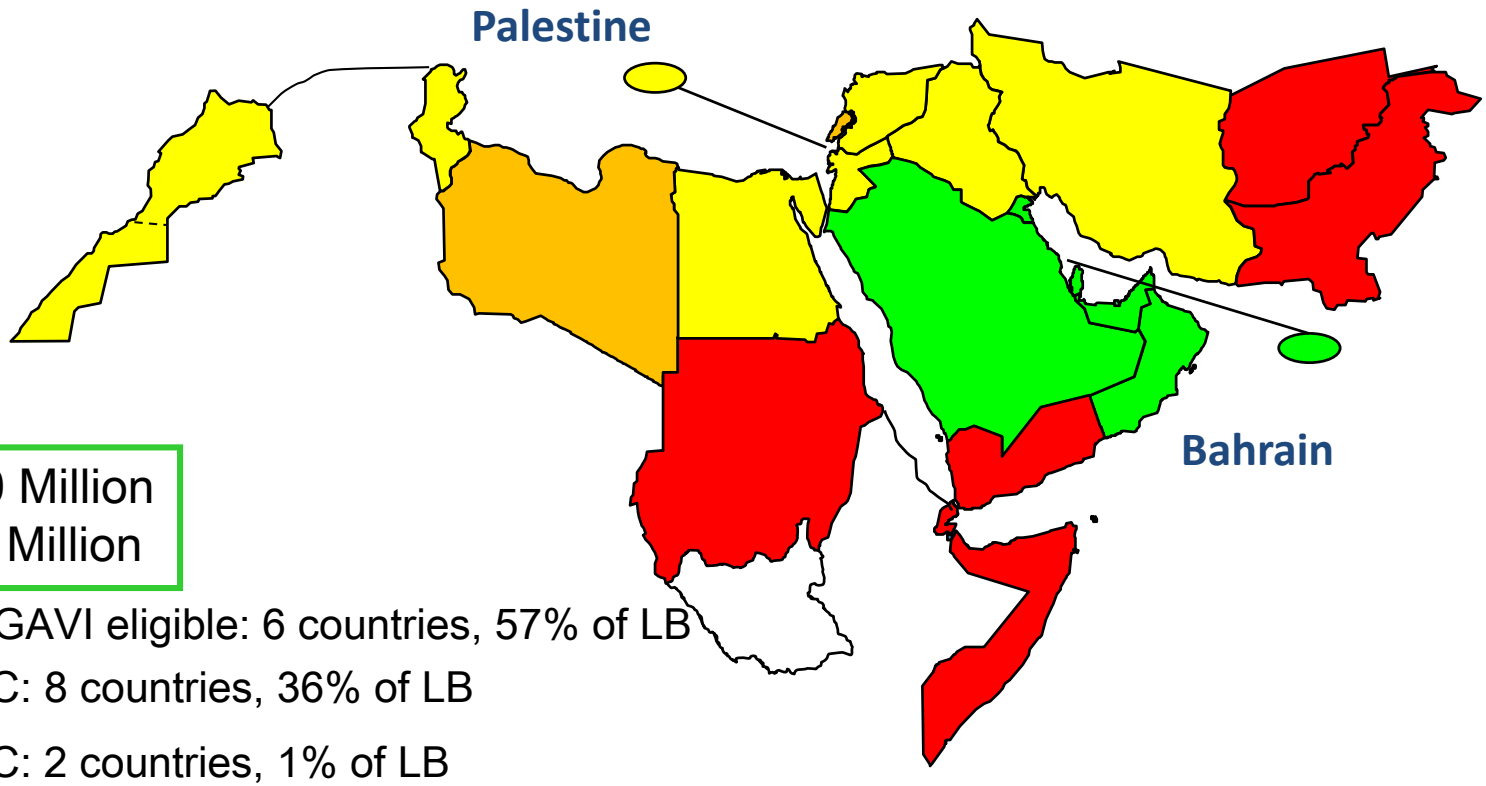
Review of current surveillance and laboratory networks in WHO Eastern Mediterranean Region

Dr A. BARAKAT
Infectious Hazard Management (IHM)
World Health Emergencies (WHE)
WHO EMRO

