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european commission for the control of foot-and-mouth disease

FAST
Foot-and-mouth And Similar Transboundary animal diseases

Special Committee for Surveillance and Applied Research SCSAR

Report Online meeting / 22 January 2021

European Commission for the Control of Foot-and-Mouth Disease

Special Committee for Surveillance and Applied Research

(SCSAR)

Online meeting

22 January 2021

Report

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The Members of the Special Committee for Surveillance and Applied Research (SCSAR) participated in a meeting organized by the European Commission for the Control of Foot-and-Mouth Disease (EuFMD) Secretariat on the 22.1.2021 *(Annex 1- agenda and list of participants*) to review the progress made by the EuFMD, and provide guidance going forward, in the following areas:

- Methods to measure and monitor surveillance capacity for Foot-and-Mouth And Similar Transboundary animal diseases (FAST) in the European neighborhood, with the aim of optimizing surveillance and thus improving confidence in the available information, as well as better informing national control strategies;
- Assess the diagnostic capacity of member countries to respond to a crisis, and identify innovative solutions to improve preparedness;
- Opportunities to integrate surveillance and control initiatives for FAST diseases in endemic countries, and identify barriers to this integration and ways to overcome them.

The meeting was held online and the participants were sent the description of the discussion items and expected outcomes in advance.

Introduction

Fabrizio Rosso, Deputy Executive Secretary of the EuFMD, introduced the meeting indicating that the 43rd General Session of the EuFMD, in 2019, endorsed the Hold–FAST strategy. This strategy extended the mandate of the EuFMD to build on good principles for prevention and control of foot-and-mouth disease (FMD) and extend them to similar transboundary animal diseases (TADS).

Given the extension of activities beyond FMD, a wider range of expertise (on multiple TADS) was considered necessary to provide specific guidance to the programme. To this end, a new ***Special Committee on Surveillance and Applied Research*** (SCSAR) was created with the participation of centres of expertise for FAST diseases within Member Nations (MNs). The Technical Directors of a number of institutes were nominated as members of the SCSAR, giving the opportunity for these centres to select the most appropriate expert within their team for the specific Committee meetings or issue under consideration.

The first meeting of the SCSAR was held in 2019 and focused on:

- priorities for FAST surveillance in EU neighbourhood and more widely in risk areas for EuFMD MN;
- mechanisms and initiatives to improve laboratory networking for FAST diseases in Europe and neighbouring regions.

The current meeting is aimed at reviewing the progress made by the EuFMD, and provide guidance going forward, in the following areas:

- Methods to measure and monitor surveillance capacity for FAST diseases in the European neighborhood, thus improving confidence in the available information as well as better informing national control strategies.

  The EuFMD programme in MNs is focused on preparedness. However, a consistent part of the activities delivered in European neighbourhood (Pillar II) is aimed at identification of risk hotspots and implementation of integrated surveillance with the ultimate goal to inform countries on circulation of FAST and Europe on possible threats. It is quite relevant that surveillance in neighbourhood can inform risk assessor in PII and PI countries and there is the need to ensure that surveillance is efficient (for use of resources) and effective according to the different objectives (early detection vs circulation).

- Assessing the diagnostic capacity of member countries to respond to a crisis, and identifying innovative solutions to improve preparedness.

  Maintaining sufficient, diagnostic capacity at all stages of disease crisis is of great importance for effective response. The meeting is focused on identifying the key elements for sufficient, scalable diagnostic response (including the relevance and limitations of diagnostic banks) and seeking inputs on how EuFMD can shape its support to contribute toward improved laboratory preparedness and diagnostic capacity in the EuFMD MNs.

- Opportunities to integrate surveillance and control measures for FAST diseases in endemic countries (particularly in the neighbourhood), and identifying barriers to this integration and ways to overcome them.

  The meeting is focused on cost-effective combinations of activities including vaccination, epidemiological investigation, control, diagnostic activities, considering also identifying the barriers to this integration, and how they can be overcome.

The outcomes of this meeting will be presented at the 44th General Session of the EuFMD in April 2021, and constitute the basis to better target activities of the workplan and identify possible improvements to achieve our objectives.

F. Rosso acknowledged the great work done for the organization of the meeting by Melissa Mclaws, Nick Lyons, Kiril Krstevski, Pamela Hullinger and the operational tram (Silvia, Benedetta, Enrico, and Filippo). He thanked Don King, Kiril Krstevski and Michel Bellaiche for having accepted to chair the working groups during the meeting.

Terms of Reference

F. Rosso presented the Terms of Reference (ToRs) for the SCSAR (*Annex 2*) that were shared in advance of the meeting, indicating that:

- The first two points focused on guidance and advice on implementation and evaluation of surveillance for early detection, including the training and support in identification of efficient models in Europe, neighbourhood and beyond.

- The following two points are focused on support to ensuring maintenance of proper networks between neighbouring countries and EU reference centres. The network would in fact support the points above, and the training initiatives to develop lab capacities, as well as facilitate the identification of lab in the neighbourhood that can assist when no EU RL are identified (e.g. BEF).

- Two further points focused on the provision of guidance on main gaps in knowledge or in the available tools needed for better preparedness and response in EuFMD MNs, and specifically the definition of mechanisms for scaling-up support on FAST diseases (the surveillance on COVID showed more limited capacities due to other priorities and difficulties in the supply chain).

- The final point is related to the identification of applied research topics and priorities that provide the greatest overall value for money, which may be either generic (to multiple TADS) or focus on a specific one.

The ToRs were endorsed by the Members of the SCSAR.

Progress on risk based surveillance in neighbourhood

Nick Lyons provided an update on the activities implemented within the Pillar II programme – risk reduction – in the European neighbourhood and specifically activities in support to risk-based surveillance such as:- Risk mapping- Risk-based surveillance workshops for the North Africa, Middle East and SEEN[1] countries - Surveillance activities in REMESA countries -Research projects on small ruminant surveillance -Risk information sharing systems -Survey of laboratory capacity (ANSES) -Risk assessment project.

He shared the results obtained and how they contribute to improving surveillance system in the EU neighbourhood and indicated some challenges encountered during the implementation of activities and particularly:

- Provide sufficient backstop support to countries for risk mapping and using the outcomes of to improve surveillance activities;
- Implement integrated surveillance for multiple diseases;
- Organize syndromic surveillance in the field;
- Equal participation of countries in risk information sharing initiatives;
- Laboratory training in virtual settings in support to surveillance activities (currently ongoing);
- Standardize collection of risk information to characterize hazard of source countries for risk assessment.

