

Summary report on the
**Consultative meeting on
strategic guidance for
prevention and control of
emerging and re-emerging
vector-borne and zoonotic
infectious diseases in the
Eastern Mediterranean Region**

Amman, Jordan
29–31 January 2023



**World Health
Organization**

REGIONAL OFFICE FOR THE Eastern Mediterranean

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1. Introduction

Zoonotic diseases are infectious diseases that can spread between animals and people, and they show increased prevalence in recent years. Six out of 10 infectious diseases in humans can be spread from animals, while three out of four new or emerging infectious diseases originated from animals. Zoonotic diseases are responsible for an estimated 2.5 billion cases and 2.7 million deaths worldwide yearly. Vector-borne diseases are human illnesses caused by parasites, viruses and bacteria transmitted by vectors such as mosquitos, ticks and fleas. Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 700 000 deaths annually. WHO' Eastern Mediterranean Region has recently faced zoonotic, emerging and vector-borne pathogens, including the COVID-19 and 2009 H1N1 pandemics. Additionally, some countries were severely affected by avian influenza and MERS-CoV originating from the Region.

“One Health” is a global public health strategy that encourages a collaborative and multisectoral approach to the human-animal-environmental interface to achieve better public health outcomes. One Health encompasses zoonotic diseases, vector-borne diseases, antimicrobial resistance, food safety and food security, environmental contamination, and other health threats shared by people, animals and the environment. The One Health approach is important for national and global health security in implementing the International Health Regulations (2005) (IHR 2005) and the international standards in animal health, veterinary public health, zoonotic diseases and animal welfare developed by the World Organisation for Animal Health (OIE), and contributes to many of the Sustainable Development Goals.

While some countries in the Eastern Mediterranean have made progress prioritizing and integrating aspects of human and animal health surveillance and response, there is no universal “model” structure that is

validated and reproducible in terms of best practices. There are different types of emerging infectious disease burden and health response requirements within the Region. Thus, while each country's context varies, a cross-cutting pan-regional structure must be built on the existing national systems with consensus from both human and animal sectors at the national level. In the wake of the COVID-19 pandemic, it is important to explore how we might develop model processes and mechanisms that have been validated against unique disease use cases to enhance the capacity to detect and prevent infectious diseases emergence at the earliest possible time in an outbreak in the Region.

Against this background, the Food and Agriculture Organization of the United Nations (FAO), OIE and WHO convened a consultative meeting on strategic guidance for prevention and control of emerging and re-emerging vector-borne and zoonotic infectious diseases in the Eastern Mediterranean Region in Amman, Jordan, on 29–31 January 2023.

The objectives of the meeting were to:

- learn about different mechanisms from countries and partners in the Region, as well as global experts, for establishing an integrated regional surveillance and laboratory network system for the early detection of emerging and re-emerging vector-borne and zoonotic diseases;
- identify model mechanisms and frameworks to strengthen the collaboration and information sharing among human and animal sectors;
- identify best practices across multidisciplinary teams (e.g. surveillance, laboratory, case management, risk communication and community engagement, vector control and cross-cutting coordination) in the Region to enhance the joint response by the human and animal sectors;
- identify key priority vector-borne and zoonotic diseases in the Region that can serve as case demonstrations for integrated human

and animal sector surveillance, information and data sharing, and coordinated outbreak response; and

- identify areas where enhanced research is needed and set up research priorities in the Region for the next few years.

A total of 100 participants Region attended the meeting, either in-person or online. Participants included focal points from ministries of health, agriculture, veterinary science and environment, as well as researchers and academics, experts from the Africa Centres for Disease Control and Prevention (Africa CDC), Eastern Mediterranean Public Health Network (EMPHNET), European Centre for Disease Prevention and Control (ECDC), FAO, Gulf CDC, OIE, United States Centers for Disease Control and Prevention (CDC) and United Kingdom Health Security Agency, as well as from WHO headquarters, the Regional Office for the Eastern Mediterranean and country offices.

In the opening session, Dr Abdinasir Abubakar, WHO Programme Area Manager of the Infectious Hazard Prevention and Preparedness Unit, Regional Office for the Eastern Mediterranean and acting WHO Representative to Lebanon, welcomed the attendees. Dr Jamela Al-Raiby, WHO Representative to Jordan, in her welcoming speech, noted that vector-borne and zoonotic diseases have a significant impact on the economic development of the Region and current outbreaks are a major threat to health security, particularly in the face of humanitarian emergencies and conflicts.

