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5th GF-TADs Middle East Roadmap and 2nd Epidemiology and Laboratory Networks Meeting for Foot-and-Mouth Disease

Report of the virtual meeting
6–9 December 2021



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Background

Foot and mouth disease (FMD) roadmap meetings are organised under the umbrella of the Global Framework for the Progressive Control of Transboundary Animal Diseases ([GF-TADs](#)) of the Food and Agriculture Organization (FAO) and World Organisation for Animal Health (WOAH, founded as OIE). They are initiated by the FMD Working Group (FMD-WG), with technical support from the European Commission for the Control of FMD ([EuFMD](#)). Participants include Chief Veterinary Officers (CVOs)/WOAH Delegates and national laboratory and epidemiology Focal Points (experts) engaged in FMD control programmes; FAO regional and national representatives; WOA Regional and Sub-Regional representatives; representatives from regional bodies; and experts from the WOA/FAO Reference Laboratory [Network](#) for FMD. This is one of several initiatives to implement the Global FMD Control Strategy and to encourage countries to progressively control FMD using the [Progressive Control Pathway for FMD](#) (PCP-FMD) at the country level, with efforts coordinated at the regional level.

Four FMD roadmap meetings for the Middle East have previously been held: in 2012, 2013, 2015 and 2017. The Middle East region can be placed in FMD virus (FMDV) Pools 3 and 4 (map [here](#)). Foot and mouth disease is endemic in all continental countries of the Middle East, with four different FMDV serotypes circulating in the region (O, A, Asia 1, SAT 2).

To reinforce regional efforts, share information, exchange expertise, and build national capacity, the 1st Epidemiology and Laboratory Networks meeting for the Middle East was organised under the umbrella of the GF-TADs in Egypt in 2019 (final report [here](#)). To follow up with the implementation of the networks' work plans and regional priorities, the 2nd Epidemiology and Laboratory Network meeting was held in a virtual format, along with the 5th Middle East FMD Roadmap Meeting.

Thirteen countries (Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Palestine, Qatar, Saudi Arabia, United Arab Emirates or UAE, and Yemen) of the Middle East region participated in the meeting. The meeting adopted the agenda and proceeded accordingly. The key highlights of the meeting were as follows.

Updated membership of the Regional Advisory Group for the Middle East

Participants elected the following three CVOs and experts as voting members of the Regional Advisory Group (RAG) for the Middle East:

1. Kaltham Ali Hussain Kayaf, CVO/delegate of the UAE (Chairperson of the RAG)
2. Essam Hawwa, CVO of Jordan
3. Ahmed Saif Al-Amri, CVO of Oman
4. Mohamed Abd Elazim Mohamed, leader of the Epidemiology Middle East Network (Epi MENET) from Egypt
5. Ahmed Refaat Ahmed Habashi, leader of the Laboratory Middle East Network (Lab MENET) from Egypt.

Non-voting RAG members are as follows:

- FMD-WG members
- FAO and WOAHA Regional Representatives
- The World Reference Laboratory for FMD (WRLFMD) representative.

Overview of the global and regional foot and mouth disease situation and vaccine recommendations

[D. King/Pirbright Institute on behalf of WRLFMD]

An overview of the regional FMD situation, in addition to vaccine recommendations, was provided by Donald King (WRLFMD). This presentation summarised data collated from the WOA/FAO FMD Laboratory Network (www.foot-and-mouth.org).

Four different FMD serotypes (O, A, Asia 1 and SAT 2) circulate in the Middle East, unequally distributed across the region. The specific circulating FMD virus (FMDV) lineages and risks reflect geography and country-level connectivity.

