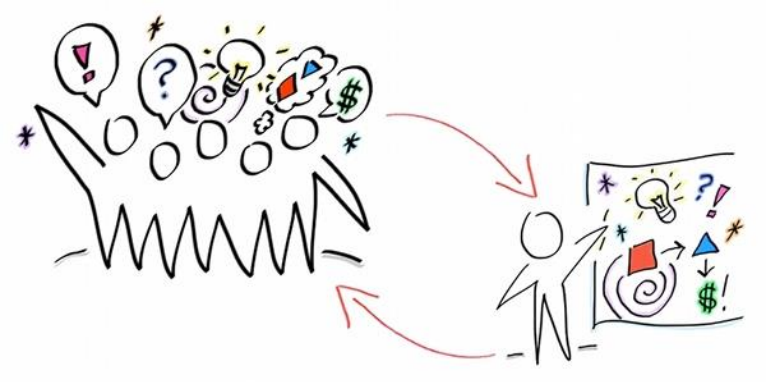

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REPORT

4th MULTISECTORAL EXERCISE ON RISK ASSESSMENT

MediLabSecure

Regional meeting

Dakar 20-24 January 2020

Figure 1 – Participants and Guests of the RM - Dakar

This report was compiled by the MediLabSecure (MLS) WP4 ISS team: Laura Amato, Maria Grazia Dente and Silvia Declich, and shared with the team which supported the development and implementation of the Multi-sectoral Risk Assessment (MRA) exercise.

This 4th MRA exercise was designed by the MLS WP4 ISS team (Maria Grazia Dente, Laura Amato and Silvia Declich) in collaboration with the IZSAM team (Paolo Calistri, Ombretta Pediconi, Daria Di Sabatino and Barbara Alessandrini), with the support of the MLS Focal Points (Aissam Hachid- Institut Pasteur d'Algérie, Soufien Sghaier- Institut de la Recherche Vétérinaire de Tunisie, Youmna Mghirbi- Pasteur Institute of Tunis, Kaouther Harabech – Tunisian Ministry of Health), the MLS Work Packages' Teams and MediPIET Project (Concha Martin de Pando and Adela Páez).

This exercise was designed as part of the project activities of the MediLabSecure project.

The project is funded by the European Union (Contract Number: N° 2018/402-247).

Contents

The 4th Multisectoral Risk Assessment (MRA)

The 4th Multisectoral Risk Assessment (MRA)[1] Exercise was designed to foster small group discussion on the status of Rift Valley Fever (RVF) surveillance in the region of Sahel and Maghreb and to exercise in assessing level of risk at country level with the support of the methodology applied by FAO for the Risk Assessment for RVF in Niger (March 2017).

Objectives

The goals of this exercise were:

- To enhance knowledge (and capacity) on multi-sectoral/integrated RA for RVF;
- To make the participants aware of RA methodologies to be applied at national level;
- To practice multi-sectoral collaboration for risk assessments that require exchange of information, expertise and experience.

Target audience

This exercise was held on the second day of the MediLabSecure Regional meeting.

Invited participants to this event included Focal Points from all the sectors involved in MLS:

- Laboratory staff from human and veterinary sectors
- Entomologists
- Public Health officials
- Veterinary Officers

Most participants were mid-career/senior staff and brought high cumulative expertise from the different sectors in each country.

Enhancing abilities

Once the participants had completed this exercise, they should be able to:

- Describe how a MRA for RVF could be conducted
- Estimate the added value and feasibility of MRA in their national context
- Assess the risk for RVF transmission in their countries

[1] Multisectoral Risk Assessment (MRA): assessment with the concomitant participation of all the relevant sectors involved in the surveillance of a given pathogen.

Documentation & materials

MATERIALS
For the Facilitator: • Facilitator Guide • FAO RVF RA in Niger • Background information and selected references on RVF (Annex 1) • National information on RFV provided by the countries involved in the exercise (Annex 2) • Risk questions & Multisectoral added value (Annex 3a & 3b) • PowerPoint® Template slides for restitution (for the Rapporteur, Annex 4a & 4b) **Distributed to all Participants one week in advance by e-mail:** • Background information and selected references on RVF (Annex 1) • National information on RFV provided by the countries involved in the exercise (Annex 2) **Distributed to all Participants *in situ* by the ISS (WP4) team:** • Pre-test (after MRA Introduction) and post-test (at the end of Exercise) • Exercise Evaluation Form **Distributed to all Participants *in situ* by the Facilitators:** • Participants' guide • Risk questions & Multisectoral added value (Annex 3a & 3b)

Participants and group work setup

The exercise involved participants, external experts and members of MLS WP teams attending the Regional Meeting, to a total of 29 Participants and 14 Facilitators. The area of expertise of the overall involved people is shown in Figure 2.

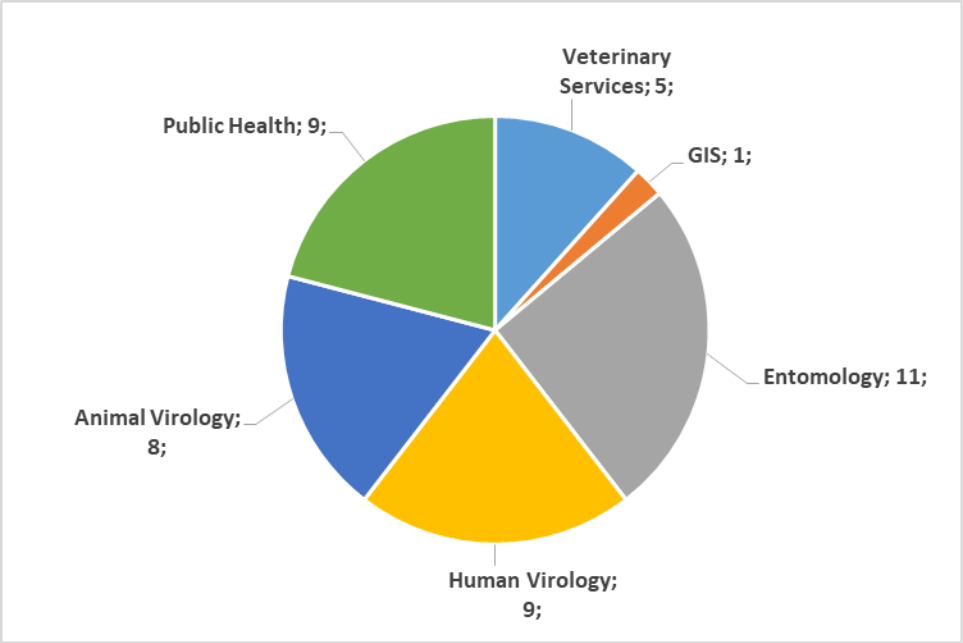

Figure 2 - Areas of Expertise of participants and facilitators of the exercise

Participants to the exercise were divided in two groups by country, each one supported by 7 and 6 Facilitators, respectively, plus one coordinator (see Table 1).

Table 1 - Group setup

Groups	Group 1 – No RVF outbreaks	Group 2 – RFV outbreaks occurred
N. Participants	16	13
N. Facilitators	7	6
N. Coordinator	1	
Countries	*Algeria* *Burkina Faso* *Mali* *Morocco* *Tunisia*	*Mauritania* *Niger* *Senegal*

Moreover, we adopted a Training-of-Trainers (ToT) approach aimed at consolidating capacities and support sustainability: four MLS Focal Points who had already taken part in the previous MRA Exercise on RVF in Tunis (July 2017) were involved in the development of the new Exercise and during its execution as facilitators. Specifically, three of them were from Tunisia and one from Algeria.

Each group conducted the exercise in a separate breakout room. The proposed allocation of the countries in the two groups above is based on the countries epidemiological situation for RVF. In fact, the countries in Group 1 have not been affected by RVF outbreaks so far or reported only sporadic cases (Mali) while in the countries of Group 2 RVF outbreaks already occurred.

Considering the different epidemiological situation of the countries in the two Groups, the risk questions proposed were slightly different: Group 1 worked on the Risk questions of Annex 3.a and Group 2 worked on the Risk questions of Annex 3.b (Figure 3).
At the end of the Exercise, Group 1 compiled the Restitution slide of Annex 4.a, and Group 2 of Annex 4.b.

Figure 3 – Breakout room and discussion in progress of Group 2

The Exercise step by step

STEP 1: Epidemiology Training

Location: Plenary
Time: Monday, January 20th from 1:30 to 5:30pm

Objective:

- To enhance knowledge on Risk Assessment (RA) methodologies (Figure 4)

Figure 4 - Dr. Paolo Calistri in "Introduction to Risk Assessment"

STEP 2: Introduction to MRA Exercise

Location: Plenary
Time: Tuesday January 21st from 11:00 to 12:00 am

Objective:

- To introduce the participants to the multi-sectoral RA exercise on RVF

Content:

- 60' Presentation of the RA Exercise on RVF
- 15' Participants pre-test

STEP 3: RA exercise in groups

Location: Breakout rooms
Time: Tuesday January 21st from 1:30 to 3:30 pm

i) Identify potential risks for your country by discussing with the group

Location: Breakout room
Duration: 45 minutes

Objectives:

- Identify potential risks for RVF transmission in your country by discussing the risk questions (Annex 3)

Content:
This step was done by involving in the discussion all the countries of the group but with all the sectors of the same country sitting nearby for possible "consultation".

Each participant was asked to follow the risk questions and to discuss and verify the possible replies with the colleagues of the other sectors in the group.

Facilitators guided the identification of measures and options for each question considering their ***feasibility*** (based on national/local conditions, available resources etc.), and their ***effectiveness*** (how much it is successful in producing the desired result/ the extent to which targeted problems are solved).

ii) Estimate the risk level in your country by consensus with the members of your country

Duration: 45 minutes

Objectives:

- Provide replies to the questions 1, 2 and 3 by country
- Assess level of risk for RVF in your country (question 4) on the basis of the replies to questions 1, 2 and 3
- Estimate the added value of multi-sectoral RA in the national context (Annex 3)

Content:
The two Groups were divided in sub-groups of only one country each with all the sectors represented, as the outcome were the replies to the questions and the level of risk by country.

Aspects that have been considered by the two Groups to assess the risk level:
- Replies provided for the risk questions (for example if the country is well prepared in terms of preparedness, prevention and control the risk could be reduced);
- Epidemiological situation of RVF/RVFV in the neighboring countries;
- Procedures/Law for animal movements.

Particular attention was paid to the multi-sectoral added value for each *Question* (e.g. *"Is the added value/the importance of identifying preparedness measures for RVF in collaboration with all the sectors low, medium or high?"*).

Each country provided the multi-sectoral estimated level of risk and the multi-sectoral added value/importance to the rapporteur to prepare the restitution slides.

iii) **Preparing restitution slide by group (Annex 4.a and 4.b)**

Duration: 30 minutes

Rapporteur Task: Prepare restitution slide

STEP 4: Restitution in plenary

Location: Plenary
Time: Tuesday January 21st from 4:00-4:30 pm
Duration: 30 minutes plus 15' for post-test and evaluation

Objectives:

- Report the outcome of the RA exercise (restitution slide by group (Annex 4))
- Discuss differences between the two groups, possible doubts and uncertainties.

Content:

- 30' Presentation of the restitution slides by the rapporteurs
- 15' Participants post-test and Evaluation

Results

Restitution

In the afternoon of January 21, the rapporteurs of the two groups presented their slides in plenary commenting on the output of the exercise (see Annex 5.a and 5.b).
Here below, the answers to the risk questions are reported per each Group.

Group 1 (no outbreaks in the country so far) – Algeria, Burkina, Mali, Morocco, Tunisia

Q.1. Which risk factors affect the spread of RVF infection into ***new areas***?

1) Animal movements and trade;
2) Changing ecosystems **and** Social and economic instabilities;
3) Climate and weather changes.

Q.2. Which ***preparedness measures*** could be put in place to reduce the risk of RVF virus infection in your country?

Feasible:

1) Enhancing veterinary capacity to recognize clinical signs of RVF in animals **and** Increasing medical capacity to recognize clinical signs of RVF in humans;
2) Improving veterinary diagnostic laboratories;
3) Control animal movements/trade.

Effective:

1) Improving veterinary diagnostic laboratories **and** Enhancing veterinary capacity to recognize clinical signs of RVF in animals;
2) Improving public health diagnostic laboratories;
3) Control animal movements/trade.

Q.3 Which **prevention and control options** can be put in place to reduce the impact of RVF spreading?

Feasible:

1) Eliminating insects and controlling mosquitoes **and** Culling sick and infected animals;
2) Animal mass vaccination **and** Control of animal movements/trade **and** Partial stamping out – culling of sick animals and vaccination of the remainder;
3) Communication campaigns for farmers and other professionals to reduce the risk of animal-sourced infections.

Effective:

1) Culling sick and infected animals;
2) Eliminating insects and controlling mosquitoes **and** Control of animal movements/trade;
3) Partial stamping out – culling of sick animals and vaccination of the remainder – **and** Communication campaigns for farmers and other professionals to reduce the risk of animal-sourced infections.

Q.4 In view of the repeated outbreaks of RVF in recent years in some of West African countries:

- **4.a** What is the risk of RVF virus infection ***introduction*** to your country in the next 3–5 years?
- **4.b** What is the risk of the RVF virus ***persisting and spreading*** once introduced into your country?

See possible choices reported in Table 2 and results reported in Table 3 below.

Table 2 – Possible choices for Q.4

0	1	2	3	4	5	6
Extremely unlikely 0%–1% Chance	Very unlikely 1%–10% Chance	Unlikely 10%–30% Chance	As likely as not 33%–66% Chance	Likely 66%–90% Chance	Very likely 90%–99% Chance	Extremely likely 99%–100% Chance

Table 3 – Answers to Q.4 (Group 1)

Country	4.a	4.b
	introduction	***persisting and spreading***
Algeria	*Unlikely - 10%–30% Chance*	*Very unlikely - 1%–10% Chance*
Burkina Faso	*Likely - 66%–90% Chance*	*As likely as not - 33%–66% Chance*
Mali	*As likely as not - 33%–66% Chance*	*Likely - 66%–90% Chance*
Morocco	*Unlikely - 10%–30% Chance*	*As likely as not - 33%–66% Chance*
Tunisia	*Unlikely - 10%–30% Chance*	*As likely as not - 33%–66% Chance*

Q.5 Please rank the **importance of discussing the proposed questions in multidisciplinary teams** (animal and human virologists, entomologists and public health officers).

See results reported in Figure 5 below.

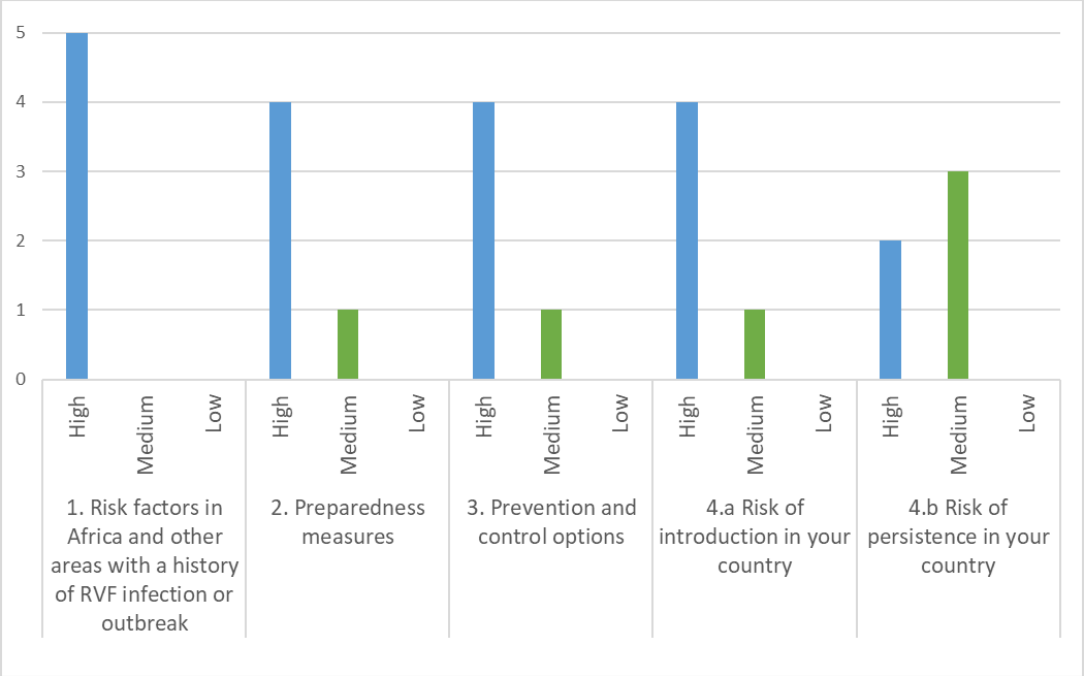

Figure 5 - Q.5 Importance of multi-sectorial assessment (Group 1)

Group 2 (countries with a history of RVF infection or outbreak) – Mauritania, Niger, Senegal

Q.1. Which risk factors affect the occurrence, persistence and spread of RVF infection in Africa and other areas ***with a history of RVF infection or outbreak***?