Dr Abubakar presented remarks on behalf of Dr Richard Brennan, WHO Regional Emergency Director, describing the context of the Region and its vulnerability to diseases such as yellow fever due to factors including global warming, the close proximity of human and animal populations, and international trade. He noted the limitations of the current strategy for the prevention and control of vector-borne and zoonotic diseases, which is fragmented and needs improvement.

Dr Yehia Ghazi, OIE's Regional Representative, emphasized the importance of sustainable technical assistance from international organizations in overcoming the challenges faced by the Region, while Dr Friederike Mayen, FAO Senior Livestock Development Officer, highlighted the importance of strengthening the existing collaboration between the different organizations in attendance.

The opening session was followed by a combination of technical presentations, group work and plenary sessions, as summarized below.

2. Summary of discussions

The global landscape of emerging vector-borne and zoonotic diseases

Dr Maria Van Kerkhove, Emerging Diseases and Zoonoses Lead, WHO headquarters, provided a global overview of emerging vector-borne and zoonotic diseases, including lessons learnt from the COVID-19 pandemic, and presented draft composite risk maps for spillover and amplification of high-threat pathogens with epidemic and pandemic potential, focusing on dengue, yellow fever, chikungunya and Zika as examples.

Dr Amina Benyahia, Scientist with the WHO One Health Initiative, explained the global structure of the Quadripartite One Health initiative and the Joint Action Plan for One Health, while Dr Zelalem Tadesse, Senior One Health Officer/Coordinator of Emerging Zoonotic Diseases and One Health, FAO, explained the role of his organization in addressing zoonotic diseases through the Quadripartite partnership, and Dr Yehia Ghazi presented on the work of the Quadripartite, including the global and regional challenges, from the perspective of OIE.

The presentations emphasized the importance of the One Health approach, which includes collaboration, coordination, communication and capacity-building in addressing ongoing multidimensional health,

water, energy, food security and biodiversity challenges, and the need for increased political commitment and international support. The former Tripartite has now been expanded to Quadripartite, with WHO, FAO, OIE and the United Nations Environment Programme (UNEP) now working together to mitigate the impact of current and future health challenges at the human, animal, plant and environmental interface, at the global, regional and country level.

The FAO's corporate framework and strategy to achieve better production, nutrition, environment and life has incorporated the One Health approach into one of its 20 priority programme areas. The presentations showed how emerging diseases are increasing due to intensified interactions between humans and animals driven by animal farming and encroachments into natural habitats, and the need for prevention strategies to improve the welfare of domesticated and wild animals and to refine surveillance systems. Presenters highlighted the need for quick data sharing and collaboration with various fields, such as ornithology, to determine the spread of the viruses, and emphasized the importance of considering the host context in developing frameworks to understand and control the spread of infectious diseases, including socioeconomic, cultural and policy contexts. Dr Todd Davis, United States CDC, explained the global challenges in surveillance and epidemiology and discussed the complicated animal-human interface and the transmission of viruses between humans and animals.

Identifying the best strategies to prepare and respond to emerging vector-borne and zoonotic diseases in the Region

The four core capacity areas in global health security are surveillance systems, laboratory networks, workforce development and emergency management systems. The Global Health Security Agenda is a framework to coordinate global efforts in preventing, detecting and responding to

infectious disease threats. The presentation and discussions highlighted the role of international laboratory networks in early detection and identification of enteric and rare disease-causing pathogens and the role of integrated surveillance and effective case management in controlling emerging vector-borne diseases. There is a need to put together multiple systems, including climate information, which can help health systems respond to outbreaks and understand the epidemiology. The role of the clinician as the "canary in the coalmine" was also discussed, emphasizing the importance of educating and training health care workers to recognize and raise the alarm about new, dangerous pathogens to inform decision-makers.

The discussions also highlighted the impact of pandemic fatigue on global health security and the importance of refocusing on the patient, as without good patient care, outbreak response is negatively affected. Families and communities need to see that patients are treated well to engage with contact tracing and surveillance. The role of integrated vector management for preventing and controlling emerging vector-borne diseases and blocking the transmission cycle of diseases such as malaria, with an estimated 6.2 million cases annually, was emphasized. Additionally, the emergence of invasive vectors like the *Anopheles* mosquito, which is becoming an efficient urban malaria vector and enlarging its geographical distribution, threatens the progress made in malaria control. The global vector control response strategy launched in 2017 to reduce the threat of vector-borne diseases focuses on improving capacity and vector control through integrated vector management and locally adapted, sustainable methods. Priority activities include conducting assessments and establishing a multisectoral task force to build capacity and generate local evidence.

