



MEDILABSECURE MULTISECTORAL EXERCISE:

Enhancing integrated surveillance for CCHF

BALKANS and Black Sea REGIONAL MEETING

MAY 9th-12th 2023

REPORT

“One Health Surveillance consists of the systematic collection, validation, analysis, interpretation of data and dissemination of information collected on humans, animals and the environment to inform decisions for more effective, evidence- and system-based health interventions”¹

Background

- In the context of the MLS Balkans and Black Sea Regional Meeting in [Belgrade in 2016](#) (15-17 November 2016) a Multisectoral Risk Assessment (MRA) Exercise on CCHF was carried out with the following countries: Serbia, Albania, Republic of North Macedonia, Georgia, Armenia, Moldova, Kosovo, Ukraine, Montenegro, Turkey, Bosnia and Herzegovina
- Participating countries identified the need of implementing an integrated surveillance system for CCHF on the basis of their national data and the results of the MRA Exercise
- Seven years later, the Exercise implemented during the Balkans and Black Sea Regional Meeting in Montenegro in May 2023, has facilitated the sharing of the national implemented steps towards an integrated surveillance plan for CCHF, feasible lines of strategies to strengthen its operationalization and potential additional approaches to reinforce cross-border and regional integrated surveillance.

During the third day of the regional meeting, Thursday 11 May, the MLS Multisectoral Exercise was implemented under the coordination of the ISS team with the following objectives:

- 1) to design²/describe³ an integrated surveillance system for CCHF following the One Health approach (i.e. considering human, animal, entomological and environmental surveillance), through the following steps:
 - Outline objectives, steps and components of the integrated surveillance system following the OH approach

¹ K.D.C. Stärket al. One Health surveillance –More than a buzz word? Preventive Veterinary Medicine 120 (2015) 124–130

² For Countries without an integrated surveillance system for CCHF

³ For Countries with an integrated surveillance system for CCHF in place



- Identify possible challenges associated with the implementation of the designed surveillance and propose feasible solutions
 - Outline a monitoring system to assess the performance of the integrated surveillance system
- 2) To identify approaches and strategies facilitating a cross-country regional surveillance system for CCHF.

Outcomes

The expected outcomes of the exercise included:

- Description of in place or in progress national OH surveillance system for CCHF in the Balkan and Black Sea regions;
- Identification of approaches and strategies facilitating a cross-country regional surveillance system for CCHF;
- Strengthening the cross-sectorial and cross-country collaborations.

Methodology

Exercise preparation

In order to contextualise the Exercise the following activities were implemented:

- The participating countries were asked to filled in a form with national information regarding CCHF/V surveillance in the human, animal and entomological sectors (Annex 1.) also to compare the data provided in 2016
- A Background Document on CCHF/V in the Region was prepared and delivered to the participants one week before the Exercise (Annex 2.)
- A guiding framework for the Exercise for the participants was prepared to be given at the starting session (Annex 3.)
- A guiding framework for the Exercise for the facilitators was prepared and discussed in advance with the facilitators (Annex 4.)
- Regional risk maps of CCHF/V were prepared to be given to the participants at the starting session (Annex 5.)
- An Exercise evaluation questionnaire was prepared (Annex 6.)

Introduction session

- Keynote talk on CCHF/V: Prof. Aykut OZKUL delivered an overview on the epidemiological situation in the Balkans and Black Sea (Annex 7.);
- Introduction of the Simulation Exercise: ISS team presented the objectives and methodology of the Exercise (Annex 8.).



Working groups

Group	Countries	Facilitators
1	Albania, North Macedonia	Maria Grazia Dente+ Miguel Ángel Jiménez-Clavero + Cédric Marsboom
2	Armenia, Georgia, Serbia	Alessia Milano+ Guy Hendrickx+ Pilar Aguilera-Sepúlveda
3	Kosovo*, Turkey	Claudia Robbiati+ Elisa Perez Ramirez+ Anais Portet
4	B&H, Montenegro	Laura Amato+ Florence Fournet + Guillain Mikaty

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and ICI Advisory opinion on the Kosovo declaration of independence*

- ✚ Three groups of two countries (±10 people) + one group of three countries (± 15 people)> four groups in total
- ✚ Countries grouped on the basis of their borders and/or available data provided on the presence of the surveillance system
- ✚ Three facilitators per group, one from ISS or IZS-Teramo and two from the MLS Consortium.

Implementation

The Exercise was divided in three parts:

- a. Description/design of country national surveillance system for CCHF/V > the participants worked in group with the national colleagues (±45 minutes)
Three slides were produced for the final restitution in plenary
- b. Discussion on potential strategies facilitating a cross-country regional surveillance plan for CCHF/V> participants worked with national colleagues and colleagues from the other countries of the group (±45 minutes)
One slide was produced for final Restitution in plenary
- c. Restitution in Plenary

The participants were guided by the implementation framework (Annex 3.) and supported by the facilitators



Results

National data on CCHF/V surveillance

Seven of the 9 participating countries provided their national data before the Exercise.

In Table 1 and Table 2 below a summary of the information is provided.

Table 1. Summary of information provided before the Exercise

CCHF/V surveillance in MLS Balkans and Black Sea Region 2023				
Countries providing data	Countries with provided data on \geq two sectors	CCHFV surveillance in place	One Health System	Countries with improvements from 2016
7/9	4/7	4/7	1/7	3/7

Table 2. Main information provided by the Countries

Country	Data on CCHF/V surveillance provided to MLS 2023			Differences from 2016			OH system
	Human	Vet	Entomology	Human	Vet	Entomology	
B&H	no	yes	yes	-----	First evidence of CCHFV in animals First evidence of Crimean-Congo haemorrhagic fever virus circulation in Bosnia and Herzegovina - PMC (nih.gov) - with MLS support	Seroprevalence studies in ticks Serologic and molecular evidence for circulation of Crimean-Congo hemorrhagic fever virus in ticks and cattle in Bosnia and Herzegovina - PubMed (nih.gov)	No official OH surveillance system in place. Some kind of 'information flow' exist thanks to good personal communication among people from different interested sectors.
Republic of Srpska - B&H	-----	No	-----	-----	-----	-----	-----
Georgia	no	yes	yes	----- Surveillance in human since 2009	----- Surveillance in animal started in 2014	Geographical national distribution of vectors and virus in vectors updated	yes

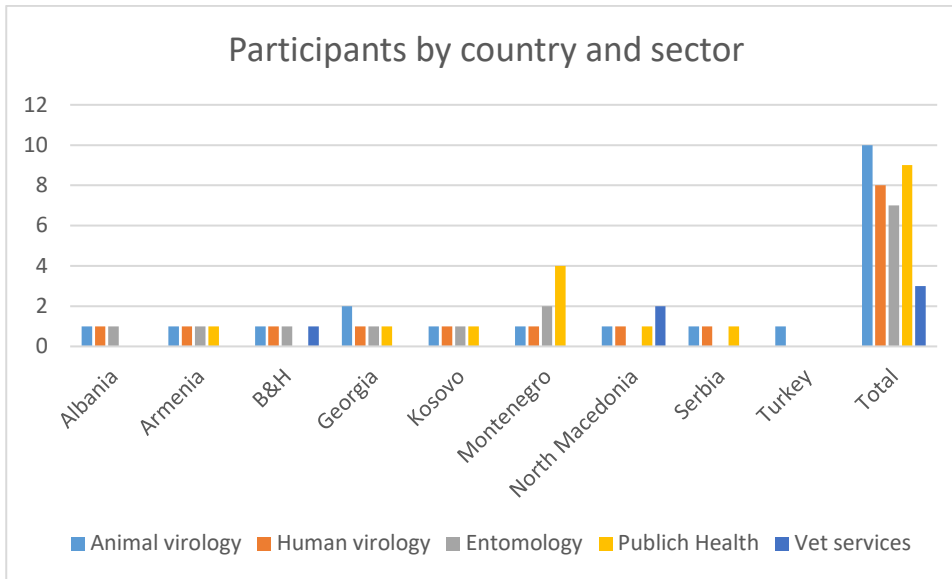


Country	Data on CCHF/V surveillance provided to MLS 2023			Differences from 2016			OH system
	Human	Vet	Entomology	Human	Vet	Entomology	
						annually (in 2016 it was in progress)	
Serbia	yes	no	no	Surveillance in human since 1954	-----	-----	yes
Montenegro	yes	no	no	Human case surveillance	-----	-----	No
Albania	no	no	yes	-----	-----	Surveillance since 2001 OH Plan in progress	In progress
Armenia	yes	yes	yes	No surveillance in place as in 2016	No surveillance in place as in 2016	Surveillance since 2021	No
Kosovo*	yes	yes	yes	Surveillance in human since 1954	From 2018 National ref Lab Kosovo, Univ. of Prishtina, Faculty of Agricul. & Veterin.	Surveillance since 2014	No

Participants

A total of 37 participants took part in the Exercise (22 female, 59%), as per the Figure 1.

Figure 1. Participants by country and sector



Restitution

The countries presented their slides in Plenary on the basis of the template given at the beginning of the Exercise.