Background

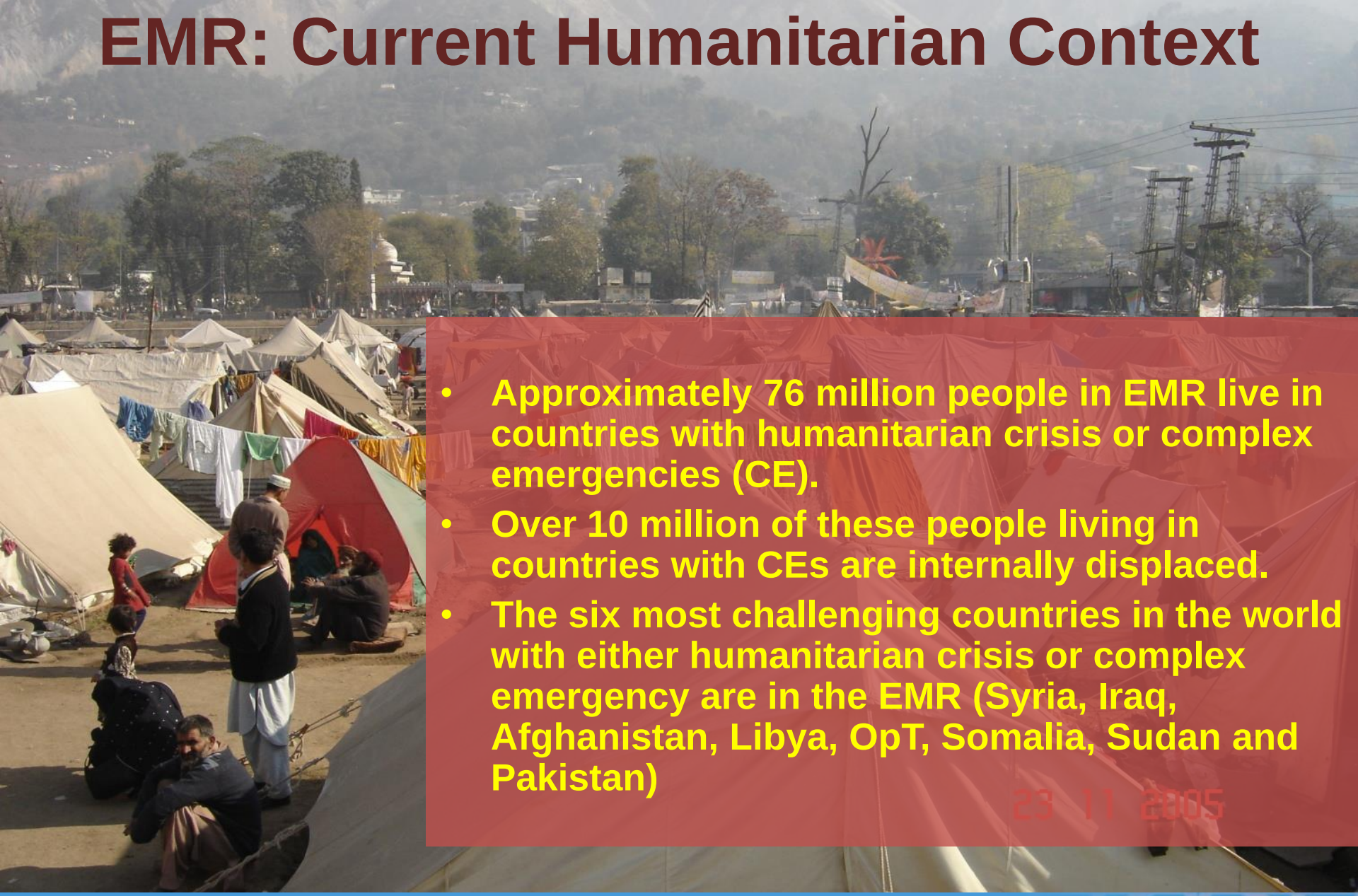
The Eastern Mediterranean Region



Pop: 580 Million
LB: > 16 Million

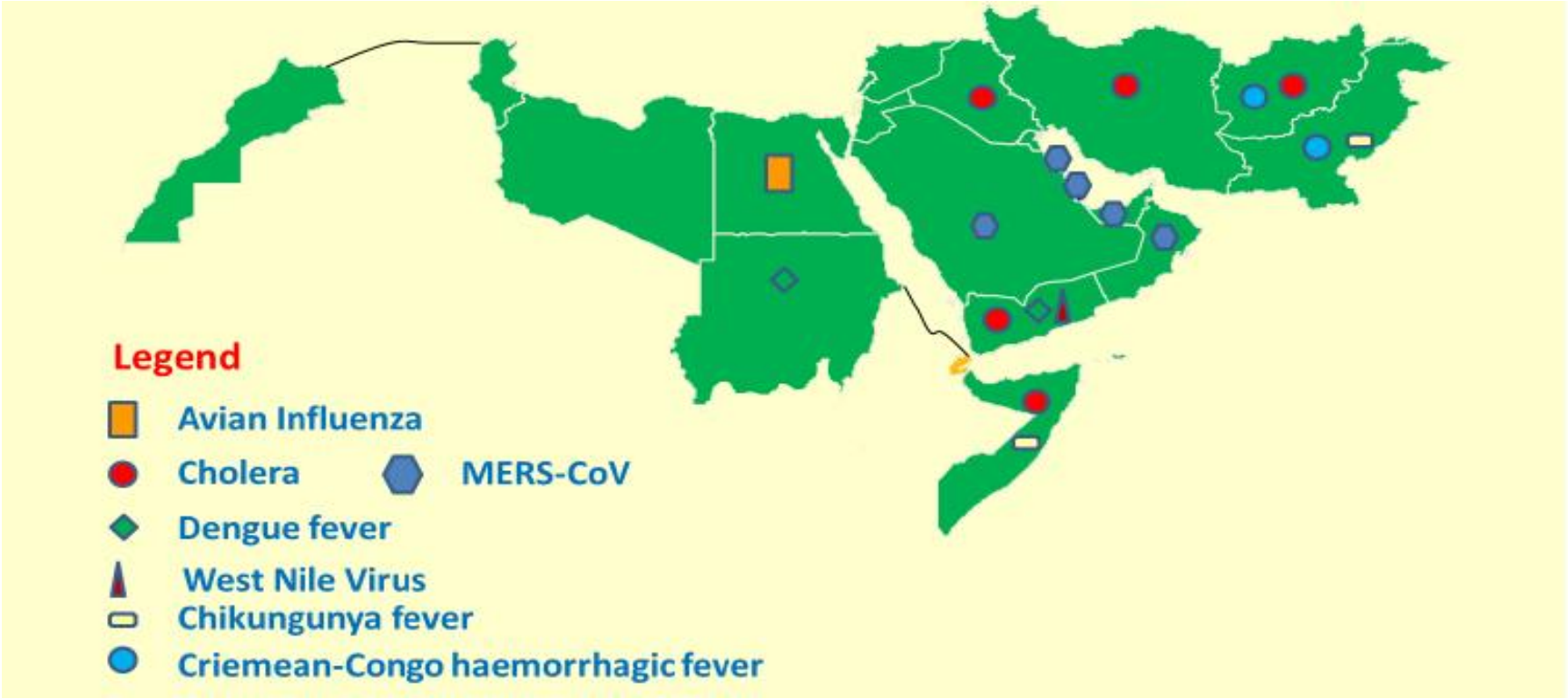
- LIC GAVI eligible: 6 countries, 57% of LB
- LMIC: 8 countries, 36% of LB
- UMIC: 2 countries, 1% of LB
- HIC: 6 countries, 6% of LB
- Moved to AFRO

EMR: Current Humanitarian Context



- Approximately 76 million people in EMR live in countries with humanitarian crisis or complex emergencies (CE).
- Over 10 million of these people living in countries with CEs are internally displaced.
- The six most challenging countries in the world with either humanitarian crisis or complex emergency are in the EMR (Syria, Iraq, Afghanistan, Libya, OpT, Somalia, Sudan and Pakistan)