In the discussion, it was proposed to consider existing tools to plan and evaluate surveillance systems, e.g. the 'SurvTools' (https://survtools.org/user/login) developed by the RISKSUR project (https://www.fp7-risksur.eu/).

Working groups

Considered the virtual settings of the meeting and the limited time for discussions, participants were asked to complete exercises corresponding to each topic before the meeting in order to facilitate the discussion and achievement of expected outcomes (*Annex 3- breakout groups*).
Participants were divided in three breakout groups (virtual rooms) focusing on:

1. Defining surveillance indicators and data needed for risk assessment by EuFMD Member countries (Chair: Don King, Moderator: Melissa Mclaws);
2. Assessing diagnostic capacity of EuFMD Member countries during crises (Chair: Kiril Krstevski, Moderator: Pamela Hullinger);
3. Integrated disease surveillance and control (Chair: Michel Bellaiche, Moderator: Nick Lyons).

The outcomes of the exercises (*Annex 4 – exercise outcomes*) were discussed within the working group and the summary of the discussion was provided to the plenary session as reported below.

[1] SEEN South East European Neighborhood

Group 1- Defining surveillance indicators and data needed for risk assessment by EuFMD Member countries

Indicators

- The committee members support the use of indicators and metrics that could be used to assess and monitor the different components of passive and active surveillance systems for FAST diseases (see annex). Some of these indicators are quantitative, whereas others were indicative of the quality of the attribute ("quality indicators"). Discussion within the group considered whether the use of generic metrics sufficiently capture the complexity of disease epidemiology and surveillance (e.g. appropriate laboratory tests and techniques – and the fact that not all diagnostic tests have equal importance). Therefore, it was agreed that some degree of refining and tailoring for specific diseases is probably required.
- Other factors that contribute to the surveillance system were not captured in these indicators, including: disease-specific drivers, role of wildlife, the quality of the veterinary services (and underlying infrastructure – such as whether animal identification is routinely used in a country) and broader animal health system.
- Sensitivity, timeliness, and other indicators are very important to estimate the confidence level of the outcome of the surveillance.
- Whilst acknowledging that a comprehensive evaluation of surveillance needs to take into account the factors listed above, **carefully defined indicators could be a useful approach to assess surveillance**, especially for non-specialist decision makers to monitor and to guide the prioritization of resources.

Following the discussion on indicators, the group considered other aspects of surveillance, namely:

- Collection of data beyond the EuFMD MNs
    - What is the best approach to influence/motivate/support surveillance studies for FAST diseases in Pillar II countries?
- Relevance of data collected
    - Considering likely sparse nature of reported events, how can we get a better appreciation for missing events and biases in these datasets?
- Significance/importance of the data that is collected via an understanding of animal trade and risk networks
    - How can we best understand the connectivity of events in Pillar II countries and their connectivity to EuFMD MNs?
- Data collation and sharing of information
    - Beyond the work of the OIE/FAO FMD Lab Network, can we improve the way that data is shared between lab and epi teams?
- Data dissemination
    - Can we improve (or democratise) the way that data is held/displayed/retrieved by interested parties?

Some of the key points raised are provided below:

- A 'sentiment study' to understand attitudes and perceptions toward surveillance in the region could be useful to characterize the challenges and barriers.
- Methods and technologies exist to enable the development of a regional 'event-based surveillance' system that would monitor and extract information from unofficial sources such as media reports.
- There remains a need for greater integration of epidemiology and laboratory expertise in the advice and support provided to countries by Reference Laboratories, e.g. by establishing epidemiological teams that interact with the Reference Laboratories and support countries on request.
- Some countries in the European neighbourhood are interested in improving capacity for disease surveillance in wildlife; this is an opportunity for collaboration.
- A surveillance database that includes information about movements/trade of animals and animal products, including wildlife, would be very useful to assess the risk of disease spread within and between regions.
- The EuFMD surveillance reports (Quarterly FMD report and the FAST disease report) would be improved with the inclusion of a section highlighting key findings, and the identification of actions needed based on a change in (or continuation of) threats. A rapid risk assessment, based also on other sources of information like animal/ human movements, could be considered to inform the EuFMD members.

Key gaps in knowledge and research priorities identified:

- Knowledge and understanding of the confidence level of a surveillance, the elements that contribute to it and what this means for the outcome of the surveillance and the follow-up actions.
- Availability of tools such as dedicated information systems aimed at collecting detailed and standardized data on surveillance at large scale are still missing. They would be helpful in having standardized results, therefore it would enable more robust data analysis.
- Gaps in diagnostic methods for many of the FAST diseases, as well as vaccine research to improve efficacy, safety, logistics… etc of existing vaccines.

Suggestions on how the EuFMD could engage more effectively with European neighbourhood countries to improve surveillance:

- Real time training depending on the needs.
- Countries could be supported by sharing the necessary budget and technical information to carry out the research they need.
- Promoting transparency and exchange of information.
- Harmonization of surveillance systems, methods and technologies.
- Promoting common projects in terms of international cooperation in these fields.
- Discussion forums, workshops, meetings addressing specific topics related to surveillance of FAST diseases in the region.
- Organizing technical training courses in these topics.
- In specific contexts, approaches like the participatory epidemiology, a two-source capture-recapture methodology and studies aimed at assessing the knowledge and the perception of FAST diseases by farmers could be helpful to improve surveillance.

Group 2- Assessing diagnostic capacity of EuFMD Member countries during crises

The group reviewed and discussed the summarized responses (Annex 4), then examined the additional questions.

Working group members agreed on the most important crisis-response indicators identified via the survey within each of the following categories: personnel, laboratory supplies, equipment/space, laboratory operation, national and international networks. Following the positive feedback received on applicability of reagent bank, the group discussion addressed some of the most relevant questions related to the setting of such bank. Potential innovative solutions to improve laboratory preparedness have also been discussed.

