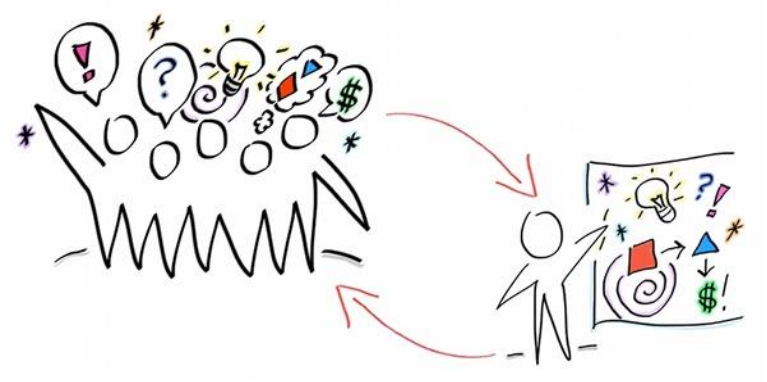

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REPORT

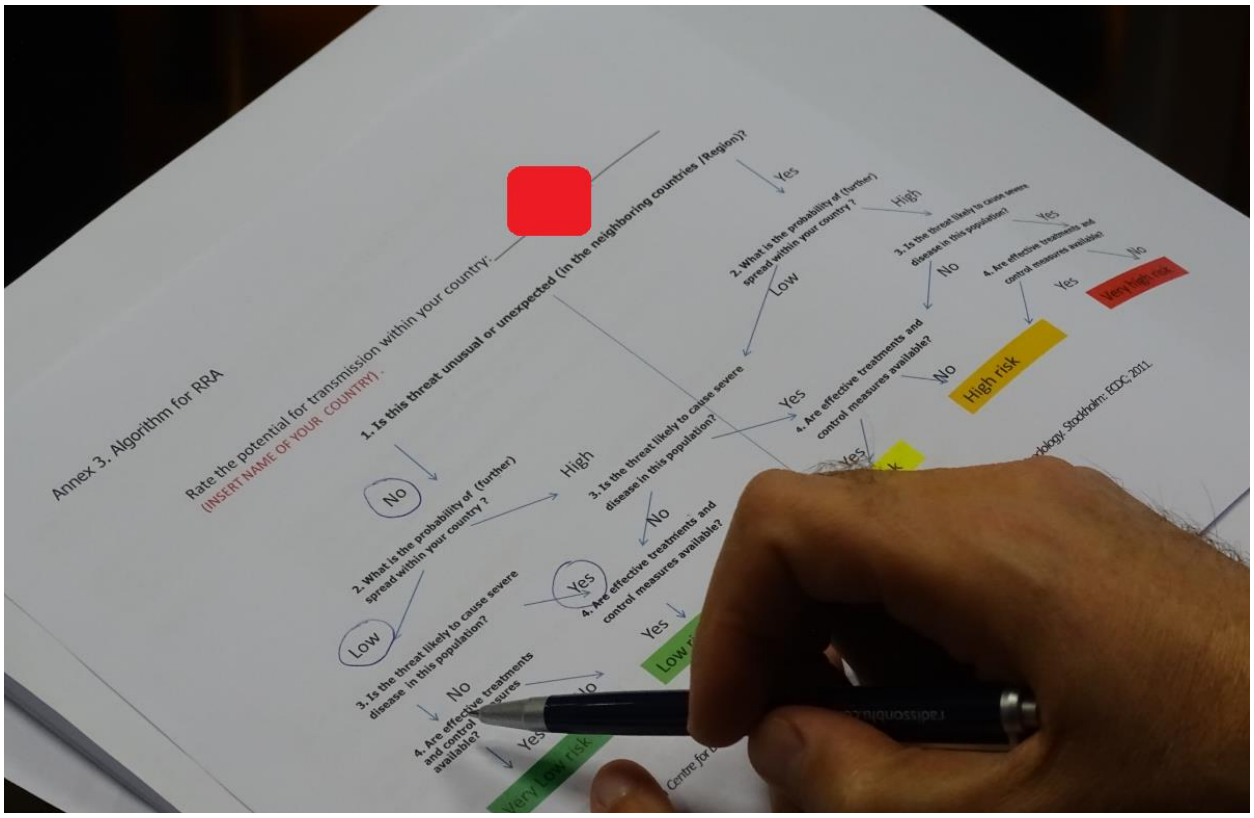
MediLabSecure

2nd Technical Workshop on Public Health:

Multisector Rapid Risk Assessment for Crimean-Congo Haemorrhagic Fever

Belgrade 16-17 November 2016

MediLabSecure



This report was compiled by the MediLabSecure WP5 ISS team: Maria Grazia Dente, Silvia Declich and Flavia Riccardo.

The Crimean-Congo Haemorrhagic Fever (CCHF) Risk Assessment exercise was designed by the WP5 ISS team in collaboration with MediLabSecure Work Packages' Teams and the ECDC subject-matter experts involved in the exercise (Thomas Mollet and Tarik Derrough).

As the technical workshop on public health was embedded in the 1st project regional, the *Institut Pasteur* took care of the logistic organization of the workshop.

MediLabSecure is a continuation of the "EpiSouth plus" project (2010-2013). The project is funded by the European Union DEVCO/ EuropeAid (Contract Number: IFS/2013/330 961). The Project is led by the Institut Pasteur and counselled by an Advisory Board composed by international experts.

CONTENTS

Introduction

THE MEDILABSECURE PROJECT

Countries of the Mediterranean and Black Sea regions have common sea borders and, as a result, share common public health issues and threats. MediLabSecure is a European project (2014-2017) that aims at consolidating a Public Health and Laboratory Network on emerging zoonotic vector borne viruses.

It represents a cluster for awareness, risk assessment, monitoring and control of these vector borne diseases. This cluster pursues the interaction of four sub-networks, one laboratory network for human health, one laboratory network for animal health, one laboratory network for entomology and one network for public health reinforcement. The MediLabSecure network includes partner countries around the Mediterranean and Black Sea Regions (19 non-EU countries).

General objectives

- Create a framework for collaboration to improve surveillance and monitoring of emerging vector borne viral diseases (arboviruses)
- Provide training for public health experts in participating countries to increase the communicable disease control in the Mediterranean and Black Sea region.
- Promote knowledge development and transfer of biosafety best laboratory practices

Specific objectives

Prevent spread of viruses and concerned vectors (mosquitoes):

- Prevent outbreaks of zoonotic viruses with an existing identified or potential risk in the region (West Nile, Dengue, Chikungunya, Yellow Fever, Rift valley fever, …)
- Improve integrated surveillance (animal, human, entomological)
- Provide risk assessment of the different emerging viruses (transmission, spread, human impact…)
- Recommend and implement public health measures for control where possible

For more information, visit http://www.medilabsecure.com/project.html

Overview of the Public Health Workshop

The Public Health (PH) workshop consisted in the conduction of the 2nd Multisector Exercise on Risk Assessment. This exercise was designed to foster small group discussion on surveillance integration in the framework of One Health, on the status of Crimean Congo Haemorrhagic Fever (CCHF) in the region and to assess level of risks at country level with the methodological support of the ECDC RRA Guidance.