1) Animal movements and trade;
2) Climate and weather changes;
3) Technological underdevelopment;

Q.2. Which ***preparedness measures*** could be put in place to reduce the risk of RVF virus infection in Africa and other at risk areas?

Feasible:

1) Improving veterinary diagnostic laboratories;
2) Improving public health diagnostic laboratories;
3) Developing early warning systems based on regular animal testing **and** Enhancing veterinary capacity to recognize clinical signs of RVF in animals;

Effective:

1) Control of animal movements/trade;
2) Developing early warning systems based on regular mosquito testing;
3) Developing early warning systems based on regular animal testing **and** Improving public health diagnostic laboratories;

Q.3 Which **prevention and control options** can be put in place to reduce the impact of RVF spreading?

Feasible:

1) Eliminating insects and controlling mosquitoes;
2) Control of animal movements/trade;
3) Communication campaign for farmers and other professionals to reduce the risk of animal-sourced infections **and** Public communication campaigns on measures to reduce exposure to mosquito bites **and** Partial stamping out – culling of sick animals and vaccination of the remainder;

Effective:

1) Culling sick and infected animals;
2) Eliminating insects and controlling mosquitoes **and** Animal mass vaccination **and** Control of animal movements/trade;
3) Communication campaigns for farmers and other professionals to reduce the risk of animal-sourced infections;

Q.4 What is the **risk for RVF virus persisting and spreading** once introduced into your country?

- **4.b** What is the risk of the RVF virus ***persisting and spreading*** into your country?

See possible choices reported in Table 4 and results reported in Table 5 below.

Table 4 – Possible choices for Q.4

0	1	2	3	4	5	6
Extremely unlikely 0%–1% Chance	Very unlikely 1%–10% Chance	Unlikely 10%–30% Chance	As likely as not 33%–66% Chance	Likely 66%–90% Chance	Very likely 90%–99% Chance	Extremely likely 99%–100% Chance

Table 5 - Answers to Q.4 (Group 2)

Country	4.b
	persisting and spreading
Mauritania	*Very likely - 90%–99% Chance*
Niger	*As likely as not - 33%–66% Chance*
Senegal	*As likely as not - 33%–66% Chance*

Q.5 Please rank the **importance of discussing the proposed questions in multidisciplinary teams** (animal and human virologists, entomologists and public health officers).

See results reported in Figure 6 below.

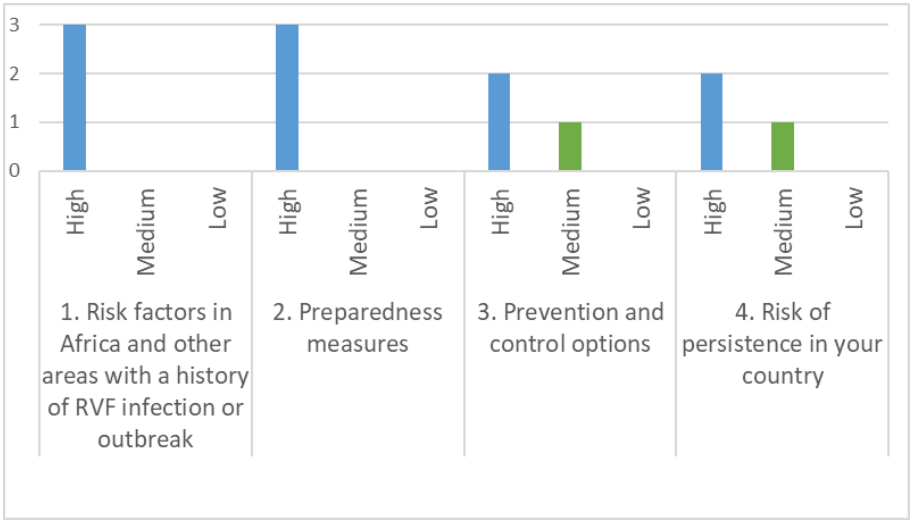

Figure 6 - Q.5 Importance of multi-sectorial assessment (Group 2)

Conclusions/comments

Taking into account all risk factors reported by each Country, and not only the most important three reported above, countries in Group 1 answered in a similar way to Q.1, reporting only 4 risk factors out of the 9 proposed. For Q.2, they highlighted 7 over 8 risk factors (for both the sub-questions), and 6 over 8 in Q.3 (for both the sub-questions).
In Group 2, the reported risk factors were 5/9 for Q1, 5/8 for Q.2 (for both the sub-questions), and 5/8 for Q.3 (for both the sub-questions).

Despite the different epidemiological situation in the countries of the two Groups (i.e. no outbreaks so far *versus* a history of RVF infection or outbreak), some risk factors and measure were reported by them both:

- **Q1.** – Animal movements and trade; Climate and weather change;
- **Q2. Feasible** – Enhancing veterinary capacity to recognize clinical symptoms of RVF; Improve veterinary diagnostic laboratories;
- **Q2. Effective** – Improving public health diagnostic laboratories; Control of animal movements/trade;
- **Q3. Feasible** – Eliminating insects and controlling mosquitoes; Control of animal movements/trade; Partial stamping out; Communication campaign for farmers;
- **Q3. Effective** – Culling of sick and infected animals; Eliminating insects and controlling mosquitoes; Control of animal movements/trade; Communication campaign for farmers.

Moreover, the added value of the multi-sectoral discussion was evaluated as "high" by most of the participants for questions 1, 2, 3 and 4a in Group 1, and all the questions for Group 2. A similar finding emerged from the previous MRA held in Tunis, confirming that the discussion in "setting the scenario" is highly facilitated by the presence of different sectors (human, animal and entomological).

Pre and Post tests

WP4 asked the 29 participants and the 4 ToT facilitators to fill in a pre and post-test questionnaire (see Annex 6) with the following open questions, to have some indications on the weak aspects and gaps of the participants on RA and on aspects of the exercise to be strengthened or modified:

1. Please rank three relevant risk factors/drivers for the occurrence, persistence and spread of RVF infection ***in Africa and other areas with a history of RVF infection or outbreak.***
2. Please rank three relevant risk factors/drivers for the spread of RVF infection into ***new areas***.
3. Please rank three relevant ***feasible*** measures to increase the rapidity of the response to RVF infection.
4. Please rank three relevant ***effective*** measures to increase the rapidity of the response to RVF infection.
5. Please rank three relevant ***feasible*** prevention and control options for reducing the impact of a possible RVF spreading.
6. Please rank three relevant ***effective*** prevention and control options for reducing the impact of a possible RVF spreading.
7. List ***kind of documents*** to rely on to assess the level of risk for RVF in your country
8. List ***institutions/depts./experts*** to involve to assess the level of risk for RVF in your country and explain the reasons

Thirty people completed pre and post-tests (26 participants and 4 ToT facilitators):

- One third of the participants (9/26) did not answer to one or more questions: seven in the pre-test, five in the post-test and three in both. The ToT facilitators were able to reply to all the questions of the pre-test and post-test. Beside this, there were not substantial differences between the tests of the participants and the tests of the ToT facilitators;
- Some risk-factors proposed during the Exercise have been reported already in Q1 and Q2 of the pre-tests, and to an higher extent in the post-tests (Table 6);

Table 6 - Report of presented risk factors in pre and post tests

Risk Factor	PRE TEST	POST TEST	PRE TEST	POST TEST
	Risk factors for the occurrence, persistence and spread in Africa and other areas with a history of RVF infection or outbreak		Risk factors for the spread of RVF infection into new areas	
	Q1	**Q1**	**Q2**	**Q2**
Animal movements and trade	66% (20/30)	90% (27/30)	76% (23/30)	90% (27/30
Climate/weather changes	26% (8/30)	60% (18/30)	16% (5/30)	50% (15/30)
Ecosystem changes	13% (4/30)	43% (13/30)	3% (1/30)	43% (13/30)
Social/economical/political instabilities	3% (1/30)	53% (16/30)	10% (3/30)	33% (10/30)

Moreover, answers to Q1-6 of the post-tests were in line with what was stated in the Restitution slides;

- 90% (27/30) and 93% (28/30) of the overall participants were able to mention general *kind of documents* in the pre-test and post-test respectively, with only few examples of existing *ad hoc* documents useful for RA on RVF in their countries (es. "bulletin EPIVET-Mali", "KoBoToolbox", etc);
- Regarding the mention of *institution/depts./experts* to involve to assess the level of risk for RVF and why, 93% (28/30) and 90% (27/30) correctly mentioned the different sectors involved, in the pre and post-test respectively. Nevertheless, in 5 cases of the pre-test and 5 cases of the post-test (same number but different people) the mention was very generic (es. "entomology experts – for entomology", "virologists – for virology", etc);

The exercise evaluation

At the end of the exercise, all participants and facilitators were asked to compile an evaluation form (Annex 7). Overall, 27 participants and 10 facilitators provided the evaluation questionnaire.

Statement questions

Q1. Respond to the following statements;

a. Exercise objectives were well communicated
b. The discussions were useful
c. Adequate time was allotted for explanations/practices
d. Overall the exercise was satisfactory

The majority of participants "strongly agree" or "agree" with sentences a, b, and d. Regarding question c, 16 (43%) "strongly agree" or "agree", 14 (38%) "neither agree nor disagree", and 7 (19%) "strongly disagree or disagree".

Answers to the four provided statements are shown in Figure 7.

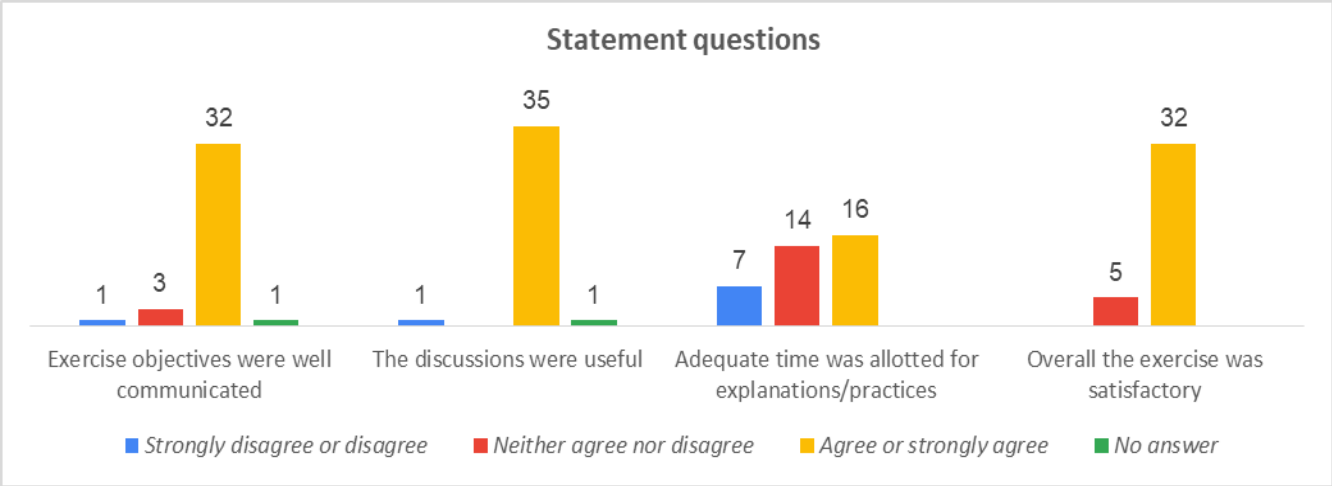

Figure 7 - Answers to the statement questions

Contents

Regarding the contents of the Exercise, both participants and facilitators reported finding particularly interesting the multi-sectoral/cross countries discussion, and to a lesser extent the participants' motivation, the objective of the exercise, its methodology and the ToT approach, and the MLS ambience with the presence of facilitators (Figure 8).

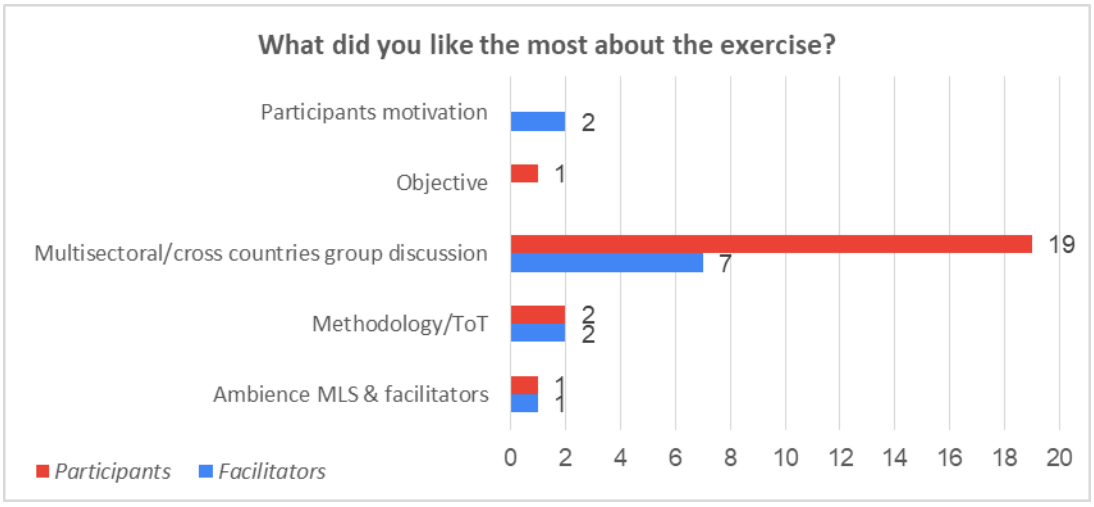

Figure 8 - Results of the question "What did you like the most about the exercise?"

Moreover, the majority of participants and facilitators suggested the allocation of more time as a way to enhance the Exercise. Other suggestions regarded the improvement of the methodology (i.e. improve the questions, documentation and materials, and ameliorate the role of facilitators) and of some explanations of the exercise. Moreover, others suggested to give relevant answers or remarks at the end, to use French language, to involve experts from the environment and climate sector, and to carry out an outbreak exercise (which was actually already foreseen for the day after, as part of the Regional Meeting activities). The results are reported in Figure 9.