Representatives from Egypt, Iran (Islamic Republic of), Iraq, Pakistan, Saudi Arabia, Sudan and United Arab Emirates presented their experiences of the best strategies for preparedness and response to

emerging vector-borne and zoonotic diseases. The role of media and religious leaders for communication and awareness, community participation, exchange of information, timely sharing of results, the importance of infrastructure disruptions and illegal animal movements, improvement in laboratory and genomic surveillance capacity, mandatory reporting platforms, annual surveys, environmental sanitation programmes involving ministries such as agriculture, irrigation, environment and local development, the need for regular meetings, and improving the vaccination coverage of dogs and cats to prevent and control rabies were among the strategies discussed.

Discussions in the plenary session noted that the global and regional landscape of emerging vector-borne and zoonotic diseases is still dominated by the fragmentation of surveillance activities, which represents one of the biggest challenges. More integration is needed, as was demonstrated in some countries during the COVID-19 pandemic, through establishing or strengthening intersectoral coordination committees to address emerging vector-borne and zoonotic diseases. Networking at the country and regional level was endorsed by the meeting participants as one of the key ways to promote emerging vector-borne and zoonotic disease control and enhance coherence in outbreak management.

Group work on preparedness and response to emerging vector-borne and zoonotic diseases in the Region provided recommendations for best practices for surveillance, laboratory, case management, risk communication and community engagement, vector control and cross-cutting coordination.

Information sharing between human and animal sectors

Participants were informed of the operationalization of a WHO hub facility that aims to create a multilateral sharing system for biological material with epidemic and pandemic potential. The aim is for a

laboratory network that ensures fast, safe and efficient sharing of biological material, with equitable access building trust among laboratories for continued sharing. The hub focuses on surveillance and its activities include detecting new diseases, monitoring disease programmes and eliminating diseases. The WHO's health emergency preparedness and response architecture was discussed, which is focused on five interconnected subsystems, including collaborative surveillance. The presentations from regional partners showed the progress, activities and challenges in the Middle East and North Africa. The main priorities included improving early warning systems, strengthening biosecurity for pest and disease management, and facilitating effective emergency preparedness and response. Presentations from the WHO South-East Asia and Western Pacific regions explained how WHO is working to improve capacity, working with Quadraparite partners and promoting collaborative activities at the human-animal interface. A system was established in 2005 to address issues related to coordination and collaboration between human, animal and environmental health.

The history of One Health in the United States and the collaboration between CDC, the Department of Agriculture and the Department of Interior were shared, including the development of the top eight priority zoonotic diseases in the United States and the launch of the One Health Federal Interagency Network. The importance of interagency collaboration in sharing scientific information to address various health issues, including the COVID-19 pandemic, was highlighted. Also noted were US congressional support for Federal One Health coordination and the signing of the 2023 Consolidated Appropriations Act, which directs the CDC to work with interagency partners to develop a national One Health framework and coordination structure.

The European CDC presentation focused on the cooperation between the Director-General of Health and Food Safety, European CDC and European Food Safety Authority, which involves joint surveillance and coordinates monitoring of relevant zoonotic diseases. The European Union countries report their surveillance data annually and publish it in a One Health report, which includes emerging and vector-borne diseases. Quarterly situation reports present a global overview and provide combined data from animal and public health sectors. European agencies and the European Commission are involved in the rapid sharing of public data on zoonotic influenza cases and antimicrobial resistance, including release of an annual joint report. Two specific systems were discussed: EpiPulse, which has several domains, including emerging vector-borne diseases and lists various signals, threats and events, and the European Commission's animal disease information system and rapid alert system for food and feed (RASFF), which provides information on outbreaks and is used for rapid exchange of information related to food safety.

The UK Health Security Agency highlighted the importance of multidisciplinary risk assessment and coordination across sectors. The UK structure for health and animal sectors was discussed, including the research done through the Health Protection Research Unit. The legal mechanisms for notification of infectious diseases were also mentioned, including the requirement for medical practitioners and laboratories to notify suspected diseases.

Africa CDC's work on developing a surveillance and laboratory strategic plan for human and animal sectors among African Union (AU) states was discussed, including the setting up by the AU of a coordinating mechanism for zoonotic diseases to address gaps in political commitment, data sharing and trade implications. The presentation showed how a disease-mapping exercise is used as a proxy to prioritize

diseases across African countries. Africa CDC and its partners use a framework to detect signals of public health events, which includes a system of regional coordinating centres and technical working groups to quickly respond to outbreaks. Information is collected from various sources, including media, line ministries, health reports and academic research. The data are then fed into the event management platform for verification before a routine risk assessment and response is initiated, but only if the country lacks the capacity to respond.