OBJECTIVES

The goal of this exercise was:

- To **enhance knowledge** (and capacity) on multi-sectoral/integrated Rapid Risk Assessment (RRA) for CCHF
- To make the participants aware of the **ECDC Operational Guidance on RRA Methodology**
- To **encourage multi-sectoral collaboration and exchange.**

TARGET AUDIENCE

This exercise was held on the second and third day of the MediLabSecure Regional meeting and Technical Workshop on Public Health.

Invited participants to this event included:

- Laboratory staff from human and veterinary sectors (heads of labs and nominees)
- Entomologists (heads of labs and nominees)
- PH officials MoH/IPH (former EpiSouth Network and VBD nominees)

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

ENHANCING ABILITIES

After completion of this exercise, the participants would be able to:

- Describe how a multi-sectoral/integrated Rapid Risk Assessment (RRA) for CCHF could be conducted
- Estimate the added value and feasibility of multi-sectoral RRA in their national context
- Assess Risk for CCHF transmission in their countries

DOCUMENTATION & materials

MATERIALS
For the Facilitator: • Facilitator Guide • ECDC Operational Guidance on RRA Methodology • Background information and selected references on CCHF (Annex 1)[1] • PowerPoint® Template slide for restitution (for the Rapporteur, Annex 4) **Distributed to all Participants one week in advance by e-mail:** • ECDC Operational Guidance on RRA Methodology • ECDC RRA on CCHF in Spain (September 2016) • Background information and selected references on CCHF (Annex 1) **Distributed to all Participants *in situ* by the ISS (WP5) team:** • Pre (after lunch day 2) and post-test (before lunch day 3) sheets **Distributed to all Participants *in situ* by the Facilitators:** • Participants' guide • RRA Information table (Annex 2) • Algorithm for RRA (Annex 3) • Exercise Evaluation Form

GROUPWORK SETUP

- The exercise involved 3 small groups divided by country :

Groups	Group 1	Group 2	Group 3
N. Participants	18	15	9
Countries	Serbia Albania Former Yugoslav Republic of Macedonia	Georgia Armenia Moldova Kosovo Ukraine	Montenegro Turkey Bosnia and Herzegovina

[1] Due to time constraints, the collection of event information; literature search and extraction of relevant evidence has been not considered in the exercise in situ. The organizers provided the essential information and evidence to the participants with the Annex 1.

- Three/four facilitators were assigned to each group
- Each group conducted the exercise in a separate break-out room.

ROLE OF FACILITATORS AND RAPPORTEURS

- **Facilitators needed to**:
  - conduct the tasks defined in this guide,
  - guide the discussions encouraging participation,
  - keep time, and
  - support the rapporteur.

- **Rapporteurs needed to**:
  - Report the assessed level of risk by country in a single slide (see template Annex 4),
  - Report the added value of the multi-sectoral collaboration for each step of the RRA information table by country in a single slide (see template Annex 4),
  - Share and discuss the slide with the group participants at the end of the group work ahead of restitution,
  - Present the slide at restitution on 17 November 2016 (see Annex 4).

Facilitator TASKS BEFORE STARTING THE EXERCISE - checklist

Task	✓
Verify that the break out room is equipped with a functioning laptop with the exercise material and a flip chart with markers.	
Distribute to all participants: • Participants' guide • RRA Information table (Annex 2) • Algorithm for RRA (Annex 3) • Exercise Evaluation Form	
Explain the role of the rapporteur and support your group to nominate a **rapporteur**	
Show the rapporteur the template restitution slide (Annex 4)	

The exercise step by step

STEP 1: TECHNICAL PRESENTATIONS

Location: Plenary
Time: Wednesday Nov. 16t^{h} from 2:00 to 3:00pm
Duration: 60 minutes

Objectives:

- To enhance knowledge on multi-sectoral/integrated Rapid Risk Assessment (RRA) methodology on CCHF
- To make the participants aware of the ECDC Guidance on RRA Methodology
- To introduce the participants to the Multi-sectoral RRA exercise on CCHF

Content:

- 30min – Rapid Risk assessment aims and methodology (ECDC)
- 30min - RRA Exercise on CCHF (ISS Team)

Facilitator Task: Pay particular attention to those presentations as you will need to refer to them in the following steps of the exercise.

STEP 2: RRA EXERCISE IN GROUP: DISCUSS THE REGIONAL SITUATION AND POTENTIAL RISKS FOR YOUR COUNTRY

Location: Break out room
Time: Thursday Nov. 17th from 8:30 am
Duration: 30 minutes

Objective/s:

- Discuss the regional situation of CCHF on the basis of the information delivered with the presentations during the previous days of the Meeting, national data and the Background document sent to the participants (Annex 1. of this Guide)

Facilitator Task: Moderate discussion

STEP 3: IDENTIFY POTENTIAL RISKS FOR YOUR COUNTRY

Location: Break out room
Time: Thursday Nov. 17th from 9:00 to 10:00 am
Duration: 60 minutes

Objectives:

- Identify potential Risks for CCHF transmission/further transmission in your country by filling in the RRA Information table (Annex 2, Part 1)
- Estimate the added value and feasibility of multi-sectoral RRA in the national context (Annex 2, Part 1- last column)

Content:

This step has been done by involving all the countries of the group but with all the sectors of the same country sitting near for possible "consultation". The discussion has involved all the countries and all the sectors of the group.

Each participant was asked to follow the RRA information table (Annex 2. part 1), starting from the first *Question/parameter* and to discuss and verify the possible replies, in relation to the respective country, with the colleagues of the other sectors in the group.

Particular attention has been paid to the multisectoral added value for each of the *Question/parameter* of the RRA information table (*i.e.* is the added value of assessing the 1st parameter with the collaboration of all the sectors low, medium or high? The 2nd parameter? Etc.)

Each participant had to report the identified categorization and multisectoral added value in his/her table with possible comments.

Facilitator Task: Keep time, provide needed indications, facilitate compilation of RRA information table by each participant (Annex 2 part 1).

STEP 4: ASSESS THE RISK LEVEL IN YOUR COUNTRY & EVALUATE THE RRA METHOD

Location: Break out room
Time: Thursday Nov. 17th from 10:30 to 11:30 am
Duration: 60 minutes

Objectives:

- Assess level of risk for CCHF transmission in your country following the Algorithm for RRA (Annex 3)
- Discuss the RRA methodological approach: was this process clear? Could it be applicable in your country? (Annex 2, part 2)
- Preparing restitution slide by Group (Annex 4)

Content:
The group has been divided in sub-groups of only one country each with all the sectors represented, as the outcome was the level of risk by country and considerations on the method.

Based on RRA information table filled in in the step 3 by each participant, the Algorithm for RRA (Annex 3) has been followed by all the sectors of each country to assess the risk.

