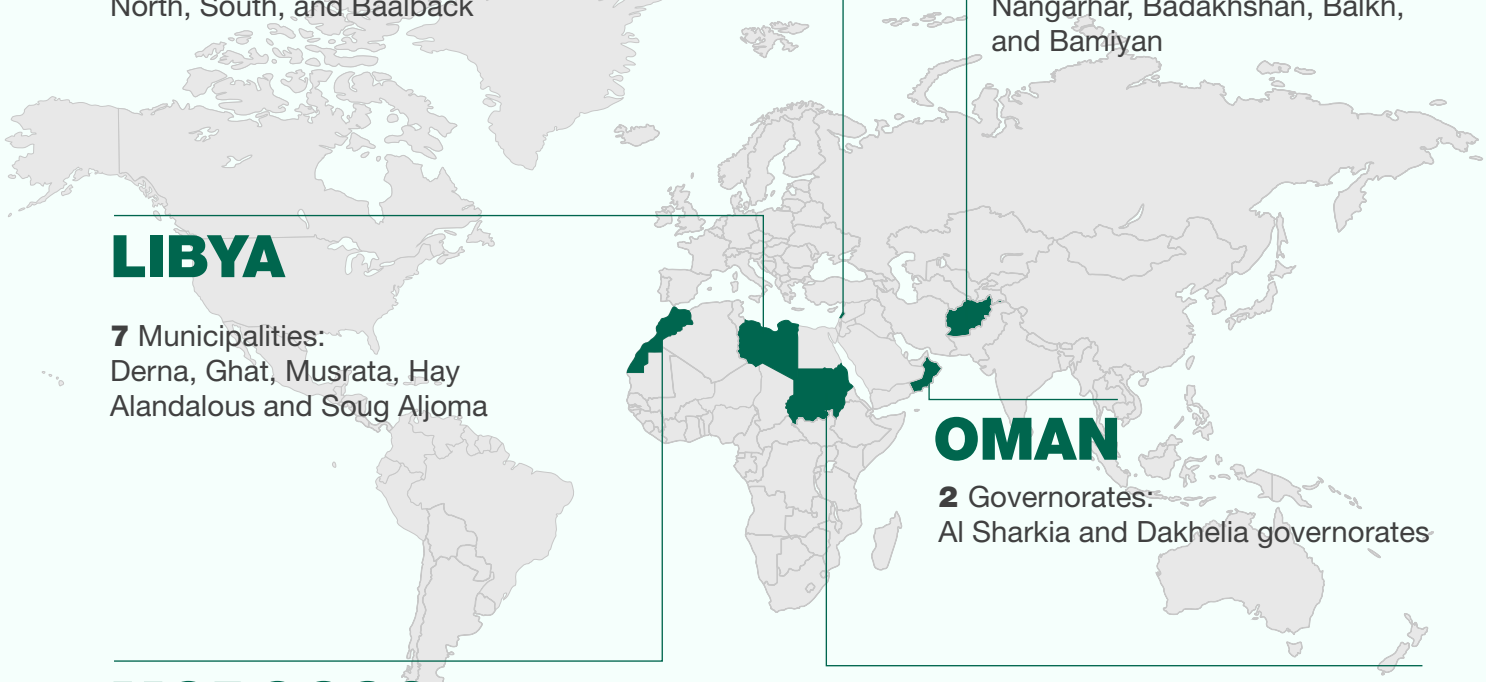
Locations covered under EBS in targeted countries

LEBANON

7 Governorates:
Beirut, Mount Lebanon, Bekaa, Akkar, North, South, and Baalback

AFGHANISTAN

7 Provinces:
Kabul (one zone), Herat, Kandahar, Nangarhar, Badakhshan, Balkh, and Bamiyan



LIBYA

7 Municipalities:
Derna, Ghat, Musrata, Hay Alandalous and Soug Aljoma

OMAN

2 Governorates:
Al Sharkia and Dakhelia governorates

MOROCCO

3 Regions:
Casablanca, Rabat, and Tangier

SUDAN (2021-2023)

7 States:
Khartoum and White Nile

COMMUNITY-BASED SURVEILLANCE

YEMEN (NATIONWIDE)

Year: 2017-2024

Focus

Supported the Yemen Ministry of Public Health and Population (MoPHP) in engaging communities in its efforts to strengthen the national immunization program and curb the spread of communicable diseases, particularly polio and other vaccine-preventable diseases (VPDs).