Representatives from Jordan, Oman and Saudi Arabia presented country experiences on joint surveillance, response and information sharing mechanisms between human and animal sectors. These include the establishment of a One Health department by the Ministries of Health and Agriculture in Jordan, with a technical committee formed to develop plans using One Health, electronic reporting systems and a response team for the human-animal interface, a data sharing agreement, mapping of the existing infrastructure and national guidelines for case definition and priority genetic disease reporting at the human-animal interface.

In Oman, the activities of the National Vector Management and Control Committee include a national vector survey for mapping mosquitoes and ongoing surveillance, an emergency response team and a process for sharing information and conducting investigations when suspect cases are identified.

In Saudi Arabia, national centres of animal health, meteorology and wildlife were launched, with a country strategy on improving current operations through building capacity and innovation focusing on integrating processes and systems between different sectors. A One Health platform was developed to collect data from various sources, and

a plan for electronic surveillance and investing in new IT technology such as machine learning and artificial intelligence (AI) is under way.

The plenary session discussed the Region's political context and highlighted the operationalization of One Health at the country level, political and economic considerations and obstacles to implementation of data sharing and coordination mechanisms, trust as a key element in this context and the role of Quadripartite organizations, a reflection on the weighting and ranking of disease prioritization, and the importance of the environmental sector being engaged and active in One Health.

Prioritizing vector-borne and zoonotic diseases in the Region

A framework to prioritize vector-borne and zoonotic diseases in the Eastern Mediterranean using the existing One Health Zoonotic Disease Prioritization tool was presented. The framework intends to identify the most important diseases to focus on in the next 3–5 years at the regional level in terms of collaborative work across the Region and between sectors (human, animal and environment) and agencies. It is not intended to replace any country-level prioritization efforts nor to ignore diseases that are relevant at the country level. WHO will continue supporting countries on country-specific vector-borne and zoonotic diseases irrespective of this list of priority diseases.

The meeting participants recommended being action-oriented and including funding for surveillance, reporting, research, etc., within the regional framework. Proposals were made to revise the list, to add more diseases, or to re-categorize some of them. An exercise was conducted to rank zoonotic diseases based on the preliminary list prepared. Based on these discussions and feedback from participants, and in some cases voting, the workshop finalized the following list of diseases.

The priority emerging vector-borne and zoonotic diseases in the Region are:

- Crimean-Congo haemorrhagic fever
- leishmaniasis
- dengue
- rabies
- yellow fever
- West Nile fever
- Rift Valley fever
- chikungunya
- leptospirosis
- brucellosis
- Middle East respiratory syndrome (MERS)
- zoonotic influenza
- malaria

A sub-priority vector-borne and zoonotic diseases list, included for enhanced IHR monitoring and research in the Region, includes:

- Ebola virus disease, other viral haemorrhagic fevers
- anthrax
- salmonellosis
- bovine tuberculosis
- hepatitis E
- disease X (representing a hypothetical, unknown pathogen that could cause a future epidemic).

Setting research priorities for emerging vector-borne and zoonotic diseases in the Eastern Mediterranean Region

WHO presented its regional research priorities for emerging vector and zoonotic diseases from country-specific and regional perspectives, and emphasizing the importance of quality, impact and inclusiveness in

research. Setting research priorities involves identifying public health problems, understanding data and risk factors, implementing suitable interventions, evaluating the intervention, and setting priorities based on the impact, burden of the problem and knowledge gaps. The presentation discussed a research plan for vector-borne and zoonotic diseases that involves reviewing existing information on the diseases, identifying knowledge gaps, conducting priority-setting exercises with different stakeholders, and translating and disseminating the priorities to stakeholders, including United Nations and funding agencies. The priority-setting process includes mapping stakeholders, situation analysis, defining criteria and reaching consensus. The public health importance of diseases is assessed based on mortality burden, time trends and the availability of cost-effective interventions. The United Nations' and stakeholders' strategic priorities, such as the SDGs, are also considered.