- Which reagents/test Kits should be included in a DB?
    - ELISA for serological testing would be a priority over PCR as it may be more difficult to scale-up or source. Antibodies can be more difficult to procure for serology. For molecular DX tests, the focus should be more on training/personnel exchanges and standardized SOPs (URL). Having adequate quality reference materials is also important for PCR (especially BEF and RVF).
    - What should be banked will depend on disease and the objectives of the DB. For example, for FMD, there might be adequate resources to do PCR, but perhaps not for the post outbreak surveillance. Likewise, if the objective is to support the rapid response and pathogen detection, PCR reagents would be needed, whereas ELISA kits should be considered if surveillance is to be supported.
    - Might be more efficient to focus on identification and banking of common reagents (for example a universal master mix for PCR). To store disease-specific kits with expiration dates may not be cost effective.
    - Look at the shelf life of various components to help identify what might be most practical to store.
    - Established equivalency protocols can help a laboratory to be more adaptable and utilize available materials to meet diagnostic demand.
    - Need to work with companies to see how such resources might be banked by the company where inventory might be rotated to make banking more cost effective. What type of contracts could facilitate this? It would be best to approach companies with a unified/European request, not as individual countries. This approach would be most cost-efficient and acceptable for the countries, as setting up national reagent banks is too expensive.
    - It would be helpful for laboratories to be more familiar with alternative protocols (or kits) in advance to facilitate preparedness to utilize other equivalent methods based on availability of specific kits or reagents.
    - Each national reference lab needs some minimal amount of reagents for first detection of pathogens not present in the country, but posing a potential risk for introduction.

- How much should be banked? Minimum amounts?
    - Need to clarify agree upon) the objectives of a DB. One might be to support an early FAST response and the other to support long term surveillance or proof of freedom from disease. Both are important.
    - Very difficult to estimate. Some information that could be useful and should be considered: data on animal population in high-risk countries and bordering regions, previous experiences with disease crisis, number of tests indicated in the laboratory contingency plans. To support the early response (until more is obtained from the market) at least few thousands would be a very rough estimate ("starter kit").
    - Consider having a network of labs (for example the 16 BTV lab) to facilitate having EU level necessary capacity. Using standardized tests/protocols/PT (URLs).
    - Experiences from the established vaccine-banks should also be considered.

- QA systems
    - QA requirements should be revised at EU level, with particular focus on identifying the minimum acceptable criteria. This could help towards QA harmonization in all of the EU, as current high QA standards pose great challenge for smaller laboratories/countries. QA systems should be harmonized in EU. EuFMD could lead/facilitate this?

- PTs
    - Enables comparisons between labs to identify some reagents/master mix that may be more universally.
    - Could use PTs as a "real emergency" exercise. Test both accuracy and time frame to obtain/report results. Also, could include analysis of other differential diseases (this would not work for all FAST diseases, so could not be a general rule)?

- What innovative solutions could be used?
    - Think about what other labs in a country could become part of a network to process serological samples that may not require the same level of biocontainment as a NRL
    - It is important to have a well-coordinated network of laboratories in a country. This is essential and must be established pre-outbreak. Not a responsive effort. This exists in some, but likely not all countries. In the EU, the NRLs are well known and so smaller countries know who they can reach out to for assistance.

- How can the EuFMD more effectively engage with member countries to improve diagnostic capacity for FAST diseases?

    - EuFMD could organize/support opportunities for lab personnel to interact in person to form and maintain a strong personal relationships that will facilitate collaborations on diagnostic approaches as well as in times of crisis. Need specific budget to support PTs/trainings/workshops/exchange of personnel for training purposes
    - EuFMD could facilitate EU neighbouring countries in the establishment of a national reference lab for all FAST diseases with a supporting system of contingency laboratories, similar to what is done in many EU member countries.
    - Lead/support the harmonization of QA standards in EU member countries
    - Support simulation exercises/modelling to assist in the estimation of appropriate DB capacity.
    - EuFMD could facilitate approaching appropriate companies about various strategies to support an EU focused DB.

Group 3 - Integrated disease surveillance and control

The group discussed where surveillance and control activities could be integrated for FAST diseases in Pillar II countries, and particularly what priorities could be identified in order to ensure cost/efficient use of the available resources.

Syndromic surveillance

- Major advantage for enhanced sensitivity for early detection and possibility to cover multiple FAST diseases (it can include abortion, mortality, milk yields and other symptoms).
- It has some challenges connected to the need of creating automated data acquisition and generation of statistical alerts.
- Importance to improve understanding of countries on what it is and what it is useful for
- Information can be collected with the involvement of private vets, paraprofessional, and farmers. Information (abortion, mortality, etc) can be also collected during vaccination.

Slaughterhouse surveillance

- It can be an “epidemiological observatory” of a territory.
- Useful and cost effective for early detection of multiple FAST diseases.
- Serology can be combined with ante and post-mortem inspections.

Integration of serological surveillance

- Opportunity to test for multiple disease in animals (where possible and according to different species and related diseases).
- Improve efficiency of farm/village visits if multiple species present with the possibility to collect samples from different species.

Milk for surveillance of multiple FAST diseases

- Milk can be used for surveillance for FMD but more information is needed for other FAST diseases on the presence in milk. Evidence should be available (literature review, research) to use milk for surveillance (e.g. unlikely useful for LSD).
- Milk value chain be exploited for surveillance of multiple FAST diseases when under-reporting is a problem.

Entomological surveillance

- There is a suspicion of low sensitivity for detecting pathogens even though for some diseases such as West Nile Fever, entomological surveillance is more sensitive than other systems (e.g. sentinel animals or passive surveillance) and therefore to be considered
- More useful for estimating vector abundance.
- Some experience were presented by Turkey (Culicoides – BTV/Akabane/Schmallenberg)

Proficiency tests

- Relevance for assessing laboratory capacities for other FAST diseases (PTs for FMD already supported and regularly carried out).
- Opportunity to investigate the possibility to combine PTs for multiple diseases (if multiple diseases covered by the same laboratory).

Co-vaccination

- There is a general lack of knowledge on the possibility to combining some vaccines.
- Some countries have experience (e.g. Turkey) which can be shared with other countries.