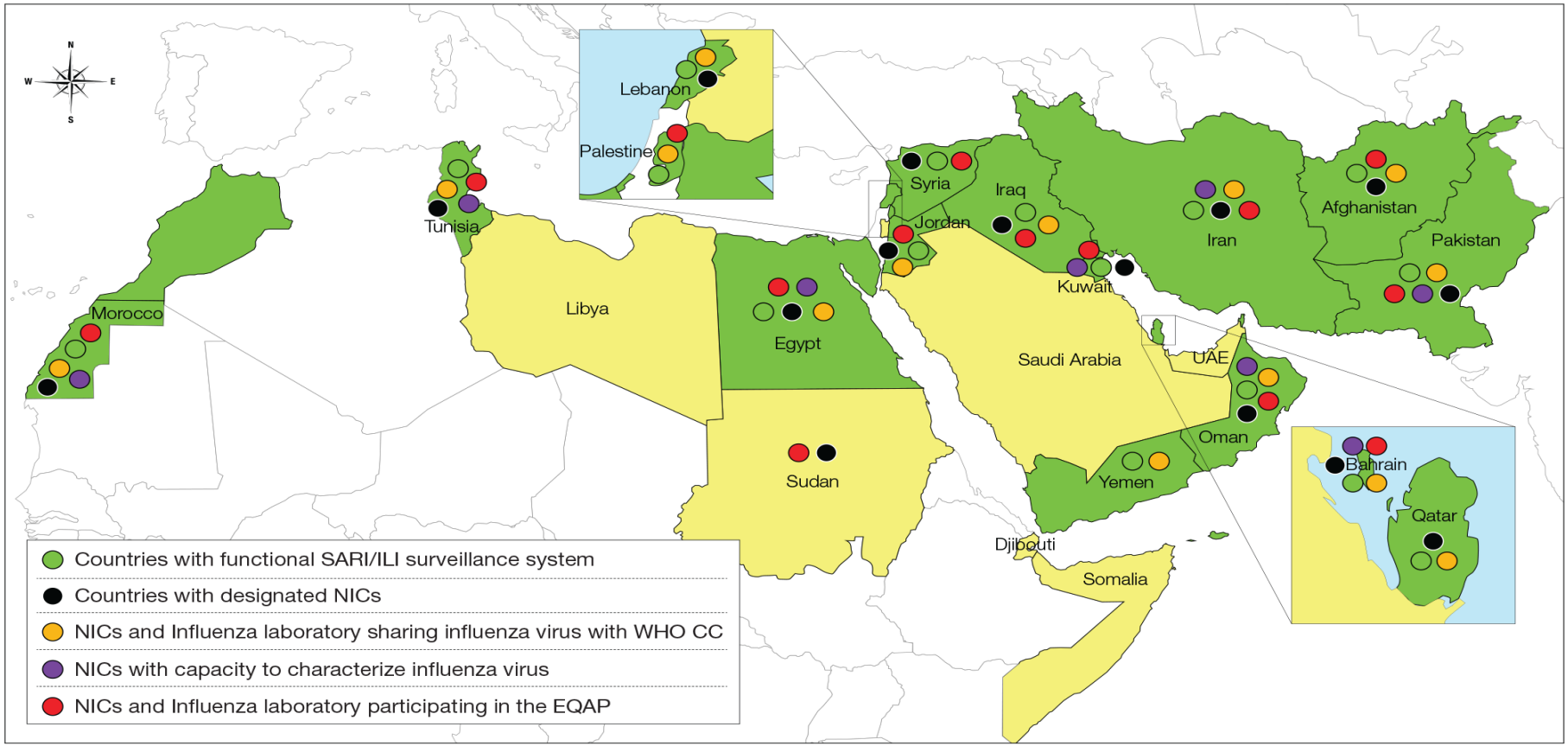
Emerging Infectious Diseases reported from the Eastern Mediterranean Region,2016