Table 3. Main points highlighted by the presentations in plenary

Country	National			Regional	
	CCHF/V surveillance	Epi situation	Integration in place	Opportunities	Proposals
Albania	yes	endemic	yes	Timely report on infected ticks and human cases Human Seroprevalence data Ticks species and if there is virus circulation Seasonal tick activity	Create a regional database
North Macedonia					Create mutual regional program Annual meeting
Armenia	Passive surveillance system	at risk of possible outbreaks	yes	Seasonal collection of ticks To create maps on positive results of ticks	Enhance Laboratory capacity
Georgia	yes	endemic	yes		Prompt communication between team members (informing focal points for IHR WHO)
Serbia	yes	at risk of virus introduction/outbreak	yes		
Kosovo*	yes	endemic	yes		



Country	National			Regional	
	CCHF/V surveillance	Epi situation	Integration in place	Opportunities	Proposals
Turkey	yes	endemic	yes		
B&H	Not in place	at risk of possible outbreaks	no	Sharing of scientific data (published or unpublished literature), historical database, legal chain of communication and project activities	procedures for communicating the results obtained through academic/professional reports with decision-makers, but also with the population (use of various media channels) in order to raise awareness of the problem that CCHFV represents nationally and regionally
Montenegro	Not in place	at risk of possible outbreaks	no		

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and ICI Advisory opinion on the Kosovo declaration of independence*

Evaluation

23/37 (62%) filled in the evaluation form as per the following figures.

Figure 2. Participants' replies on "Objectives well communicated"

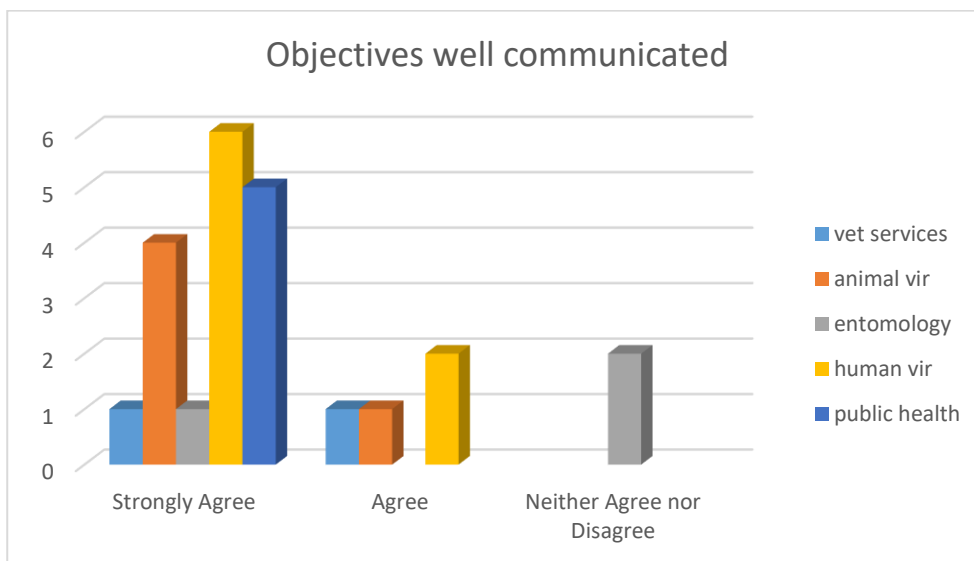


Figure 3. Participants' replies on "The discussion were useful" by sector

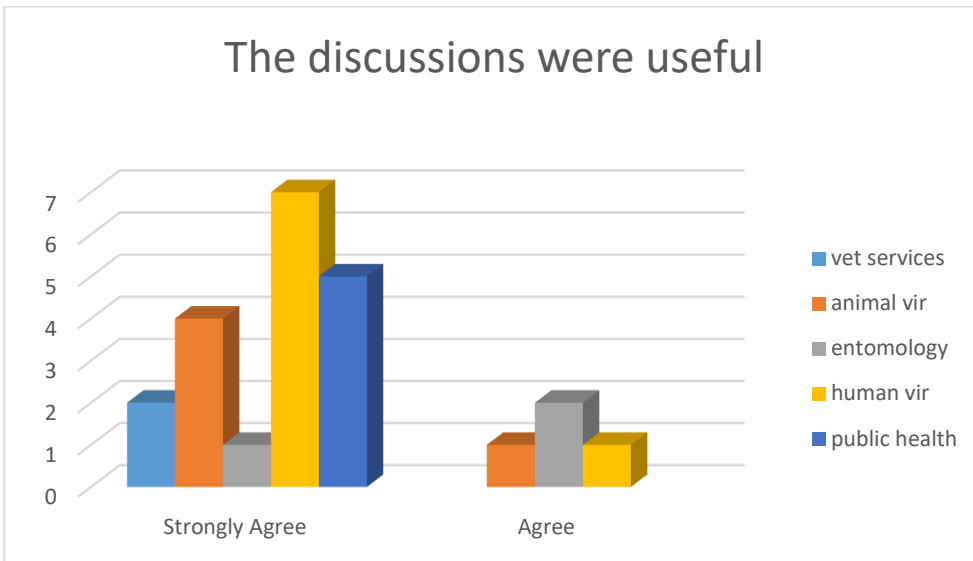


Figure 4. Participants' replies on "Adequate time was allotted to the Exercise"

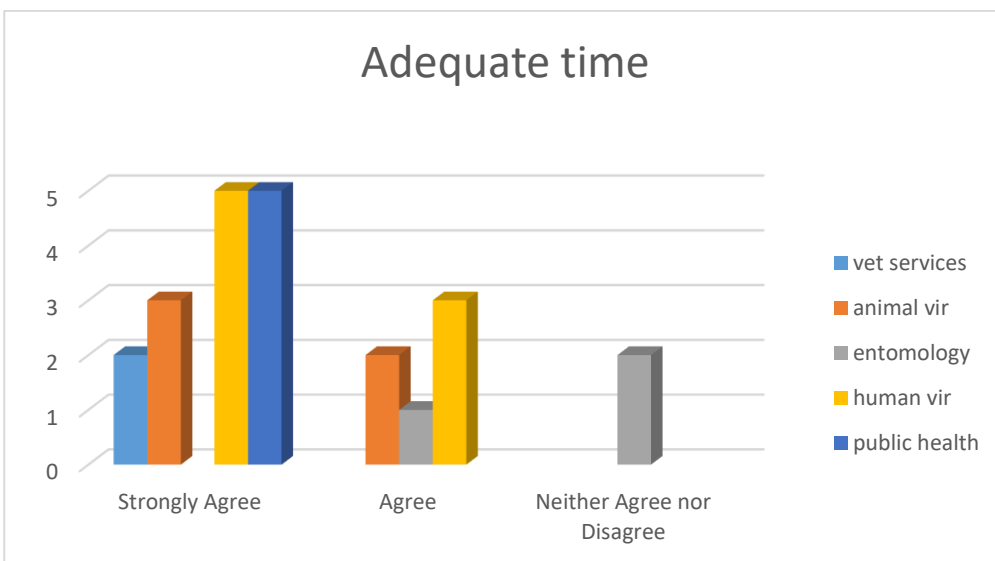


Figure 5. Participants' replies on "Overall the exercise was satisfactory" by sector

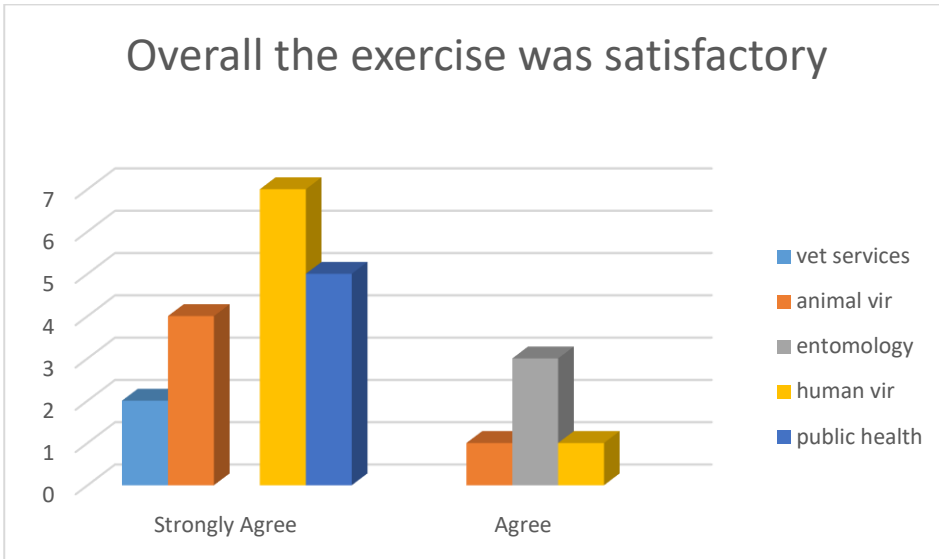
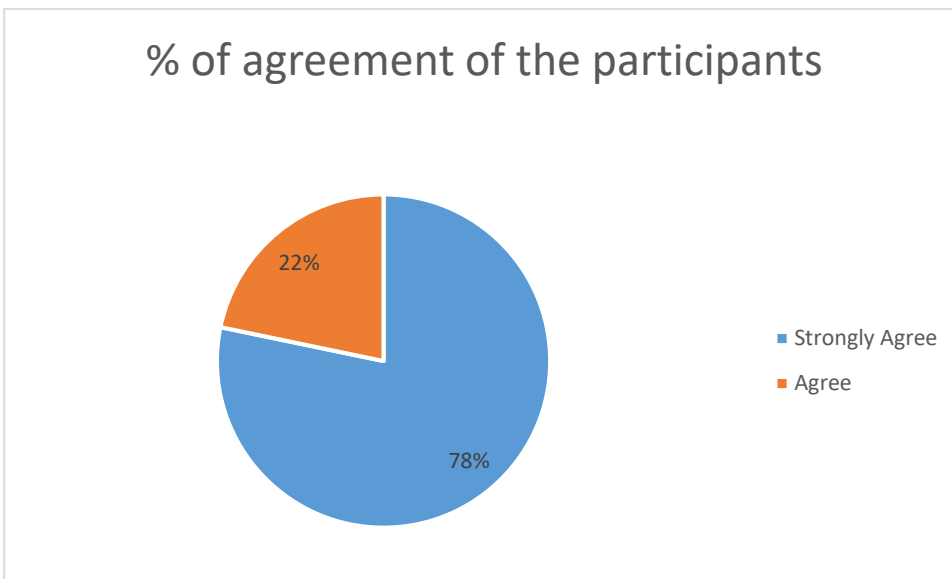