Conclusions

The SCSAR identified several areas for further consideration in the scope of the EuFMD workplan related to:

1. Assessment of surveillance outcomes and availability of risk information

- The possibility to define indicators and metrics (considering specificity of different diseases) that could be used to assess and monitor the different components of passive and active surveillance systems.
- The need to improve understanding of the confidence level of a surveillance and how this is considered in the evaluation of results.
- The opportunity to disseminate risk information using dashboard able to integrate information from different sources and the possibility to develop 'event-based surveillance' system that monitors and extracts information from unofficial sources such as media reports.
- The opportunity to develop tools aimed at collecting detailed and standardized data on surveillance at large scale. The possibility to improve EuFMD surveillance reports (FMD and FAST) with the inclusion of a section highlighting key findings.

2. Improving laboratory capacities in neighbouring countries

- The relevance of ensuring integrated laboratory and epidemiological expertise in the support provided to countries by Reference Laboratories to ensure proper interpretation of laboratory results.
- The possibility to combine PTs for multiple diseases.

3. Improved integrated surveillance and control in risk hotspots

- The use of training initiatives to improve the understanding of specific surveillance option (e.g. syndromic , slaughterhouse) for multiple diseases.
- The need to support research/literature review to investigate possibility to use milk for integrated surveillance for multiple diseases.

- The opportunity to collect and share available information and experiences on the possibility to combine multiple vaccines and the possibility to discuss within the Groups for Vaccination Advice Guidance and Consultation (GVA).

4. Assessing laboratory capacity to respond to crises

- The opportunity to better refine indicators proposed to assess level of preparedness and to implement simulation exercises for laboratories with the possibility to use proficient test panels for this purpose. Indicators should consider personnel, laboratory supplies, equipment/space, laboratory operation, national and international networks
- The importance of scrutinizing the applicability of reagent bank and strength and weaknesses related to the setting of such bank. This should include: identification of priority reagents, common reagents for multiple diseases (e.g. PCR mastermix), shelf life, presence of equivalency protocols, rotating mechanisms of inventory, parameters/models to estimate amount of reagents.
- The need to define the objectives of a reagent bank (early response vs long term surveillance).
- The importance of facilitating the establishment of National Reference Laboratory for FAST diseases in EuFMD Members where does not exist and enhancing the national laboratory networks in support to crises.

Annex 1

Special Committee for Surveillance and Applied Research
22nd January 2021, 14:00 – 17:00 CET

Draft AGENDA

Time CET	Topic	Lead
14:00 - 14:10	Welcome and introduction.	Dr F. Rosso (EuFMD)
14:10 - 14:25	Special Committee - Terms of Reference.	Dr F. Rosso (EuFMD)
14:25 - 14:50	Progress on risk based surveillance in neighbourhood.	Dr N. Lyons (EuFMD)
14:50 - 15:50	Breakout groups 1. Defining surveillance indicators and data needed for risk assessment by EuFMD Member countries; 2. Assessing diagnostic capacity of EuFMD Member countries during crises; 3. Integrated disease surveillance and control.	Dr M. Mclaws (EuFMD), Dr D. King (TPI) Dr K. Krstevski (FVMS), Dr P. Hullinger (EuFMD) Dr N. Lyons (EuFMD), Dr M. Bellaiche (KVI)
15:50 - 16:00	Break	
16:00 - 16:45	Group report back and plenary discussion.	Dr M. Mclaws (EuFMD)
16:45 - 17:00	Conclusions and meeting closure.	Dr F. Rosso (EuFMD)

Special Committee for Surveillance and Applied Research
22nd January 2021, 14:00 – 17:00 CET

List of Participants in Groups

Country	Institute	Name	Surname	Group
Spain	IREC	Ramón Christian	Gortazar Schmidt	1
Turkey	SAP/EuFMD	Abdulnaci	Bulut	1
France	CIRAD	Renaud	Lancelot	1
Turkey	VCRI	Fahriye	Sarac	1
Netherlands	WBVR	Phaedra	Elbé	1
Germany	FLI	Franz Joseph	Conraths	1
UK	TPI	Don	King	1
EuFMD	EuFMD	Melissa	Mclaws	1
Spain	CISA	Miguel Angel	Jiménez-Clavero	2
Italy	IZSLER	Santina	Grazioli	2
Italy	IZSLER	Giulia	Pezzoni	2
Spain	LCV	Montserrat	Agüero García	2
France	ANSES	Stephan	Zientara	2
France	ANSES	Labib	Bakkali-Kassimi	2
North Macedonia	FVMS	Kiril	Krstevski	2
EuFMD	EuFMD	Pam	Hullinger	2
Bulgaria	BFSA	Tsviatko	Alexandrov	3
Belgium	SCIENSANO	Kris	De Clercq	3
Italy	IZSAM	Daniela	Morelli	3
Turkey	VDL	Sabri	Hacioglu	3
Israel	KVI	Michel	Bellaiche	3
EuFMD	EuFMD	Fabrizio	Rosso	3
EuFMD	EuFMD	Nick	Lyons	3
EuFMD	EuFMD	Filippo	Pedulla	0
EuFMD	EuFMD	Silvia	Epps	1
EuFMD	EuFMD	Benedetta	Arangio-Ruiz	2
EuFMD	EuFMD	Enrico	Mezzacapo	3

Annex 2

Special Committee for Surveillance and Applied Research
Terms of Reference

Background

The 43rd General Session in 2019 endorsed the Hold–FAST strategy with the extended mandate of the EuFMD to build on good principles for prevention and control of foot-and-mouth disease and extend them to similar transboundary animal diseases.
Within the Hold-FAST strategy, a categorisation of FAST diseases was carried out for which decisions on activities will need to be made, support provided, and competencies expected. The diseases were categorized as following:
- Category 1 : FMD, PPR, Capripoxviruses [criterion: all ruminant infections with similar risk factors to FMD and are currently present in multiple neighbourhood countries, and for which vaccination is an option].
- Category 2: Rift Valley Fever, Bovine Ephemeral Fever [criterion: ruminants are directly affected with major losses; schedule 1 surveillance for other FAST disease may provide a cost-efficient means to monitor risk or Early Warning for these AND evidence for circulation /disease in neighbourhood countries AND vaccination is needed in response].
- Category 3: Not included in the above since a) these are already well covered by GF-TADS SGE or for which co-ordination is well established at EU level: ASF, CSF, BT and AHS. For these, there may be a value and need to co-ordinate with others e.g. training resources, modelling impact
Given the extension of activities beyond FMD, a wider range of expertise (on multiple TADS) is required in the expert groups called upon to provide specific guidance. To this end, a new ***Special Committee on Surveillance and Applied Research*** (SCSAR) was created with the participation of centres of expertise for FAST diseases.