Outcome

- **1290+** community health volunteers trained
- **(2019)** Independent evaluation showed that Non-Polio AFP rate in children ≤15 years and the Adequacy Rate have increased in Yemeni districts where volunteers were trained
- **(2024) 2000+** cases reported, encompassing suspected measles, suspected neonatal tetanus, and acute flaccid paralysis

LEBANON PROVINCES: BAALBACK, AKKAR, TRIPOLI, MOUNT LEBANON AND BEIRUT, ZAHLE

Year: 2022

Focus

Established Community-Based Surveillance for AFP in border provinces in Lebanon

Outcome

- Developing CBS guidelines and training material and building capacities of epidemiological surveillance unit officers from central, provincial and district levels
- **120+** community informants trained
- NPAFP rate (per 100,000) increased in 4 out of 6 targeted governorates between February and June 2023. For instance, it increased from 3.1 to 5 in Mount Lebanon, 0 to 4.1 in Akkar, 0 to 5.7 in Beirut and 0 to 10.1 in Baalback-Hermel. This is partially due to the raised awareness among community informants who were in their turn sensitizing the community about the need to seek medical care for AFP.

SUDAN
(18 STATES)

Year: 2019-2025

Focus

Establishing community-based networks to achieve high population immunity for measles and other VPDs among high-risk groups.

Outcome

Year: 2019-2020

- Around **200** EPI Officers, State Surveillance Officers, Locality Surveillance Officers trained from **18** states targeted. These officers were trained to educate community informants on community-based surveillance.

Year: 2024-2025

- **286** community informants were trained in **6** states: River Nile, Nothern, Kassala, Gedaref, Red Sea in addition Gezira.
- **183** supervisory visits conducted.
- The CBS system has been successfully implemented nation-wide and is now operational, providing valuable public health insights despite the challenging circumstances in Sudan.

IRAQ
(NAJAF, MUTHANNA, AND ANBAR PROVINCES)

Year: 2018-2019

Focus

Strengthening Community-Based Surveillance for AFP, Measles, and Tetanus Detection

Outcome

- **41** community members trained at the district-level
- CBS focal points contributed to detecting missed AFP, measles, and tetanus cases.

DIGITALIZATION OF SURVEILLANCE SYSTEMS

BANGLADESH 2022

Supported Bangladesh's IEDCR in enhancing its Web-Based Disease Surveillance System (WBDSS) by strengthening technology, data management, and staff training at the subdistrict level.

JORDAN 2021

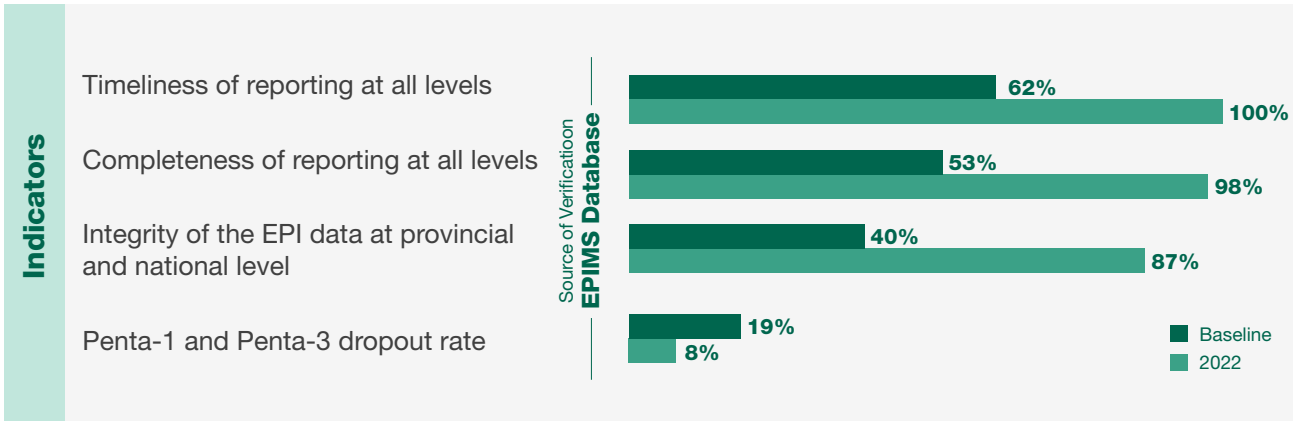
Assisted the Jordan Ministry of Health in digitizing existing mother and child healthcare records, creating a registry that is fully synchronized and interoperable with the Ministry's information system.