Each country provided the multi-sectoral assessed level of risk and the multi-sectoral added value to the rapporteur to prepare the restitution slide.

Rapporteur Task: Prepare restitution slide

Facilitator Task: Keep time, provide needed indications, facilitate use of the algorithm, support the rapporteur.

STEP 5: RESTITUTION IN PLENARY

Location: Plenary
Time: Thursday Nov. 17th from 11:30 to 12:00 am
Duration: 30 minutes

Objectives:

- Report to the other groups the outcome of the RRA exercise (restitution slide by Group (Annex 4))
- Discuss possible doubts and uncertainties.

Exercise schedule and summary of tasks

Steps of the Exercise	Expected Time	Task of Facilitator
1. **Technical presentations (Step 1)** • Rapid Risk Assessment methodology (ECDC) • MediLabSecure Multisectoral exercise introduction(ISS)	**60 minutes** 30 minutes 30 minutes	**Pay particular attention** to those presentations as you will need to refer to them in the following steps of the exercise.
2. **MediLabSecure Multisectoral exercise** • discuss the regional situation and potential risks for your country **(step2)** • identify potential risks for your country **(step3)**	**150 minutes** 30 minutes 60 minutes	▪ Moderate discussion, ▪ Keep time, ▪ Facilitate compilation of the information table and algorithm ▪ Support rapporteur in preparing restitution slide ▪ Ask back the evaluation sheet to the participants

• assess the risk level in your country & evaluate the RA method **(step 4)**	60 minutes	
3. **Restitution in plenary (step 5)** • Restitution by the rapporteur	**30 minutes**	▪ Support the discussion in plenary with possible issues raised during the exercise

RESTITUTION

On the 17th of November the rapporteurs of the three groups presented their slides in plenary commenting on the output of the exercise (Table 1.).

Table 1.Restitution slide: All countries (groups 1, 2 and 3)

Country	**Level of risk assessed** (Low/medium/high)	**Added value of multi-sector approach for each of the questions of the assessment** (Low/medium/high)				
		1. Is this threat unusual or unexpected?	**2. What is the potential for transmission within your country?**	**3. Is it likely to cause severe disease in the population?**	**4. Are effective treatments and control measures available?**	**5. Are there contextual factors that may affect the risk assessment?**
Bosnia and Herzegovina	Low	high	high	high	medium	medium
Macedonia	Low	high	high	medium	low	high
Ukraine (only Human Virology)	Low	high	high	high	high	high
Moldova	Low/Moderate	high	high	medium	medium	high
Serbia	Moderate	high	high	high	low	high
Armenia	Moderate	high	high	High	medium	high

Albania	Moderate	high	high	medium	low	high
Turkey	Moderate	medium	medium	medium	high	high
Montenegro	Moderate	high	high	medium	high	high
Georgia	Moderate/high	high	medium	high	high	high
Kosovo	Moderate/high	high	high	high	high	high

Four of the eleven countries (36%) assessed a low or low/moderate risk of CCHF transmission in their countries, 5(46%) a moderate risk and 2(18%) a moderate/high risk.

Almost all the countries considered that doing the assessment with a multisector approach had a high added value for the questions 1, 2. and 5. In other words, the replies to the question 1, 2 and 3. were highly facilitated by the concomitant presence of different sectors (human, animal and entomological) at the assessment. This has ensured a comprehensive discussion.aimed at filling gaps and decreasing uncertainty.

Pre and Post tests

The facilitators asked participants to fill in a pre and post-test (see annex 5 for the pre and post-test questionnaires) with the following open questions (except the first one: yes or no) to have some indications on the weak aspects and gaps of the participants on RRA and also on aspects of the exercise to be strengthened or modified:

1. Would CCHF be an unusual or unexpected threat in your country?
2. List factors related to the potential for transmission of CCHF in your country (risk factors to consider in order to assess the level of risk for CCHF)
3. List kind of documents to rely on to assess the level of risk for CCHF in your country
4. List institutions/departments/experts to involve to assess the level of risk for CCHF in your country and explain the reasons

Eleven countries took part in the exercise with 42 participants. Thirty-five (83%) completed pre and posts tests, while seven compiled only the pre or the post-test.

With reference to the question 1, 10 out of 35 (29%) of the respondents replied ***yes*** in the pre-test. However, in the post-test, all the respondents (35) replied ***no*** to this question.

For the question 2, it has to be noted that all the respondents were more detailed and specific in the post-test (i.e. presence of the virus in addition to the presence of the vector, human cases, sero-prevalence data etc.).

Beside risk factors connected with the presence of the virus, the vector and the occupation, 13 respondents (37%) reported as risk the presence of the virus in neighborhood countries in the pre-test and additional 3 in the post-test.
Weakness of laboratory facilities and lack of preparedness were mentioned by 8 responders (23%) as risk factors in their pre-tests and two of them repeated it also in the post test.
The risk connected with environmental and climate changes was mentioned in one pre-test and two post-tests.

The Table 2 presents the participants' replies to question 3.
In the pre-test, 9 (25%) participants were not able to identify any document useful for the RA and the majority of the respondents (22, 63%), mentioned only guidance, national law decrees and plans among the documents. These documents do provide information on the country organization, procedures and possible fragilities to threats (e.g. laboratory capacities), but do not provide sufficient and updated information and data (as recent relevant articles, unpublished documents, reports, data from neighborhood countries etc.).

In the post-test, as shown in Table 2, only 2 (6%) participants did not mention any kind of documents. Thirty-three (94%) participants were able to identify needed documents, 2/33 (6%) only scientific articles, 17(52%) only guidance, national law decrees and plans, and 14(42%) guidance, national law decrees and plans and also articles, unpublished documents, studies etc.

The difficulty in the identification of articles, unpublished documents, reports etc. as needed documentation, for a considerable number of participants also in the post-test, could be a weakness of the participants but also a weakness of the method adopted for the exercise. In fact, in order to save time during the implementation of the exercise, the ISS team searched and analyzed in advance the available relevant documentation and synthetized the outcomes in a background document (annex 1) distributed to the participants. Therefore, the participants might have missed the critical importance of this step for the RRA.

Table 2 - Number of participants identifying documents for RRA by type of document, pre and post test results

Type of document	Per-test	Post-test
No documents mentioned	9(25%)	2(6%)
Guidance, law decrees, plans	22 (63%)	17(49%)
Guidance, law decrees, plans, articles, unpublished documents, studies	2(6%)	14(39%)
Scientific articles	2(6%)	2(6%)
Total responses received	**35 (100%)**	**35 (100%)**

The gaps of the question 3 seem to be filled in with the question 4 where the participants list many institutions and experts from different sectors to involve in the assessment as source of updated information and data on the situation. The provided lists give also a clear idea on all the stakeholders involved in the surveillance and response in each country.

The exercise evaluation

At the end of the exercise, all participants were asked to compile an evaluation form (annex 6). Of the 42 participants, 37(88%) provided the evaluation questionnaire.