As there is no cross-protection between serotypes, and cross-protection between lineages within serotypes is variable, the presence of different serotype and lineages has important impacts on the selection of appropriate vaccines. The presentation summarised vaccine-matching data that were generated at the Federal Centre for Animal Health (ARRIAH) in Russia, the ŞAP Institute for FMD of the Ministry of Food, Agriculture and Livestock in Türkiye; and WRLFMD. Key points were:

- a range of serotype O vaccines show good antigenic matches against field isolates from O/ME-SA/PanAsia-2 (ANT-10 and QOM-15 sub-lineages);
- encouraging antigenic data are also available for representative O/ME-SA/Ind-2001e isolates collected since 2017;
- vaccine-matching data from WRLFMD for A/ASIA/Iran-05 (FAR-11 and SIS-13 sub-lineages) include a greater proportion of field isolates that are not well matched against the vaccines from Boehringer Ingelheim and Merck & Co., Inc. (MSD);

- results reported for serotype A vaccines produced by ARRIAH show that only the A22 and A/TUR/06 vaccines were matched against A/ASIA/Iran-05 field isolates collected in Pakistan in 2018;
- data presented from the ŞAP Institute also revealed a poor match for locally produced serotype A vaccines against recent FAR-11 isolates collected in Iran.

Taken together, these results reinforce the importance of ensuring that good quality vaccines are used with a booster regime (where this is recommended), with good coverage in target host populations. A diverse range of FMD vaccines and vaccine strains are used in the region (including those from international suppliers and local sources) and the use of harmonised regional reference FMDV antigens provides an approach that could be adopted to allow heterologous post-vaccination responses to be measured and compared.

Foot and mouth disease vaccines should be selected to cover epidemiological risks in the region. The table below summarises data collected by the WOA/FAO FMD Laboratory Network to outline specific FMD viral lineages that circulate in Middle East countries.

TABLE 1: Conjectured distribution of specific foot and mouth disease viral lineages in the Middle East region

Viral lineages of FMD circulating strains	Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, UAE, Yemen	Egypt* * Other serotype O (including O-Sharqia-72) and serotype A lineages have been detected in the past	Libya, Algeria, Morocco, Tunisia Serotypes O and A reported in Libya (2020 and 2021, respectively)
O/ME-SA/PanAsia-2		Egypt 2011	Libya 2012
O/ME-SA/Ind-2001			Morocco 2015
O/EA-3	Palestine 2018		
A/ASIA/Iran-05		Egypt 2011	Libya 2009
A/ASIA/G-VII			
A/AFRICA/G-IV			
ASIA-1	Iraq 2012/2019?		
SAT-2/topotype VII	Palestine 2012		Libya 2012

FMD: foot and mouth disease
UAE: United Arab Emirates

NB: Countries in the region are divided into three discrete columns based on geography. Darker-shaded boxes represent viruses that have been recently detected within any of the countries. Lighter-shaded boxes represent historical detection of these specific FMD virus lineages.

National strategies and country reports

During days 1, 2 and 3, the representatives of each country presented a report, sharing the national FMD situation. At the end of days 1, 2 and 3, closed meetings were organised with countries to review their FMD situation, control activities and PCP–FMD stage (based on the self-assessment tool, their presentation outcomes and

control plan) and discuss the way forward. Two interview panels, taken from the non-voting members of the RAG and relevant technical experts, met with representatives of 13 Middle East members, namely Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Palestine, Qatar, Saudi Arabia, the UAE and Yemen.