Members

The Technical Directors of different Institutes were nominated as Members of the SCSAR, giving the opportunity for these centres to select the most appropriate expert within their team for the specific Committee meetings or issue under consideration.
Members of the SCSAR and nominated participants to specific Committee meetings should have specific technical expertise recognised at European and/or global level on epidemiology and surveillance for one or more FAST diseases and should have one or more competencies from the following:
1. Expertise in the epidemiology and laboratory diagnosis of schedule 1 or 2 FAST diseases and strong working connections with EU-RL or competent laboratories to support activities.
2. Expertise in potential vaccines for assessment of their potential use against FAST in Europe, and/or studies on the performance of vaccines against one or more FAST diseases.
3. Expertise in specialised disciplines that are considered critical for planning or response to FAST diseases, such as surveillance and control in wildlife.

It is assumed these experts have a working knowledge of contingency plans and control measures applicable in the EU, and are engaged in relevant research and therefore have a very good understanding of the research gaps and priorities.

Terms of Reference

Provide guidance and assistance to the Commission for the implementation and evaluation of surveillance for FAST diseases aimed at improving the early detection of FAST circulation in high risk areas of Europe, European neighbourhood and beyond
Provide advice on training and support needed for the implementation of integrated surveillance in high risk locations, ensuring the adoption of efficient models of collaboration that can maximise the use of samples collected and the value of different risk information to risk mapping of FAST virus circulation
Ensure guidance for the functioning of network between the REMESA laboratories and the FAST disease reference centres (EU-RL and OIE-RL and others) in the EuFMD countries
Assist in the identification of reference laboratories in the European neighbourhood able to confirm infections, where there is no EU Reference laboratory.
Provide support for identifying gaps in knowledge or in the available tools needed for better preparedness and response in EuFMD Member countries
Assist in the definition of mechanisms for scaling up support on FAST diseases according to risk and for strengthening emergency arrangements for confirmation of suspected cases of FAST diseases (particularly where there is no EU-RL)
Contribute to define the applied research topics that provide the greatest overall value for money, which may be either generic (to multiple TADS) or focus on a specific one. At the request of the Executive Committee, provide scientific and technical assessment of proposals for research put forward for funding [or other support] by the Commission.

Members of the SCSAR (43rd General Session 2019)

Name	Country	Title
Montse Aguero	Spain	Technical Director, Laboratorio Central de Veterinaria (LCV)
Tsviatko Alexandrov	Bulgaria	Deputy Executive Director, Bulgarian Food Safety Agency (BFSA)
Nicola D'Alterio	Italy	Director of Health, Istituto Zooprofilattico Sperimentale Abruzzo e Molise (IZSAM)
Michel Bellaiche	Israel	Deputy Director, Kimron Veterinary Institute
Giorgio Varisco	Italy	Head, National FAO-OIE Reference laboratory for FMD & Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (IZSLER)
Abdulnaci Bulut	Turkey	Veterinary FMD Expert, Sap Institute
Kris De Clercq	Belgium	Director of Virology & Head of the Unit Vesicular and Exotic Diseases, Sciensano Institute
Cristian Gortazar	Spain	Head, National Wildlife Research Institute IREC, Univ. Castilla-La Mancha (IREC)
Christian Griot	Switzerland	Director, Institute of Virology and Immunology (IVI)
Miguel Angel Jimenez Clavero	Spain	Head, Animal Health Research Center, Centro de investigation en sanidad animal (CISA)
Don King	United Kingdom	Head, Vesicular Disease Reference Laboratory Group, The Pirbright institute
Kiril Krstevski	North Macedonia	National reference lab network of Balkan countries/Faculty of Veterinary Medicine Skopje
Renaud Lancelot	France	Veterinary Epidemiologist, Centre de coopération internationale en recherche agronomique pour le développement (CIRAD)
Phaedra Eblé	Netherlands	Statutory Task Unit Transmissible Diseases, Wageningen Bioveterinary Research - Lelystad
Thomas Mettenleiter	Germany	President, Friedrich Loeffler Institute (FLI)
Fahriye Sarac	Turkey	Director, Pendik Veterinary Control and Research Institute
Cevdet Yarali	Turkey	Deputy Director, Veterinary Control Central Research Institute
Stephan Zientara	France	Assistant Director, Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (ANSES)

Other centres of expertise proposed to be contacted for specific diseases

Name	Country	Institution
Casals Jordi	Spain	Researcher, CRESA (for LSD, RVF)
Miguel Ángel Miranda	Spain	Senior Lecturer, Universidad de Zaragoza

Working arrangements and Frequency of meetings

The extent of annual input is not likely to be more than 5 working days.

The members should be ready to respond to telephone and e-mail communications on a one to one basis in their area of expertise, from the Secretariat team, associated with specific issues arising from activities.

There is always the opportunity to do more, and it is assumed that there will be a good fit between the EuFMD activities and the type of work sought by the member or his/her institution. Potential conflicts of interest will be managed in such a way as to ensure transparency of process but allows the expertise/facilities associated with the member to be contracted to undertake the work involved.

One or two face-to-face (F2F) meetings will be held each year, as needed to ensure a good level of co –ordination and understanding between members and the Secretariat (and its staff managing field activities). Online (virtual conferencing) meetings may also be used.

Financial /Budget

Members will be supported (travel and allowances) as per the FAO normal procedures, for missions and meetings.