Weekly **Epidemiological. Volume 9 Issue 52; 25 December 2016 Monitor.**

EMR Surveillance and Laboratory networks

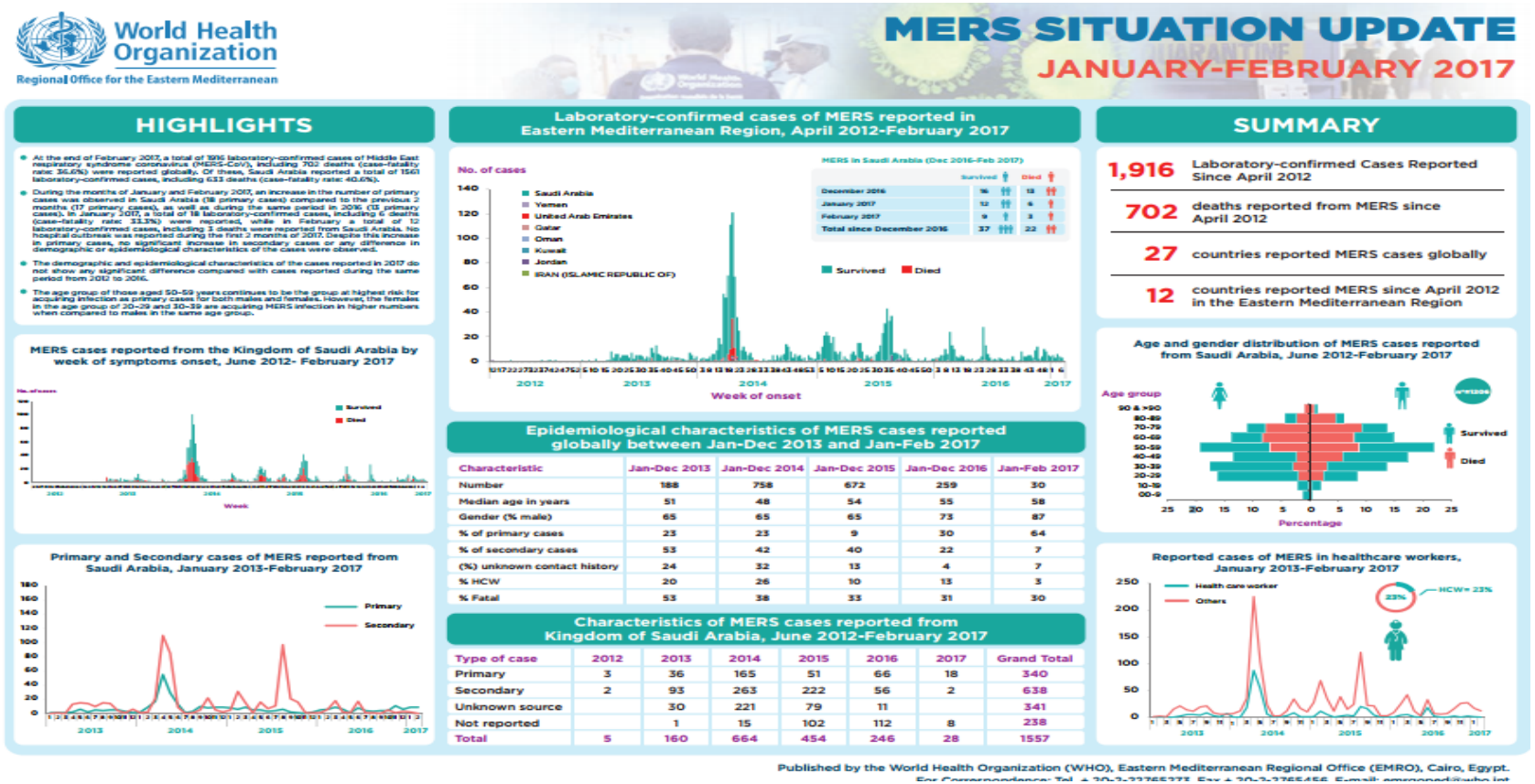
Influenza Epidemiological and Virological surveillance in the Eastern Mediterranean Region



Eastern Mediterranean Flu Network regional web based (http://www.emflu.org)

EMFLU is a regional web based interactive platform for ***entry, management and sharing of epidemiological and virological data*** on influenza in the WHO Eastern Mediterranean Region.