Epidemiology and Laboratory Regional Networks' work plans 2021–2023

EPIDEMIOLOGY REGIONAL NETWORK (EPI MENET) WORK PLAN 2021–2023

this session was chaired by M. Abd Elazim Mohamed/Epi MENET leader

SUCCESES 2019–2021	CHALLENGES & GAPS 2019–2021	POSSIBLE SOLUTIONS FOR 2021–2023
<p>WhatsApp groups for Epi MENET created to aid internal discussion among network members</p> <p>Preliminary online survey conducted to assess epidemiology and surveillance activities among members</p>	<p>How to translate the items identified in the 2019 Cairo meeting into action</p> <p>Official authority is needed to implement the plan at the regional level</p> <p>Coordination is required between the network and other regional and international organisations</p> <p>There is no well-defined operational plan for implementation</p> <p>A channel of communication is needed between network members</p> <p>The RAG does not have a secretariat</p> <p>Follow-up activities should be defined (roles and responsibilities, and procedures)</p>	<p>The RAG to seek assistance and support from the GF–TADs regional committee.</p> <p>The RAG to formulate an agenda with periodic meetings to enable both Epi MENET and Lab MENET to discuss ways to implement the planned initiatives with other members</p> <p>The RAG to follow up on planned activities (possibility of establishing a RAG secretariat)</p> <p>Coordination with regional organisations (e.g. the Arab Organization for Agricultural Development or AOAD) to support implementation of the plan (for instance, sharing risk information through AOAD databases)</p> <p>Coordination with the Virtual Learning Centre (VLC) of the FAO Regional Office for the Near East and North Africa (RNE) to identify regional training needs that can support the identified work plan and also liaise between Epi MENET's members and the RAG through the VLC (RNE) platform</p>

HIGH-PRIORITY ACTIVITIES FOR 2021–2023	TIMELINE, ROLES AND RESPONSIBILITIES
Assess countries' capacity and capabilities in FMD epidemiology and surveillance	1st quarter of 2022: role of the Epi MENET Leader with Epi MENET members through GF–TADs
Establish a regional database for storing and analysing data on FMDV circulation, surveillance, vaccines and vaccination	3rd quarter of 2022: role of the AOAD
Provide training on the design of risk maps and risk-based surveillance	3rd quarter of 2022 to 3rd quarter of 2023: role of the AOAD, EuFMD and FAO
Improve disease surveillance	3rd quarter of 2022 to end of 2023: training is the role of the AOAD, EuFMD, FAO and WOA, coordinated through the RAG
Harmonise FMD vaccine and vaccination schemes across the region	4th quarter of 2022 to 3rd quarter of 2023: role of AOAD, EuFMD, FAO, WOA, WRLFMD in coordination with the RAG and regional GF–TADs
Conduct socio-economic impact studies	By the end of 2023: role of EuFMD in coordination with the RAG & regional GF–TADs
Establish an Epi MENET work organisational chart (organogram) and identify a channel of communication	To be discussed

LABORATORY REGIONAL NETWORK (LAB MENET) WORK PLAN 2021-2023

this session was chaired by A. Refat Ahmed Habashi/Lab MENET leader

SUCSESSES 2019–2021	CHALLENGES & GAPS 2019–2021	POSSIBLE SOLUTIONS FOR 2021–2023
Some information was shared directly after the nomination of laboratory Points of Contact (Cairo 2019) through a WhatsApp group – in particular, when Asia1 was detected	Due to COVID-19, priorities changed	Countries' training needs are unknown – undertake a training needs assessment
EuFMD and the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) conducted an online survey to assess the laboratory capacities of members of the Mediterranean Animal Health Network (REMESA) (including Egypt and Lebanon)	Participation in proficiency testing schemes (PTS) is costly – request support from GF–TADs partners	Laboratory capacities across the region are unknown. Regional assessment needs to be extended to all countries in the Middle East Roadmap
Annual PTS conducted by WRLFMD and ANSES: Lebanon 2019; Palestine 2021; Egypt 2020, 2021; Iraq 2019, 2020; and Qatar	No staff from national laboratories were trained in diagnostics in the reference laboratory due to COVID-19 restrictions. The network needs to identify a candidate Regional Supporting Laboratory	There is no laboratory in the region able to lead a regional PTS. The network needs to identify a candidate Regional Supporting Laboratory
A VLC is operational in the region (a platform for capacity-building initiatives)	—	—
Egypt: Reorganisation of the virology department, increasing its laboratory biosecurity level (almost BSL3) & conducting research on early detection of FMDV serotypes through reverse-transcription polymerase chain reaction (RT–PCR)	—	—