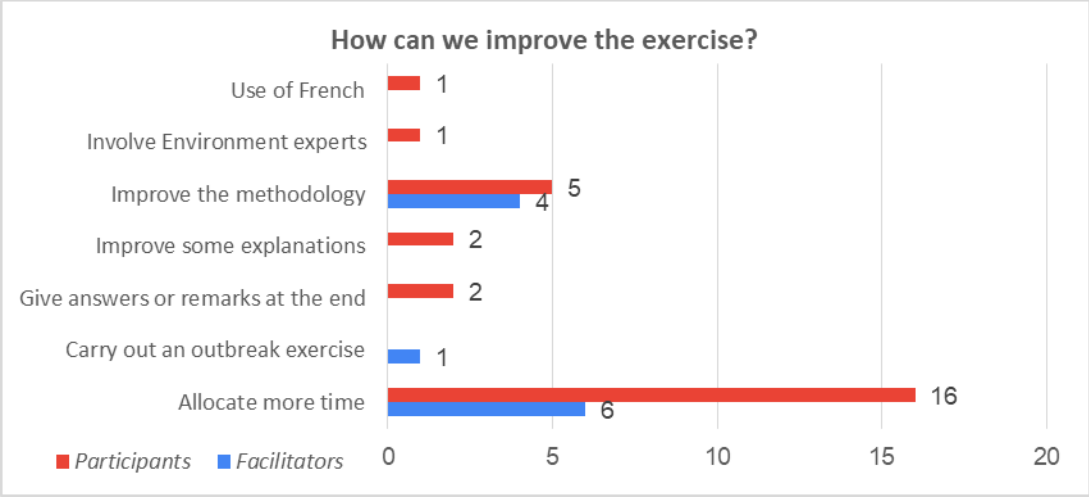

Figure 9 - Results of the question "How can we improve the exercise?"

Conclusion

In conclusion, the 4th MRA proved to be successful.

Participants and facilitators explored a RA methodology and, through the multi-sectoral discussions, enhanced their knowledge on RA for RVF.
The feedback confirmed the high added value of the cross sectoral/country debates, which were allowed by the concomitant presence of representatives from the different sectors and countries.

The results of the pre and post-tests highlight the usefulness of these exercises to raise awareness on potential risk factors, not always considered by the participants (i.e. climate changes or social instability as reported in Table 6).

In addition, it seems that having been involved in previous exercise had a positive and long lasting effect: MLS Focal Points who had already taken part in the previous MRA Exercise on RVF in Tunis (July 2017) showed abilities in supporting the implementation of the exercise and were able to reply to all the pre-test questions, unlike one third of the participants.

Finally, it has to be mentioned that the discussion during the restitution in plenary highlighted several aspects related to the possible measures to be implemented which would need further insights in *ad hoc* workshops on preparedness and response (i.e. Eliminating insects and controlling mosquitoes: where and when could be feasible and effective?; Animal mass vaccination: when? In which conditions? To which extend is it possible to control animal movements and trade?).

Annexes

Annex 1 Background information and selected references on RVF

Annex 2 National information on RFV provided by the Countries involved in the exercise

Annex 3 Risk questions & Multi-sectoral added value (3.a and 3.b)

Annex 4 PowerPoint® Template slides for restitution (4.a and 4.b)

Annex 5 Groups restitution slides (5.a and 5.b)

Annex 6 Pre-test and post-test questionnaires

Annex 7 Exercise Evaluation Form

Annex 8 Facilitator's Guide

Annex 9 Participant's Guide

4th MULTISECTORIAL EXERCISE ON RISK ASSESSEMENT
21 January 2020
Pasteur Institute Dakar

Annex 1.

Background information on RVF [1-5]

Rift Valley fever (RVF) is a peracute or acute zoonotic disease of domestic ruminants. It is caused by a single serotype of a mosquito-borne virus of the *Bunyaviridae* family (genus Phlebovirus).
The virus was first identified in 1931 during an investigation into an epidemic among sheep on a farm in the Rift Valley of Kenya.

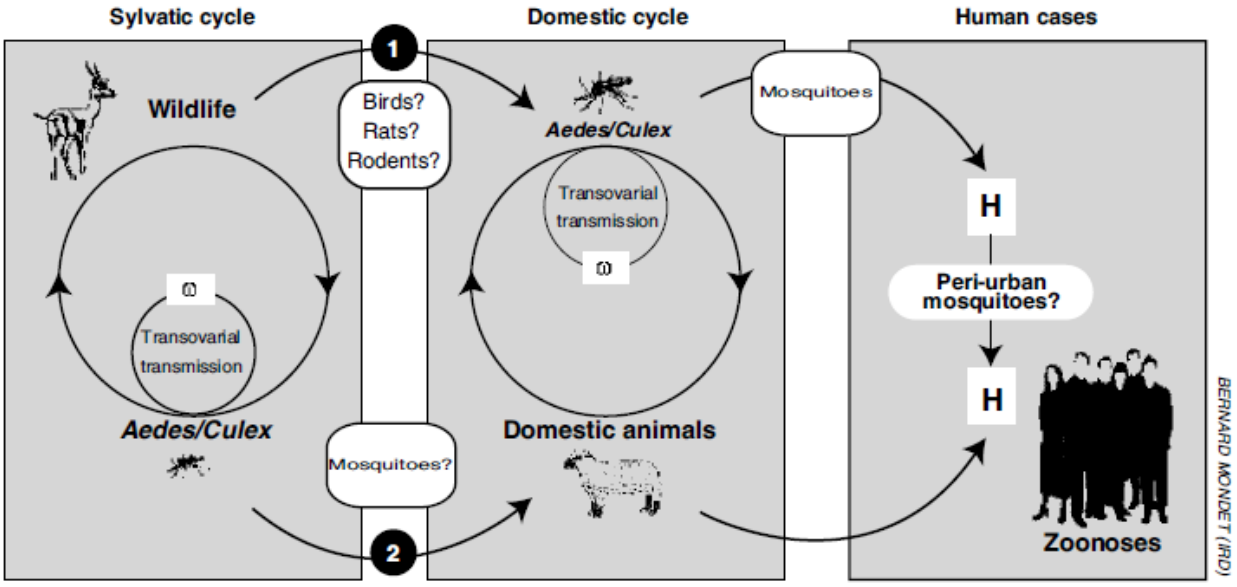

Fig. 1 Theoretical cycle of RVF virus transmission [1]

The disease occurs in climatic conditions favouring the breeding of mosquito vectors and is characterized in animals by abortion, neonatal mortality, and liver damage. The disease is most severe in sheep, goats and cattle. Older, non-pregnant animals, although susceptible to infection, are more resistant to clinical disease. There is considerable variation in the susceptibility to RVF of animals of different species. Camels usually have an unapparent infection, but sudden mortality. Like in cattle, the disease in camels is associated with high rates of spontaneous abortion or neonatal mortality.

Humans are susceptible to RVFV and are infected through contact with infected animal material (body fluids or tissues) or through bites from infected mosquitoes.
Certain occupational groups such as herders, farmers, slaughterhouse workers, and veterinarians are therefore at higher risk of infection than the general population. Humans are dead-end hosts, which means that they are unable to transmit the virus to the vector.

Mild form of Rift Valley Fever in humans

The interval from infection to onset of symptoms for RVF varies from 2 to 6 days. Those infected either experience no detectable symptoms or develop a mild form of the disease characterized by a feverish syndrome with sudden onset of flu-like fever, muscle pain, joint pain and headache. Some patients develop neck stiffness, sensitivity to light, loss of appetite and vomiting; in these patients, the disease, in its early stages, may be mistaken for meningitis. The symptoms of RVF usually last from 4 to 7 days.

Severe form of Rift Valley Fever in humans

While most human cases are relatively mild, a small percentage of patients develop a much more severe form of the disease. This usually appears as one or more of three distinct syndromes: ocular (eye) disease (0.5-2% of patients), meningoencephalitis (less than 1%) or hemorrhagic fever (less than 1%).

The total case fatality rate has varied widely between different epidemics but, overall, has been less than 1% in those documented. Most fatalities occur in patients who develop the hemorrhagic icterus form.

RVFV has also caused serious infections in laboratory workers. Due to high risk of exposure, all laboratory procedures must be performed in biosafety level 3 (BSL-3) facilities and veterinary practitioners involved in the collection of suspected RVF samples from infected animals should take appropriate biosecurity precautions.

Transmission pathways and protective measures

Although no human-to-human transmission of RVF has not been demonstrated, there is still a theoretical risk of transmission of the virus from infected patients to healthcare workers through contact with infected blood or tissues. Healthcare workers should implement standard precautions when handling specimens from suspected or confirmed RVF infected patients.

An inactivated vaccine has been developed for human use. However, this vaccine is not licensed and is not commercially available. It has been used experimentally to protect veterinary and laboratory personnel at high risk of exposure to RVF. Other candidate vaccines are under investigation.

During an outbreak of RVF, close contact with animals, particularly with their body fluids, either directly or via aerosols, has been identified as the most significant risk factor for RVF virus infection. Raising awareness of the risk factors of RVF infection as well as the protective measures individuals can take to prevent mosquito bites is the only way to reduce human infection and deaths.

Live attenuated and inactivated vaccines are available for vaccination programmes in animals. Although both have some disadvantages (need of several doses for the inactivated one or potential spontaneous abortions for the live vaccine), vaccination of ruminants is an option and the impact on control and prevention of the disease is relevant.

The main vectors for transmission of RVFV are *Aedes spp*. but many secondary vectors can also contribute (e.g. *Culex* and A*nopheles*, *Culicoides spp*. and other biting flies). The mosquitoes acquire the virus from feeding on infected animals and transmit the virus during the next meals. However, vertical transmission of the virus from mothers to theirs eggs is suspected. Since the eggs of these mosquitoes may survive for periods of up to several years in dry conditions and that rainfall facilitates mosquito eggs hatching, this would provide a potential mechanism for maintaining the virus in nature.

Low level of RVF activity may take place during inter-epizootic periods.

RVF should be suspected when exceptional flooding and subsequent abundant mosquito populations are followed by disease outbreaks in ruminants (abortions and/or newborn mortality with hepatic lesions). It can be potentially concurrent with the occurrence of an influenza-like illness in farm workers and people handling raw meat.

Epidemiology

RVFV is endemic in many African countries and may involve several countries at the same time or progressively expand geographically over the course of a few years. In addition to Africa, large outbreaks have been observed in the Arabian Peninsula and some Indian Ocean islands. These generally, but not exclusively, follow the periodic cycles of unusually heavy rainfall, which may occur at intervals of several years, or the flooding of wide areas favouring the proliferation of mosquitoes.

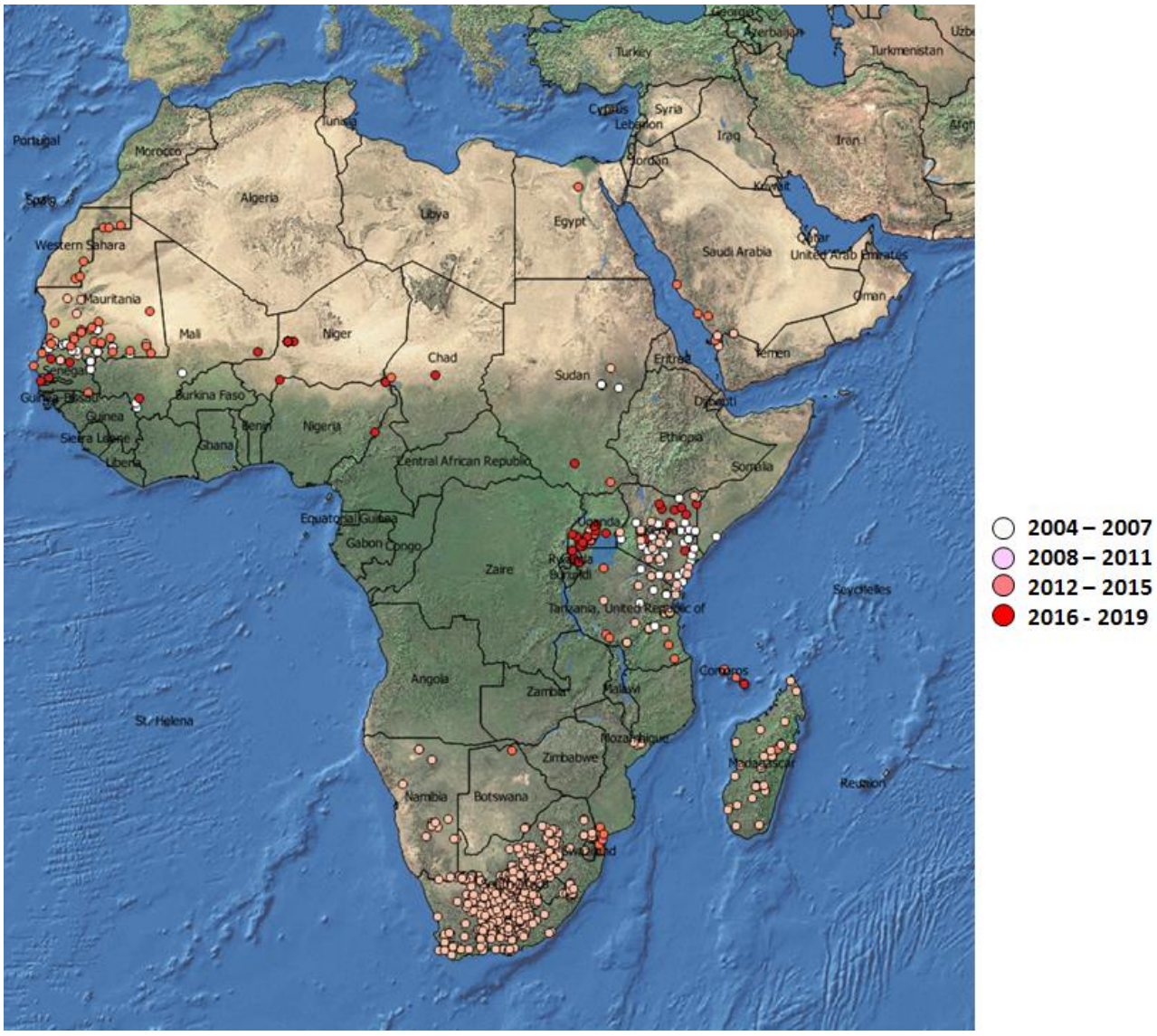

Fig. 2 Elaboration from EMPRES-i [4] by P. Calistri

RVF human outbreaks that have occurred since 2000 [6-8]:

2019, Sudan, According to the recent (5 Dec 2019) OCHA (UN Office for the Coordination of Humanitarian Affairs) update, the (human) RVF situation in Sudan, as of 26 Oct 2019, was the following: "a total of 345 suspected RVF cases -- including 11 related deaths -- reported in the states of Red Sea (128), River Nile (212), Khartoum (1), White Nile (1), Kassala (2), and Gedaref (1). The most affected age group is 15 to 45 years, which accounts for 83% of the total suspected cases. The male to female ratio is 2.6, with a high proportion of the cases being farmers (37.5 per cent). RVF is endemic in Sudan and 3 outbreaks affecting people have been documented in 1973, 1976, and 2008. During the outbreak in 2008, a total of 747 laboratory-confirmed cases were reported, including 230 deaths."

2019, Mayotte: As of August 2019, since the beginning of the circulation of the RVF virus in Mayotte, at the end of November 2018, 143 human cases have been reported

2018, South Sudan: 32 cases and 4 deaths in Eastern Lakes state, South Sudan on March

2017, Mail: in July Health officials in the west African country of Mali confirmed a single case of Rift Valley fever (RVF) virus infection in a 10-year-old boy from Oulessebougou.

2016, Republic of Niger: As of 11 October 2016, Ministry of Health reported 105 suspected cases including 28 deaths due to RVF in humans in Tahoua region.

2012, Republic of Mauritania: The Ministry of Health in Mauritania declared an outbreak of RVF on 4 October 2012. From 16 September 2012 (the date of onset of the index case) to 13 November 2012, a total of 36 cases, including 18 deaths, were reported from 6 regions.

2010, Republic of South Africa: From February to July 2010, the Government of South Africa reported 237 confirmed cases of RVF in humans, including 26 deaths from 9 provinces.

2008–2009, Madagascar: From December 2008 to May 2009, the Ministry of Health of Madagascar reported 236 suspected cases including 7 deaths.