Labyrinth Global Health, Inc. presented a global overview, outlined research gaps and discussed the importance of looking at vulnerable populations and high-risk groups, integrated multisectoral disease surveillance, and the behavioural risk and qualitative research that needs to accompany syndromic surveillance and national capacity building for social scientists and public health experts. The Pasteur Institute of Iran presented its infrastructure for the morphological and molecular detection of vectors and vaccine production, in addition to its capacity to conduct studies on human populations and development of international guidelines.

Representatives from Egypt, Jordan and Qatar presented their country experience on progress and gaps in research on vector-borne and/or zoonotic diseases. The presentations highlighted the importance of studying expatriate populations, the large animal population imported from endemic areas, and international travel. They showed how prevalence studies have become too common in the literature, sometimes

leading to conclusions without proper research and communication with relevant authorities. They discussed the lack of leadership in research and the need for better translation of findings into practical and useful results for communities and scientific organizations. The main funding sources are from international organizations, but such funding is project-based and lacks follow-up continuation. The need for stricter peer review, and for governments to take action based on research, allocate funding according to research needs and provide capacity-building for scientific studies, especially in zoonotic diseases, was discussed. An interdisciplinary understanding of the prevention and mitigation of vector-borne diseases was emphasized. Some of the studies presented related to zoonotic disease burden, vaccine production and efficacy, health literacy promotion and social localization.

3. Recommendations

The plenary session made recommendations according to research areas and specific diseases, and how to achieve them.

To Member States

1. Foster multisectoral collaboration by operationalizing the One Health framework and facilitating transborder collaboration to prevent and control the spread of vector-borne and zoonotic diseases in the Eastern Mediterranean Region.
2. Shift to integrating surveillance activities, including early warning and community-based surveillance, to ensure a comprehensive surveillance system that links human, animal and environmental health data for early detection of and response to emerging health threats.
3. Conduct annual or bi-annual risk assessments to identify and prioritize diseases and develop effective strategies and plans to respond to them.

4. Invest in research, including studies on the impact of climate change on the spread of vector-borne and zoonotic diseases.
5. Promote effective communication and outreach strategies to raise awareness of emerging zoonotic and vector-borne diseases and engage stakeholders, particularly communities, through science-driven risk communication.

To WHO and partners

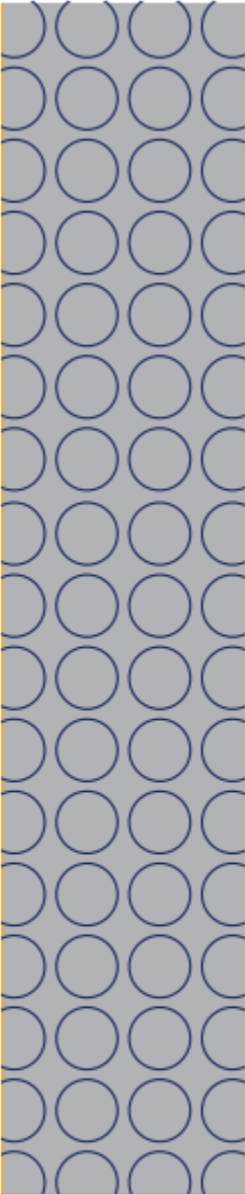
6. Promote and support the development of a One Health operational plan via autonomous national entities and transborder activities in the Region.
7. Support capacity-building programmes to improve the knowledge, skills and infrastructure necessary to implement coordinated and multisectoral initiatives.
8. Map research institutions and researchers and establish a regional researchers' network, including WHO Collaborating Centres (interdisciplinary, virtual and in-person with WHO support).
9. Establish a regional biohub and/or epihub to enhance research capacity, outbreak prediction/forecasting and early warning, including data-sharing mechanisms.
10. Engage academic institutions and government on the research agenda to better understand the complex interconnections between human, animal and environmental health, including the impact of zoonotic spillover.
11. Increase funding and tools to promote data-sharing initiatives.

4. Next steps

Regional strategic guidance on vector-borne and zoonotic diseases will be developed and shared with all participants for their review and inputs within the next few months.

5. Conclusion

This consultative meeting resulted in extensive reflection on the key areas of emerging vector-borne and zoonotic disease control. Despite some methodological limitations, a consensus was reached on a list of priority diseases through constructive discussions. Good practices were also identified and shared, enabling countries to learn from them. However, major challenges in collaboration and effective data sharing between entities in charge of human and animal health surveillance remain. The recommendations formulated, which will serve as guidance for the Region, will improve and bridge the gaps. However, these recommendations need to be implemented by countries, adapted to the local context, and enjoy the support of the Quadripartite organizations and other regional partners.



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