31/37 (84%), “strongly agree” or “agree” with all the four sentences of the evaluation form:

- The exercise objectives were well communicated
- Discussions were useful
- Adequate time was allotted
- Overall the exercise was satisfactory

Regarding content, participants reported finding the discussion topics addressed useful (Figure 1). In particular, the most recurrently mentioned strengths were the usefulness of discussions, the exchange of expertise and information across sectors and countries, team building and exposure to the ECDC guidance.

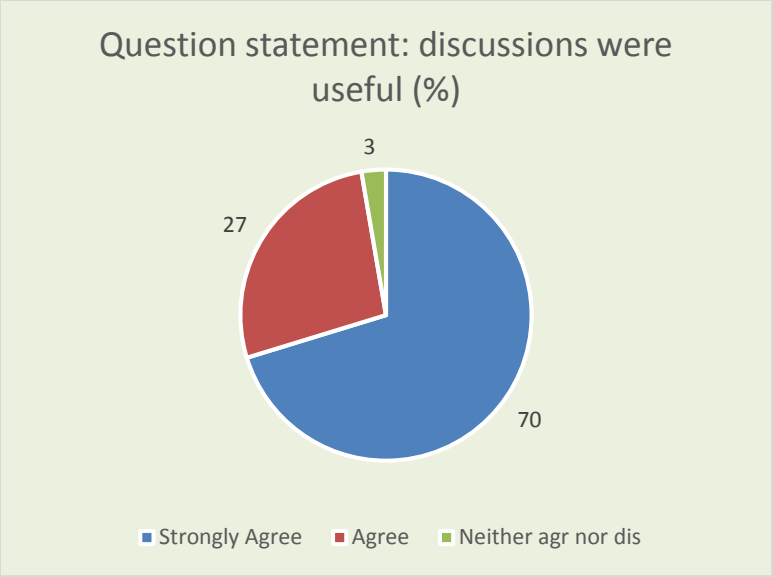


Figure 1. Proportion of answers provided to the question on usefulness of discussions

Overall participants expressed a very high satisfaction with the exercise (Figure 2).

Figure 2. Proportion of answers provided to the question on satisfaction

Concerning more organizational aspects, participants reported finding the exercise to be well designed and implemented. More specifically most participants found that the objectives of the exercise were well communicated (Figure 3) and that time was adequately allotted to the exercise activities (Figure 4).

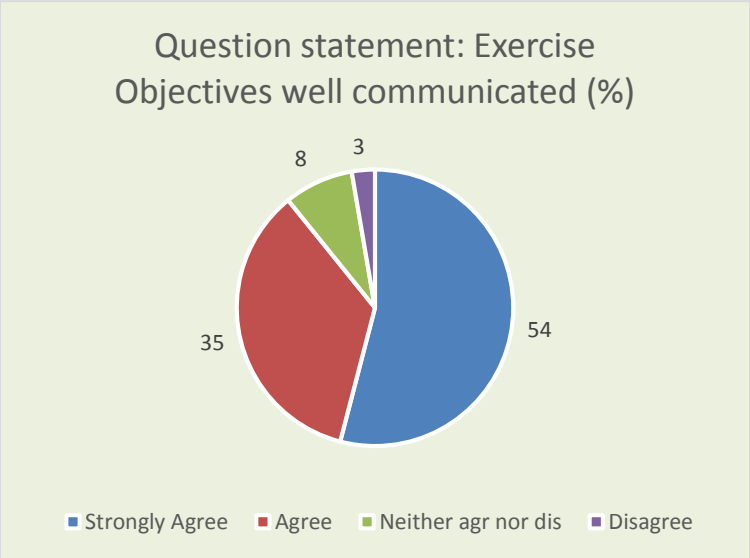


Figure 3. Proportion of answers provided to the question on communication of objectives

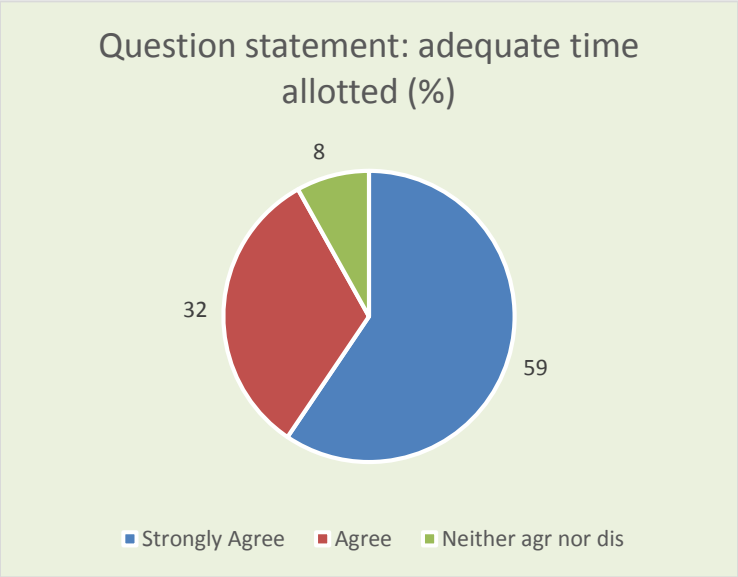


Figure 4. Proportion of answers provided to the question time allotment

The following areas of improvement were identified:

- realistic assessment can be done on the basis of countries data
- consider organizational, economical e political aspects impacting on the risk

Conclusion

In conclusion, the PH workshop was successful in implementing a practical exercise on CCHF rapid risk assessment following an integrated and intersectorial approach in the framework of One Health.

Based on the feedback received, participants were satisfied with the quality of this exercise both in general and specifically in regards to its content and its organization.

The evaluation highlighted that the exercise was successful in providing information on multi-sectoral/integrated RRA for CCHF and expose participants to the ECDC Operational Guidance on RRA Methodology (objectives 1 and 2 of the exercise).

Finally, participants reported that the exercise successfully promoted the exchange of expertise across sectors and countries and multisector team building (objective 3).

Resources

- ECDC Operational Guidance on RRA Methodology. Available at http://ecdc.europa.eu/en/publications/Publications/1108_TED_Risk_Assessment_Methodology_Guidance.pdf

Annexes

Annex 1. Background information and selected references on CCHF

Annex 2. RRA Information table

Annex 3. Algorithm for RRA

Annex 4. PowerPoint® Template slide for restitution

Annex 5. Pre and post-test questionnaires

Annex 6. Evaluation form

MediLabSecure

2nd MULTISECTORIAL EXERCISE ON RISK ASSESSEMENT
November 17th 2016

Annex 1.

Background information on CCHF

(based, with integrations, on the ECDC document: "Crimean-Congo haemorrhagic fever in Spain – September 8th 2016". Stockholm: ECDC; 2016 [1] and WHO Crimean-Congo haemorrhagic fever (CCHF) sheets [2])

Crimean–Congo haemorrhagic fever (CCHF) is a tick-borne viral disease caused by a virus belonging to the genus Nairovirus of the Bunyaviridae family. The virus circulates in a silent enzootic tick-vertebrate-tick cycle.