IRAQ 2016-2021

Supported the Iraq Ministry of Health in strengthening preparedness and response capacities for the Arba'een Mass Gathering (MG). This collaboration has led to the development of an enhanced and effective real-time syndromic surveillance system, powered by mobile technology and linked to a centralized server where real-time data from all governorates is aggregated.

AFGHANISTAN 2022

Supported the implementation of an access-based EPI database, integrating it with the Health Information Management and Information System (HIMIS), and transitioning to an online system for real-time data access and analysis.



Improvements noted in the EPI database following technological integration

BUILDING CAPACITIES FOR STRONGER SURVEILLANCE SYSTEMS

CONGENITAL RUBELLA SYNDROME (CRS) SURVEILLANCE

AFGHANISTAN

Supported the **expansion of the CRS surveillance system across all 7 provinces in Afghanistan** through capacity building for doctors and surveillance officers on case detection, sample quality, collection, transportation, testing, and reagent use, while conducting supervisory visits to assist with data collection, processing, cleaning, and analysis.

EGYPT

Assisted the Egypt Ministry of Health and Population (MoHP) in **establishing a Congenital Rubella Syndrome (CRS) surveillance system** by developing and reviewing CRS surveillance guidelines, training clinical staff on surveillance practices, providing training for sentinel site and lab staff, and conducting sensitization, orientation, and advocacy visits to sentinel sites.

ACUTE FLACCID PARALYSIS AND VACCINE PREVENTABLE DISEASE SURVEILLANCE AT THE PERIPHERY

EGYPT 2019-2022

10,749
district level staff trained covering 18 governorates

From the outcomes:
Limited-scale, active case search and vaccination coverage surveys.

MOROCCO 2017-2022

354
district-level surveillance focal points trained

From the outcomes:
The Non-Polio AFP rate (NPAFP) per 100000 population below the age of ***15*** reached the regional standard of **2.1 in 2019** in comparison with **1.3 and 0.73 in 2017 and 2015**, respectively.

IRAQ 2021-2022

448
district-level surveillance officers trained

From the outcomes:

Contributing to enhancing community engagement

53 detailed epidemiological investigations of Hot AFP & 0 dose cases

53 immunization coverage surveys conducted

30 coverage micro surveys conducted on fever and rash cases.

YEMEN 2017-2024

419
district-level surveillance officers trained

From the outcomes:

Contributing to enhancing community engagement in surveillance

FIELD EPIDEMIOLOGY TRAINING PROGRAMS (FETPS): BUILDING A KNOWLEDGEABLE WORKFORCE IN SURVEILLANCE TO EMPOWER RESPONSE AND DECISION-MAKING

FETPs rely on surveillance as a fundamental element to support response efforts, with surveillance being a core component of the curriculum. This is reinforced through extensive fieldwork, ensuring that officers are well-prepared to effectively report on emerging threats at the local level, facilitating prompt and informed responses. By supporting FETPs, EMPHNET plays a critical role in strengthening surveillance systems at the local level, empowering frontline officers to enhance disease detection, response, and decision-making.

PUBLIC HEALTH EMPOWERMENT PROGRAM-SURVEILLANCE FOR POLIO OFFICERS (PHEP-SPO)

The Public Health Empowerment Program, an FETP customized modality - Surveillance for Polio Officers was launched to equip frontline surveillance officers with essential skills to enhance disease detection and response.

NUMBER OF COHORTS

Afghanistan **1**	Lebanon **2**	Yemen **3**	Sudan **7**

MATERNAL AND CHILD HEALTH

Establishing The Jordan Maternal Mortality Surveillance and Response System (JMMSR)

Year: 2016-2021

Overview

Supported the USAID's Health Service Delivery (HSD) to establish and implement the Jordan Maternal Mortality Surveillance and Response System (JMMSR) implementation.

Outcome

- ☑ Jordan's National Maternal Mortality Reports released, measuring and tracking maternal deaths to assist in understanding the underlying factors that are contributing to maternal deaths and guide actions to prevent similar death occurrences in the future.

Conducting Neonatal Mortality Audits in Zaatari and Azraq Refugee Camps, Jordan

Year: 2016-Present

Overview

Supporting the UNHCR in conducting neonatal mortality audits in two refugee camps: Azraq and Zaatari to systematically capture information on the number and causes of all neonatal deaths and the potential avoidable factors linked to these deaths.