Annex 3

Exercise/Breakout group 1: Optimizing surveillance

(Chair: Don King, facilitator: Melissa McLaws)

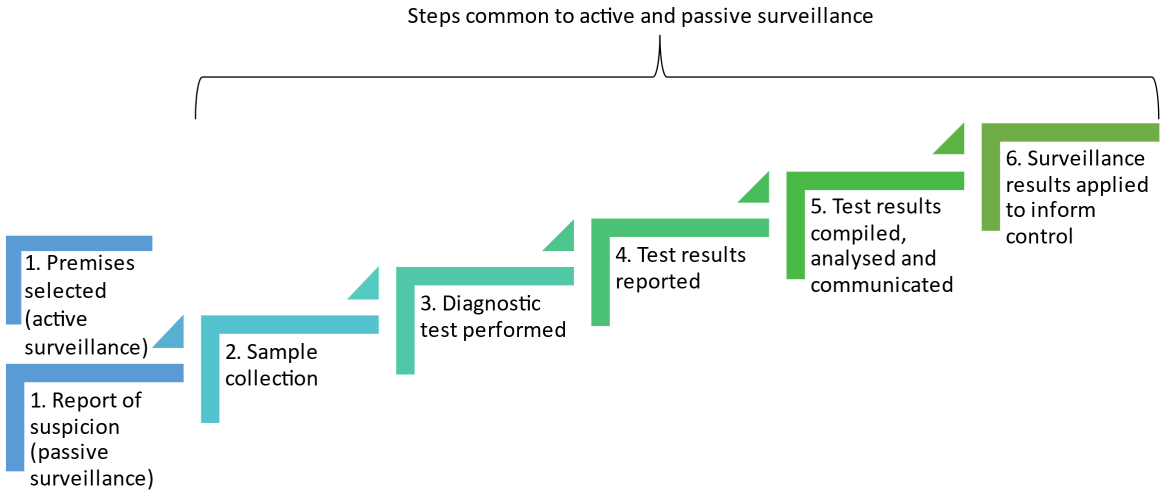
In this breakout group, we will discuss possible indicators that could be used to assess and monitor components of active and passive surveillance systems, and seek input as to how the EuFMD can most effectively engage with European neighbouring countries (Pillar 2) and share the results of our work with EuFMD MS.

Disease monitoring and surveillance systems are the foundation of an effective, evidence-based control strategy through the provision of information about the temporal and spatial patterns of disease.

As well as enabling **more effective control** in endemic countries, improved surveillance in the European neighbourhood can also reduce the threat of FAST diseases to EuFMD MS by **enhancing confidence** in the information available to risk assessors and risk managers to prepare for and mitigate the risk of an incursion.

The EuFMD currently publishes two quarterly reports summarizing available surveillance information: one for FAST diseases in the European neighbourhood and a second (with the WRL) on the Global FMD situation. These reports are intended to enable risk managers in the EuFMD MS keep up-to-date with respect to the disease risk in the European neighbourhood.

A flowchart of a generic surveillance system is provided below, illustrating that the system is composed of a series of steps that must be completed for the system to function properly. If any one step does not perform correctly, then the system is compromised.



Tasks:

Prior to the meeting

1. Review the Quarterly FMD report and the FAST disease report

2. **To be completed and sent back by Jan 18 to** EuFMD@fao.org
   In the table below, please suggest SMART[2] indicators that could be used to measure the performance of each step in the surveillance system.
   a. Define at least one and a maximum of three indicators per step
   b. Try and identify indicators that would be feasible to collect using existing data (for example, using your country as a point of reference).

[2] Specific, Measurable, Attainable, Relevant, Time-bound. See here for more information

Surveillance step	Indicators
1. Suspect cases are reported (passive surveillance)	*E.g., Number of suspect cases reported each year per district, per FAST disease*
2. Premises selected (active surveillance)	
3. Sample collection	
4. Diagnostic testing and laboratory capacity	
5. Report test results	
6. Test results compiled, analysed and communicated	
7. Use of surveillance information to improve control	

For discussion during the meeting

3. Could the indicators defined in the table above be useful to assess attributes relevant to the overall performance of surveillance system (e.g. sensitivity, timeliness, cost, representativeness)? If so, how?

4. Based on your review of the Quarterly FMD report and/or the FAST disease report, which elements are the most useful, and is any key information missing that would be needed to inform the risk of FAST diseases to EuFMD members?

5. What are key gaps in knowledge and research priorities, with respect to optimizing the surveillance of FAST diseases?

6. How can the EuFMD more effectively engage with European neighbourhood countries to improve surveillance?

Breakout group 2: Diagnostic capacity in Member countries during crisis

(Chair: Kiril Krstevski, facilitator: Pamela Hullinger)

Maintaining sufficient, scalable diagnostic capacity at all stages of disease crisis is of great importance for the effective response and successful disease containment and control. In this breakout group we try to identify the key elements for sufficient, scalable diagnostic response and seek inputs on how EuFMD can shape its support to contribute toward improved laboratory preparedness and diagnostic capacity in the EuFMD MS.

Tasks:

To be completed and sent back by Jan 18 to EuFMD@fao.org:

1. The diagnostic capacity of laboratory is a result of different factors related to availability and adequacy of equipment, trained staff, reagents/test kits, procedures for receiving, processing and results reporting, etc. Please list (and score) the factors you consider as important indicators for the ability of the laboratory to effectively scale up its diagnostic capacity in crisis.

Factor	**Assign score 1 to 3 (1 - highest importance 2- medium importance 3- less importance)**
1.	
2.	
3.	
4.	
5.	
6.	
7.	

Some examples:

- *Availability of instruments for automation of testing processes, availability of reserve (back-up) instruments in case of failures, etc.*
- *Capability to train existing staff, and/or hire and train new staff, organize work in shifts, etc.*
- *Immediate sourcing of unexpectedly high quantities of reagents or test kits*
- *Flexibility to use alternative platforms/kits, procedures to quickly adapt and show equivalency for new testing protocols or use of alternative reagents or kits, etc.*

2. How might these factors and their ranking vary by FAST disease (FMD, PPR, Sheep/Goat Pox, RVF, and BEF)?

3. Would the existence of diagnostic bank for FAST diseases (some or all) be useful and applicable to EuFMD members? Please explain your answer.