2008, Madagascar: The Ministry of Health of Madagascar reported an outbreak of RVF on 17 April 2008. From January to June 2008, a total of 476 suspected cases of RVF, including 19 deaths, were reported from 4 provinces.

2007, Sudan: The Federal Ministry of Health of Sudan, reported an outbreak of RVF on 28 October 2008. A total of 738 cases, including 230 deaths, were reported in Sudan between November 2007 and January 2008.

2006, Kenya, Somalia and Tanzania: From 30 November 2006 to 12 March 2007, a total of 684 cases including 234 deaths from RVF was reported in Kenya. From 19 December 2006 to 20 February 2007, a total of 114 cases including 51 deaths was reported in Somalia. From 13 January to 3rd May 2007, a total of 264 cases including 109 deaths was reported in Tanzania.

2003, Egypt: In 2003 there were 148 cases including 27 deaths of RVF reported by the Ministry of Health of Egypt.

2000, Saudi Arabia and Yemen: There were 516 cases with 87 deaths of RVF reported by the Ministry of Health of Saudi Arabia. In 2000, the Ministry of Public Health in Yemen reported 1087 suspected cases, including 121 deaths.

Scientific Opinion on Rift Valley fever by the EFSA Panel on Animal Health and Welfare [9]

Based on a comprehensive review of literature and OIE (World Animal Health Organisation) outbreak reports, this scientific opinion reports, first, that there is no evidence that Rift Valley fever (RVF) has spread to previously uninfected countries during the past 10 years. Nevertheless, RVF has moved North within Mauritania, in a desert area. Secondly, maps of Europe and the Southern Mediterranean Basin are provided, displaying the geographic distribution of nine potentially competent RVFV vectors based on a systematic literature review.

From environmental and eco-climatic data, predicted presence maps were generated that suggest the suitability of several parts of Europe and the Southern Mediterranean Basin for these potentially competent RVFV vectors.

Thirdly, to assess the risk of introduction of RVFV into some designated countries in the Southern Mediterranean Basin (RC)[1] , especially through the movements of live animals and vectors, a quantitative model was constructed and model parameters were derived based on expert knowledge elicitation (EKE). The EKE model indicates that some hundreds of RVFV-infected animals will be moved into the RC when an epidemic in the source areas occurs. The risk of RVFV entering the RC through the movement of vectors is expected to be small in comparison with the risk of entry through infected animals. Because of a lack of quantitative information on the seasonality of vector abundance and vertical transmission of RVFV within local vector species, the risk of endemicity could not be assessed. However, based on the abundance of the vector *Culex pipiens*, the livestock densities and the temperature in the region, there is a potential for RVF spread in the coastal areas of the RC.

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Please examine the synthetic memo at the end of this document where main relevant aspects of the identified references are reported (from pag.11).
The list of references is not exhaustive but includes the articles identified during the preparation of the risk assessment exercise.

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4th MULTISECTORIAL EXERCISE ON RISK ASSESSEMENT

Supporting documents on Rift Valley Fever

Authors	Title	Journal	Relevant points
Bashir and Hassan	A One Health perspective to identify environmental factors that affect Rift Valley fever transmission in Gezira state, Central Sudan	Tropical Medicine and Health, 2019	The added value of One Health
R. Poueme et al.	Seroprevalence and Associated Risk Factors of Rift Valley Fever in Domestic Small Ruminants in the North Region of Cameroon	Veterinary Medicine International, 2019	The added value of One Health
Wright et al.	Rift Valley fever: biology and epidemiology	Journal of General Virology, 2019	In this review, it is highlighted the current understanding of RVF, including its epidemiology, pathogenesis, clinical manifestations and status.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, Rome, 2003	Recognizing Rift Valley Fever	FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, Rome, 2003	Detailed information on all the aspects related to RVF are reported and clearly described.
WHO AFRO	Mapping the Risk and Distribution of Epidemics in the WHO African Region	2016	A comprehensive picture of all the threats of this regional area including RVF.
S. de La Rocque, P. Formenty	Applying the One Health principles: a trans-sectoral coordination framework for preventing and responding to Rift Valley fever outbreaks.	Rev. sci. tech. Off. int. Epiz., 2014, 33 (2), 555-567	Integrated strategy for the prevention and control of RVF outbreaks reported for each phase (period) and with a suggested framework
EFSA Panel on Animal Health and Welfare (AHAW)	Scientific Opinion on Rift Valley fever	EFSA Journal 2013;11(4):3180. [48 pp.] doi:10.2903/j.efsa.2013.3180.	Detailed info on Mauritania, Morocco, Algeria, Tunisia, Libya, Egypt, Jordan, Israel, the Palestinian Territories, Lebanon and Syria. Since RVFV was introduced and is probably still present in Egypt and Mauritania, these two countries were excluded from this assessment.
Maria Baudin, Ammar M Jumaa, Huda J E Jomma, Mubarak S Karsany, Göran Bucht, Jonas Näslund, Clas Ahlm, Magnus Evander*, Nahla Mohamed	Association of Rift Valley fever virus infection with miscarriage in Sudanese women: a cross-sectional study	Lancet Glob Health 2016; 4: e864–71	Of 130 pregnant women with febrile disease, 28 were infected with Rift Valley fever virus and 31 with chikungunya virus, with typical clinical and laboratory findings for the infection in question. 15 (54%) of 28 women with an acute Rift Valley fever virus infection had miscarriages compared with 12 (12%) of 102 women negative for Rift Valley fever virus (p<0·0001). In a multiple logistic regression analysis, adjusting for age, haemorrhagic disease, and chikungunya virus

			infection, an acute Rift Valley fever virus infection was an independent predictor of having a miscarriage (odds ratio 7·4, 95% CI 2·7–20·1; p<0·0001). This study is the first to show an association between infection with Rift Valley fever virus and miscarriage in pregnant women.
Mark O. Nanyingi, Peninah Munyua, Stephen G. Kiama, Gerald M. Muchemi, Samuel M. Thumbi, Austine O. Bitek, BVM, Bernard Bett,. Muriithi, and M. Kariuki Njenga,	A systematic review of Rift Valley Fever epidemiology 1931-2014	Infection Ecology and Epidemiology 2015, 5: 28024 -	A total of 84 studies were included in this review; majority (50%) reported on common human and animal risk factors that included consumption of animal products, contact with infected animals and residing in low altitude areas associated with favorable climatic and ecological conditions for vector emergence. A total of 14 (16%) of the publications described RVF progressive spatial and temporal distribution and the use of risk modeling for timely prediction of imminent outbreaks. Using distribution maps, we illustrated the gradual spread and geographical extent of disease; we also estimated the disease burden using aggregate human mortalities and cumulative outbreak periods for endemic regions. Interesting maps as per viral distributions and outbreak days.
Ling Xue, H. Morgan Scott, Lee W. Cohnstaed, Caterina Scoglio	A network-based meta-population approach to model Rift Valley fever epidemics	Journal of Theoretical Biology 306(2012)129–144	We propose a new compartmentalized model of RVF and the related ordinary differential equations to assess diseases spread in both time and space; with the latter driven as a function of contact networks. Humans and livestock hosts and two species of vector

			mosquitoes are included in the model. The model is based on weighted contact networks, where nodes of the networks represent geographical regions and the weights represent the level of contact between regional pairings for each set of species. The inclusion of human, animal, and vector movements among regions is new to RVF modeling.
Monaco F, Cosseddu GM, Doumbia B, Madani H, El Mellouli F, Jiménez-Clavero MA, et al.	First External Quality Assessment of Molecular and Serological Detection of Rift Valley Fever in the Western Mediterranean Region.	(2015) PLoS ONE 10(11): e0142129. doi:10.1371/journal	The Animal Health Mediterranean Network (REMESA) linking some Northern African countries as Algeria, Egypt, Libya, Mauritania, Morocco, Tunisia with Southern European ones as France, Italy, Portugal and Spain aims at improving the animal health in the Western Mediterranean Region since 2009. In this context, a first assessment of the diagnostic capacities of the laboratories involved in the RVF surveillance was performed. The first proficiency testing (external quality assessment—EQA) for the detection of the viral genome and antibodies of RVF virus (RVFV) was carried out from October 2013 to February 2014. Ten laboratories participated from 6 different countries (4 from North Africa and 2 from Europe). Six laboratories participated in the ring trial for both viral RNA and antibodies detection methods, while four laboratories participated exclusively in the antibodies detection ring trial. For the EQA targeting the viral RNA detection methods 5 out of 6 laboratories reported 100% of correct results. One

			laboratory misidentified 2 positive samples as negative and 3 positive samples as doubtful indicating a need for corrective actions. For the EQA targeting IgG and IgM antibodies methods 9 out of the 10 laboratories reported 100% of correct results, whilst one laboratory reported all correct results except one false-positive. These two ring trials provide evidence that most of the participating laboratories are capable to detect RVF antibodies and viral RNA thus recognizing RVF infection in affected ruminants with the diagnostic methods currently available.
Emna Ayari-Fakhfakh, Abdeljelil Ghram, Ali Bouattour, Imen Larbi, Latifa Gribâa-Dridi, Olivier Kwiatek, Michèle Bouloy, Geneviève Libeau, Emmanuel Albina, Catherine Cêtre-Sossah	First serological investigation of peste-des-petits-ruminants and Rift Valley fever in Tunisia	The Veterinary Journal 187 (2011) 402–404	This study, carried out between September 2006 and January 2007, is the first cross-sectional serological investigation of peste-des-petits-ruminants (PPR) and Rift Valley fever (RVF) in Tunisia. The objective was to assess the potential need to develop a dual, recombinant PPR–RVF vaccine and how such a vaccine might be utilised in Tunisia. An overall PPR seroprevalence of 7.45% was determined, a finding supported by the high specificity (99.4%) and sensitivity (94.5%) of the ELISA used. On assessment of the diversity and density of mosquitoes in the sampling area, four species of RVF-vectors of the genus Aedes and Culex were identified. However, no serological evidence of RVF was found despite the use of a highly sensitive ELISA (99–100%). Larger scale investigations are underway to confirm these findings and the continuation of the emergency vaccination program against these two diseases remains valid.

Breiman RF, Njenga MK, Cleaveland S, Sharif SK, Mbabu M, King L.	Lessons learned from the 2006_7 Rift Valley fever outbreak in East Africa: implications for prevention of emerging infectious diseases.	Future Virol 2008; 3: 411_7.	Very interesting. Conclusions of almost 10 years ago are still very alive!
Osama Ahmed Hassan, Clas Ahlm, and Magnus Evander	A need for One Health approach lessons learned from outbreaks of Rift Valley fever in Saudi Arabia and Sudan	Infection Ecology and Epidemiology 2014, 4: 20710	It is interesting the description of the two outbreaks, but the need for One Health approach is not very well supported and discussed.
D. E. Nicholas et al.	Risk factors for Rift Valley fever infection	Tropical Medicine and International Health volume 19 no 12 pp 1420–1429 December 2014	A systematic review identified 17 articles reporting on 16 studies examining risk factors for RVFV. Pooled odds ratios (pOR) were calculated for exposures examined in four or more studies. Being male [pOR = 1.4 (1.0, 1.8)], contact with aborted animal tissue [pOR = 3.4 (1.6, 7.3)], birthing an animal [pOR = 3.2 (2.4, 4.2)], skinning an animal [pOR = 2.5 (1.9, 3.2)], slaughtering an animal [pOR = 2.4 (1.4, 4.1)] and drinking raw milk [pOR = 1.8 (1.2, 2.6)] were significantly associated with RVF infection after meta-analysis. Other potential risk factors include sheltering animals in the home and milking an animal, which may both involve contact with animal body fluids.

Hughes-Fraire, Hagerman, McCarl, and Gaff.	Rift Valley fever: an economic assessment of agricultural and human vulnerability.	in Southern Agricultural Economics Association Annual Meeting, Corpus Christi, TX, February 5–8, 2011	Interesting for indicators identified for the assessment
Sara Moutailler, Ghazi Krida, Francis Schaffner, Marie Vazeille and Anna-Bella Failloux	Potential Vectors of Rift Valley Fever Virus in the Mediterranean Region	Vector-borne and zoonotic diseases Volume 8, Number 6, 2008 DOI: 10.1089/vbz.2008.0009	The presence of competent *Cx. pipiens* in southern France and Tunisia indicates the potential for RVFV epizootics to occur if the virus was introduced into countries of the Mediterranean basin.
V. Chevalier	Relevance of Rift Valley fever to public health in the European Union	Clin Microbiol Infect 2013; 19: 705–708	The epidemiological situation in northern African countries, and the risk of introduction via either animal movements or infected vector 'travel', should be assessed, as well as the performance of both existing northern African and European surveillance systems. In fact, a 'one-health' regional approach and a joint effort by human and animal health authorities is needed to control RVF in endemic countries and protect virus-free areas from introduction of the virus.
Robert F. Breiman ,Bruno Minjauw , S. K. Sharif , Peter Ithondeka , and M. Kariuki Njenga	Rift Valley Fever: Scientific Pathways Toward Public Health Prevention and Response	Am. J. Trop. Med. Hyg., 83(Suppl 2), 2010, pp. 1–4	GAPS IN KNOWLEDGE AND TOOLS: A RESEARCH AGENDA - A variety of gaps in knowledge and in available tools were identified during workshop discussions to be important for controlling RVF in endemic and naive countries in Africa and the Arabian Peninsula.

A. Bosworth, T. Ghabbari, S. Dowall, A. Varghese, W. Fares, R. Hewson, E. Zhioua, M. Chakroun, H. Tiouiri, M. Ben Jemaa, A. Znazen and A. Letaief	Serologic evidence of exposure to Rift Valley fever virus detected in Tunisia	New Microbes and New Infections, Volume 9 Number C, January 2016	This study aimed to ascertain whether RVFv is circulating in regions beyond its known geographic range. Samples from febrile patients (n = 181) and nonfebrile healthy agricultural and slaughterhouse workers (n = 38) were collected during the summer of 2014 and surveyed for exposure to RVFv by both serologic tests and PCR. Of the 219 samples tested, 7.8% of non febrile participants showed immunoglobulin G reactivity to RVFv nucleoprotein and 8.3% of febrile patients showed immunoglobulin M reactivity, with the latter samples indicating recent exposure to the virus. Our results suggest an active circulation of RVFv and evidence of human exposure in the population of Tunisia.
Ali S Khan, Carl V Smith	Rift Valley fever: still an emerging infection after 3500 years	www.thelancet.com/lancetgh Vol 4 November 2016	Commenting study in Sudan (7.) but not particularly relevant
Archie C.A. Clements Dirk U. Pfeiffer, Vincent Martin, M. Joachim Otte	A Rift Valley fever atlas for Africa	Preventive Veterinary Medicine 82 (2007) 72–82	We have highlighted sub-national areas of the African continent where evidence synthesized from published serological data indicated high, low or unknown risk of RVFV infection in humans and livestock. Our maps might assist decision-makers to target resources and attention to parts of Africa where RVF poses a greater or unknown threat and to assist risk management in non-affected regions by identifying potential sources of the infection and

			areas from which animals and animal products may be imported with lower risk of introduction of RVF.
Assaf Anyamba, Jean-Paul Chretien, Jennifer Small, Compton J Tucker and Kenneth J Linthicum	Developing global climate anomalies suggest potential disease risks for 2006 – 2007	International Journal of Health Geographics 2006, 5:60	Hotspots of potential elevated risk for disease outbreaks under El Niño conditions: 2006 – 2007: Dengue Fever; Respiratory illness; Cholera; Malaria; Rift Valley Fever; Hanta Virus Pulmonary Syndrome; Plague.
William A. Geering and F. Glyn Davies	FAO Animal Health Manual Preparation of RVF Contingency Plans	Food and Agriculture Organization of the United Nations, Rome 2002	Detailed chapter also on Risk Assessment methodologies and stakeholders

Annex 2.