HIGH-PRIORITY ACTIVITIES FOR 2021–2023 AND TIMELINE	RESPONSIBLE FOR SUCH ACTIVITIES
WhatsApp group to be re-activated	Lab MENET (Leader)
Extend the online survey on regional laboratory capacities and capabilities to other countries in the Middle East and Gulf Cooperation Council	ANSES & EuFMD
Conduct annual proficiency testing schemes	WRLFMD, the European Union Reference Laboratory for FMD (EURL-FMD) & EuFMD
WRLFMD/EuFMD to conduct an online FMD laboratory training course (bilingual in English and French) in autumn 2022	WRLFMD & EuFMD
Member Countries to provide training needs. Face-to-face training may be organised by the WRLFMD in May 2022	Lab MENET (Leader) & VLC
Identify a Regional Supporting Laboratory to facilitate regional training and information sharing. The WRLFMD is interested in being part of this approach, by providing further expertise/trainers	Lab MENET & WRLFMD
Define the reference antigens to be used in serological testing to evaluate the vaccines used in the region	Lab MENET & Group for Vaccination Advice (GVA)
Provide standard operating procedures (SOPs), manuals, research findings, and latest FMD diagnostic techniques (https://www.wrlfmd.org/laboratory-protocols ; https://eurl-fmd.anses.fr/en/minisite/lrue-fievre-aphteuse/methods) Identify which primer sets should be used for molecular FMD diagnosis and good quality reagents. The WRLFMD publication, <i>Details of lineage-specific real-time RT–PCR assays</i> , can be found at: https://www.foot-and-mouth.org/science/lineage-specific-pcr Egypt will share the results of its research with the network, once they become available	WRLFMD & ANSES

Provisional Middle East Roadmap for foot and mouth disease, 2021–2026

COUNTRY	VALIDATED STAGES										EXPECTED STAGES (NOT VALIDATED)				
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Bahrain	1	2	2	2*	2*	2*	2*	2*	2*	2	2	2	3	3	3
Egypt	1	1	2*	2*	2*	2	2	2	2	2	3	3	3	4	4
Iraq	2	2	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	2	3*
Jordan	1	1	2*	2*	2*	2*	2*	2*	2*	2*	2	2	3	3	3
Kuwait	2	2	3	3*	3*	3*	3*	3*	3*	3*	3	3	3	3	3
Lebanon	1	1	2*	2*	2*	2*	2*	2*	2*	2*	2	2	3	3	3
Libya										1*	1	2	2	2	3
Oman	2	2	2*							2*	—	—	—	—	—
Palestine			1	1	1	1	1	1	1	2	2	2	3	3	3
Qatar	2	2	3*	3*						3*	3	3	4	4	WOAH
Saudi Arabia	1	1	2*	2*	2*	2*	2*	2*	2*	2*	2	3	3	3	4
Syria ¹	2	2	2*	2*	2*	2*	2*	2*	2*		—	—	—	—	—
UAE	1	1	2	2*	2*	2*	2*	2*	2*	2*	2	3	3	3	4
Yemen	1	1	1*							0	1	1	2	2	3

UAE: United Arab Emirates

WOAH: World Organisation for Animal Health (founded as OIE)

* Provisional status given to the country. Attribution of a provisional stage along the Progressive Control Pathway for foot and mouth disease (PCP-FMD) is limited to a maximum period of 6 months. Countries have 6 months to provide additional information, including an FMD Control Plan/Programme; if not, they will be downgraded to the previous PCP-FMD stage

¹ Country did not attend the virtual meeting in 2021

— Information not provided

0	1	2	3	4	WOAH
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Report of the survey on foot and mouth disease vaccination programmes

The survey was completed by ten countries in various stages of the Progressive Control Pathway for foot and mouth disease (PCP-FMD) (Table 2).