For discussion during the meeting:

4. Please share your opinion on the following aspects relevant for setting up a diagnostic bank?

    - Which reagents or test kits must be included in the bank (e.g. PCR, ELISA, other) – can we foresee which reagents/components would most likely be in shortage in crisis?
    - How to estimate the minimum reasonable quantities to be held?
    - What would be the preferred arrangement for the reagents bank: storage of ready-to-use reagents (immediate delivery), reserved quantities to be produced if needed (takes more time to deliver), contract for IDIQ (indefinite delivery/indefinite quantity) access with rolling inventory or combined approach?
    - Would independent (external) batch quality control be needed and how it can be arranged (e.g. EU-RLs)

5. What innovative solutions could be used to improve the diagnostic response capacity of a laboratory? Which would be most beneficial and what barriers might exist to implementation? What are the research priorities in this regards?
    a. Use of software for exercising different crisis scenarios to assess potential diagnostic response gaps;
    b. Explore alternative mechanisms for extension of the national laboratory network in crisis – e.g. incorporating university labs, private labs, other testing centers, etc.);
    c. A framework/approach to potentially allow, for example:
        i. proficiency trained staff from other institutions to provide diagnostic support to a responding laboratory in a prolonged response.
        ii. The receiving and processing of FAST disease diagnostic specimens (via established biosecure protocols and as approved by the receiving CVO) by neighbouring country or regional laboratories to help provide additional test capacity in support of a large or prolonged outbreak response.
    d. Would laboratories find value pre-outbreak research to validate sample pooling strategies or population screening approaches (e.g. bulk milk or milk tanker testing for FMD) for FAST diseases to help make testing more efficient (more strategically leverage limited diagnostic capacity)? If so, what diseases or specimen types would be priorities?
    e. Other?

6. How can the EuFMD more effectively engage with member countries to improve diagnostic capacity for FAST diseases?

Exercise/Breakout group 3: Integrated disease surveillance and control

(Chair: Michel Bellaiche Facilitator: Nick/Fabrizio)

The third component of the Global FMD Control Strategy is "prevention and control of other major diseases of livestock", which is a recognition of the fact that improving control of one disease (for example by progressing along the Progressive Control Pathway for FMD) and strengthening the veterinary services should also contribute to the control of other diseases. There may be sensible and cost-effective combinations of activities including vaccination, epidemiological investigation, diagnostic activities and treatments.

Tasks:

Prior to the meeting **(to be completed and sent back by Jan 18 to** EuFMD@fao.org)

1. Please fill in the matrix below, indicating where surveillance and control activities could be integrated for FAST diseases in Pillar 2 countries, for example: vaccination campaigns, surveillance including serosurveys, prophylactic treatments, awareness campaigns, post-vaccination monitoring.

   Possible activities that could be integrated for PPR and FMD are shown as an example.

	BEF	FMD	LSD	PPR	RVF
BEF					
FMD				(example) • Vaccine campaign • serosurvey	
LSD					
PPR					
RVF					

2. For each entry in the matrix, provide any examples of where this integration is already occurring

For discussion during the meeting

3. What are the barriers to this integration, and how can they be overcome?

4. What are the gaps in knowledge and research needs for integrating these activities?

5. How can the EuFMD more effectively engage with European neighbourhood countries to improve surveillance (including but not limited to integration) and post-vaccination monitoring?

Annex 4

Report of the exercises

Exercise group 1

1. *Using the table provided, please suggest SMART[3] indicators that could be used to measure the performance of each step in the surveillance system.*

Surveillance step	Indicators
1. **Suspect cases are reported (passive surveillance)**	• **Number of suspect cases reported each year per district, per FAST disease (and other diseases where FAST diseases should be differential)** - By farm-type (intensive, extensive, game, wildlife) - total number of farms per province in the same period. • **Estimated sensitivity and specificity of passive surveillance is available and taken into account for determining degree of confidence of surveillance** • **Average time (nº of days) from first suspicion to report** • More than 1 qualified veterinarian per e.g. 10 000 cows • The active prepared plan for passive surveillance reviewed • Marking the regions where suspected cases are reported on the map monthly and tracking the spread by creating animated video annually
• **Premises selected (active surveillance)**	• **Number of animals/premises checked** - Per district, year, disease, high risk area - Per total number farms in area - Statistically significant - Sites/regions for wildlife - Relative to the active surveillance plan • **Estimated sensitivity and specificity of active surveillance is available and taken into account for determining degree of confidence of surveillance** • Number of vets involved in active surveillance • The active surveillance should be risk-based E.g. X number of farms with the highest risk of introduction of disease. - Sampling based on risk assessment • A report for risks for transmission in the country should be available to be able to obtain this. • The active prepared plan for active surveillance reviewed with timelines

[3] Specific, Measurable, Attainable, Relevant, Time-bound. See here for more information

Surveillance step	Indicators
	• Percentage of diseases obtained from veterinary visits to premises with cases of FAST diseases in the previous month • Periodicity of sampling (average days between two sampling times) Rating classification 1. Random sampling performed, clear sampling design (design prevalence, 95% confidence level, calculated sample size, inforce random selection of premises from an existing list of all premises); 2. systematic sampling; 3. convenience sampling
2. **Sample collection**	• **Number of samples collected** ○ Statistically significant ○ Quality of samples ○ Per FAST disease and species, include wildlife ○ Per active vs passive surveillance ○ Per farm per district ○ Per suspect case reported • (Governmental) protocols for sample collection for all different diseases (number of samples, type of samples) should be available • Estimated sensitivity and specificity per sample and per test taken into account for calculating number of samples to be taken and degree of confidence that can be obtained • Number of vets involved in the sampling • The active prepared plan for sample collection reviewed with timelines • availability of sampling kits for veterinarians • Disease investigation and evaluation of positivity rates in samples collected from premises where the disease occurred and closer to it. • Average time (days) from sample collection to submission to laboratory • Description and control of transport and storage conditions Rating classification 1 SOP and standardized material; 2 SOP, 3 no standardized sample collection
3. **Diagnostic testing and laboratory capacity**	• **Number of tests available/ that could be performed simultaneously** ○ Per disease, per laboratory, per reference technique ○ Per day, per year, in emergency situations ○ Maximum capacity for virus / antigen detection (plus throughput) should be known ○ Maximum number of samples for serology (plus throughput) should be known • **Se and Sp of each test used, is available and regular updated** • Number of regional labs able to perform test for FAST diagnosis

