

## Current major event

### Genomic sequencing capacities in EMR

In line with the global sequencing strategy, the WHO Regional Office for the Eastern Mediterranean in collaboration with its partners has been working to increase genome sequencing capacities in the Region by leveraging on the existing influenza surveillance systems and its networks to equip them with next generation sequencing (NGS) capacities.

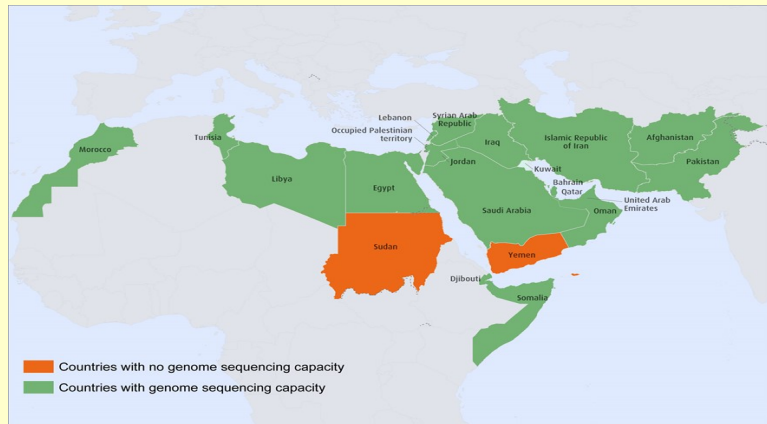
#### Editorial note

NGS is a high-volume throughput low-cost technology that uses parallel sequencing of multiple small fragments of RNA or DNA to determine a sequence. This revolutionary science has contributed greatly to investigations of infectious disease outbreaks by uncovering evidence for or against transmission events together with their evolution dynamics. Genomic sequencing is therefore increasingly impacting mainstream health care and research. Specifically, the whole genome sequencing (WGS) of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) using NGS technologies, has been in use as a powerful tool to study the pathogen, since the first sequence was released on January 10, 2020.

The Infectious Hazard Prevention and Preparedness (IHP) Unit of WHO in the Eastern Mediterranean Region (EMR) has conducted a landscape analysis and situation review of existing laboratory capabilities in NGS and bioinformatics and identified gaps and needs in laboratory utilization. The capacity and capabilities of WGS exist in some countries in the Region, but still not equally distributed. The availability of NGS in the Region has provided a ready-to-use platform for the integrated surveillance of multiple pathogens with Emerging Epidemic and Pandemic-prone Infectious Diseases (EIDs) including SARS-CoV-2.

Following concerted efforts from WHO-EMR, to date, 20 out of 22 member states (*See map*) currently have the capacity to conduct genomic sequencing in public health laboratories. This has been achieved through twinning initiatives within the Region between regional

### The status of laboratory sequencing capacity, EMR



### Key elements of a sustainable genomic surveillance system

The key elements include:

- Training on bioinformatics, genomics and data management
- Developing genomic standard operating procedures, algorithms and standards
- Improving sample referral systems
- Enhancing genomic data sharing within the EMR and the global arena

laboratories or centers of excellence and other laboratories for knowledge transfer, trainings and the provision of financial support to operationalize the sequencing plans. The 2 countries with no national genomic capacity have access for technical support from other regional and international referral sequencing laboratories.

In addition, the regional capacity is boosted by the existence of 3 regional sequencing hubs: Reference Laboratory for Infectious Disease in Abu Dhabi, Laboratoire de Virologie in Morocco and Central Public Health Laboratory in Oman. These hubs have been providing sequencing and other advance testing for emerging infectious diseases, data analysis and other technical support services to their respective countries as well as to neighbouring countries, to maximize the efficiency and flexibility of genetic surveillance and testing.

WHO-EMR has drafted a regional genomic strategy to be operationalized shortly to ensure improvement and sustainability of its strategic goal, which is to ensure the infrastructure and skills in EMR to provide rapid, extensive genomic epidemiological and quality integrated analysis of EIDs.

### Update on outbreaks

in the Eastern Mediterranean Region

#### COVID-19 in 22 EMR countries

#### Current public health events of concern [cumulative N° of cases (deaths), CFR %]

#### Coronavirus disease 2019 (COVID-19): 2019-2022

Afghanistan	[180 176 (7701), 4.3%]
Bahrain	[583 984 (1487), 0.3%]
Djibouti	[15 680 (189), 1.2%]
Egypt	[513 944 (24 718), 4.8%]
Iran (Islamic Republic of)	[7 231 387 (141 306) 2%]
Iraq	[2 327 837 (25 219), 1.1%]
Jordan	[1 696 937 (14 066 ), 0.8%]
Kuwait	[633 316 (2555), 0.4%]
Lebanon	[1 099 065 (10426), 0.9%]
Libya	[502 016 (6430), 1.3%]
Morocco	[1 167 732 (16 076), 1.4%]
occupied Palestinian territory (oPt)	[657 705 (5660), 0.9%]
Oman	[389 605 (4628), 1.2%]
Pakistan	[1 530 285 (30 379), 2%]
Qatar	[368 087 (677), 0.2%]
Saudi Arabia	[766 196 (9143) 1.2%]
Somalia	[26 535 (1361), 5.1%]
Sudan	[62 321 (4941), 7.9%]
Syrian Arab Republic	[55 890 (3150), 5.6%]
Tunisia	[1 042 872 (28 641), 2.7%]
United Arab Emirates	[907 069 (2302), 0.3%]
Yemen	[11 822 (2149), 18.2%]