Bi-Monthly Situation update on Middle East respiratory syndrome coronavirus



World Health Organization
Regional Office for the Eastern Mediterranean

MERS SITUATION UPDATE
JANUARY-FEBRUARY 2017

HIGHLIGHTS

- At the end of February 2017, a total of 1916 laboratory-confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV), including 702 deaths (case-fatality ratio: 36.6%) were reported globally. Of these, Saudi Arabia reported a total of 1561 laboratory-confirmed cases, including 633 deaths (case-fatality ratio: 40.6%).
- During the months of January and February 2017, an increase in the number of primary cases was observed in Saudi Arabia (18 primary cases) compared to the previous 2 months (17 primary cases), as well as during the same period in 2016 (13 primary cases). In January 2017, a total of 18 laboratory-confirmed cases, including 6 deaths (case-fatality ratio: 33.3%) were reported, while in February a total of 12 laboratory-confirmed cases, including 3 deaths were reported from Saudi Arabia. No hospital outbreak was reported during the first 2 months of 2017. Despite this increase in primary cases, no significant increase in secondary cases or any difference in demographic or epidemiological characteristics of the cases were observed.
- The demographic and epidemiological characteristics of the cases reported in 2017 do not show any significant difference compared with cases reported during the same period from 2012 to 2016.
- The age group of those aged 50–59 years continues to be the group at highest risk for acquiring infection as primary cases for both males and females. However, the females in the age group of 20–29 and 30–39 are acquiring MERS infection in higher numbers when compared to males in the same age group.

MERS cases reported from the Kingdom of Saudi Arabia by week of symptoms onset, June 2012- February 2017

Primary and Secondary cases of MERS reported from Saudi Arabia, January 2013-February 2017

Laboratory-confirmed cases of MERS reported in Eastern Mediterranean Region, April 2012-February 2017

MERS in Saudi Arabia (Dec 2016–Feb 2017)

	Survived	Died
December 2016	16	13
January 2017	12	6
February 2017	9	3
Total since December 2016	37	22

Epidemiological characteristics of MERS cases reported globally between Jan-Dec 2013 and Jan-Feb 2017

Characteristic	Jan-Dec 2013	Jan-Dec 2014	Jan-Dec 2015	Jan-Dec 2016	Jan-Feb 2017
Number	188	758	672	259	30
Median age in years	51	48	54	55	58
Gender (% male)	65	65	65	73	87
% of primary cases	23	23	9	30	64
% of secondary cases	53	42	40	22	7
(%) unknown contact history	24	32	13	4	7
% HCW	20	26	10	13	3
% Fatal	53	38	33	31	30

Characteristics of MERS cases reported from Kingdom of Saudi Arabia, June 2012-February 2017

Type of case	2012	2013	2014	2015	2016	2017	Grand Total
Primary	3	36	165	51	66	18	340
Secondary	2	93	263	222	56	2	638
Unknown source		30	221	79	11		341
Not reported		1	15	102	112	8	238
Total	5	160	664	454	246	28	1557

SUMMARY

1,916 Laboratory-confirmed Cases Reported Since April 2012

702 deaths reported from MERS since April 2012

27 countries reported MERS cases globally

12 countries reported MERS since April 2012 in the Eastern Mediterranean Region

Age and gender distribution of MERS cases reported from Saudi Arabia, June 2012-February 2017

Reported cases of MERS in healthcare workers, January 2013-February 2017

Published by the World Health Organization (WHO), Eastern Mediterranean Regional Office (EMRO), Cairo, Egypt.