NATIONAL INFORMATION ON RFV PROVIDED BY THE COUNTRIES

June 2017

Updated on December 2019 (highlighted in yellow)

Country	Information provided by:	Information and references
Algeria 2017	Hachid Aissam Laboratoire des Arbovirus Département de Virologie humaine Institut Pasteur d'Algérie	Until now, there is no report for human cases of RVFV. However, there are some not published serosurvey data for IgG anti-RVFV prevalence in slaughterhouse staff located in Sahara provinces bordering affected countries (Mauritania, Niger). We have an active surveillance system for RFV in Algeria for human. It focus on high risk population (people with regular contact with animal, traveller's returning from endemic countries ...) and for severe forms (haemorrhagic, neuro-invasive and ocular form).
Algeria 2017	Nadera Bouayed Institut National de Médecine Vétérinaire, Algiers,	Many serological and molecular surveys have been conducted in Algeria during last decade: 2006-2007-2010-2012-2013-2014-2015-2016-2017 (postponed because the FMD outbreak). There is no article or report on RVF evidence circulation in Algeria In the Website of the OIE we can see the evidence of RVF in Mauritania, Senegal, Mali and Niger. Animals: *Passive *active: in the area neighbouring the infected countries (Mali, Niger, Mauritania) Vectors: *Entomological: surveys on BTV vectors (culicoides).
Algeria 2019	Hachid, Benallal, Harrat IP Algeria Human virology and entomology	The only work about RVF was done on camels and livestock in west south of Algeria (Tindouf province which has border with Mauritania and SARD), please find below the different publications. The only paper for Algeria is about the assessment competency by experimental infection of *Culex pipiens* by RFV , paper below Humans A surveillance system for RVF was established by health ministry in high risky districts bordering endemic countries in the Sahel region. This system is activated upon evidence of RVF cases both in humans or animals in Algeria or neighboring countries. There is close collaboration between health and animal systems for RVF. Vector There is a ministerial device that was performed in 2017 after the establishment of *Aedes albopictus* in Algeria concerning the arboviruses (West Nile, Chikungunya, Zika) and regarding RVF in

		the event of an epidemic, in the same device, there is the procedure to follow, how collecting mosquitoes, molecular detection of the virus and how doing the vector control in the infested areas.
Burkina Faso 2019	Brice Wilfried BICABA Ministère de la santé (Burkina Faso)	Au Burkina Faso, nous n'avons pas encore mis en évidence la circulation du virus de la fièvre de la vallée du Rift dans la surveillance de routine Pour les cas de fièvre de la vallée du Rift, deux pays voisins ont connu des épidémies au cours des deux dernières années; il s'agit du Niger et du Mali; des investigations au Burkina Faso n'ont pas permis d'objectiver le virus; nous avons mis en place un système de surveillance sentinelle des arboviroses (dengue, Zika et Chigungunya) depuis 2017; le laboratoire national de référence des fièvres hémorragiques virales (LNR-FHV) dispose des capacités pour la détection de la fièvre de la Vallée de Rift; nous avons un système de survaillance sentinelle des arboviroses axée sur trois virus (Dengue, Zika et Chigungunya); le laboratoire de référence a néanmoins les capacités de détecter le virus de la fièvre de la Vallée du Rift; en ce qui concerne la surveillance entomologique, elle existe pour ce qui concerne le paludisme dans le cadre de la recherche et d'une collaboration avec un Institut de recherche (IRSS); la surveillance entomologique des vecteurs (dans la surveillance de routine) des arbovirus est en cours d'implémentation mais non encore effective.
Mali 2019	Drissa Coulibaly Direction Nationale des services vétérinaires	Le 13 Octobre 2016, une mission conjointe FAO/OMS/Gouvernement du Mali dans certaines localités de la Région de Ménaka (au nord du pays à la frontière nigérienne) a procédé à 228 prélèvements chez les ovins et caprins sur sept (7) sites identifiés. Ces prélèvements ont été effectués chez les femelles gestantes ou ayant avorté. Au total 9 échantillons se sont révélés positifs soit 3,94% aux tests sérologiques qui ont détecté les anticorps IgM. Il faut noter que sur les 228 prélèvements effectués, 206 ont été effectués sur des sujets ayant avortés ; les 22 autres étaient soient gestantes ou présentaient des jetages. Ce qui dénote d'une circulation récente du virus à l'époque ; même si au cours de l'investigation aucun cas clinique n'a été enregistré chez les animaux,. - Rapport de la mission conjointe FAO/OMS/Gouvernement du Mali du 13 octobre 2016 ; - Analyse qualitative du risque d'occurrence de la fièvre de la Vallée du Rift au Mali- FAO - CMC-AH Anticipation et réaction précoce à la FVR, Bamako, déc.2016 (C. Coste, C. Squarzoni-Diaw, R. Lancelot Cirad, Inra, UMR). Cirad, Inra, UMR Contrôle des maladies animales exotiques et émergentes iii) Un système de la FVR est-il actif dans votre pays? Si oui, veuillez préciser (Animaux? Humains? Vecteurs?) - Il n'y a pas de système de surveillance actif de la FVR.
Mauritania 2019	Barry Yahya, Animale Tropicale Coordonnateur du Département Santé Animale & Hygiène Alimentaire A l'Office National de Recherche et de	Historically, there were five large outbreaks of RVF in Mauritania (1987, 1998, 2003, 2010, 2012 and 2015). The virus is circulating in Mauritania and some sporadic cases are registered occasionally. RVF result in a high number of human fatalities and major losses in the livestock population. Officially, there are both Sentinelled herds and vector surveillance, but they still week in financial resources.

	Développement de l'Elevage (ONARDEL)	
Mauritania 2019	Ali El Boukhary Université de Nouakchott Al-Aasriya Faculté des Sciences et Techniques, Unité de recherche Génomes et Milieux (GEMI)	i) Have there been evidences/suggestions that RVF virus has been circulating in your country ? If so, kindly provide details. Historically, there were five large outbreacks of RVF in Mauritanie (1987, 1998, 2003, 2010, 2012). The virus is ciculating in Mauritania and some sporadic cases are registered occasionally. RVF result in a high number of human fatalities and major losses in the livestock population. ii) Have you relevant articles/reports on RVF in your country or neighborhood to report to us (year 2000 onwards) Please see attachments iii) Is a RVF surveillance system active in your country? If so, kindly specify (Animals? Humans? Vectors?) Officially, there are both animal and vector surveillance, but they still rudimentary.
Morocco 2017	Merieme LAHRACH Office National de Sécurité Sanitaire des Produits Alimentaires (ONSSA) Laboratoire Régional d'Analyses et de Recherches de Casablanca	- Rift Valley Fever (Never Notified) 1-Factors of risk : - the virus has been particularly active in Mauritania , outbreaks notified in 2010, 2012 and 2015. - Favorite Biotope - Susceptible species. 2- Control Measures: -Surveillance reinforcement in risk areas (Notification of diseases and border precautions) South and East of Morocco. -Communication, collaboration and coordination with Public Health Authorities -Epidemiological investigation (Serology) in 2011 on 4011 sera (ov-cp, bv, cm) : Negative results No evidence of viral circulation.
Morocco 2019	Jalal NOURLIL Institut Pasteur du Maroc Medical Virology and BSL-3 Laboratory	In my knowledge there is no evident that RVF is has been or is circulating in Morocco One published serologic survey in camels intercepted at different points by the Moroccan Veterinary Services in 2009. The camels were coming from the south-eastern part of the Sahara Desert going to the northwest. El-Harrak M, Martín-Folgar R, Llorente F, Fernández-Pacheco P, Brun A, Figuerola J, Jiménez-Clavero MA. Rift Valley and West Nile virus antibodies in camels, North Africa. Emerg Infect Dis. 2011 Dec;17(12):2372-4. doi: 10.3201/eid1712.110587. There is no RVF human active surveillance system in Morocco
Morocco 2019	M'hammed SARIH Laboratoire des maladies Vectorielles Institut Pasteur du Maroc Casablanca	surveillance of RVF virus in Morocco is provided by ONSSA. There were no human cases. the studies that have been carried out on the serology of livestock at the border with Mauritania.
Morocco	Ilham AHAMJIK	

2019	Service de l'Epidémiologie et de la Veille Sanitaire Division de la Santé Animale Direction de la Protection du Patrimoine Animal et Végétal ONSSA	No, RVF disease never reported. A serological survey was carried out in 2011 and concerned cattle, sheep, goats and camels. a sample of 4011 sera was analysed, all laboratory results were negative.
Niger 2019	Djibo Issifou Division Riposte aux Épidémies Direction de la Surveillance et de la Riposte aux Épidémies (DSRE) Ministère de la Santé Publique, Niger	**i) Have there been evidences/suggestions that RVF virus has been circulating in your country ? If so, kindly provide details.** **Yes** **ii) Have you relevant articles/reports on RVF in your country or neighborhood to report to us (year 2000 onwards)** Yes **iii) Is a RVF surveillance system active in your country? If so, kindly specify (Animals? Humans? Vectors?)** **RVF srveillance system passive**
Niger 2019	Adamou LAGARE Unité de Bacteriologie-Virologie Centre de Recherche Médicale et Sanitaire (CERMES)	The first evidence of RVF virus circulation in Niger was established during the 2016 epidemics in both animals and humans, although the virus was circulating throughout neighbouring countries during the last decade. Unfortunately there is no real active surveillance for RVF in Niger, although animal sector do conduct an episurveillance for all priority diseases among animals and human sector to conduct active surveillance for all epidemic priority diseases.
Senegal 2019	Ndeye Sakha BOB Institut Pasteur de Dakar	Recently, sporadics RVF human cases have been detected in 2012 (Kédougou), 2013 (Daara) and 2015 (Bokidiawe). In addition the virus has also been detected in mosquitoes in 2013. For animals there is a surveillance system based on sentinelle herds For mosquitoes IPD has a surveillance system for arboviruses including RVFV For humans there is no specific surveillance system however, cases can be detected through the 4S system and the yellow fever specific surveillance (IPD)
Tunisia 2017	Imène Ben Dhifallah Institut Pasteur de Tunis	No evidence of the circulation of Rift Valley Fever (RVF). In 2016, we carried out an investigation in dromedaries from the south of Tunisia to detect RVF and no evidence for circulation of this virus was revealed. A RFV surveillance system is active in our country (done by the Observatoire National des maladies nouvelles et émergentes) and Institute Pasteur (Pr Ali Bouattour is implicated in this surveillance).We have never seen also any reports of RVF in Morocco, Algeria and Libya.
Tunisia 2019	HAJ AMMAR Heni General Directorate	Our network of animal diseases didn't notified any real suspicion of the disease. However, Tunisian veterinary services has been

	of Veterinary Services	implemented a camel animal diseases in December 2017. The RVF is among of the listen of priority diseases. A collection of samples in camel didn't reveal a viral circulation. The camel network is based on i) passive surveillance that is based on syndromic approach with digestive, respiratory, abortive, neonatal mortality. ii) active surveillance that's is focussing on critical points. Other species are targeted like small ruminants and samples are taken when we have seized animals at the borders.
Tunisia 2019	Ali Bouattour Institut Pasteur de Tunis	In Tunisia there are no evidence that RVF virus has been - Animal : serological surveillance in cattle and small ruminants -Vectors : mosquitoes (Culex pipiens) q PCR.
Tunisia 2019	Soufien SGHAIER Laboratoire de Virologie Institut de la Recherche Vétérinaire de Tunisie	As you know, there has been a controversial publication on RVF in humans in Tunisia: Bosworth A., Ghabbari T., Dowall S., Varghese A., Fares W., Hewson R. et al. , 2015, 'Serologic evidence of exposure to Rift Valley fever virus detected in Tunisia', New Microbes and New Infections 9, 1–7. https://doi.org/10.1016/j.nmni.2015.10.010 Animal surveys, including 900 ruminants in risk areas, have shown that the virus has not circulated in Tunisia. On the other hand, we analyze 200 to 300 dromedary sera each year and no serological trace of this virus. However, it is possible to find positive IgG sera in animals from sub-Saharan areas. this is why I believe that there is no viral circulation to date but the risk of an introduction of the virus is very high.
Tunisia 2019	Wasfi Fares Institut Pasteur de Tunis	i) Have there been evidences/suggestions that RVF virus has been circulating in your country ? If so, kindly provide details. Yes Our results suggest an active circulation of RVFv and evidence of human exposure in the population of Tunisia. Samples from febrile patients (n = 181) and nonfebrile healthy agricultural and slaughterhouse workers (n = 38) were collected during the summer of 2014 and surveyed for exposure to RVFv by both serologic tests and PCR. Of the 219 samples tested: - 7.8% of non febrile participants showed immunoglobulin G reactivity to RVFv nucleoprotein - 8.3% of febrile patients showed immunoglobulin M reactivity, with the latter samples indicating recent exposure to the virus. ii) Have you relevant articles/reports on RVF in your country or neighborhood to report to us (year 2000 onwards) Bosworth A, Ghabbari T, Dowall S, Varghese A, Fares W, Hewson R, Zhioua E, Chakroun M, Tiouiri H, Ben Jemaa M, Znazen A, Letaief A. 2015. Serological evidence of exposure to Rift Valley Fever virus detected in Tunisia. NMNI, 27(9):1-7. iii) Is a RVF surveillance system active in your country? If so, kindly specify (Animals? Humans? Vectors?) to my knowledge no

Egypt	Mohamed Amin Kenawy	Report (Annex A of this Memo)

	Prof. of Medical Entomology, Department of Entomology, Faculty of Science, Ain Shams University, Abbassia, Cairo	
Egypt	Momtaz Shahein Director of Animal Health Reserach Instiute (AHRI) Cairo	History: • Egypt 1977-78: Outbreak of RVF occurred along the Nile in Egypt. This was the first epidemic out of sub-Saharan Africa. - 18,000 human cases. - 598 human deaths. - Many abortions and deaths were reported in sheep, goats, cattle, water buffalo and camels. - In 1993,1994: RVFV outbreaks were reported in cattle and sheep in Kafr El Sheikh and El Behara Provinces within the Nile delta Region. • In 1997: • affected herds were reported in the Aswan and Assiut Provinces, Upper Egypt. Aswan, the nearest Egyptian province to the Sudan, is the focus of RVF virus infection in Egypt. • In June - October 2003. • The outbreaks occurred in in Kafr El Sheikh Province 150 kilometres north of Cairo and all cases were Egyptian farmers. -45 cases of RFV were diagnosed with 17 deaths. • Considered on a regular monthly basis specially on the months of late summer August-November. Surveillance Activities • National institutions to monitor data (Goves, AHRI, and ministry of health) • Decision either: – no risk epizootic RVF – Possible risk. Passive surveillance (clinical disease base lie) □ Abortions/Mortality neonates □ Sudden onset many high temperatures □ Gastro enteric/ hepatitis/jaundice □ Haemorrhagic signs • Active surveillance (Virus Activity): □ Sero-surveillance (IgM). □ Testing Mosquitoes pools: (RT-PCR, Virus isolation).
Lebanon	Nabil Haddad, Laboratory of Immunology and Vector-Borne Diseases Faculty of Public Health Lebanese University Beyrouth-Lebanon	No human cases have been reported in the country. Moreover, the focal contact (Mrs Jeanne EL Hage) for the animal virology confirms that no animal cases have neither been reported. Mrs El Hage stated that, in their laboratory, which is accredited for the Ministry of agriculture, they don't test for this virus in their routine control testing. On the entomological level, I can confirm that some potential vectors exit in the country (as in many other countries in the MediLabSecure). These vectors belong to the *Culex and Aedes* genera. The vector competence of *Culex pipiens* , a widely spread mosquito in Lebanon, was assessed under experimental conditions. This mosquito showed a limited capacity to transmit the virus. Moreover, the tiger mosquito (*Aedes albopictus*) is spread in Lebanon, however, the vector competence of this mosquito for RVFV was never assessed.