Figure 6. % of agreement to the sentence "Overall the exercise was satisfactory"





Conclusions

- ✓ All the nine countries of Balkans and Black Sea Region of MLS participated in the Exercise
- ✓ 37 participants took part in the Exercise (22 female, 59%)
- ✓ 7/9 countries provided national data on CCHF surveillance before the Exercise
- ✓ The fact that a similar Exercise was conducted in MLS in 2016 with the same countries has allowed to follow up national situations and to consolidate expertise
- ✓ The Exercise was an opportunity to start to discuss the feasibility of regional/cross country surveillance for threats with a regional dimension like CCHF/V
- ✓ 23/37 (62%) participants filled in the evaluation form
- ✓ All the participants who provided their evaluation agreed (strongly agree 78% and agree 22%) that overall the Exercise was well organised



Crimean-Congo hemorrhagic fever virus (CCHFV)
 CCHF countries' background data for the Multisectorial Surveillance Exercise
 Compiled by (name and institution):
 Compiled by (name and lab):



				DATA & INFO PROVIDED TO MLS REGIONAL MEETING BELGRADE (15-17 NOVEMBER 2016)										DATA & INFO TO BE PROVIDED FOR REGIONAL MEETING PODGORICA (8-12 MAY 2023)												
				2014-2016					2017-2020					2021					2022					One Health Surveillance System (YES/NO)		
Country	CCHF human surveillance	Official year of surveillance starting	Case definition	n. of cases	n. of deaths	n. of confirmed cases	nosoco mial cases	n. of nos. deaths	n. of casu	n. of deaths	n. of confirm ed cases	nosoco mial cases	n. of nos. deaths	n. of casu	n. of deaths	n. of confirm ed cases	nosoco mial cases	n. of nos. deaths	n. of casu	n. of deaths	n. of confirm ed cases	nosoco mial cases	n. of nos. deaths	reference lab	DIAGNOSTIC TECHNIQUES	Additional remarks
1	Turkey	Yes, permanent	national- to be reported in the remarks cell	2116	90	2116	6	1																		
2	Bosnia Herzegovina	No																								
3	Montenegro	No																								
4	Kosovo	Yes, permanent	1954 WHO	7	0	7	0	0																		
5	Serbia	Yes, permanent		0	0	0	0	0																		
6	Former Yugoslav Republic of Macedonia	Yes, permanent	national- to be reported in the remarks cell	0	0	0	0	0																		
7	Albania																									
8	Georgia	Yes, permanent	2009 national- to be reported in the remarks cell	39	7	36	1	0																		
9	Armenia	No	WHO																							

Please fill in the table below if data are available

Seroprevalence studies				Reference (if publication /report is available)
year	month (s)	(%)	Country areas	

INTERSECTORAL ACTIVITIES

Do you share surveillance data with other sectors?
 Which sectors?

How often do you share data?

Do you collect data on at risk group (e.g. slaughterers)
 Do you involve the communities in prevention, control and risk communication activities?
 Do you use environmental/climate data for surveillance/risk assessment?



Crisman Congo hemorrhagic fever virus [CCHFV]

CCHF countries' background data for the MultiSectorial Surveillance Exercise

Compiled by (name and institution/lab):



DATA & INFO PROVIDED TO MILS REGIONAL MEETING BELGRADE (15-17 NOVEMBER 2016)

DATA & INFO TO BE PROVIDED FOR REGIONAL MEETING PODGORICA (8-12 MAY 2023)

Country	Animal surveillance	Official year of surveillance starting	animal species included in surveillance	reference lab (animal)	DIAGNOSTIC TECHNIQUES	sero-prevalence studies	Virus detection studies	Control of animal movements	Additional remarks	Animal surveillance starting	Official year of surveillance	animal species included in surveillance	reference lab (animal)	DIAGNOSTIC TECHNIQUES	sero-prevalence studies	Virus detection studies	Control of animal movements	One Health Surveillance System (YES/NO)	Additional remarks
1 Turkey	Yes, seasonal	2007																	
2 Bosnia	No																		
3 Herzegovina	No																		
4 Kosovo	Yes, permanent		Cattle/Sheep/Goats	BNI Hamburg reference lab non available at national level	IFA	Yes	No	No											
5 Serbia	No					No	Yes, RT-PCR	Yes											
Former Yugoslav Republic of Macedonia	No			Faculty of Veterinary Medicine - Skopje	Serology	Yes		No	* In the Republic of Macedonia, there is not an official surveillance program for CCHF in animals. However, in 2013 in collaboration with Friedrich-Loeffler-Institut, for the purpose of development and validation of a novel ELISA for detection of CCHFV antibodies in cattle serum, a small seroepidemiological study (including 133 cattle serum samples from 4 different regions in Macedonia collected from 2009 until 2011), was conducted. As a part of this study, 128 ticks were collected from cattle, sheep and goat and 34 of them (26.6%) from 3 out of the 4 region) were characterized as Hyalomma ticks.										
7 Albania	No																		
8 Georgia	Yes, seasonal	2014	Cattle	our lab is the reference lab	Molecular	No	Molecular	Yes											
9 Armenia	No																		

Please fill in the table below if data are available

Sero-prevalence studies				Virus detection studies							
year	month (s)	animal species	CCHFV-specific IgG antibodies (%)	Country areas	Reference (if publication/report is available)	year	month(s)	animal species	Virus	Country areas	Reference (if publication/report is available)

INTERSECTORIAL ACTIVITIES

Do you use environmental/climate data for surveillance/risk assessment?
Do you share surveillance data with other sectors?
Which sectors?
How often do you share data?

Do you vaccinate animals?

Do you collect data on vaccination?

Do you involve the communities in prevention, control and risk communication activities?



Crimean-Congo hemorrhagic fever virus (CCHFV)
 CCHFV countries' background data for the Multisectoral Surveillance Exercise
 Compiled by (name and institution):
 Compiled by (name and lab):



Country	DATA & INFO PROVIDED TO ME'S REGIONAL MEETING BELGRADE (15-17 NOVEMBER 2018)						DATA & INFO TO BE PROVIDED FOR REGIONAL MEETING PODGORICA (8-12 MAY 2023)								
	Tick surveillance (Y/N)	Official year of surveillance starting	Virus detection studies (Y/N)	Geographical distribution of vectors studies	Geographical distribution of virus in vectors	Vector Control (Y/N)	Additional remarks	Tick surveillance (Y/N)	Official year of surveillance starting	Virus detection studies (Y/N)	Geographical distribution of vectors studies	Geographical distribution of virus in vectors	Vector Control (Y/N)	One Health Surveillance System (YES/NO)	Additional remarks
1 Turkey	Yes, seasonal	2008	Yes, data available	In progress	In progress	Yes									
Bosnia	No						There is no official tick surveillance programme in BiH. However, the existence of CCHFV competent vector (Phlebotomus, leishmanians) in BiH is confirmed through previously conducted small scientific project.								
2 Herzegovina	No														
3 Montenegro	No														
4 Kosovo	Yes, seasonal	2012	Yes	Yes	Yes	Yes									
5 Serbia							*Study on Faculty of Veterinary medicine in 2009-2011 genus Hyalomma and Rhhipicephalus; **upon request the regional centers of public health perform activities for								
Former Yugoslav Republic of Macedonia	No		No	No	No	No									
6 Albania															
8 Georgia	Yes, seasonal	2009	Yes, seasonal	In progress	In progress	Yes									
9 Armenia	Yes, seasonal			limited	limited	Yes									

Please fill in the table below if data are available

Year	Month(s)	Virus detection studies			Reference (if publication/report is available)
		Method used for collecting tick	Method used for virus detection	Country areas	
		Tick species	No. of ticks tested	Virus detected	

INTERSECTORAL ACTIVITIES
 Do you use environmental/climate data for surveillance/risk assessment?
 Do you share surveillance data with other sectors?
 Which sectors?