TABLE 2. Countries that completed the vaccination survey, by stage along the Progressive Control Pathway for foot and mouth disease, before assessment during the Roadmap Meeting of December 2021

2021 PCP-FMD STAGE	COUNTRIES
1*	Libya
2*	Iraq, Jordan, Lebanon, Saudi Arabia
2	Bahrain, Egypt, Palestine
3*	Kuwait, Qatar

VACCINATION POLICIES

- Seven out of 10 countries reported vaccinating large and small ruminants during 2020 and 2021, while 3 countries reported vaccination either in 2020 or 2021. The vaccination strategy was reported as being one of the following: mass vaccination (8 countries), emergency vaccination (8 countries), targeted vaccination (2 countries), and border-zone vaccination (1 country).
- In 7 countries, FMD vaccination is practised at the owner's request and 1 country is planning to make FMD vaccination mandatory by law.
- Two countries reported vaccinating buffaloes.

IMPLEMENTATION OF VACCINATION

- In 2020–2021, overall population coverage attained among countries in the region varied from 2% to 88%.
- Large ruminants: reported vaccination coverage ranged from 3% to 85% in 2020–2021.
- Small ruminants: reported vaccination coverage ranged from 2% to 75% in 2020–2021.
- Only 2 countries reported considering their neighbours' vaccination schedules to plan their own vaccination programme.
- In 7 countries, the government covers all costs of vaccination; in one country the costs are partially shared by development partners; and in 2 countries the livestock owner covers the entire cost of vaccination.

- 50% of respondent countries indicated that funds in the national budget were not sufficient for vaccination.
- Vaccination is administered by the Central Government Veterinarian (in 6 countries); the local government veterinarian (in 6 countries); veterinary para-professionals (in 5 countries); local private veterinarians (in 6 countries); and livestock owners (in 2 countries).
- Three countries reported using public–private partnerships, one country reported a joint programme with dairy companies to establish vaccination (safe) zones around dairy farms.

VACCINES USED, VACCINE MATCHING AND POST-VACCINATION MONITORING

- Listed FMD vaccine suppliers in the Middle East (9 countries responded)
 - Merial/BI: 4 countries
 - FBGI-ARRIAH: 1 country
 - JOVAC: 2 countries
 - VETAL: 1 country
 - VSVRI: 1 country
 - MEVAC: 1 country
 - National Veterinary Pharmaceutical and Pesticides Company: 1 country.
- The number of doses administered, as well as the serotypes included, varied across the region in 2020–2021.
- The FMDV serotypes used in vaccines were:
 - A, O, Asia 1 and SAT 2 (4 countries)
 - A, O, SAT 2 (1 country)
 - A, O, Asia 1 (2 countries)
 - A, O (3 countries).
- All 10 countries confirmed that serotype C was **not** included in the vaccines used or registered nationally.
- Six countries confirmed **not** maintaining live serotype C stocks for research, diagnosis or vaccine-manufacturing purposes. Seven out of 10 countries also reported that live serotype C stocks were not maintained in their country for research, diagnosis or vaccine-manufacturing purposes while 3 countries did not respond to this question.

- Post-vaccination monitoring is done to ensure that the vaccine is providing the expected protection. Three countries reported conducting post-vaccination monitoring and 2 countries reported outbreaks in vaccinated herds.
- For laboratory diagnosis of FMD, 6 countries used national laboratories, 3 countries used both national and international laboratories while 1 country used international laboratories.

COVID-19 AND FMD VACCINATION

Seven out of the nine countries that responded to the question indicated that COVID-19 had had an impact on FMD vaccination. This was due to changes in budget priorities and allocations, as well as the impact of social-distancing requirements on mobilising livestock owners to participate in vaccination campaigns.