Lebanon	Nada Ghosn (Head of Epidemiological Surveillance Unit) Ministry of Public Health Directorate of Prevention Epidemiological Surveillance Program	No evidence in Lebanon that RVF virus has been circulating RVF surveillance system is active for humans: via syndromic approach: acute hemorrhagic fever is investigate for potential travel, animal contact, entomological context...
Libya	Taher Shaibi Director of the Administration of Zoonotic Diseases Control, National Centre for Diseases Control University of Tripoli LIBYA	950 human blood samples were examined to determine the seroprevalence (baseline exposure) to zoonotic viruses and bacteria causing acute febrile illness. Antibodies against RVFV have been detected, the prevalence was 0.4%. RVF surveillance system is not active in Libya.
Jordan	Nabil Hailat, Professor of Veterinary Pathology, Dept. of Pathology and Public Health, Faculty of Veterinary Medicine, Jordan University of Science and Technology (JUST)	There has been no evidence suggestions that RVF virus has been circulating in the country, but no studies have been conducted. there are few reports from Yemen and Saudi Arabia which are published. In Jordan, there no capacity to my knowledge for the detection and diagnosis of the RVF. I have submitted a proposal for funding regarding capacity building of RVF and waiting for a response. I included only few countries from the region, but I think there is some potential for the virus to spread up North, that we should be aware of. There is no surveillance system for RVF, but I think, we should. There should be some education and awareness about this disease. More focus is put on FMD, PPR, LSD, Pox, abortions, diarrhoea...etc.
Palestine	Ibrahim Salem Central Public Health Laboratory Director Ministry Of Heath Palestine	1- no evidence and no cases of RVF till now in Palestine, KEEP in mind that the vectors of Aedes and Culex are present in the country. 2- we have not any reports or articles about RVF . 3- there is not an active surveillance system for RVF in animals, humans and vectors

Annex A

RIFT VALLEY FEVER (RVF) IN EGYPT

By Dr. MOHMED A KENAWY, PhD Prof. of Medical Entomology; Faculty of Science, Ain Shams University, Cairo, Egypt

The Rift Valley fever (RVF) is a neglected, emerging, mosquito-borne disease with severe negative impact on human and animal health and economy [**01**] and is caused by a virus (RVFV, genus: *Phlebovirus*, family: Bunyaviridae), which causes significant morbidity and mortality in animals and humans

Two RVF epidemics have been recorded in Egypt, in 1977-1978 [**02**] and in 1993. Shortly after RVF has been reported in Sudan [**03**], extensive epizootics occurred in 1977-1978 in several areas of the Nile Delta and Valley resulted in unpredicted human disease with severe clinical manifestations and heavy mortality as

well as abortion and death in sheep and cattle [04, 05]. The disease was observed first in animals in Aswan, and then extended north into the Nile Valley and Delta in eight governorates mainly Sharqiya, Qalyubia, and Giza. It is estimated that 18,000 persons suffered from the disease and 598 died in 1977 [06]. In 1978, the number of human cases officially reported was 114 with 12 deaths, all from Sharqiya Gov. [07]. Importation of infected ruminants, especially camels from the Sudan, was suggested as the principal source of infection [02]. After an absence of 12 years, in May 1993 RVF recorded again in man and in domestic animals (cattle and buffaloes) in Aswan Governorate [08]. By August, RVF has spread to most of governorates in the Nile Delta as well as in El-Faiyum oasis [09, 10]. This outbreak was much less severe than 1977-78 epidemics as it was limited to estimated 600-1500 infections [08]. After this major outbreak, RVF epidemics re-occurred in irregular intervals between 1993 and 2003 [11]. RVFV was detected in human clinical samples (29 cases out of 375: 7.7% RVF infection rate) collected during June-October, 2003 in Kafr el Sheikh Governorate (Nile Delta) [12].

During the 1977-1978 epidemics, *Culex pipiens* was implicated as the primary vector of RVFV, based on abundance, susceptibility to infection, virus isolation from an unengorged females, ability to experimental transmission of the virus [04, 13) and its blood feeding habits [14, 15]. The transmission rate of mosquitoes that fed on viremic hamsters was 40.0% (46.2% based only on infected mosquitoes) [13]. *Aedes caspius* and *Cx. antennatus* were also suspected of disseminating the virus among livestock, based on feeding patterns [14, 15] and vector competence [16]. However, these studies of host selection by mosquitoes were carried out after RVF virus was last documented in 1981 [07].

During 1993 outbreak, the abilities of *Aedes caspius*, *Culex pipiens, Cx. antennatus, Cx. perexiguus, Cx. poicilipes* and *Anopheles pharoensis* collected in the Aswan area and *Cx. pipiens* collected in the Nile Delta were evaluated to transmit RVFV [17]. None of *An. pharoensis* transmitted RVFV by bite. In contrast, other species transmitted virus with overall transmission rates were 7.0-20.0%. Based on abundance, susceptibility to infection, ability to transmit virus and feeding behavior, *Ae. caspius* appeared to be the most efficient vector of the Egyptian mosquitoes evaluated. While

less susceptible than *Ae. caspius, Cx. pipiens, Cx. antennatus* and *Cx. perexiguus* were also potential vectors during this RVF outbreak in Egypt. During the 2003 outbreak, Hanafi et al. [**12**] reported for the first time three isolates of RVFV from naturally-infected *Cx. antennatus* mosquitoes so that it was implicated as a vector of RVFV during an outbreak in the Nile Delta of Egypt.

The epidemiological factors related to the introduction, spread and maintenance of RVF which have contributed to the explosive nature of the RVF epizootics in Egypt are:

1. A more virulent RVFV which caused extensive morbidity and mortality to the dense non-immune population of Egypt.
2. The local practice of keeping domestic animals closely associated to households [15].
3. Human hosts in Egypt are more susceptible to the virus because of local endemic diseases mainly Shistosomiasis [05,18].
4. Local custom of sheep slaughter and distribution of fresh meat. The 1977 epidemic coincided with the timing of a religious occasion (Eid el-Adha) at which sheep are sacrificed [19].
5. Sick animals are often slaughter for human consumption so that RVFV could easily be spread by infected meat.

6. *Culex pipiens* is the most ubiquitous and prevalent mosquito species in the Nile Valley and Delta. Isolation of RVF virus from unengorged *Cx. pipiens*, and demonstration of laboratory transmission of the virus by this species, strongly implicate it as the chief vector in Egypt [04].
7. Virus transmission to man also occurs by contamination when handling infected meat [04]

To-day, no national surveillance system is active in the country, only sporadic ones (animals) by individual research workers are carried out for examples:

1. Mroz et al. [11] conducted (2014/2015) a serosurvey in non-vaccinated livestock including camels, sheep, goats and buffalos (born after the last RVF epidemic in 2003) in Nile Delta and southeast of Egypt to investigate the presence of anti-RVFV antibodies for further evaluating the risk exposure for animal and human health. The authors concluded that currently low level of circulating virus in the investigated areas suggests minor indication for a new RVF epidemic.
2. Mroz et al. [20] examined the current anti-RVFV antibody status in immunized as well as non-immunized dairy cattle from the Nile Delta. During 2013-2015, a total of 4,167 dairy cattle from four governorates: El-Dakahlia, Damietta, El-Gharbia and Port Said were investigated. All cattle were born after 2007, i.e. after the last reported RVFV outbreak in 2003. The results indicated that the RVFV is still circulating in Egypt as about 10% of the non-immunized animals exhibited RVFV-specific antibodies.

Entomologically, some recent surveys were carried out in some governorates where virus was reported during the RVF outbreaks and some other governorates. Such surveys further indicated that *Culex pipiens*, the chief vector is the most common or predominating mosquito species in Egypt for examples:

1. Culicine mosquitoes were surveyed (11/2007 – 5/2008) in some villages representing the different districts of El Sharqiya Governorate (Nile Delta) [21]. Totally 6 species were reported: *Culex pipiens, Cx. perexiguus, Cx. antennatus, Cx. pusillus, Cx. sinaiticus* and *Aedes detritus. Cx. pipiens* was the predominant or the most common species (*ca* 88% larvae & 47% adults, P<0.01).
2. Mosquitoes were surveyed (3 – 5 & 11/2007) in all centers of El Gharbia Governorate (Nile Delta) [22]. Seven species (6 culicine and 1 anopheline) were collected. These are *Culex pipiens, Cx. perexiguus, Cx. antennatus, Cx. theileri, Ochlerotatus detritus, Culiseta longiareolata* and *Anopheles tenebrosus*. *Cx. pipiens* was the most common or predominating species (*ca* 45% adults and 86%, 63 larvae, P<0.01). *Cx. antennatus* (*ca* 38% adults) was also a common species (P<0.01).
3. Mosquitoes were surveyed (11/2009 – 3/2010) in El Ismailia Governorate (Suez Canal Zone) [23]. Nine species were reported: *Culex pipiens, Cx. perexiguus, Cx. antennatus, Anopheles tenebrosus, An. pharoensis, An. multicolor, Ochlerotatus detritus, Oc. caspius* and *Culiseta longiareolata. Culex pipiens* was the predominant species (*ca* 87% larvae & 57% adults). The abundance of mosquito vectors in El Ismailia with its old history of vector transmitted diseases contributes to the risk of mosquito borne disease transmission in this area.
4. Culicine mosquitoes were surveyed (10 - 11/2008 & 4 - 5/2009) in villages representing eight districts of El Menoufia Governorate (Nile Delta) [24]. Six species were reported: *Culex pipiens*, *Cx. perexiguus, Cx. antennatus, Aedes caspius, Aedes detritus* and *Culiseta longiareolata. Cx. pipiens* was the commonest or predominating species (*ca* 47% adults & 92% larvae, P<0.01).
5. Mosquitoes were surveyed over one year period in two localities in Cairo governorate

representing different levels of urban planning: El-Muqattam (planned) and Abu- Seir (unplanned) [25]. *Culex pipiens, Cx. perexiguus, Cx. pusillus*, *Ochlerotatus caspius*, *Culiseta longiareolata* and *Anopheles multicolor* were the collected species at both sites. Mosquitoes were more common in Abu-Seir than in El-Muqattam, with larvae of *Cx. pipiens* accounting for 81% and 52% of recorded individuals at these sites, respectively.

6. Mosquitoes were surveyed (Oct. 2010 & Apr - Oct. 2011) in some localities representing 13 centers of El-Dakahlia Governorate (Nile Delta) [26]. Six mosquito species were collected: *Culex pipiens, Cx. antennatus, Cx. perexiguus, Ochlerotatus detritus*, *Anopheles pharoensis* and *An. tenebrosus. Culex pipiens* was predominating (*ca* 79% larvae & 51% adults). *Culex antennatus* and *Cx. perexiguus* were also common.
7. The prevalence and feeding patterns of mosquitoes in 5 villages of Aswan governorate where the RVFV was active during 1993 outbreak were examined [27]. Of 10 species recovered, *Aedes caspius, Culex pipiens, Cx. antennatus* and *Cx*. *perexiguus* constituted 99% of > 35,000 mosquitoes captured. *Ae. caspius* was most prevalent and *Cx. pipiens* ranked 2nd. Most blood meals analyzed reacted to > or = 1 antiserum. *Cx. pipiens* was mainly anthropophagic, and therefore may have been the main vector of RVFV among humans. *Ae. caspius* feeds were chiefly from humans, bovines, and equines. *Cx. antennatus* and *Cx*. *perexiguus* fed generally on bovines. Because potential vectors are abundant, susceptible domestic animals are associated closely with humans, and surveillance of imported livestock is not systematic, the authors concluded that RVFV sporadically will recur in Egypt.

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4th MULTISECTORIAL RISK ASSESSMENT EXERCISE ON RVF
21 January 2020
Pasteur Institute Dakar

Annex 3.a

ASSESS THE RISK OF NEW INTRODUCTION OF RVF INFECTION IN YOUR COUNTRY (NO OUTBREAKS IN THE COUNTRY SO FAR)

Risk questions & Multisectoral added value

§ The questions should be discussed in group, then within each country team, and finally the replies should be provided by country to the rapporteur.

Considering the possibility that in the future years a RVF outbreak might occur in your country, how would you reply to the following questions:

1. Which risk factors affect the spread of RVF infection into ***new areas (countries without any RVF disease outbreaks until this moment)***?

Please rank from most to least relevant the risk factors and drivers for the spread of RVF infection into your country

Six-level ranking system (with 0 as least relevant and 5 as most relevant factor)

	0	1	2	3	4	5
bioterrorism						
technological underdevelopment						
social and economic instabilities						
changing host susceptibility						
changing ecosystems						
climate and weather changes						
microbial adaptation						
animal movements and trade						
international travel						

2. Which ***preparedness measures*** could be put in place to reduce the risk of RVF virus infection in your country?

Please rank from most to least ***feasible*** and from most to least ***effective*** measures to increase the rapidity of the response to RVF infection.

Six-level ranking system (with 0 as least relevant and 5 as most relevant factor)

		0	1	2	3	4	5
Improving veterinary diagnostic laboratories	feasible						
	effective						
Enhancing veterinary capacity to recognize clinical signs of RVF in animals	feasible						
	effective						
Improving public health diagnostic laboratories	feasible						
	effective						
Increasing medical capacity to recognize clinical signs of RVF in humans	feasible						
	effective						
Developing risk assessment forecasting models	feasible						
	effective						
Control of animal movements/trade	feasible						
	effective						
Developing early-warning systems based on regular animal testing: examples include sentinels and cross-sectional testing	feasible						
	effective						
Developing early-warning systems based on regular mosquitoes testing	feasible						
	effective						

3. Which ***prevention and control options*** can be put in place to reduce the impact of RVF spreading?

Please rank from most to least ***feasible*** and from most to least ***effective*** the prevention and control options for reducing the impact of a possible RVF spreading.

		0	1	2	3	4	5
culling sick and infected animals	feasible						
	effective						
eliminating insects and controlling mosquitoes	feasible						
	effective						
animal mass vaccination	feasible						
	effective						
vaccination of infected flocks/herds only	feasible						
	effective						
partial stamping out – culling of sick animals and vaccination of the remainder –	feasible						
	effective						
public communication campaigns on measures to reduce exposure to mosquito bites	feasible						
	effective						
Control of animal movements/trade	feasible						
	effective						
communication campaigns for farmers and other professionals to reduce the risk of animal-sourced infections	feasible						
	effective						

4. In view of the repeated outbreaks of RVF in recent years in some West African countries:

4.a What is the risk of RVF virus infection ***introduction to*** your country in the next 3–5 years?

0	1	2	3	4	5	6
Extremely unlikely 0%–1% Chance	Very unlikely 1%–10% Chance	Unlikely 10%–30% Chance	As likely as not 33%–66% Chance	Likely 66%–90% Chance	Very likely 90%–99% Chance	Extremely likely 99%–100% Chance

4.b What is the risk of the RVF virus ***persisting and spreading*** once introduced into your country?

0	1	2	3	4	5	6
Extremely unlikely 0%–1% Chance	Very unlikely 1%–10% Chance	Unlikely 10%–30% Chance	As likely as not 33%–66% Chance	Likely 66%–90% Chance	Very likely 90%–99% Chance	Extremely likely 99%–100% Chance

5. Multisectoral added value

Please rank the importance of discussing the proposed questions in multidisciplinary teams (animal and human virologists, entomologists and public health officers)

	Importance		
Question	Low	Medium	High
1. risk factors in new Country			
2. preparedness measures			
3. prevention and control options			
4.a Risk of introduction in your country			
4.b Risk of persistence in your country			

4th MULTISECTORIAL EXERCISE ON RISK ASSESSMENT
21 January 2020
Pasteur Institute Dakar

Annex 3.b

Risk questions & Multisectoral added value

§ The questions should be discussed in group, then within each country team, and finally the replies should be provided by country to the rapporteur.