Surveillance step	Indicators
	○ Minimum number per geographical area (eg 1/100.000 km^2 • Proficiency test ○ number of proficiency test organised ○ Results of participation in yearly international PT test is available • - A validation report of each test used, is available and regular updated • Accredited stat laboratories available • Qualified laboratory personnel available • existence of a coordinated national laboratory network • Capacity for using filter paper or FTA card samples, in place • Number of suspected cases of FAST disease that are diagnosed (confirmed) in the lab, within XX days, through official and standardized methods/total number of samples collected within the active surveillance. • Proportion of pathogens (per FAST disease) adequately characterized to allow cluster detection. • The number of ring tests performed according to the instructions of the Official Reference lab <u>Rating classification</u> 1 <u>ISO 17025- accredited laboratory that regularly participates in proficiency testing and demonstrates that its procedures are fit for purpose</u>; 2 accredited laboratory; 3 non-accredited laboratory; number of trained personnel per geographical unit or country size
4. **Report test results**	• **Time from the date of collection of samples to the report test results** • Reports accessible for all relevant authorities • Test results are given together with a footnote mentioning: ○ the cut-off of the test ○ the Se and Sp of the test • Existence of a Laboratory information management system ○ Country should preferably have a database with all reports ○ Availability of a sample management system in place in the laboratory to facilitate traceability from sample reception to results analysis report • Results reported for wildlife • Number of suspect/confirmed cases reported ○ in passive surveillance ○ in active surveillance <u>Rating Classification:</u> 1 accredited laboratory that reports results according to ISE 17025; 2 non-accredited laboratory reporting according to ISO 17025; 3 any other kind of reporting; number of trained personnel per geographical unit or country size

Surveillance step	Indicators

5. **Test results compiled, analysed and communicated**	• **Periodically report of all findings (e.g. yearly per country or region)**
	  ○ combining surveillance results and test results with conclusions available and sent to competent authority and laboratory
	  ○ Number of reports, newsletters, bulletins with epidemiological information published per FAST disease in a year.
	  ○ Analysis by virologists, epidemiologists and if needed with other external experts (e.g. WRL)
	• Number of correctly compiled, analysed and communicated test results p geographical unit and year
	  ○ Incl for wildlife
	• Average time (days) from results compilation to communication.
	  ○ How long it takes to contact the premises where the cases has occurred and how much clinical control is made there.
	• Availability of database
	• Number of people involved in the FAST surveillance/number of the people involved in the surveillance system
	• - Feedback received by the laboratory
	• Existence of a health emergency response plan
	• Trainings and inter laboratory communication
	• Channels of communication of test results from laboratory to Animal Health Authorities
	• Evaluating the test results and evaluating the risk in the regions where there are cases or not.
	• Number of analytical epidemiological studies (case-control and cohort) performed

6. **Use of surveillance information to improve control**	• **Report with analysis of the positive and negative findings and a recommendation to improve control**
	  ○ Number of reports, or annual
	  ○ Recommendation should also be based on surveillance information from 'external' sources (FMD report, FAST disease reports)
	  ○ Report with conclusions sent to international organisations (EU, EuFMD, FAO, OIE) and neighbouring countries or region
	  ○ Follow-up action by neighbouring countries or region reported to international organisations (EU, EuFMD, FAO, OIE)
	  ○ Feedback from international organisations received by neighbouring countries or region
	  ○ Include wildlife surveillance information
	• Number of people trained to use and analyse surveillance information to improve control

Surveillance step	Indicators

	• Number of events, in which surveillance information was used to improve control per geographical unit and year
	  ○ Average time (days) from disease confirmation to decision taking on unfold control activity
	  ○ Number of activities for disease control triggered by surveillance data per year
	• Decrease in total number of confirmed cases per farm-province per FAST disease in a year.
	  ○ Comparison of the positive rates obtained from the tests between the premises and the rate of cases that the precautions applied in risky areas.

Exercise group 2

Summary of responses:

Q1: List of the factors considered as important indicators for the ability of the laboratory to effectively scale up its diagnostic capacity in crisis.

Category	Indicators
Personnel	Trained personnel, large number of people trained in diagnosis, capability to train existing and new staff rapidly, administrative procedures for rapid recruitment of new staff (internally and externally)
Lab supplies (Reagents/test kits/consumables)	Permanently available stocks in sufficient amounts Easy and quick procurement
Equipment/Space	Availability and adequacy of instruments, instruments for automation, quick administrative procedures for rapid equipment purchase
Lab operation	Quality system, Good sample management system (from sample reception to result reporting-LIMS), flexible protocols and equivalency assessment procedures, emergency plans, frequent exercises
National networks	Coordination and harmonization through national proficiency testing, meetings, trainings
International networks	International proficiency testing schemes, technical meetings, continuous communication and risk information exchange

Q2: How might these factors and their ranking vary by FAST disease?

All listed factors are very important for any disease response when a rapid scaling up in testing/diagnostic capacity is needed. However, the disease characteristics could determine the level of urgency and in this regards FMD and PPR would rank highest, followed by LSD, SPGP and BEF.

Q3: Would the existence of diagnostic bank for FAST diseases be useful and applicable to EuFMD members?

All Committee members responded positively and agreed on the usefulness and applicability of a diagnostic bank for the MSs. Difficulties to ensure permanent reserves of reagents for diseases not present in the MSs was suggested as important reason for having diagnostic bank.

Exercise group 3

Indicate where surveillance and control activities could be integrated for FAST diseases in Pillar 2 countries, for example: vaccination campaigns, surveillance including serosurveys, prophylactic treatments, awareness campaigns, post-vaccination monitoring.

Summary of the outcomes:

1. All surveillance field activities could potentially be combined (e.g. serosurveys, outbreak investigations, active surveillance for clinical disease) considering the different species affected and those that are vector-borne (i.e. for entomological surveillance). This is particularly the case for BEF about which relatively little is known. However, it is critical that stakeholders receive relevant feedback on surveillance activities.
2. The economic costs and benefits of combining these activities needs to be considered.
3. Samples taken from passive surveillance could be screened for other FAST diseases
4. Combined awareness campaigns for all FAST diseases could be considered
5. Overlaps in the role of biosecurity (and other control measures e.g of insects) in the control of multiple FAST diseases could be identified and emphasised in communicating with stakeholders.
6. The role of slaughterhouse surveillance could be considered for FAST diseases
7. Studies on combining vaccines are needed to ensure they can be used together, and if they can it would mean some simultaneous PVM activities could be conducted

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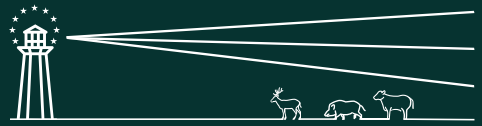

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EuFMD Committees

Executive Committee, Standing Technical Committee, Special Committee for Surveillance and Applied Research (SCSAR), Special Committee on Biorisk Management (SCBRM), Tripartite Groups.