How often do you share data?

Do you involve the communities in prevention, control and risk communication activities?



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BACKGROUND DOCUMENT

- In the context of the MLS Balkans and Black Sea Regional Meeting in Belgrade in 2016 (15-17 November 2016) a Multisectoral Risk Assessment (MRA) Exercise on CCHF was carried out with the following countries: Serbia, Albania, Republic of North Macedonia, Georgia, Armenia, Moldova, Kosovo, Ukraine, Montenegro, Turkey, Bosnia and Herzegovina (Annex 1).
- Participating countries identified the need of implementing an integrated surveillance system for CCHF on the basis of their national data (Annex 2) and the results of the MRA Exercise
- Seven years later, the Exercise which will be implemented during the next BALKANS and Black Sea REGIONAL MEETING will facilitate the sharing of the national implemented steps towards an integrated surveillance plan for CCHF, feasible lines of strategies to strengthen its operationalization and potential additional approaches to reinforce cross-border and regional integrated surveillance.

Background information on CCHF

(based, with updated 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, 23 May 2022 [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.

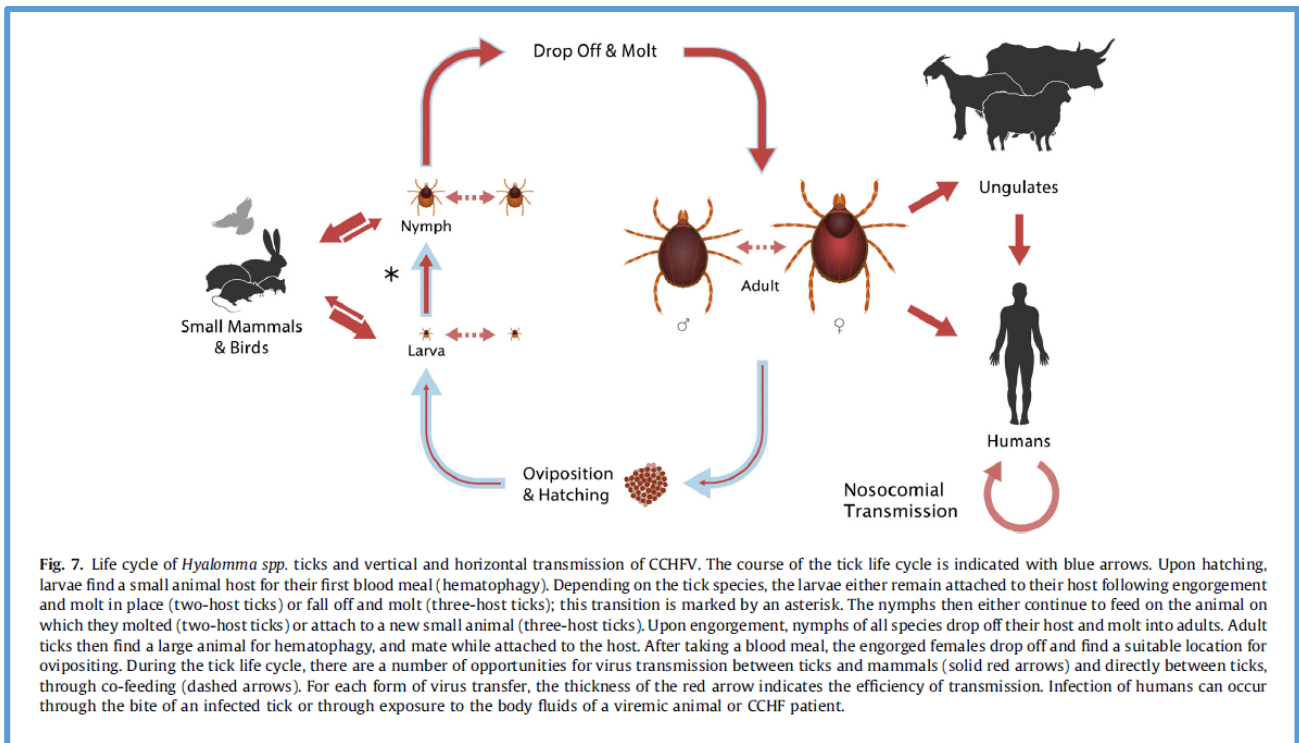
The length of the incubation period depends on the mode of acquisition of the virus. Following infection by a tick bite, **the incubation period is usually one to three days**, with a maximum of nine days. The incubation period following contact with infected blood or tissues is usually five to six days, 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.



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.

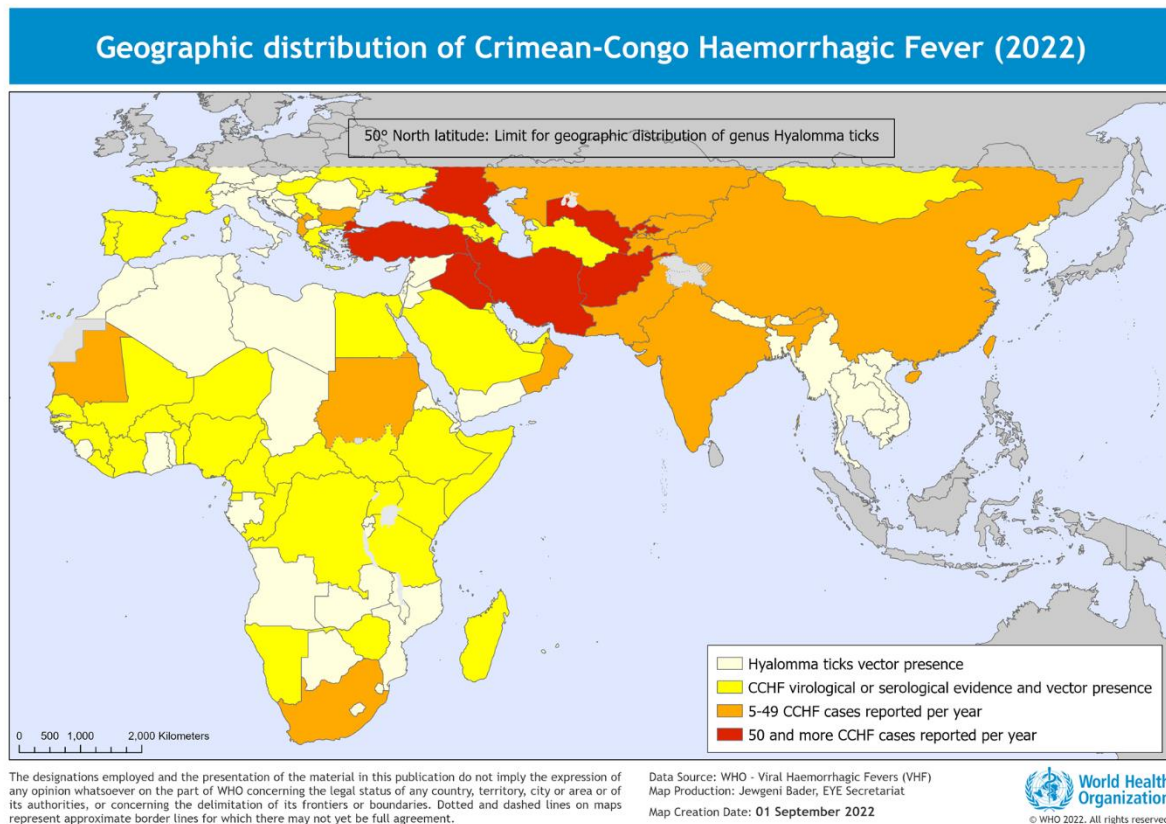
CCHF virus infection **can be diagnosed by several different laboratory tests:**

- 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.