Outcome

- ☑ Recommendations released on inmplementing community-based interventions, building healthcare provider capacity in refugee camps, and strengthening partnerships between healthcare providers, NGOs, and community representatives.

Developing and rolling out a computerized harmonized, digital Reproductive Health Registry (hRHR)

Year: 2018-2021

Overview

Working with the Jordan MoH, with support from IDRC Canada, in developing and rolling out a computerized harmonized, digital Reproductive Health Registry (*h*RHR) in 19 health facilities in Mafraq. The registry digitizes existing mother and child health-care files and is synchronized and interoperable with the Ministry of Health's information system. The system also includes a non-computerized *h*RHR to allow for broader reach.

Outcome

- ☑ Recommendations released on implementing community-based interventions, building healthcare provider capacity in refugee camps, and strengthening partnerships between healthcare providers, NGOs, and community representatives.

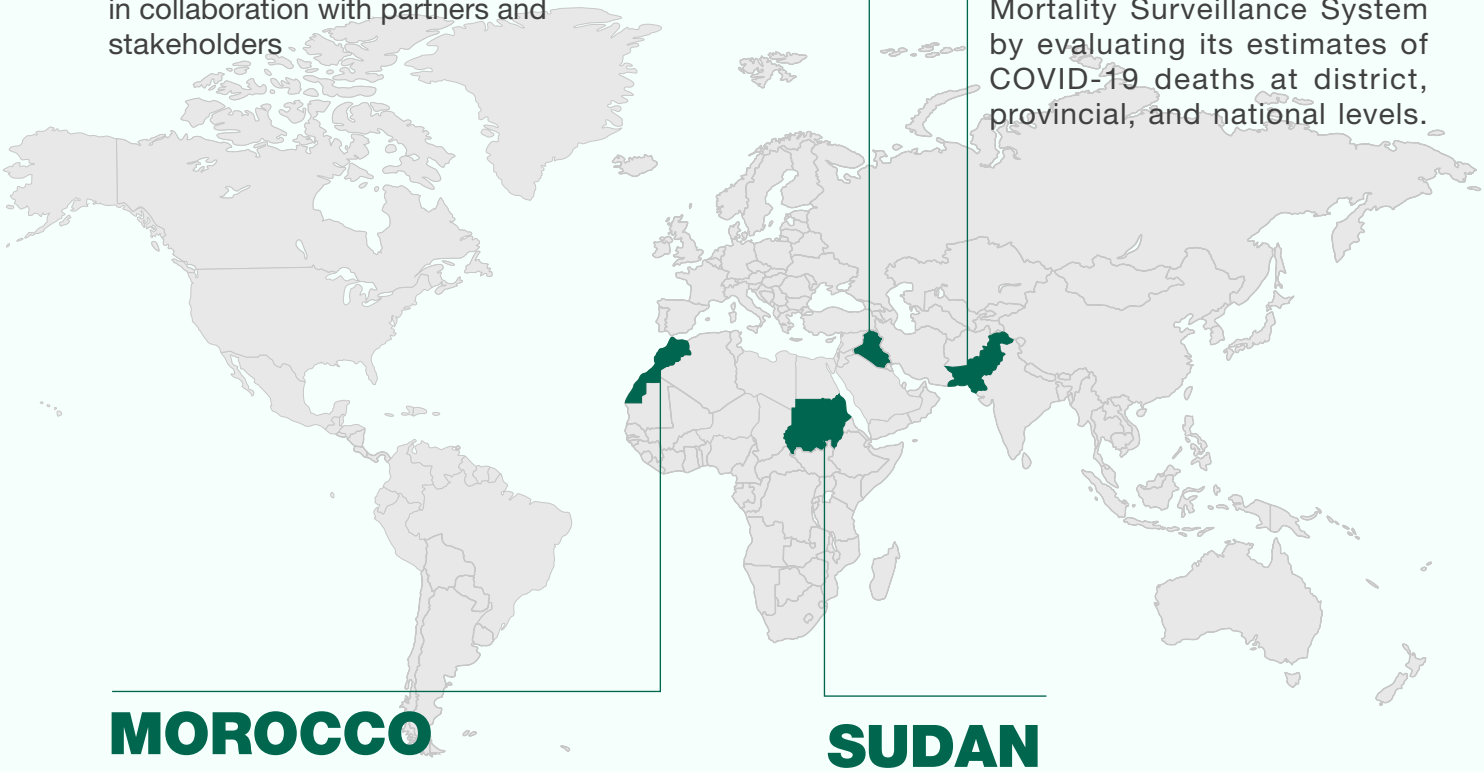
SURVEILLANCE AND DATA ASSESSMENTS AND REVIEWS

IRAQ

Supported surveillance reviews in collaboration with partners and stakeholders

PAKISTAN

Assessed effectiveness of the Mortality Surveillance System by evaluating its estimates of COVID-19 deaths at district, provincial, and national levels.