Considering the possibility that in the future years another RVF outbreak might occur in your country, how would you reply to the following questions:

1. Which risk factors affect the occurrence, persistence and spread of RVF infection ***in countries with a history of RVF infection or outbreak***?

Please rank from most to least relevant the risk factors and drivers for the occurrence, persistence and spread of RVF infection in Africa and other areas with a history of RVF infection or outbreak.

Six-level ranking system (with 0 as least relevant and 5 as most relevant factor).

	0	1	2	3	4	5
bioterrorism						
technological underdevelopment						
social and economic instabilities						
changing host susceptibility						
changing ecosystems						
climate and weather changes						
microbial adaptation						
animal movements and trade						
international travel						

2. Which ***preparedness measures*** could be put in place to reduce the risk of RVF virus infection in Africa and other at risk areas?

Please rank from most to least ***feasible*** and from most to least ***effective*** measures to increase the rapidity of the response to RVF infection.

Six-level ranking system (with 0 as least relevant and 5 as most relevant factor)

		0	1	2	3	4	5
Improving veterinary diagnostic laboratories	feasible						
	effective						
Enhancing veterinary capacity to recognize clinical signs of RVF in animals	feasible						
	effective						
Improving public health diagnostic laboratories	feasible						
	effective						
Increasing medical capacity to recognize clinical signs of RVF in humans	feasible						
	effective						
Developing risk assessment forecasting models	feasible						
	effective						
Control of animal movements/trade	feasible						
	effective						
Developing early-warning systems based on regular animal testing: examples include sentinels and cross-sectional testing	feasible						
	effective						
Developing early-warning systems based on regular mosquitoes testing	feasible						
	effective						

3. Which ***prevention and control options*** can be put in place to reduce the impact of RVF spreading?

Please rank from most to least ***feasible*** and from most to least ***effective*** the prevention and control options for reducing the impact of a possible RVF spreading.

		0	1	2	3	4	5
culling sick and infected animals	feasible						
	effective						
eliminating insects and controlling mosquitoes	feasible						
	effective						
animal mass vaccination	feasible						
	effective						
vaccination of infected flocks/herds only	feasible						
	effective						
partial stamping out – culling of sick animals and vaccination of the remainder –	feasible						
	effective						
public communication campaigns on measures to reduce exposure to mosquito bites	feasible						
	effective						
Control of animal movements/trade	feasible						
	effective						
communication campaigns for farmers and other professionals to reduce the risk of animal-sourced infections	feasible						
	effective						

4. What is the risk of the RVF virus ***persisting and spreading*** into your country?

0	1	2	3	4	5	6
Extremely unlikely 0%–1% Chance	Very unlikely 1%–10% Chance	Unlikely 10%–30% Chance	As likely as not 33%–66% Chance	Likely 66%–90% Chance	Very likely 90%–99% Chance	Extremely likely 99%–100% Chance

5. Multisectoral added value

Please rank the importance of discussing the proposed questions in multidisciplinary teams (animal and human virologists, entomologists and public health officers)

	Importance		
Question	Low	Medium	High
1 risk factors in Africa and other areas with a history of RVF infection or outbreak			
2. preparedness measures			
3. prevention and control options			
4. Risk of persistence in your country			

Annex 4.a Restitution slide (1)

Country	**Question 1**	**Question 2**	**Question 3**	**Level of risk assessed**	
				Question 4.a	**Question 4.b**
	The three most relevant risk factors for **new areas**	***preparedness measures*** The three most feasible The three most effective	***prevention and control options*** The three most feasible The three most effective	Introduction	Persisting and spreading

Annex 4.a Restitution slide (2)

Country	**Importance of multi-sectorial assessment** (Low/medium/high)				
	1. Risk factors for new areas	2. Preparedness measures	3. Prevention and control options	4.a Risk of introduction in your country	4.b Risk of persistence in your country

Annex 4.b Restitution slide (1)

Country	**Question 1**	**Question 2**	**Question 3**	**Question 4.**
	The three most relevant risk factors in Africa and other areas with a history of RVF infection or outbreak	***preparedness measures*** The three most feasible The three most effective	**prevention and control** options The three most feasible The three most effective	**Level of risk assessed:** Persisting and spreading

Annex 4.b Restitution slide (2)

Country	**Importance of multi-sectorial assessment** (Low/medium/high)			
	1.a Risk factors in Africa and other areas with a history of RVF infection or outbreak	2. Preparedness measures	3. Prevention and control options	4. Risk of persistence in your country

Restitution Slides Group 1

- *ALGERIA*
- *BURKINA FASO*
- *MALI*
- *MOROCCO*
- *TUNISIA*

Annex 5.a Restitution slide

Country	Question 1	Question 2	Question 3	Level of risk assessed	
				Question 4.a	Question 4.b
	The three most relevant risk factors for **new areas**	***preparedness measures*** The three most feasible The three most effective	***prevention and control options*** The three most feasible The three most effective	Introduction	Persisting and spreading
ALGERIA	1. Animal movement and trade 2. Changing ecosystem 3. Climate and whether change	1. Vet clinical capacities 2. Vet diagnostic lab 3. Control animal movement	1. Culling sick animal 2. Animal movement and trade 3. Communication campaign	10-30%	1-10%
		SAME	----		
BURKINA FASO	1. Animal movement and trade 2. Changing ecosystem 3. Socio-economic instability	1. Medical clinical capacities 2. Control animal movement 3. Early warning system on mos	1. Eliminating mosquitos 2. Animal mass vaccination 3. Control animal movement	66-90%	33-66%
		1. vet diagnostic lab 2. Human diagnostic lab 3. Control animal movement	SAME		
MALI	1. Animal movement and trade 2. Social and economic instability 2. Climate and weather change	1. vet capaciti for clinical signs 2. Improve vet lab disgnositc lab 3. Control animal movement	1. Communication campaign 2. Controlling mosquitos 3. Culling and vaccinating animal	33-66%	66-90%
		1. Vet capacity for clinical sign 2. 2vet diagnostc capacities	Same		

Annex 5.a Restitution slide

Country	**Question 1**	**Question 2**	**Question 3**	**Level of risk assessed**	
				Question 4.a	**Question 4.b**
	The three most relevant risk factors for **new areas**	***preparedness measures*** The three most feasible The three most effective	***prevention and control options*** The three most feasible The three most effective	Introduction	Persisting and spreading
MOROCCO	1. Animal movement and trade 2. Climate and whether change 3. Changing ecosystem	1. Medical clinical capacities 2. Early warning system 3. Control animal movement	1. Culling sick animal 2. Controlling mosquitos 3. Control animal movement		
		1. Early warning system 2. Control animal movement 3. Medical clinical capacities	1. Culling sick animal 2. Control animal movement 3. Eliminating mosquitos	10-30%	33-66%
TUNISIA	1. Animal movements and trade 2. Socio-economic instability 3. Changing ecosystem	1. Vet diagnostic lab 2. PH diagnositc lab 3. Sentinel animals	1. Control mosquitos 2. Culling and vaccinating animal 3. 3comunication campaign	10-30%	33-66%
		1. Vet diagnosisc lab 2. PH diagnostic lab 3. Control animal movement	1. Culling sick animal 2. Control mosquitos 3. Control animal movement and trade		

Annex 5.a Restitution slide

Country	**Importance of multi-sectorial assessment** (Low/medium/high)				
	1. Risk factors for new areas	2. Preparedness measures	3. Prevention and control options	4.a Risk of introduction in your country	4.b Risk of persistence in your country
ALGERIA	HiGH	HIGH	HIGH	HIGH	HIGH
BURKINA FASO	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM
MALI	HIGH	HIGH	HIGH	HIGH	HIGH

Annex 5.a Restitution slide

Country	**Importance of multi-sectorial assessment** (Low/medium/high)				
	1. Risk factors for new areas	2. Preparedness measures	3. Prevention and control options	4.a Risk of introduction in your country	4.b Risk of persistence in your country
MOROCCO	HGH	HIGH	HIGH	MEDIUM	MEDIUM
TUNISIA	HIGH	HIGH	HIGH	HGH	MEDIUM

Restitution Slides Group 2

MAURITANIA

NIGER

SENEGAL

Annex 5.b Restitution slide

Country	Question 1	Question 2	Question 3	Question 4.
	The three most relevant risk factors in Africa and other areas with a history of RVF infection or outbreak	***preparedness measures*** The three most feasible The three most effective	**prevention and control** options The three most feasible The three most effective	**Level of risk assessed:** Persisting and spreading
Mauritania	1. Animal movements and trade 2. Climate and weather changes 3. Technological underdevelopment	Feasible: 1. Increasing medical capacity to recognize clinical signs of RVF in humans 2. Enhancing vet capacity to recognize clinical signs of RVF in animals 3.Improving public healh diagnostic lab capacities	Feasible: 1. Eliminating insects and control of mosquitos 2. Control of animal movements and trade 3. Public communication campaigns	5 – very likely
		Effective: 1. Control of animal movements and trade 2. Developing early warning systems based on regular mosq testing 3. Development of early warning systems based on regular animal testing	Effective: 1. Culling sick and infected animals 2. Animal mass vaccination 3. Control of animal movements and trade	

Annex 5.b Restitution slide

Country	Question 1	Question 2	Question 3	Question 4.
	The three most relevant risk factors in Africa and other areas with a history of RVF infection or outbreak	***preparedness measures*** The three most feasible The three most effective	**prevention and control** options The three most feasible The three most effective	**Level of risk assessed:** Persisting and spreading
Senegal	1. Changing ecosystems 2. Climate and weather changes 3. Animal movments and trade	Feasible: 1. Improving vet diagnostic lab 2. Improving public health diagnostic lab 3. Dev early warning system (sentinels)	Feasible: 1. Vector control 2. Public communication campaign 3.Communication campaigns for farmers	33-66% chance As likely as not
		Effective: 1. Enhancing vet capacity to recognize clinical signs 2. Dev early warning system based on regular mosquito testing 3. Control of animal movments	Effective: 1. Culling sick and infected animals 2. Vector control 3. Communication campaigns for farmers	

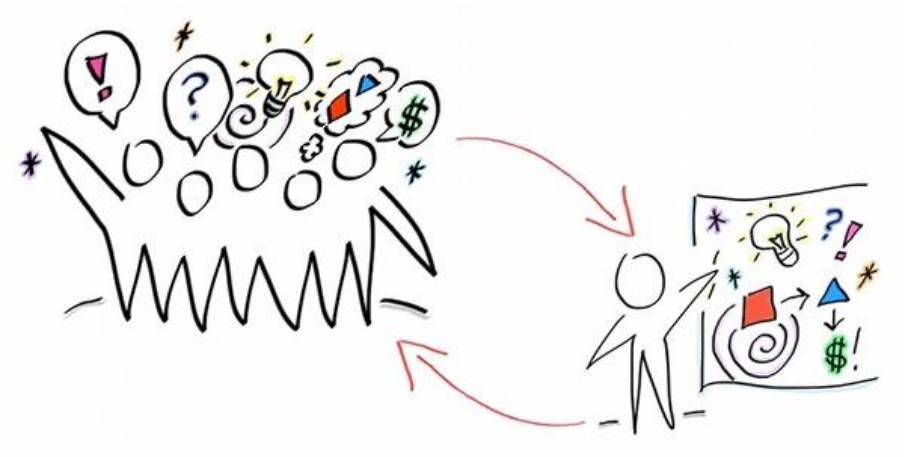
Annex 5.b Restitution slide

Country	Question 1	Question 2	Question 3	Question 4.
	The three most relevant risk factors in Africa and other areas with a history of RVF infection or outbreak	***Preparedness measures*** The three most feasible The three most effective	**Prevention and control** options The three most feasible The three most effective	**Level of risk assessed :** **Persisting and spreading**
Niger	1. Animal movements and trade 2. Social and economic instabilities 3. Climate and weather changes	**Feasible:** 1. Improving veterinary diagnostic lab 2. Improving public health diagnostic lab 3. Enhancing veterinary capacity to recognize clinical signs of RVF	**Feasible:** 1. Public communication campains 2. Eliminating insects and controlling mosquitoes 3.Partial stamping out	**3 (**as likely a not 33-66%) .
		Effective: 1. Control of animal movement 2. Developing early warning systems 3. Improving public health diagnostic lab	**Effective:** 1. Animal mass vaccination 2. Control of animal movement 3. Culling sick and infected animals	

Annex 5.b Restitution slide

Country	**Importance of multi-sectorial assessment** (Low/medium/high)			
Questions	*1.a Risk factors in Africa and other areas with a history of RVF infection or outbreak*	*2. Preparedness measures*	*3. Prevention and control options*	*4. Risk of persistence in your country*
Mauritania	High	High	Medium	High
Niger	High	High	High	Medium
Senegal	High	High	High	High

Annex 6 Pre-test and post-test questionnaires



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PARTICIPANTS PRE-TEST

4th MULTISECTORAL EXERCISE ON RISK ASSESSMENT

MediLabSecure

Regional meeting

Dakar 20-24 January 2020

MediLabSecure

ISTITVTO SVPERIORE DI SANITÀ

IZSAM G.CAPORALE TERAMO

Name: _____

Family Name: _____

Institution: _____

Country: _____

1. Please rank three relevant risk factors/drivers for the occurrence, persistence and spread of RVF infection ***in Africa and other areas with a history of RVF infection or outbreak.***

_____

_____

_____

2. Please rank three relevant risk factors/drivers for the spread of RVF infection into ***new areas***.

_____

_____

_____

3. Please rank three relevant ***feasible*** measures to increase the rapidity of the response to RVF infection.

_____

_____

_____

4. Please rank three relevant ***effective*** measures to increase the rapidity of the response to RVF infection.

---

5. Please rank three relevant ***feasible*** prevention and control options for reducing the impact of a possible RVF spreading.

---

6. Please rank three relevant ***effective*** prevention and control options for reducing the impact of a possible RVF spreading.

---

7. List ***kind of documents*** to rely on to assess the level of risk for RVF in your country

---

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8. List ***institutions/depts./experts*** to involve to assess the level of risk for RVF in your country and explain the reasons

institutions/depts./experts	**Reason for involvement**

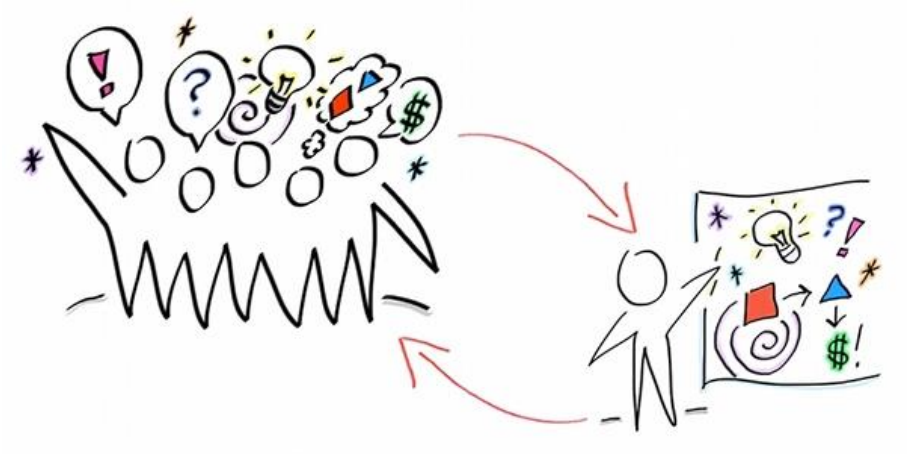


Image source: http://jeannelking.com/services/graphic-facilitation/

PARTICIPANTS POST-TEST

4th MULTISECTORAL EXERCISE ON RISK ASSESSMENT

MediLabSecure

Regional meeting

Dakar 20-24 January 2020

MediLabSecure

ISTITVTO SVPERIORE DI SANITÀ

IZSAM G.CAPORALE TERAMO

Name: _____

Family Name: _____

Institution: _____

Country: _____

1. Please rank three relevant risk factors/drivers for the occurrence, persistence and spread of RVF infection ***in Africa and other areas with a history of RVF infection or outbreak.***

_____

_____

_____

2. Please rank three relevant risk factors/drivers for the spread of RVF infection into ***new areas***.

_____

_____

_____

3. Please rank three relevant ***feasible*** measures to increase the rapidity of the response to RVF infection.

_____

_____

_____

4. Please rank three relevant ***effective*** measures to increase the rapidity of the response to RVF infection.

---

5. Please rank three relevant ***feasible*** prevention and control options for reducing the impact of a possible RVF spreading.