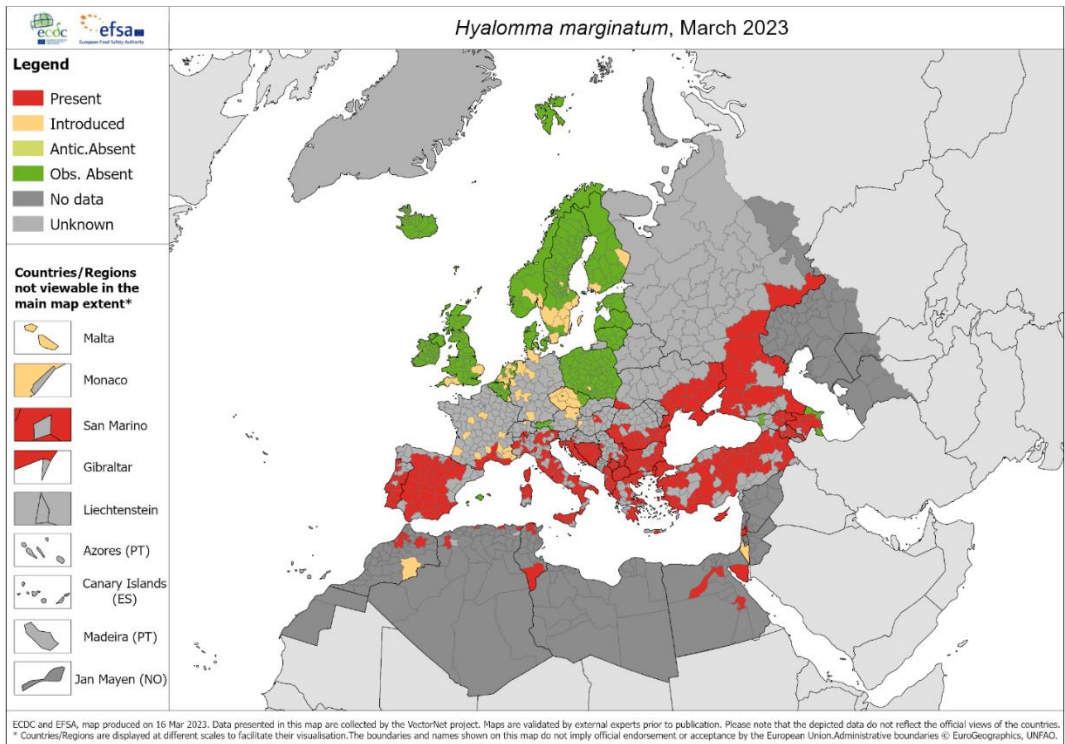
Situation in the Region¹



Source [9]

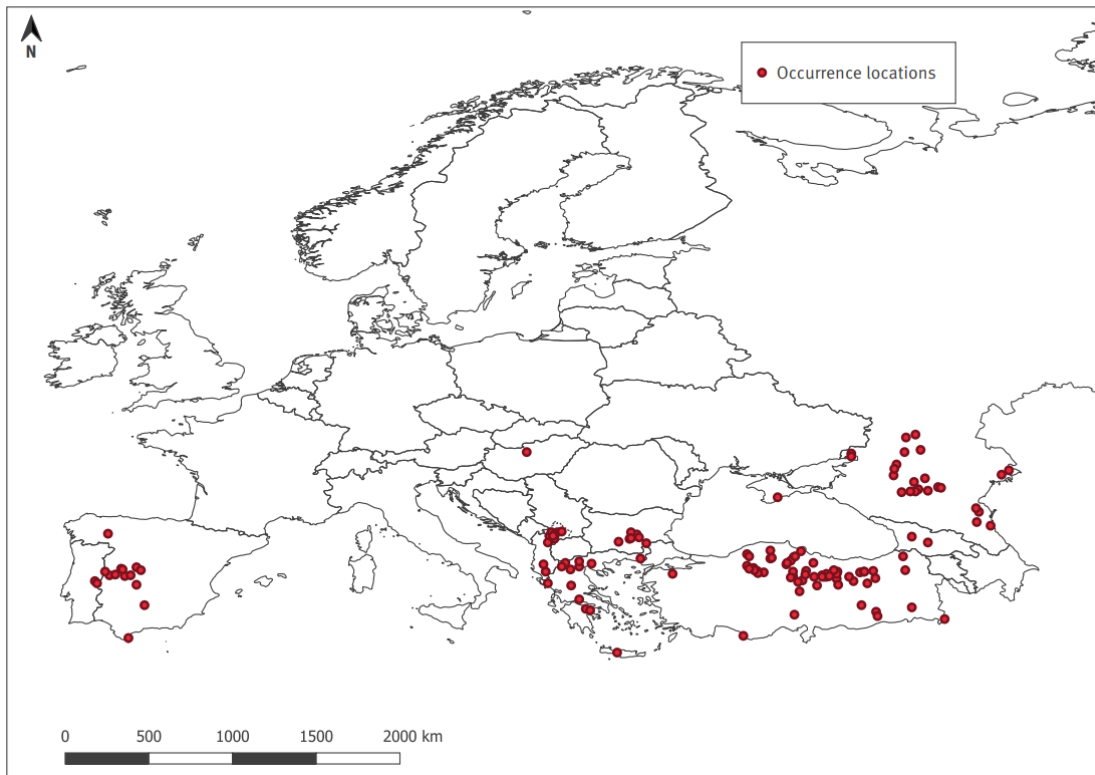
¹ Additional information will be shared during the exercise session by an introduction presentation and on the basis of the data provided by the participating countries

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

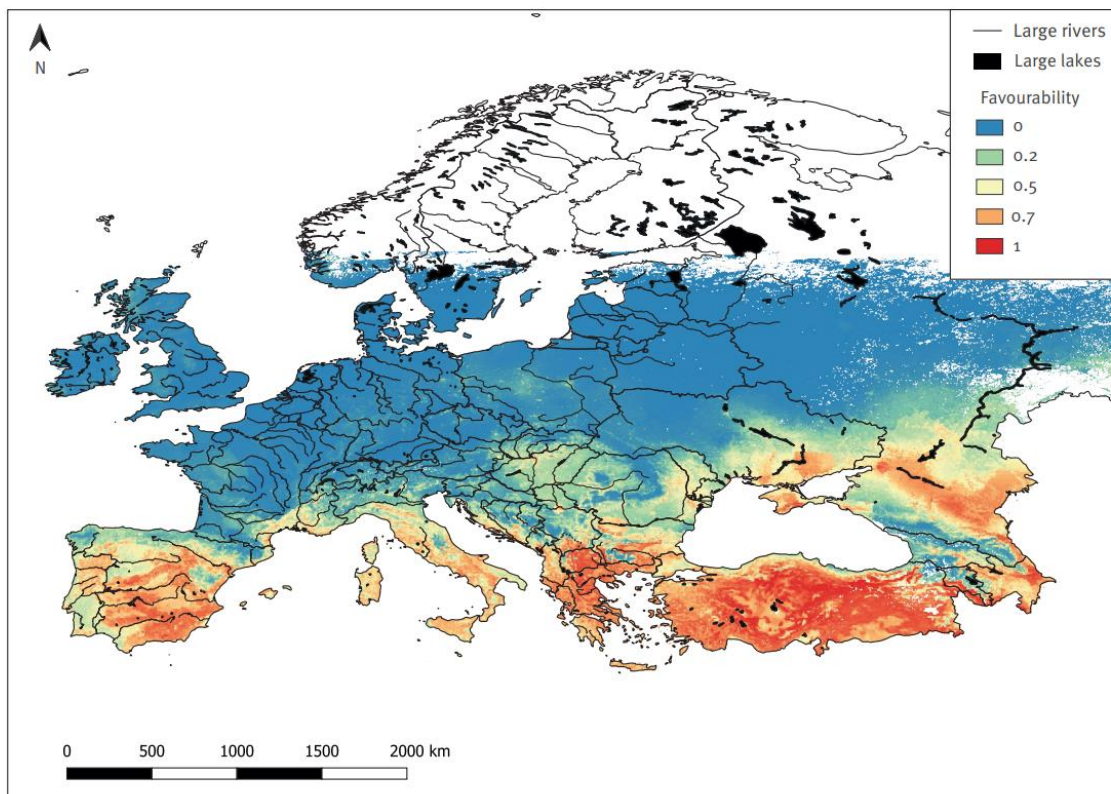


Source [10]

Occurrence locations of Crimean-Congo haemorrhagic fever cases in humans and Crimean-Congo haemorrhagic fever virus isolates from ticks, European Region, 2012–2022 (n = 141 before spatial thinning)



Source [11]



Source [11]

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 **Republic of North 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 [12]

In the WHO European Region, Turkey remains the most affected country [13].

Recent reports of CCHFV circulation in Bosnia and Herzegovina have been published, including detection of specific antibodies in sheep and cattle with an estimated seroprevalence of 9.6% and 14.9%, respectively [14, 15]. Also, the virus has been detected by PCR in a pool of *Hyalomma* ticks for the first time in the country [14].

These studies confirm the circulation of the virus in the westernmost region of the Balkans so far and the potential spread of the virus further out of this endemic area should not be neglected.

Surveillance and control measures are critical to contrast this threats in the Region [16].

REFERENCES IN THE TEXT

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2. [Crimean-Congo haemorrhagic fever \(who.int\)](https://www.who.int/news/item/23-05-2022/crimean-congo-haemorrhagic-fever) 23-5-2022
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Annex 1 – Report on Multisectoral Risk Assessment (MRA) Exercise on CCHF

Annex 2 - Countries data on CCHF/V Surveillance 2016



MEDILABSECURE MULTISECTORAL EXERCISE:

Enhancing integrated surveillance for CCHF

BALKANS and Black Sea REGIONAL MEETING

MAY 9th-12th 2023

GUIDING FRAMEWORK FOR PARTICIPANTS

“One Health Surveillance consists of the systematic collection, validation, analysis, interpretation of data and dissemination of information collected on humans, animals and the environment to inform decisions for more effective, evidence-and system-based health interventions”¹

Background

- In the context of the MLS Balkans and Black Sea Regional Meeting in Belgrade in 2016 (15-17 November 2016) a Multisectoral Risk Assessment (MRA) Exercise on CCHF was carried out with the following countries: Serbia, Albania, Republic of North Macedonia, Georgia, Armenia, Moldova, Kosovo, Ukraine, Montenegro, Turkey, Bosnia and Herzegovina
- Participating countries identified the need of implementing an integrated surveillance system for CCHF on the basis of their national data and the results of the MRA Exercise
- Seven years later, the Exercise which will be implemented during the next BALKANS and Black Sea REGIONAL MEETING will facilitate the sharing of the national implemented steps towards an integrated surveillance plan for CCHF, feasible lines of strategies to strengthen its operationalization and potential additional approaches to reinforce cross-border and regional integrated surveillance.