http://www.emro.who.int/health-topics/mers-cov/news.html

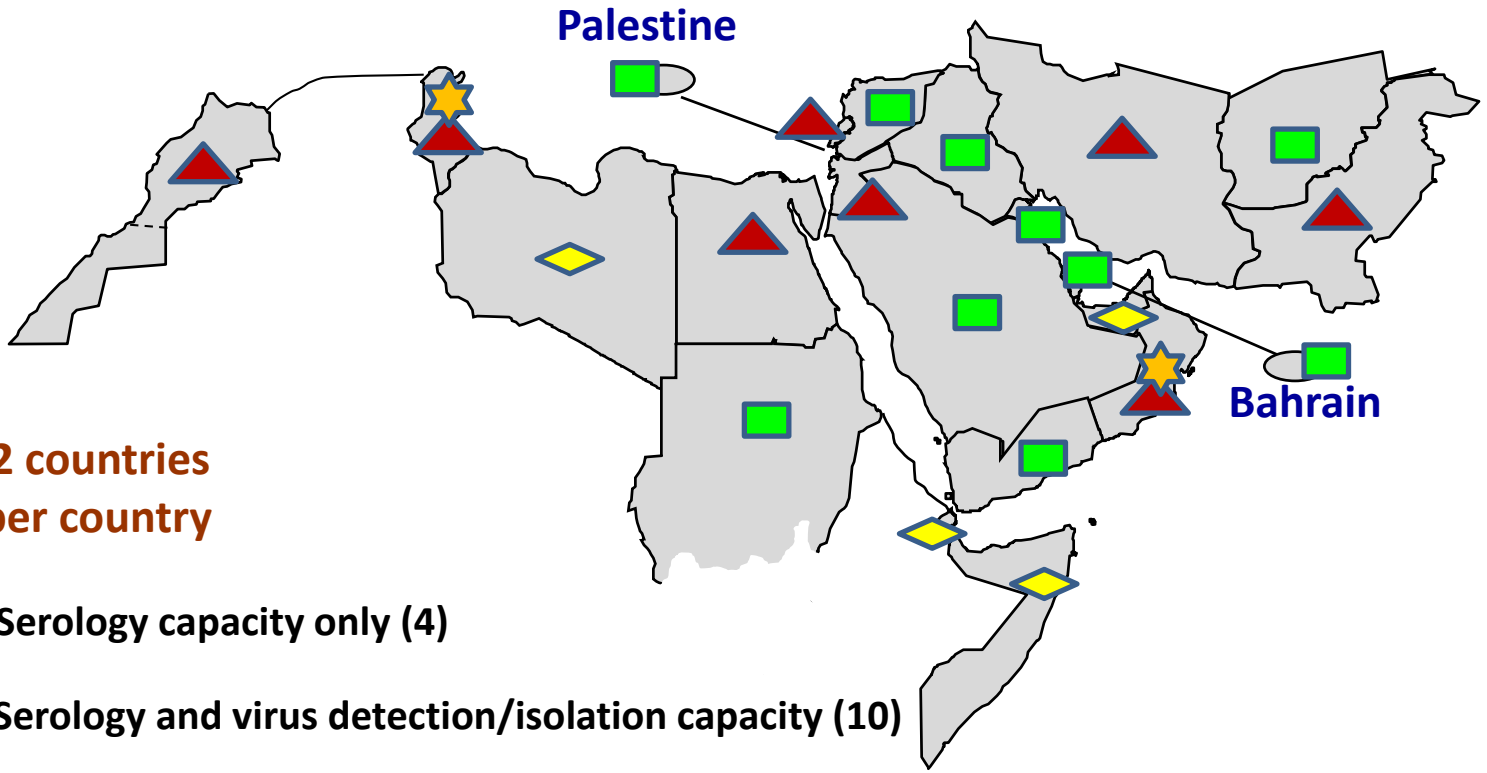
The Eastern Mediterranean Region Polio Laboratory Network (EPLN)

- **12 National polio laboratories**
  - (Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Tunisia, Morocco, Oman, Pakistan, Saudi Arabia, Syrian Arab Republic, Sudan).
  - Countries without national laboratories are served by others in the network; Afghanistan is served by Pakistan. Bahrain, Qatar and United Arab Emirates are served by Oman. Lebanon is served by Syrian Arab Republic, Libya is served by Tunisia. Yemen is served by Egypt and Oman.
  - Djibouti, Somalia are served by the Kenya Laboratory

- **7 Polio intratypic differentiation laboratories**
  - Egypt, Pakistan, Islamic Republic of Iran, Oman, Kuwait, Tunisia and Morocco), serve other specified countries which do not have the capability to perform intratypic differentiation laboratories

- **2 Polio nucleotide sequencing laboratories**
  - Pakistan and Tunisia. All wild viruses are subjected to nucleotide sequencing to monitor the virus transmission pattern and relationships.