MOROCCO

Supported surveillance reviews in collaboration with partners and stakeholders

SUDAN

Enhanced routine immunization data accuracy and improvement at the subnational level through state review meetings conducted for **18** states and field visits conducted to **600** health facilities

MULTI-COUNTRY COLLABORATIONS IN SURVEILLANCE

LIBYA AND TUNISIA 2021

BUILDING MULTISECTORAL AND CROSS-BORDER NETWORKS FOR THE SURVEILLANCE, DETECTION, AND RESPONSE OF POTENTIALLY WEAPONIZABLE PATHOGENS

In collaboration with Georgetown University Center for Global Health Science and Security, and in a partnership with Libyan and Tunisian stakeholders, EMPHNET worked to improve multisectoral coordination for the surveillance, detection and response to priority transboundary diseases and especially dangerous pathogens (EDP).

Steps Taken to Improve Cross-Border Surveillance between Libya and Tunisia

Developed a **systems-map defining nodes of communication** and coordination between Libyan and Tunisian stakeholders for five priority transboundary diseases	Developed a **methodology** using tools and frameworks to improve **communication and effective engagement** for cross-border surveillance and outbreak investigation	Developed a **framework and supporting implementation tools used to facilitate information exchange** for robust and efficient surveillance, detection, and outbreak investigation of especially dangerous pathogens

ESTABLISHING THE INVASIVE BACTERIAL DISEASE SURVEILLANCE NETWORK IN AFRICA, MIDDLE EAST, AND EURASIA: MENINGITIS AND SEPTICEMIA MAPPING NETWORK (MENMAP) (2024)

EMPHNET, in collaboration with Sanofi Pasteur, has spearheaded the establishment of the Meningitis and Septicemia Mapping Network (MenMap). This regional network aims to bolster the understanding and management of vaccine-preventable Invasive Bacterial Diseases (IBDs) in the Middle East, North Africa, and Eurasia.

The MenMap Contributions

- ☑ Fostering collaboration among research partners to enable knowledge sharing and improve the understanding of the disease epidemiology and management.
- ☑ Allowing countries to compare their findings with each other and with regional trends, thereby contributing to a stronger foundation for evidence-based public health interventions.
- ☑ Using generated research to support decision makers in designing, developing, and implementing effective interventions.

LOGISTIC SUPPORT FOR ENHANCED DISEASE DETECTION

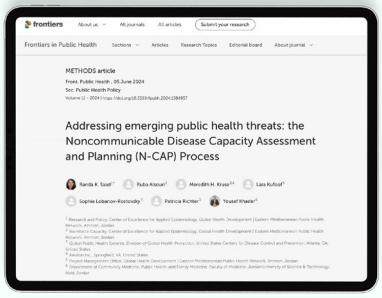
Over the years, EMPHNET has provided comprehensive logistic support and essential equipment to strengthen the infrastructure of Central Public Health Laboratories across multiple countries. This support has included the provision of modern laboratory equipment and the integration of inventory management software to ensure effective tracking and maintenance.

NCD SURVEILLANCE

EMPHNET's Role in Strengthening NCD Surveillance through the N-CAP Process

EMPHNET, in collaboration with the USCDC and the International Association of Public Health Institutes, spearheaded the Noncommunicable Disease Capacity Assessment and Planning (N-CAP) Process, an initiative designed to assist ministries of health and various governmental and non-governmental stakeholders in assessing, prioritizing, and planning strategies to enhance public health functions. The primary goal of the N-CAP process is to empower countries to more effectively respond to the NCD epidemic by strengthening their capacities for surveillance, monitoring, and intervention.

Through the use of the N-CAP tool, EMPHNET worked closely with countries like Jordan and Pakistan to enhance their NCD surveillance systems.



***Read More**: Addressing emerging public health threats: the Noncommunicable Disease Capacity Assessment and Planning (N-CAP) Process*