Objectives

- 1) to **design²/describe³ an integrated surveillance system for CCHF following the One Health approach** (i.e. considering human, animal, entomological and environmental surveillance), through the following steps:

¹ K.D.C. Stärket al. One Health surveillance –More than a buzz word? Preventive Veterinary Medicine 120 (2015) 124–130

² For Countries without an integrated surveillance system for CCHF

³ For Countries with an integrated surveillance system for CCHF in place



- Outline objectives, steps and components of the integrated surveillance system following the OH approach
 - Identify possible challenges associated with the implementation of the designed surveillance and propose feasible solutions
 - Outline a monitoring system to assess the performance of the integrated surveillance system
- 2) To identify approaches and strategies facilitating a cross-country regional surveillance system for CCHF;

Outcomes

The expected outcomes of the exercise include:

- Description of in place or in progress national OH surveillance system for CCHF in the Balkan and Black Sea regions;
- Identification of approaches and strategies facilitating a cross-country regional surveillance system for CCHF;
- Strengthening the cross-sectorial and cross-country collaborations.

- Guiding framework for the Participants

The Exercise is divided in three parts:

- i) Describe/design your national surveillance system for CCHF/V > working with national colleagues
 - a. ±45 minutes
 - b. Three slides for final restitution in plenary
- ii) Suggest and discuss potential strategies facilitating a cross-country regional surveillance plan for CCHF > working with national colleagues and colleagues from the other countries in your group
 - a. ±45 minutes
 - b. One slide for final Restitution in plenary
- iii) Restitution in Plenary
 - a. 5' for each country [9 countries]
 - b. 5' for each group [4 groups]

Describe/design your national surveillance system for CCHF/V

Suggested flow to describe/design the surveillance system

1. Defining your national epidemiological situation for CCHF/V
 - a. Endemic?
 - b. At risk of virus introduction/outbreak?
 - c.

✚ Your national situation will guide and justify the surveillance strategy



2. Setting priority objectives of your surveillance system
 - a. Contrasting virus introduction?
 - b. Reducing animal cases?
 - c. Preventing human cases?
 - d.?
- ✚ The objective/s will guide your strategy and data collection
 - Discuss your choices
3. Deciding which sector/s are involved in the surveillance system
 - a. Human?
 - b. Animal?
 - c. Entomology?
 - d. Environment?
 - e.?
 - f. More than one? Which ones?
 - Discuss your choices
 - Report potential strengths/gaps/challenges
4. Describing the type of surveillance activities and planning data collection
 - a. Sentinel sites?
 - b. Permanent?
 - c. Seasonal?
 - d.?
 - e. How data will be collected?
 - Discuss your choices
 - Report potential strengths/gaps/challenges
5. Setting the monitoring of your surveillance system
- ✚ Data/Indicators/Procedures which help you to monitor the efficacy of your surveillance system
 - Discuss your choices
 - Report potential strengths/ gaps/challenges

➤ Prepare three slides to summarise the outcome

Suggest potential strategies facilitating a cross-country regional surveillance plan for CCHF

1. Identifying possible data and information which can be collected at regional level
 - Discuss your choices
 - Report potential strengths/gaps/challenges
2. Proposing strategies/approaches to overcome possible challenges and barriers
 - Discuss your choices
 - Report potential strengths/gaps/challenges

➤ Prepare one slide to summarise the outcome



MEDILABSECURE MULTISECTORAL EXERCISE:

Enhancing integrated surveillance for CCHF

BALKANS and Black Sea REGIONAL MEETING

MAY 9th-12th 2023

GUIDING FRAMEWORK for FACILITATORS

“One Health Surveillance consists of the systematic collection, validation, analysis, interpretation of data and dissemination of information collected on humans, animals and the environment to inform decisions for more effective, evidence-and system-based health interventions”¹

Background

- In the context of the MLS Balkans and Black Sea Regional Meeting in [Belgrade in 2016](#) (15-17 November 2016) a Multisectoral Risk Assessment (MRA) Exercise on CCHF was carried out with the following countries: Serbia, Albania, Republic of North Macedonia, Georgia, Armenia, Moldova, Kosovo, Ukraine, Montenegro, Turkey, Bosnia and Herzegovina
- Participating countries identified the need of implementing an integrated surveillance system for CCHF on the basis of their national data and the results of the MRA Exercise
- Seven years later, the Exercise which will be implemented during the next BALKANS and Black Sea REGIONAL MEETING will facilitate the sharing of the national implemented steps towards an integrated surveillance plan for CCHF, feasible lines of strategies to strengthen its operationalization and potential additional approaches to reinforce cross-border and regional integrated surveillance.

Objectives

- 1) to **design²/describe³ an integrated surveillance system for CCHF following the One Health approach** (i.e. considering human, animal, entomological and environmental surveillance), through the following steps:
 - Outline objectives, steps and components of the integrated surveillance system following the OH approach

¹ K.D.C. Stärket al. One Health surveillance –More than a buzz word? Preventive Veterinary Medicine 120 (2015) 124–130

² For Countries without an integrated surveillance system for CCHF

³ For Countries with an integrated surveillance system for CCHF in place



- Identify possible challenges associated with the implementation of the designed surveillance and propose feasible solutions
 - Outline a monitoring system to assess the performance of the integrated surveillance system
- 2) To identify approaches and strategies facilitating a cross-country regional surveillance system for CCHF;

Outcomes

The expected outcomes of the exercise include:

- Description of in place or in progress national OH surveillance system for CCHF in the Balkan and Black Sea regions;
- Identification of approaches and strategies facilitating a cross-country regional surveillance system for CCHF;
- Strengthening the cross-sectorial and cross-country collaborations.

Methodology

Introduction session

- Keynote talk on CCHF/V: the invited expert will present an overview on the epidemiological situation in the Balkans and Black Sea;
- Introduction of the Simulation Exercise: ISS team will present the objectives and methodology of the Exercise.

Working groups

Group	Countries	Facilitators
1	Albania, North Macedonia	Maria Grazia Dente+ Miguel Ángel Jiménez-Clavero + Cédric Marsboom
2	Armenia, Georgia, Serbia	Alessia Milano+ Guy Hendrickx+ Pilar Aguilera-Sepúlveda
3	Kosovo*, Turkey	Claudia Robbiati+ Elisa Perez Ramirez+ Anais Portet
4	B&H, Montenegro	Laura Amato+ Florence Fournet + Guillain Mikaty

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and ICI Advisory opinion on the Kosovo declaration of independence*



- + Three groups of two countries (± 10 people) + one group of three countries (± 15 people) > four groups in total
- + Countries grouped on the basis of their borders and available data provided on the presence of surveillance system
- + Three facilitators per group, one from ISS and two from the MLS Consortium.

Guiding framework for the Working Groups (as per guiding framework of the Participants)

The Exercise is divided in three parts:

- i) Describe/design your national surveillance system for CCHF/V > working with national colleagues
 - a. **± 45 minutes**
 - b. Three slides for final restitution in plenary
- ii) Suggest and discuss potential strategies facilitating a cross-country regional surveillance plan for CCHF > working with national colleagues and colleagues from the other countries in your group
 - a. **± 45 minutes**
 - b. One slide for final Restitution in plenary
- iii) Restitution in Plenary
 - a. 5' for each country [9 countries]
 - b. 5' for each group [4 groups]

Describe/design your national surveillance system for CCHF/V

Suggested flow to describe/design the surveillance system

1. Defining your national epidemiological situation for CCHF/V
 - a. Endemic?
 - b. At risk of virus introduction/outbreak?
 - c.
- + Your national situation will guide and justify the surveillance strategy
2. Setting priority objectives of your surveillance system
 - a. Contrasting virus introduction?
 - b. Reducing animal cases?



- c. Preventing human cases?
- d.?

+ The objective/s will guide your strategy and data collection

- Discuss your choices

3. Deciding which sector/s are involved in the surveillance system

- a. Human?
- b. Animal?
- c. Entomology?
- d. Environment?
- e.?
- f. More than one? Which ones?

- Discuss your choices

- Report potential strengths/gaps/challenges

4. Describing the type of surveillance activities and planning data collection

- a. Sentinel sites?
- b. Permanent?
- c. Seasonal?
- d.?
- e. How data will be collected?