Capacity Measles/Rubella Laboratory Network in the EMR



MRL : 22 countries
1 NML per country

- Serology capacity only (4)
- Serology and virus detection/isolation capacity (10)
- Serology and virus detection/isolation and sequencing capacity (8)
- Regional Reference Laboratories (2)

Surveillance of antimalarial drug efficacy networks

- Surveillance of antimalarial drug efficacy is one of the priority that is going on for many years in two networks of the region.

  - HANMAT(Horn of Africa Network for Monitoring Antimalarial Treatment) includes Somalia, Sudan, and Djibouti from EMR and Ethiopia, Eritrea and south Sudan form AFR. Saudi Arabia and Yemen are other members of the network outside Africa .

  - PIAm-net include Pakistan, Iran and Afghanistan.

- The results of the drug efficacy monitoring has helped countries to update their antimalarial drug policy.

Establishment of the Emerging and Dangerous Pathogens Laboratory Network (EDPLN) in the EMR

Objectives of EMR EDPLN : *To enhance readiness and response of countries for timely laboratory detection and management of outbreaks of novel EDPs*

- Establish a regional collaborating network for laboratory surveillance, detection of and response to EDPs
- Enhance technical capacities for the detection and reporting of EDPs in selected national and regional reference laboratories
- Develop rapid and reliable differential diagnostics for selected EDPs

EMR EDPLN

- Self-assessment complete for 20/23 countries
- Country visits in Morocco (December), Pakistan (March), Iran (April) and Saudi Arabia (May).

→ Regional meeting on 21 August 2017 in Cairo to launch EMR EDPLN and adopt TOR for the network covering

  - Biosafety and biosecurity
  - Specimen collection and shipping
  - Diagnosis of EDPs
  - Collaboration and networking
  - Outbreak investigation and response
  - Data management/ surveillance

WHO EMR Antimicrobial Resistance Surveillance

Current Status in EMR

- 32% (7/22) of countries of the EMR have initiated early implementation of the GLASS
  - BAA*, EGY*, IRA, JOR, LEB, OMA, PAK

- Twinning of Oman GLASS with WHO Collaborating Center for antimicrobial resistance in Sweden on data management

- 60% (13 countries) are participating in the Regional External Quality Assessment (REQAS) managed by CPHL Oman and HRL, Iran

* Through own initiation

REQAS Organizers

- **Central Public Health Laboratories, Oman**
  - Bacteriology specimens and overall management of the program, shipment, data collection, bacteriology result evaluation, feedback reporting
- **Health Reference Laboratory, Iran**
  - Parasitology, Mycology and HIV, HBsAg, HCV Serology
  - Results evaluated by HRL, Iran

Mapping Bacteriology Laboratories

- **General**:
  - Information on the status of laboratories are patchy
    - Each program applies a different tool on a specific disease
    - Mapping becomes a complex issue
  - Traditional approach to reviewing the capacities of laboratories delays action:
    - Identifying the gaps (not capacities)
    - Pure scientific recommendations out of the country context
  - CPHL: either missing or not sufficiently competent

Mapping Bacteriology Laboratories

- **GLASS**:
  - Concept not fully clear (antibiogram vs. AMR surveillance information: clinical + laboratory + epidemiological data)
  - Lack of expertise for GLASS data analysis and report writing addressing different target audience at the country level (variety of incompatible software)
  - Weak laboratory quality management system
  - Irregular access to quality kits and supplies
  - Use of different laboratories guidelines (CLSI and EUCAST)
  - Misunderstanding between EQAS and Accreditation

Next Immediate Steps

- Training of enrolled countries on GLASS
  - Data management and report writing
- Creating pool of WHONET “Super Users” for the Region
  - For trouble shooting at the country level
  - For sustain refresher courses/training in the countries
- Create a Regional Platform for hosting the Network

Thank You