Ticks from the ***Hyalomma genus*** (Ixodid ticks) are considered the principal vectors of CCHF virus. *Hyalomma marginatum* is the main vector for CCHF virus in the Balkans.

CCHF virus is a ***BSL4 pathogen*** and should be handled in containment level 4 but diagnostics can be conducted in ***lower BSL levels after inactivation of the biological samples.***

CCHFV infection causes only a mild fever in domestic and wild vertebrate animals with a detectable viraemia of up to 2 weeks.
Viraemia and ability of animals to serve as source of infection is well established. Although animal infections are generally subclinical, the associated viraemia levels are sufficient to enable virus transmission to uninfected ticks [3]

The long-distance transfer of CCHF viruses could occur through at least two different mechanisms [4].
The first, which has presumably been occurring for millennia, is the ***transport of infected ticks by migratory birds***. With the exception of ostriches, there is no evidence that birds are hosts for the replication of CCHFV.
However, many competent tick vectors of CCHFV feed on birds during their larval and nymph stages, and could potentially be carried over great distances, should they attach to a bird before it sets off on its migration.
The second possible mechanism of long-distance virus transfer, which has begun relatively recently on the biological time-scale, is the ***international shipment of livestock, which can introduce infected animals and ticks into areas previously free of disease,*** or add novel virus strains in regions where CCHFV already circulates.

Small mammals, such as hares and hedgehogs, are hosts for the immature stages of the ticks and serve as amplifying hosts. ***Domestic animals***, such as cattle, goats and sheep, and wild game are the usual hosts for the adult ticks.

The main ***mode of transmission is a bite from an infected tick, mostly of the Hyalomma genus***. The tick bite can be unnoticed and exposure to the virus can occur upon crushing the tick. The virus can also be transmitted by **direct contact with blood or tissues** from viraemic livestock or patients at risk of ***nosocomial infections***.

CCHF outbreaks constitute a threat to public health services because of its epidemic potential in at risk groups, its high case fatality ratio (10-40%), its potential for nosocomial outbreaks and the difficulties in treatment and prevention.

The length of the incubation period depends on the mode of acquisition of the virus. Following infection by a tick bite, ***the incubation period is usually one to three days,*** with a maximum of nine days. The incubation period following contact with infected blood or tissues is usually five to six days, with a documented maximum of 13 days. There is no evidence of viraemia during the incubation period, prior to onset of symptoms [5].

Onset of symptoms is sudden, with fever, myalgia, (muscle ache), dizziness, neck pain and stiffness, backache, headache, sore eyes and photophobia (sensitivity to light). There may be nausea, vomiting, diarrhoea, abdominal pain and sore throat early on, followed by sharp mood swings and confusion. After two to four days, the agitation may be replaced by sleepiness, depression and lassitude, and the abdominal pain may localize to the upper right quadrant, with detectable hepatomegaly (liver enlargement).

Other clinical signs include tachycardia (fast heart rate), lymphadenopathy (enlarged lymph nodes), and a petechial rash (a rash caused by bleeding into the skin) on internal mucosal surfaces, such as in the mouth and throat, and on the skin. The petechiae may give way to larger rashes called ecchymoses, and other haemorrhagic phenomena. There is usually evidence of hepatitis, and severely ill patients may experience rapid kidney deterioration, sudden liver failure or pulmonary failure after the fifth day of illness.

The mortality rate from CCHF is approximately 30%, with death occurring in the second week of illness. In patients who recover, improvement generally begins on the ninth or tenth day after the onset of illness.

The incidence of ***infection among donors is undocumented, and no cases of donor-derived CCHF have been reported.*** Therefore, the risk for transmission of CCHF through substances of human origin remains uncertain. Available data are insufficient to make evidence-based CCHF safety recommendations for deferral of donors. Pathogen inactivation of plasma and platelets and multiple pathogen reduction steps used in the fractionation process have been shown to be effective in the removal of enveloped viruses such as CCHF virus.

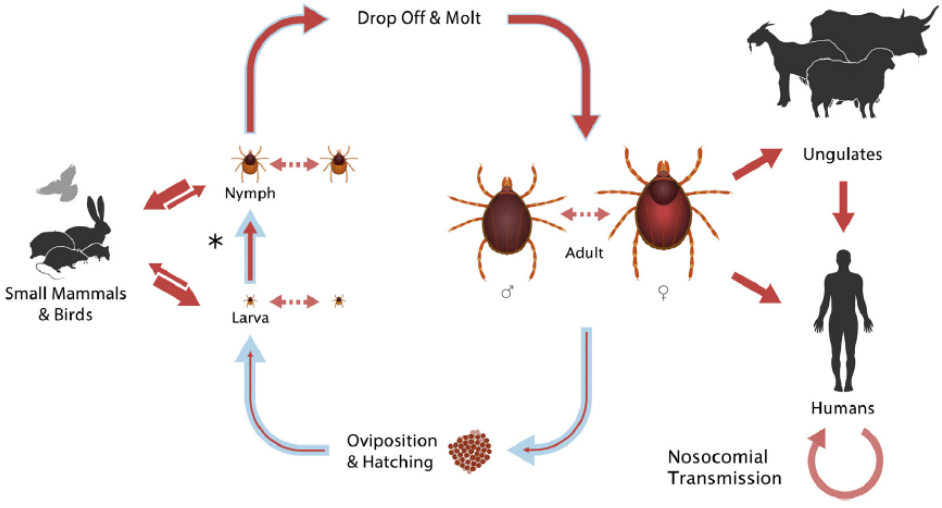


Fig. 7. Life cycle of *Hyalomma spp.* ticks and vertical and horizontal transmission of CCHFV. The course of the tick life cycle is indicated with blue arrows. Upon hatching, larvae find a small animal host for their first blood meal (hematophagy). Depending on the tick species, the larvae either remain attached to their host following engorgement and molt in place (two-host ticks) or fall off and molt (three-host ticks); this transition is marked by an asterisk. The nymphs then either continue to feed on the animal on which they molted (two-host ticks) or attach to a new small animal (three-host ticks). Upon engorgement, nymphs of all species drop off their host and molt into adults. Adult ticks then find a large animal for hematophagy, and mate while attached to the host. After taking a blood meal, the engorged females drop off and find a suitable location for ovipositing. During the tick life cycle, there are a number of opportunities for virus transmission between ticks and mammals (solid red arrows) and directly between ticks, through co-feeding (dashed arrows). For each form of virus transfer, the thickness of the red arrow indicates the efficiency of transmission. Infection of humans can occur through the bite of an infected tick or through exposure to the body fluids of a viremic animal or CCHF patient.