---

6. Please rank three relevant ***effective*** prevention and control options for reducing the impact of a possible RVF spreading.

---

7. List ***kind of documents*** to rely on to assess the level of risk for RVF in your country

---

---

8. List ***institutions/depts./experts*** to involve to assess the level of risk for RVF in your country and explain the reasons

institutions/depts./experts	**Reason for involvement**

Annex 7. Evaluation Form

4th MLS Multisectoral Risk Assessment Exercise *(DAKAR, 20-24 JANUARY 2020)*

Evaluation

Please help us improve the workshop by responding candidly to the following statements:

Scale Definition: 1 – Strongly Disagree 2 – Disagree 3 – Neither Agree nor Disagree 4 – Agree 5 – Strongly Agree	
Exercise objectives were well communicated	1 2 3 4 5
The discussions were useful	1 2 3 4 5
Adequate time was allotted for explanations/practice	1 2 3 4 5
Overall the exercise was satisfactory	1 2 3 4 5

What did you like most about the exercise?

How can we improve the exercise?

Do you have any additional questions regarding this topic?

If you wish us to contact you, please provide the following information:

Name	Email	Telephone Number

Annex 8.

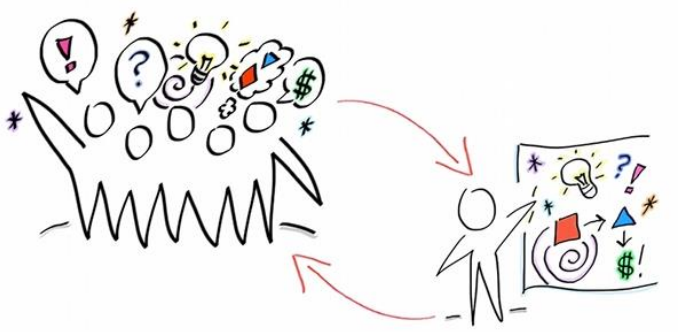


Image source: http://jeannelking.com/services/graphic-facilitation/

FACILITATOR'S GUIDE

4th MULTISECTORAL EXERCISE ON RISK ASSESSMENT

MediLabSecure

Regional meeting

Dakar 20-24 January 2020

MediLabSecure

ISTITUTO SUPERIORE DI SANITÀ

IZSAM G.CAPORALE TERAMO

This 4th multi-sectoral risk assessment exercise was designed by the MediLabSecure (MLS) WP4 ISS team (Maria Grazia Dente, Laura Amato and Silvia Declich) in collaboration with the IZSAM team (Paolo Calistri, Ombretta Pediconi, Daria Di Sabatino and Barbara Alessandrini), with the support of the MLS Focal Points (Aissam Hachid- Institut Pasteur d'Algérie, Soufien Sghaier- Institut de la Recherche Vétérinaire de Tunisie, Youmna Mghirbi- Pasteur Institute of Tunis, Kaouther Harabech – Tunisian Ministry of Health), the MLS Work Packages' Teams and MediPIET Project (Concha Martin de Pando and Adela Páez).

This exercise was designed as part of the project activities of the MediLabSecure project.

The project is funded by the European Union (Contract Number: N° 2018/402-247).

Introduction

Overview of the exercise

The 4th Multisectoral Risk Assessment (MRA)[1] Exercise is designed to foster small group discussion on the status of Rift Valley Fever (RVF) surveillance in the region of Sahel and Maghreb and to assess level of risk at country level with the support of the methodology applied by FAO for the Risk Assessment for RVF in Niger (March 2017).

OBJECTIVES

The goal of this exercise is:

- To enhance knowledge and capacity on MRA for RVF
- To make the participants aware of RA methodologies to be applied at national level
- To practice multi-sectoral collaboration for risk assessments that require exchange of information, expertise and experience

TARGET AUDIENCE

This exercise will be held on the second day of the MediLabSecure Regional meeting.

Invited participants to this event include FPs from all the sectors involved in MLS:

- Laboratory staff from human and veterinary sectors
- Entomologists
- Public Health officials
- Veterinary Officers

Most participants are expected to be mid-career/senior staff and to bring high cumulative expertise from the different sectors in each country.

[1] Multisectoral Risk Assessment (MRA): assessment with the concomitant participation of all the relevant sectors involved in the surveillance of a given pathogen

ENHANCING ABILITIES

Once the participants have completed this exercise, they will be able to:

- Describe how a MRA for RVF could be conducted
- Estimate the added value and feasibility of MRA in their national context
- Assess the risk for RVF transmission in their countries

DOCUMENTATION & MATERIALS

MATERIALS
Annex 1- Background information and selected references on RVF **Annex 2 -** National information on RFV provided by the countries involved in the exercise **Annex 3a & 3b -** Risk questions & Multisectoral added value **Annex 4a & 4b -** PowerPoint® Template slides for restitution **For the Facilitator:** • Facilitator Guide • FAO RVF RA in Niger • Background information and selected references on RVF (Annex 1) • National information on RFV provided by the countries involved in the exercise (Annex 2) • Risk questions & Multisectoral added value (Annex 3a & 3b) • PowerPoint® Template slides for restitution (for the Rapporteur, Annex 4a & 4b) **Distributed to all Participants one week in advance by e-mail:** • Background information and selected references on RVF (Annex 1) **Distributed to all Participants *in situ* by the ISS (WP4) team:** • Pre-test (before lunch day 2) and post-test (at the end of Exercise) **Distributed to all Participants *in situ* by the Facilitators:** • Participants' guide • Risk questions & Multisectoral added value (Annex 3a & 3b) • Exercise Evaluation Form

GROUPWORK SETUP

- The exercise involves two small groups divided by country :

Groups	Group 1	Group 2
N. Participants [2](excluding facilitators=at least 9[3])	±21 No RVF outbreaks	±13 RFV outbreaks occurred
Countries	Morocco (4) Algeria (5) Tunisia (3) Burkina Faso (5) Mali (4)	Mauritania (3) Senegal (6) Niger (4)

Commentato [DMG1]: To my knowledge, based also on the references sent by participants, Mali had only one human cases so far and sporadic in animals (**2017, Mail:** in July Health officials in the west African country of Mali confirmed a single case of Rift Valley fever (RVF) virus infection in a 10-year-old boy from Oulessebougou).
I would keep this division to facilitate discussion between Sahel and Maghreb and to simplify the understanding of the 1st risk question in Annex 3.a e 3.b

- Each group will conduct the exercise in a separate break-out room.

The proposed allocation of the countries in the two groups above is based on the countries epidemiological situation for RVF. In fact, the countries in Group 1 have not been affected by RVF outbreaks so far or only sporadic cases (Mali) while in the countries of Group 2 RVF outbreaks already occurred.
Group 1 will work on the Risk questions of Annex 3.a and Group 2 will work on the Risk questions of Annex 3.b

[2] To be confirmed in accordance with the actual participants to the exercise
[3] Each country of the two groups will be followed by a facilitator

ROLE OF FACILITATORS AND RAPPORTEURS

- **Facilitators need to**:
  - conduct the tasks defined in this guide,
  - guide the discussions encouraging participation,
  - keep time, and
  - support the rapporteur.
- **Rapporteurs need to**:
  - Report the replies to the risk questions and the assessed level of risk by country in a single slide (1) (see template Annex 3),
  - Report the added value of the multi-sectoral collaboration for each of the risk questions by country in a single slide (2) (see template Annex 3),
  - Share and discuss the slide with the group participants at the end of the group work ahead of restitution,
  - Present the slides at restitution in plenary

The exercise step by step

STEP 1: EPIDEMIOLOGY TRAINING

Location: Plenary
Time: Monday, January 20th from 1:30 to 5:30pm

Objective:

- To enhance knowledge on Risk Assessment (RA) methodologies

STEP 2: INTRODUCTION TO MRA EXERCISE

Location: Plenary
Time: Tuesday January 21st from 11:00 to 12:00 am

Objective:

- To introduce the participants to the multi-sectoral RA exercise on RVF

STEP 3: RA EXERCISE IN GROUP [2 HOURS]

Location: Break out room
Time: Tuesday January 21st from 1:30 to 3:30 pm

i) **Identify potential risks for your country by discussing with the group**

Location: Break out room
Duration: 45 minutes

Objectives:

- Identify potential risks for RVF transmission in your country by discussing the risk questions (Annex 3)

Content:

This step will be done by involving in the discussion all the countries of the group but with all the sectors of the same country sitting nearby for possible "consultation".

Each participant is asked to follow the risk questions and to discuss and verify the possible replies with the colleagues of the other sectors in the group.

Facilitators will guide the identification of measures and options for each question considering their ***feasibility*** (based on national/local conditions, available resources etc.), and their ***effectiveness*** (how much it is successful in producing the desired result/ the extent to which targeted problems are solved).

ii) **Estimate the risk level in your country by consensus with the members of your country**

Duration: 45 minutes

Objectives:

- Provide replies to the questions 1, 2 and 3 by country
- Assess level of risk for RVF in your country (question 4) on the basis of the replies to questions 1, 2 and 3
- Estimate the added value of multi-sectoral RA in the national context (Annex 3)

Content:

The group will be divided in sub-groups of only one country each with all the sectors represented, as the outcome will be the replies to the questions and the level of risk by country.

Aspects to be considered to assess the risk level:
- Replies provided for the risk questions. If the country is well prepared in terms of preparedness, prevention and control the risk could be reduced
- Epidemiological situation of RVF/RVFV in the neighboring countries
- Procedures/Law for animal movements
- Etc. etc.

Particular attention will be paid to the multisectoral added value for each *Question* (e.g. Is the added value/the importance of identifying preparedness measures for RVF in collaboration with all the sectors low, medium or high?)

Each country will provide the multi-sectoral estimated level of risk and the multi-sectoral added value/importance to the rapporteur to prepare the restitution slides.

iii) **Preparing restitution slide by group (Annex 4)**

Duration: 30 minutes

Rapporteur Task: Prepare restitution slide

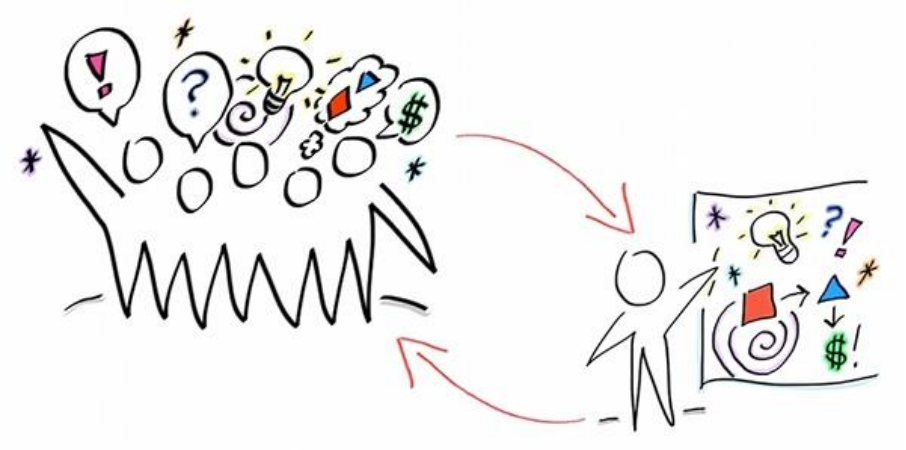
STEP 4: RESTITUTION IN PLENARY

Location: Plenary
Time: Tuesday January 21st from 4:00-4:30 pm
Duration: 30 minutes

Objectives:

- Report to the other groups the outcome of the RA exercise (restitution slide by group (Annex 4))
- Discuss differences between the two groups, possible doubts and uncertainties.

Annex 9.



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PARTICIPANTS' GUIDE

4th MULTISECTORAL EXERCISE ON RISK ASSESSMENT

MediLabSecure

Regional meeting

Dakar 20-24 January 2020

This 4th multi-sectoral risk assessment exercise was designed by the MediLabSecure (MLS) WP4 ISS team (Maria Grazia Dente, Laura Amato and Silvia Declich) in collaboration with the IZSAM team (Paolo Calistri, Ombretta Pediconi, Daria Di Sabatino and Barbara Alessandrini), with the support of the MLS Focal Points (Aissam Hachid- Institut Pasteur d'Algérie, Soufien Sghaier- Institut de la Recherche Vétérinaire de Tunisie, Youmna Mghirbi- Pasteur Institute of Tunis, Kaouther Harabech – Tunisian Ministry of Health), the MLS Work Packages' Teams and MediPIET Project (Concha Martin de Pando and Adela Páez).

This exercise was designed as part of the project activities of the MediLabSecure project.

The project is funded by the European Union (Contract Number: N° 2018/402-247).

Overview of the exercise

The 4th Multisectoral Exercise on Risk Assessment (RA) is designed to foster small group discussion on the status of Rift Valley Fever (RVF) surveillance in the region and to assess level of risk at country level with the support of the methodology applied by FAO for the Risk Assessment for RVF in Niger (March 2017).

OBJECTIVES

The goal of this exercise is:

- To enhance knowledge (and capacity) on multi-sectoral/integrated RA for RVF
- To make the participants aware of RA methodologies to be applied at national level
- To practice multi-sectoral collaboration for risk assessments that require exchange of information, expertise and experience

DOCUMENTATION & MATERIALS

Distributed to all Participants one week in advance by e-mail:

- Background information and selected references on RVF (Annex 1)
- National information on RFV provided by the countries involved in the exercise (Annex 2)

Distributed to all Participants *in situ* by the ISS (WP4) team:

- Pre-test and post-test sheets
- Exercise Evaluation Form

Distributed to all Participants *in situ* by the Facilitators:

- Participants' guide
- Risk questions & Multisectoral added value (Annex 3a & 3b)

The exercise step by step

STEP 1: EPIDEMIOLOGY TRAINING

Location: Plenary
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Location: Break out room
Duration: 45 minutes

Objectives:

- Identify potential risks for RVF transmission in your country by discussing the risk questions (Annex 3)

Content:

This step will be done by involving in the discussion all the countries of the group but with all the sectors of the same country sitting near for possible "consultation".

Each participant is asked to follow the risk questions and to discuss and verify the possible replies with the colleagues of the other sectors in the group.

ii) Estimate the risk level in your country by consensus within the members of your country

Duration: 45 minutes

Objectives:

- Provide replies to the questions 1, 2 and 3 by country
- Assess level of risk for RVF in your country (question 4) on the basis of replies to questions 1, 2 and 3
- Estimate the added value/importance of multi-sectoral RA in the national context (Annex 3)

Content:
The group will be divided in sub-groups of only one country each with all the sectors represented, as the outcome will be the replies to the questions and the level of risk by country.

Particular attention will be paid to the multisectoral added value for each *Question* (e.g. Is the added value of identifying preparedness measures for RVF in collaboration with all the sectors low, medium or high?)

Each country will provide the multi-sectoral estimated level of risk and the multi-sectoral added value to the rapporteur to prepare the restitution slides.

iii) Preparing restitution slide by group (Annex 4)

Duration: 30 minutes

Rapporteur Task: Prepare restitution slide

STEP 4: RESTITUTION IN PLENARY

Location: Plenary
Time: Tuesday January 21st from 4:00-4:30 pm
Duration: 30 minutes

Objectives:

- Report to the other groups the outcome of the RA exercise (restitution slide by group (Annex 4))
- Discuss differences between the two groups, possible doubts and uncertainties.