Meeting recommendations

RECOMMENDATIONS OF THE 5TH GF-TADS MIDDLE EAST FMD ROADMAP AND 2ND MENET NETWORKS MEETING

Virtual meeting, 6–9 December 2021

Considering:

- The adoption of the FAO-WOAH Global Strategy for the control of FMD (Bangkok, June 2012), with its three inter-related components on the control of FMD, the reinforcement of Veterinary Services and the combined control of FMD with other animal diseases;
- The FMD endemicity in most of the countries of the region and the importance of controlling FMD due to its high contagion rate and important socio-economic impacts on food security, trade and sustainable development of the livestock sector;
- The importance of evaluating the effectiveness of vaccination programmes, and lack of diagnostic tools for countries to conduct their own testing for post-vaccination monitoring;
- The results of previous FMD regional roadmap meetings which have taken place since Cairo 2012 (Amman/2014; Doha/2015; Amman/2017);
- The importance of having a Regional Advisory Group (RAG) for the Middle East to review the PCP-FMD stage assessments of countries during PCP-FMD regional roadmap meetings, but also to support the implementation of the regional strategy by performing activities as described in the Terms of Reference of the RAG, such as guiding FMD training and capacity development activities and advocating the importance of investing in FMD control and prevention at the regional level to countries, the private sector and donors;
- The possibility offered by EuFMD and the GF-TADS Working Group (FMD-WG) to provide specific support for countries, through the PCP-FMD Support Officer (PSO) system;
- The geostrategic position of the Middle East, its livestock movement and trade patterns and the associated risks of FMD spread;
- That the implementation of the Roadmap vision requires the coordination of national efforts under an overall framework of progressive risk management to reduce the impact of FMD in the region, including information sharing, technical knowledge and possible donor support.

The 13 countries attending (Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Palestine, Qatar, Saudi Arabia, UAE and Yemen) agree to:

- A Regional Advisory Group (RAG) elected for a three-year period (2021–2024), with voting members comprising:
 - The Chair: the CVO/Delegate of the UAE;
 - Members: the CVOs of Jordan and Oman and leaders of Epi MENET (Egypt) and Lab MENET (Egypt).
- Use the information presented during this virtual Roadmap Meeting as a basis to establish a provisional Roadmap for the countries of the Middle East (see table “Provisional Middle East Roadmap for foot and mouth disease, 2021–2026” on page 9).

The countries identified the following areas of priority for improved implementation of the Global FMD Control Strategy at the regional level and their national FMD control strategies, in alignment with PCP-FMD principles.

Priorities for countries

1. To continue progressing along the Roadmap, based on the principles of the progressive Control Pathway for FMD (PCP-FMD) and the need for competent Veterinary Services. This includes:
 - When in a provisional PCP-FMD stage, conducting a self-assessment and, using the outcomes of the PCP-FMD self-assessment tool (SAT), strengthening and submitting their Risk Assessment Plan (Stage 1), Risk-based Strategic Plan (Stage 2) or Official Control Programme (Stage 3) to the FMD-WG within six months of this meeting, to allow them to advance to the next stage;
 - To make use of the PSOs, when these are assigned by the FMD-WG, to assist their progress on the PCP-FMD and to identify and train national and/or regional experts to become PSOs;
 - To share information about their results and challenges in implementing their control strategies with other countries on a regular basis.
2. To improve regional coordination and knowledge about the epidemiology of FMD and circulating FMDV strains in the region by:
 - Ensuring rapid reporting and field investigation of suspected FMD outbreaks, including submitting samples to national and/or regional