Source: [4]

People working in close proximity to animals, especially livestock (e.g. ***agricultural workers in animal husbandry or slaughterhouse workers, veterinarians***) and people exposed to tick-to-human transmission through their outdoor activities (e.g. hunters, forest workers, hikers) can be at higher risk of

exposure. ***Healthcare providers*** caring for patients infected with CCHF virus are at risk of human-to-human transmission.

Person-to-person and ***nosocomial transmission*** is occasional but not unusual for CCHF virus infection [6,7].
It may occur during early contact with healthcare services, before CCHF is recognised in the source patient and appropriate protective measures implemented. ***This is particularly true in areas where CCHF has not been detected before.*** Once CCHF is known to occur in a region, nosocomial transmission tends to occur at later stages of the disease, most probably related to high viraemia when source patients present severe manifestations [1]. Nosocomial transmission is usually related to direct contact with the blood and bodily fluids of infected patients or needle-stick injuries. ***The use of personal protective equipment (PPE)*** among healthcare workers is recommended [8].

There is ***no validated specific antiviral therapy for CCHF***. Treatment relies on supportive care and ***ribavirin*** has been used to treat CCHF infection with apparent benefit, although more studies are needed.

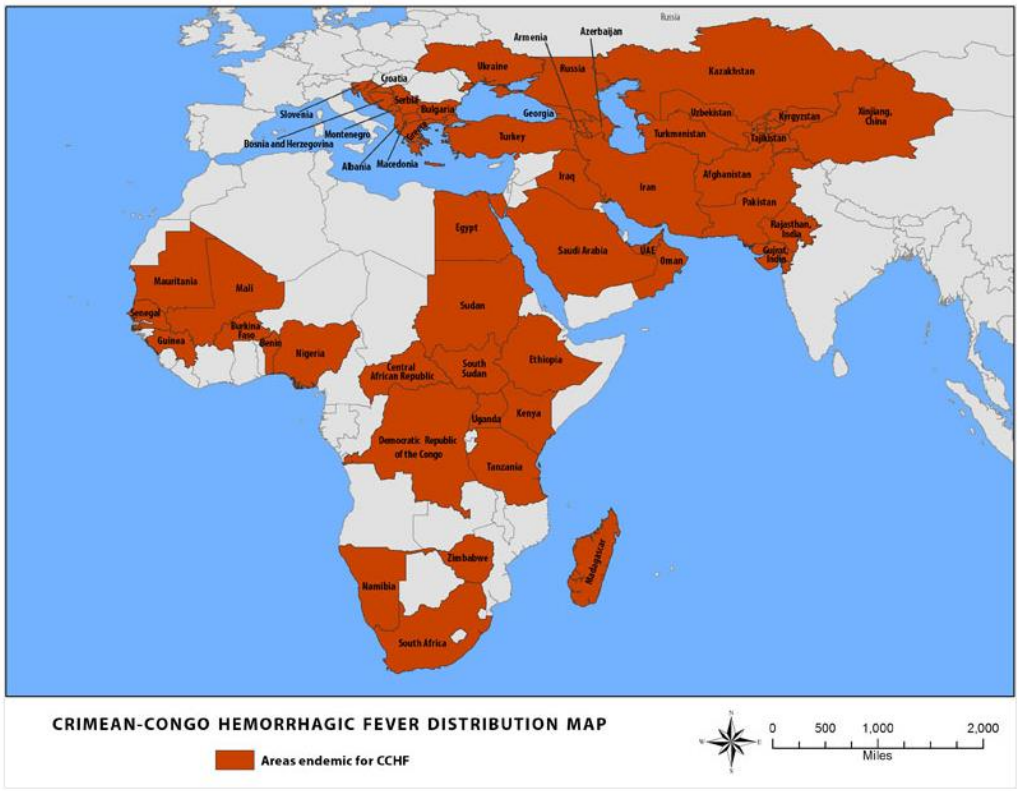
CCHF virus infection ***can be diagnosed by several different laboratory tests***:

- Enzyme-linked immunosorbent assay (ELISA);
- Antigen detection;
- Serum neutralization;
- Reverse transcriptase polymerase chain reaction (RT-PCR) assay; and
- Virus isolation by cell culture.

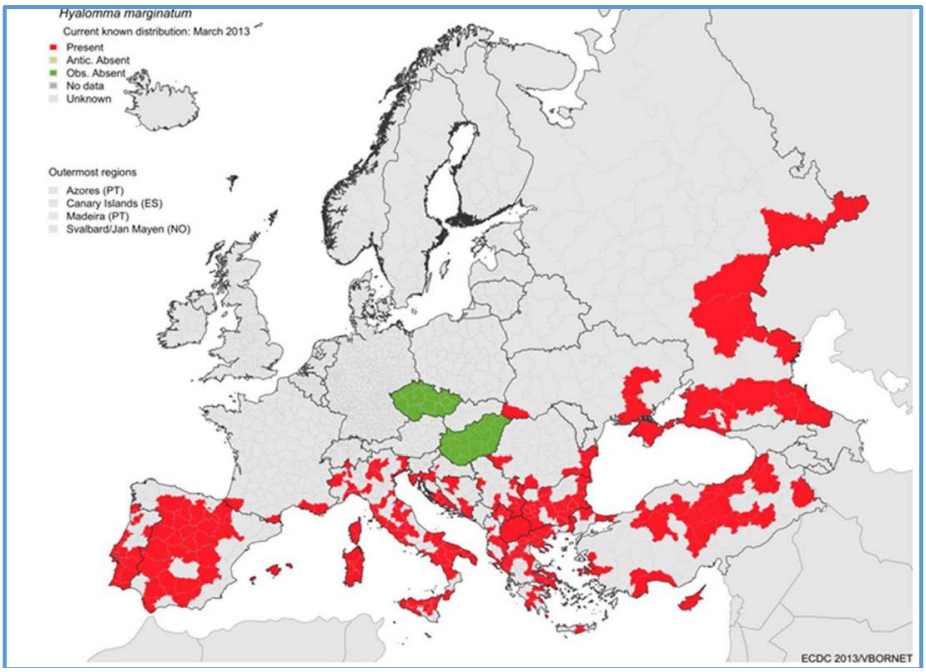
Patients with fatal disease, as well as in patients in the first few days of illness, do not usually develop a measurable antibody response and so diagnosis in these individuals is achieved by virus or RNA detection in blood or tissue samples.

Tests on patient samples present an extreme biohazard risk and should only be conducted under maximum biological containment conditions. However, if samples have been inactivated (e.g. with virucides, gamma rays, formaldehyde, heat, etc.), they can be manipulated in a basic biosafety environment.

Situation in the Region[1]



Source [9]



Geographic distribution of major vectors in Europe. Ticks: *Hyalomma marginatum*, vector of Crimean-Congo Hemorrhagic fever.