- Discuss your choices

- Report potential strengths/gaps/challenges

5. Setting the monitoring of your surveillance system

+ Data/Indicators/Procedures which help you to monitor the efficacy of your surveillance system

- Discuss your choices

- Report potential strengths/ gaps/challenges

➤ Prepare three slides to summarise the outcome

Suggest potential strategies facilitating a cross-country regional surveillance plan for CCHF

1. Identifying possible data and information which can be collected at regional level

- Discuss your choices

- Report potential strengths/gaps/challenges



2. Proposing strategies/approaches to overcome possible challenges and barriers
 - Discuss your choices
 - Report potential strengths/gaps/challenges

➤ Prepare one slide to summarise the outcome

- The facilitators follow the phases of the Exercise implementation and facilitate on the basis of their respective expertise.
- During the Exercise the facilitators may follow the level of Integration between sectors within the designed/described CCHF/V surveillance systems through the Integrated Surveillance Framework developed in previous phases of MLS. (<https://onlinelibrary.wiley.com/doi/epdf/10.1111/zph.12562>)

Level of integration	Sublevels of integration	Criteria
Policy and institutional level	Policy level	1. Existence of a National policy addressing integrated surveillance for this specific exposure 2. Existence of a policy addressing integrated surveillance for this specific exposure at subnational level
	Institutional level	3. Existence of agreements among the institutions involved in human/animal/entomological surveillance for the specific exposure 4. Existence of a coordination mechanisms among the institutions involved 5. Existence of identified focal points for each of human/animal/entomological surveillance for the specific exposure
Data collection and analysis level	Interoperability mechanisms at data collection level	6. Existence of integrated data collection tools 7. Existence of activation mechanisms of human surveillance based on signals from animal/entomological surveillance 8. Other interoperability mechanisms at data collection level
	Interoperability mechanisms at data analysis level	9. Presence of DB exchange/merging/other mechanisms to facilitate joint analysis among sectors 10. Performance of joint/integrated data analysis among the different surveillance sectors 11. Other interoperability mechanisms at data analysis level
Dissemination level		12. Existence of joint result dissemination mechanisms (e.g. bulletins, reports, papers, media reports, websites)

Source: Dente et al. (2016).

TABLE 1 Criteria to describe existing levels of integration between human, animal and entomological surveillance

119_3_Download from https://onlinelibrary.wiley.com/doi/10.1111/zph.12562 by INNSPHERE - MONTENEGRO, Wiley Online Library on [22/01/2023]. See the Terms and Conditions (https://onl

Restitution

The countries will present their slides in Plenary on the basis of the template given at the beginning of the exercise.

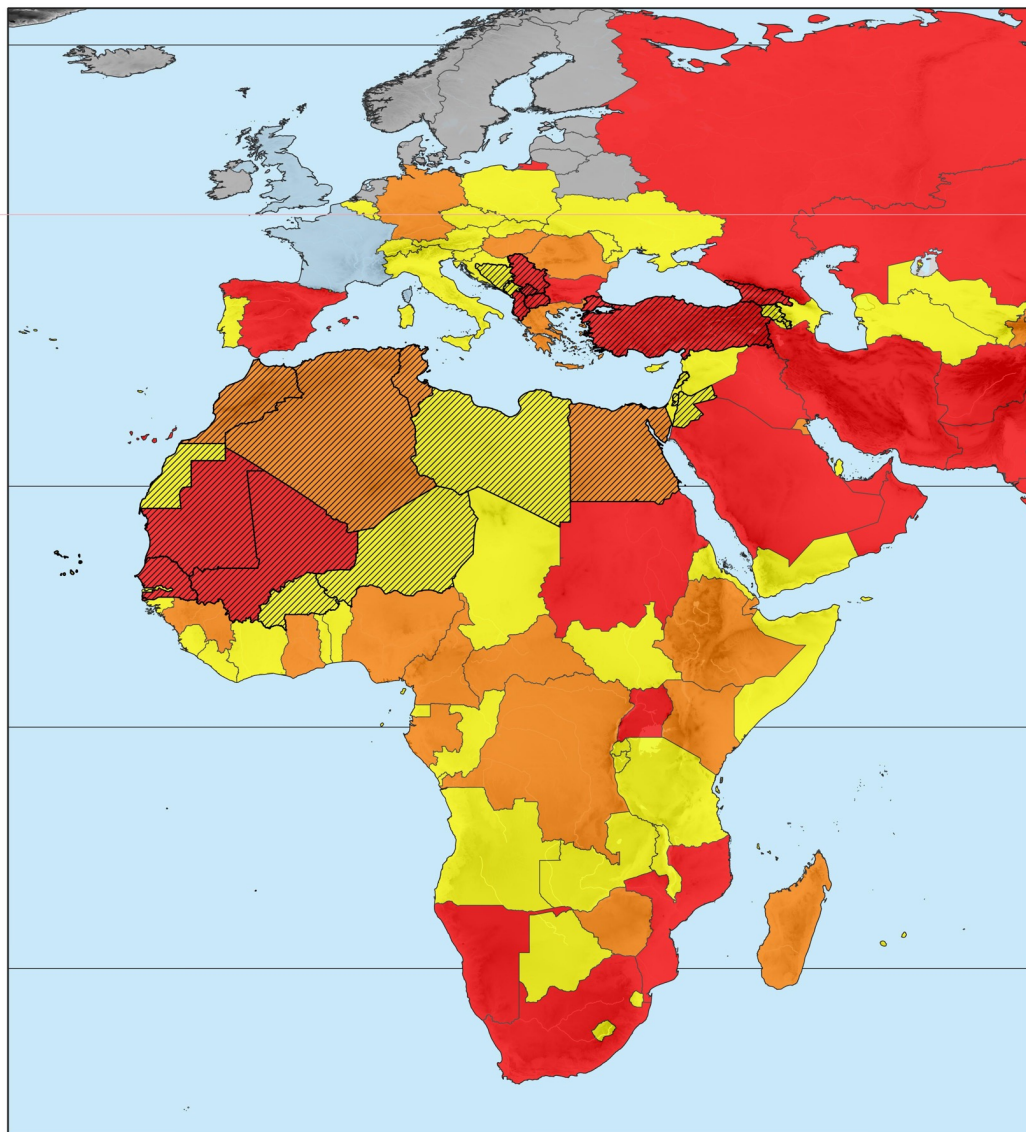


MLS Consortium meeting

Network for **promoting a One Health** approach to mitigate **biological risks** related to emerging **vector-borne viruses** in the Mediterranean, Black Sea & Sahel regions