- laboratories for confirmation and to the WOA/FAO FMD Reference Laboratories for full virus characterisation and vaccine matching;
- Identifying and sharing relevant information (e.g. vaccine and vaccination campaigns, circulating strains, animal mobility, etc.), possibly through the creation of a regional database and regular MENET Network meetings;
 - Supporting and strengthening the Epidemiology and Laboratory MENET Networks to share good practices and lessons learnt and to build capacity in these countries.
3. To use the FAO–WOAH guidelines in conducting post-vaccination monitoring studies regularly, to continue assessing the quality of the vaccine and vaccination programme in reducing the FMD burden and to determine the cost benefits.
 4. To strengthen capacities and ensure best use of the limited resources available to control FMD by:
 - Conducting studies to assess the socio-economic impact of FMD on different stakeholders;
 - Periodically assessing the risks of FMD entry and spread, and maintaining updated records to inform targeted interventions;
 - Encouraging national laboratories to participate in the proficiency tests organised by FAO and WOA/FAO reference laboratories (organised by the World Reference Laboratory, the Pirbright Institute);
 - Requesting specific laboratory capacities and surveillance system assessments through FAO’s Laboratory Mapping Tool (LMT) and Surveillance Evaluation Tool (SET) assessments, developing progressive improvement/action plans, and using these to mobilise resources for improvements in capacity;
 - Sharing experiences and best practices in public–private partnerships to improve disease control.
 5. To consider requesting a WOA/FAO PVS initial evaluation or WOA/FAO PVS follow-up mission (if the initial PVS evaluation was carried out before 2014), requesting support from the Veterinary Legislation Support Programme and requesting support on sustainable laboratories to update countries’ understanding of their Veterinary Services capacity, and guidance on investments in their veterinary systems. This will assist in building capacity according to the gaps identified (Component 2 of the Global FMD Control Strategy);
 6. To initiate dialogue with countries in the region and exporting countries in order to develop a framework to address the challenge of informal cross-border movement of animals and mixing of animals during import;
 7. To seek to combine prevention and control activities for FMD with those of other livestock diseases, such as peste des petits ruminants and contagious bovine pleuropneumonia, which are considered high-priority diseases in the region (Component 3 of the Global FMD Control Strategy);
 8. To promote responsible and prudent use of antimicrobials when they are used for clinical treatment of secondary bacterial infection in FMD cases, considering the growing concern over antimicrobial resistance (AMR).
- Priorities for technical partners**
9. For Epidemiology and Laboratory Regional Networks (Epi MENET and Lab MENET):
 - To develop and implement the two-year work plan that includes coordination and capacity-building activities. Training and capacity building should be cascaded to strengthen national capacities, including for laboratories and veterinary para-professionals;
 - To develop a well-defined operational plan for these networks, and seek assistance from the GF–TADs and/or regional organisations (e.g. AOAD) to support implementation of the work plan;
 - To improve communication and the dissemination of information through regular virtual meetings, e-mails, and other communication aids. The VLC platform in the region (RNE) may be used to facilitate communication between MENET members. An official channel for communication between network members may be developed under the guidance of the RAG;
 - To establish a mechanism for exchanging information and support with the FAO/WOA/FAO FMD Reference Laboratories Network.
 10. For the FAO, WOA/FAO, GF–TADs FMD–WG and EuFMD:
 - To provide regional training courses, online courses and Webinars on the PCP–FMD principles and surveillance processes, including risk assessment, socio-economic impact assessment, early detection, outbreak investigation, and sample collection and shipment;

- To undertake activities to improve laboratory and epidemiological capacities, in collaboration with relevant regional and global partners and the WOA/FAO Reference Laboratories;
- To encourage vaccine manufacturers to make available a highly specific and sensitive companion serological diagnostic kit, including standard control sera, to enable countries to conduct post-vaccination monitoring to evaluate their vaccination programme's effectiveness;
- To encourage vaccine manufacturers to share their vaccine virus strain(s) and homologous sera (or packaged vaccine to prepare the homologous sera) with the reference centre(s) for vaccine matching and testing as part of post-vaccination monitoring, upon agreed procedures for material transfer;

- To find a source of rapid financial support for countries to help them implement epidemiological survey activities and respond to the emergence of infections (outbreaks), for sampling, for analysing samples in reference laboratories, and for supporting them by providing the vaccine upon request (emergency vaccination campaigns);
- To assist countries in developing contingency and emergency plans and a vaccination strategy.

The meeting agreed that material presented at the Roadmap Meeting, including country reports and meeting reports, be published on the GF-TADs website.

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