[1] Additional country specific information will be shared during the exercise on the basis of the data provided by the participating countries

Since 2000 the incidence and geographic range of confirmed CCHF cases have markedly increased, with the disease being reported in human for the first time in ***Turkey, Iran, Greece, the Republic of Georgia, and some Balkan countries.*** Very recently, a sero-prevalence study on cattle sera in the ***Former Yugoslav Republic of Macedonia*** reported that out of 158 serum samples (2009-2011) 23 were confirmed positive (14.6%). Evaluated by geographical region, 16 positive sera (80%) were from the North-eastern region. Presence of *Hyalomma* ticks in cattle, sheep and goats was also positive at the time of the study [10]

Sporadic cases are reported every year from ***Bulgaria*** (14 cases in 2008, eight cases in 2009, six cases in 2010, four cases in 2011, four cases in 2012 and eight in 2013).
In the WHO European Region, Turkey remains the most affected country. Overall, 9 787 cases have been reported by the Ministry of Health of Turkey between 2002 and 2015 with a 4.8% case fatality ratio [11]. A multicentre retrospective cross-sectional study in nine Turkish regional CCHF reference centres covering the years 2002 to 2014 identified 25 nosocomial laboratory-confirmed infections, including four fatal cases, from 51 exposed healthcare workers [12].

Additional data are reported in the tables below.

Table 1-1. Reported outbreaks of CCHF since 1945–2006 [1, 2, 5, 12, 13, 15, 20, 24, 27–30, 34, 37, 39, 42, 43, 47, 49, 53]

Geographical location	Years	No. of cases	Case fatality rate (%)	Occupation
Southeast Europe				
Crimea	1944–1945	200	10	Military members
Astrakhan	1953–1963	104	17	Agricultural workers
Rostov	1963–1969	323	15	Agricultural workers
Bulgaria	1953–1974	1105	17	Agricultural workers, HCWs
	1975–1996	279	11	Agricultural workers
	1997–2003	138	21	Agricultural workers
Albania	2001	7	Survived	Agricultural workers, HCWs
Kosovo	2001	18	33	Agricultural workers
Turkey	2002–2005	1103	5	Agricultural workers, HCWs
Asia				
China	1965–1994	260	21	Agricultural workers
	1997	26	24	Agricultural workers
Kazakhstan	1948–1968	75	50	Agricultural workers
Tadzhikistan	1943–1970	97	23	Agricultural and laboratory workers
Pakistan	1976	14	29	Shepherd, HCWs
	1994	3	Unknown	HCWs
	2000	9	55	Agricultural workers, HCWs
Middle East				
United Arab Emirates	1979	6	50	HCWs
	1994–1995	11	73	Agricultural workers
Sharjah	1980	1	Survived	Storekeeper
Iraq	1979–1980	55	64	Agricultural workers
Saudi Arabia	1990	7		Agricultural workers
Sultanate of Oman	1995–1996	4	Unknown	Agricultural workers
Iran	2003	81	18	Agricultural workers
Africa				
Zaire (Congo)	1956	2	Survived	Physician
Uganda	1958–1977	12	8	Laboratory workers
Mauritania	1983	1	Survived	Camel herd owner
	2004	38	29	Agricultural workers, HCWs
Burkina Faso	1983	1	Survived	Unknown
Republic of South Africa	1981–1986	32	31	Farmers, HCWs
Tanzania	1986	1	Survived	Student

Source: [13]

Table 1
Summary of published reports of CCHF in regions of the former Soviet Union and southeastern Europe, with total cases per country, case fatality rate and identification of virus clade (when available). Data on total cases and case fatality rates were obtained from the articles cited. See Supplementary Table 1 for more detailed information.

Years	Country/region	Total cases	Case fatality rate	Clade	Reference
1944	Crimea	161	11		Hoogstraal (1979)
1953–1963	Astrakhan	104	17	Europe-V	Hoogstraal (1979)
1953–1968	Stavropol	25	44	Europe-V	Hoogstraal (1979)
1963–1969	Rostov	323	15		Hoogstraal (1979)
1953–2009	Bulgaria	2431	17	Europe-V	Hoogstraal (1979), Papa et al. (2004), ECDC (2008), Christova et al. (2009) and Ergonul (2010)
1995–2010	Kosovo	216	19	Europe-V	EpiSouth and WHO (2008), EpiSouth (2012) and WHO SEARO (2011)
1999–2008	Russia	>1150	3.2	Europe-V	Yashina et al. (2003a, 2003b), EpiSouth and WHO (2008), and Leblebicioglu, 2010
2001–2006	Albania	32	3	Europe-V	Papa et al. (2002a), EpiSouth and WHO (2008)
2008	Greece	1	100	Europe-V	Papa et al. (2008)

Source: [4]

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2nd MULTISECTORIAL EXERCISE ON RISK ASSESSEMENT
November 17th 2016

Annex 2.

1. Information table for rapid risk assessment to support risk-ranking algorithm

(Modified from European Centre for Disease Prevention and Control. Operational guidance on rapid risk assessment methodology. Stockholm: ECDC; 2011).

Rapid risk assessment	
Public health issue: CCHFV transmission **Date of rapid risk assessment: 17/11/2016** **Scope of rapid risk assessment: Possible actions** **Summary of incident: increasing number of CCHF cases in the Region**	**Outcome of risk assessment:** (Refer to assessment risk ranking tool: Annex 3) **Confidence:** (Good/satisfactory/unsatisfactory)

Question/parameter	**Parameters to consider**	**Quality of evidence** (Good/satisfactory/unsatisf	**Comments (including gaps, doubts and uncertainties)**	**Added value for multi-sectorial assessment (Low/medium/high) Explain**
1. Is this threat unusual or unexpected? (in the neighboring countries where occurred) **Categorisation as:** Yes/no	• Since 2000 human confirmed CCHF cases increased in the Region • Presence of competent vector Hyalomma • CCHF virus detected in Hyalomma • the climatic conditions are suitable for the maintenance of the epidemiological cycle			

Question/parameter	Parameters to consider	Quality of evidence (Good/satisfactory/unsatisf	Comments (including gaps, doubts and uncertainties)	Added value for multi-sectorial assessment (Low/medium/high) Explain
2. What is the potential for transmission within your country **Categorization as:** High/low	Consider factors relating to: • presence and population density of competent vectors (Hyalomma) • presence of the virus • population at risk • international shipment of livestock • mode of transmission (bite from an infected tick; direct contact with blood or tissues: animal & nosocomial) • **……**			
3. Is it likely to cause severe disease in the population? **Categorization as:** Yes/no	• Consider morbidity, mortality, case fatality, complications and burden of disease. Timely and appropriate case management is crucial for the impact for the reduction of case fatality • Diagnostic capacities (clinical & Lab) • **……**			
4. Are effective treatments and control measures available? **Categorization as:** Yes/no	• There is no validated specific antiviral therapy for CCHF. Treatment relies on supportive care • Consider other factors which may affect these (feasibility, acceptability). • **……**			
5. Are there contextual factors that may affect the risk assessment?[1] **Categorization as:** • Yes/no Note: Context does not necessarily alter the risk in absolute terms but may alter risk perception.	• Consider public perception, media interest, political/economic issues, special circumstances (e.g. mass gathering, tourism). Examples include situations where there is increased public concern, combined with political and motional pressure etc.			

[1] Not to be inserted in the alghoritm

2. Evaluation of the method

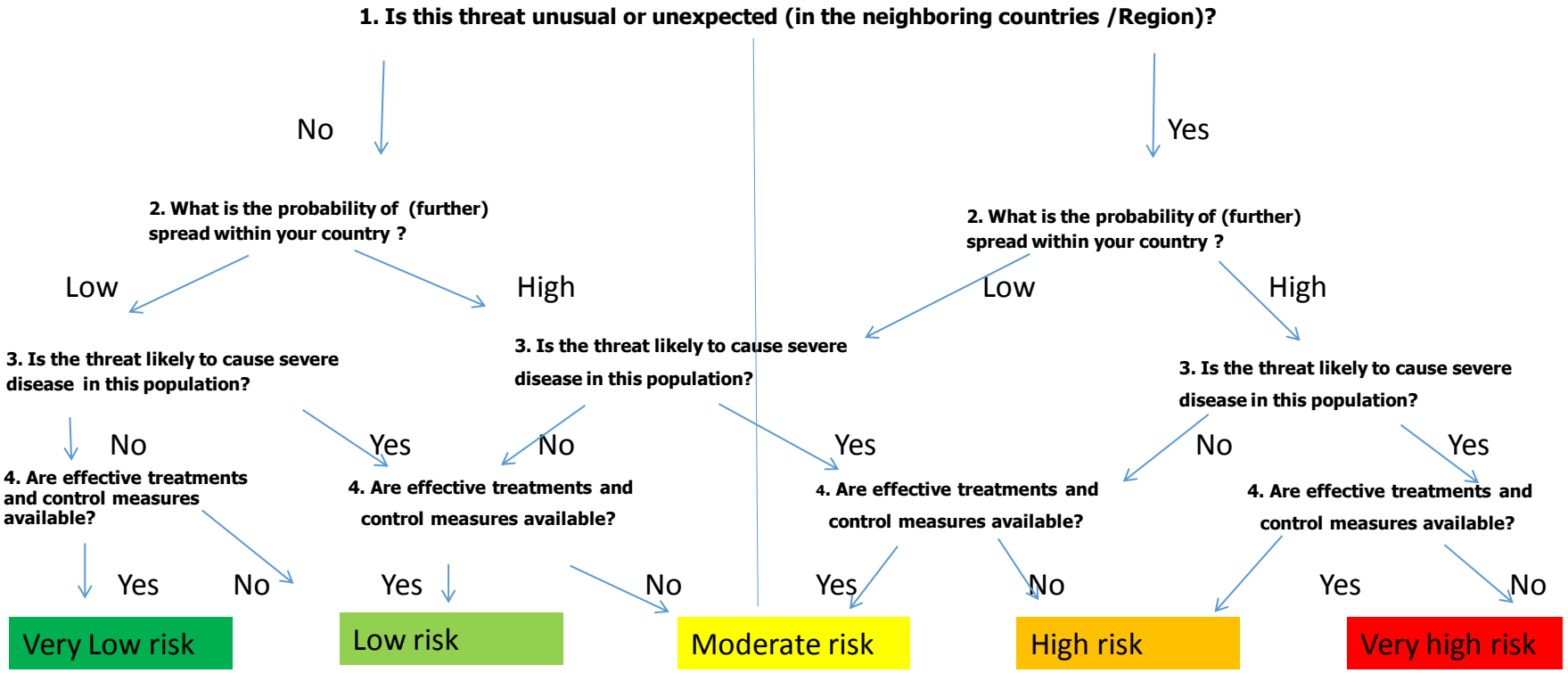
- Is this method to assess the risk easy to understand and to follow?

- Could it be implemented in the context of your country?

- Are you already assessing risks with similar methods?

Annex 3. Algorithm for RRA

Rate the potential for transmission within your country:_____
(INSERT NAME OF YOUR COUNTRY) .



Modified from European Centre for Disease Prevention and Control. Operational guidance on rapid risk assessment methodology. Stockholm: ECDC; 2011.

Annex 4 Restitution slide

Country	**Level of risk assessed**	**Added value of multi-sectorial assessment** (Low/medium/high)				
		1. Is this threat unusual or unexpected?	**2. What is the potential for transmission within your country?**	**3. Is it likely to cause severe disease in the population?**	**4. Are effective treatments and control measures available?**	**Are there contextual factors that may affect the risk assessment**?

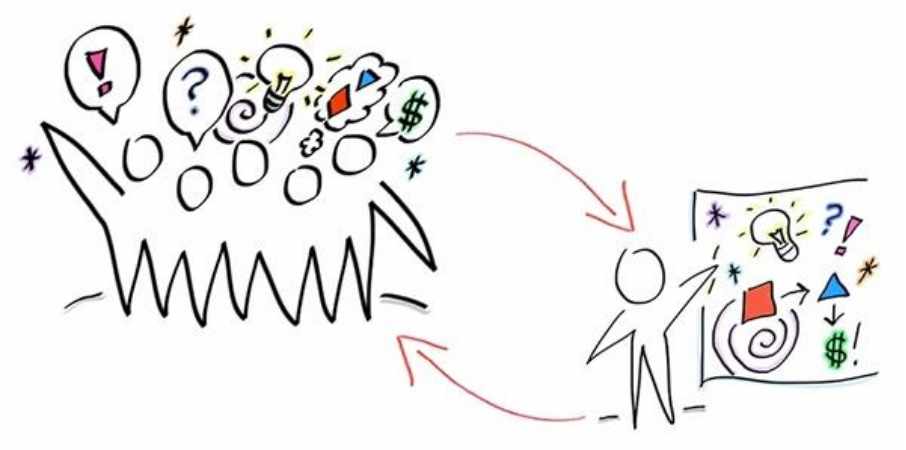


Image source:
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2nd MULTISECTORAL EXERCISE ON RISK ASSESSEMENT

November 17th 2016

MediLabSecure

Regional meeting and Technical Workshop on Public Health

Belgrade 15-17 November 2016

PRE TEST

MediLabSecure

ISTITVTO SVPERIORE DI SANITA

Name: _____

Family Name: _____

Institution: _____

Country: _____

1. **Would CCHF be an unusual or unexpected threat in your country?**

   Yes No

2. **List factors related to the potential for transmission of CCHF in your country (risk factors to consider in order to assess the level of risk for CCHF)**

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

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

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

POST TEST

Name: _____

Family Name: _____

Institution: _____

Country: _____

1. **Would CCHF be an unusual or unexpected threat in your country?**

   Yes No

2. **List factors related to the potential for transmission of CCHF in your country (risk factors to consider in order to assess the level of risk for CCHF)**

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

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

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

Do you agree to use the country data on CCHF surveillance provided for the exercise to prepare a comprehensive Thematic Note on CCHF in the Mediterranean and Black Sea Region to be disseminated?

YES

NO

Other_____

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