Funded by the European Union



CCHF – country status

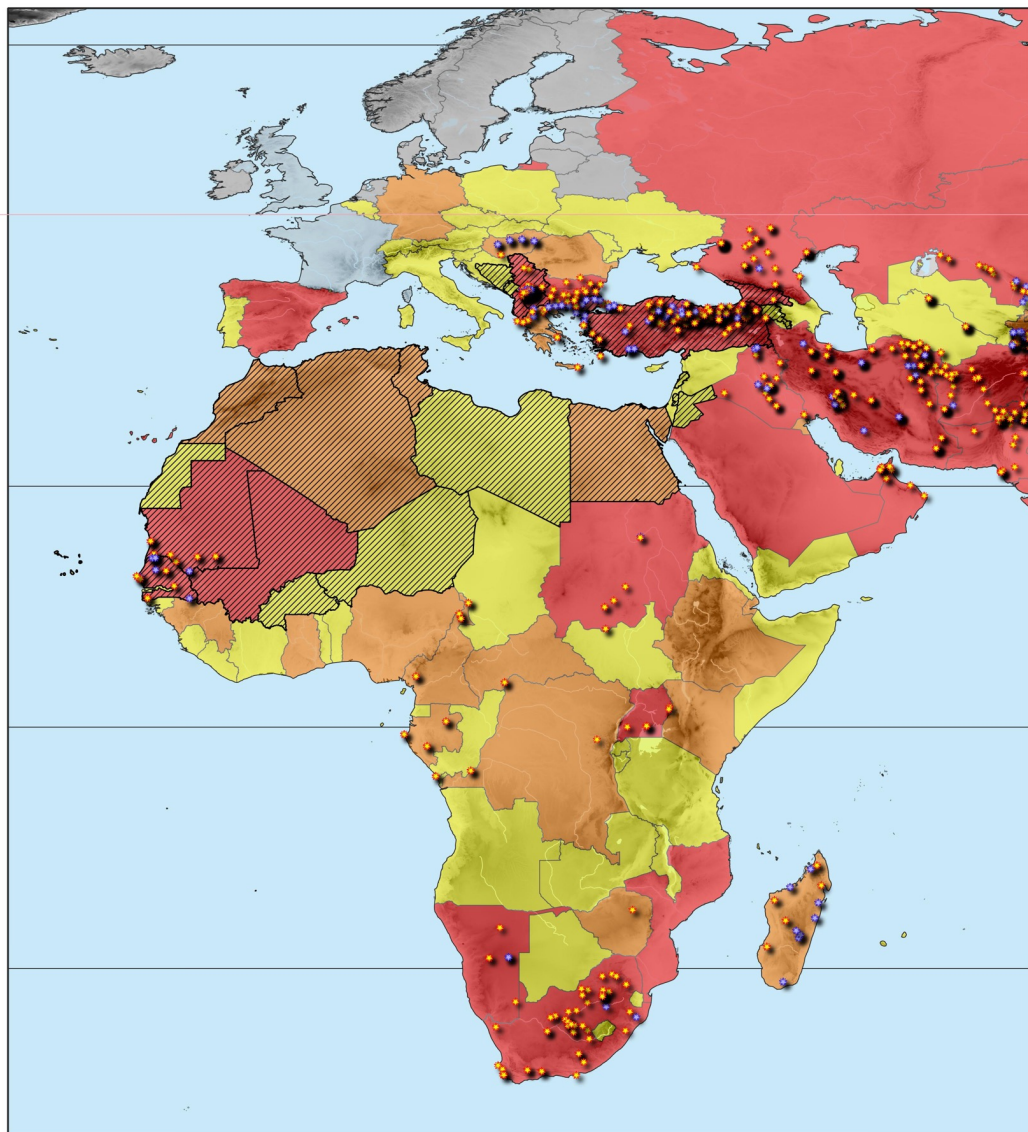
Grey: no reports

Bleu: only imported cases

Yellow: vector present but no disease reports

Orange: individual cases reported

Red: large outbreaks reported



CCHF – country status

Grey: no reports

Bleu: only imported cases

Yellow: vector present but no disease reports

Orange: individual cases reported

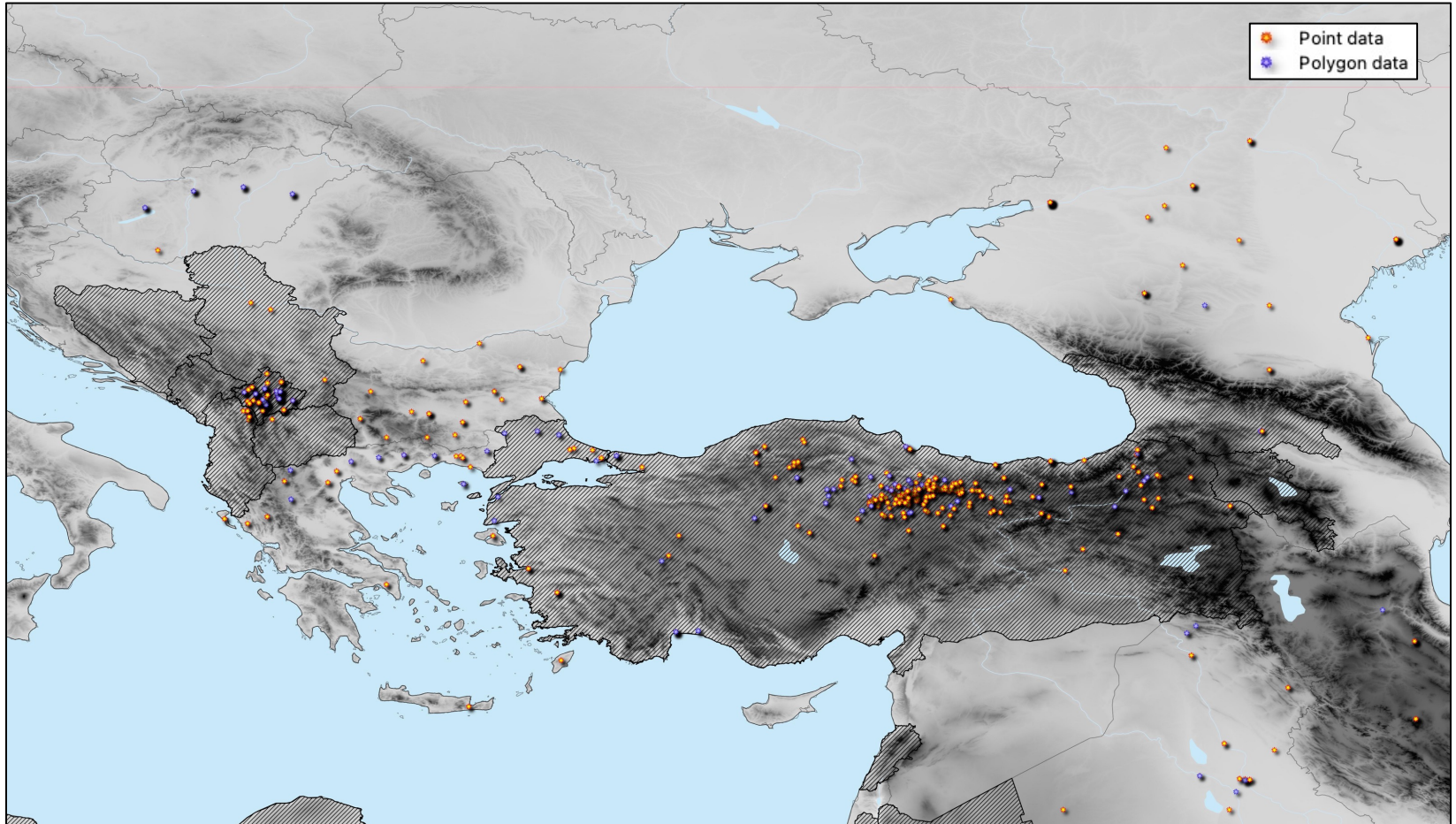
Red: large outbreaks reported

REPORTED OUTBREAK LOCATIONS (*)

Orange: actual geo-references

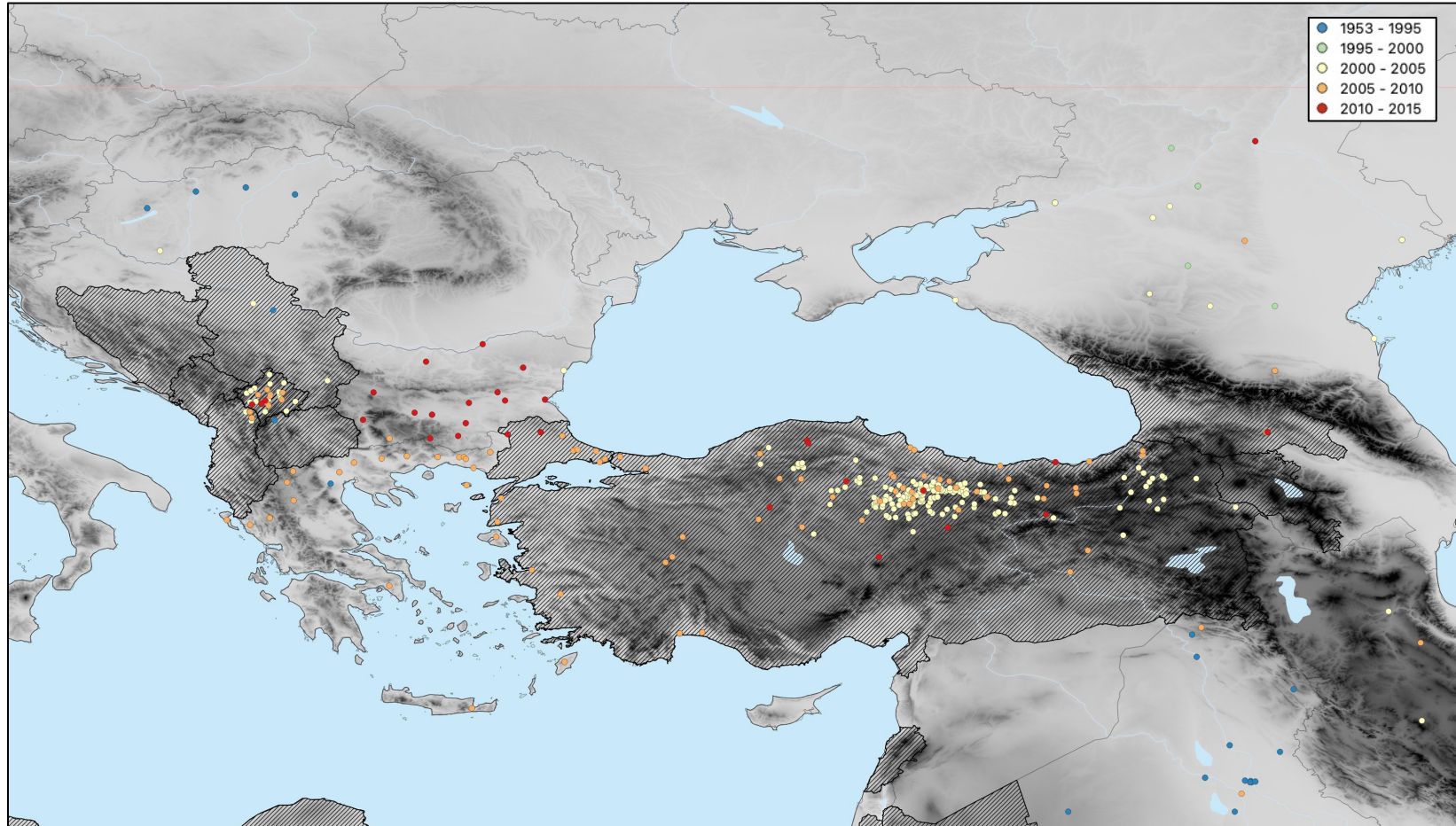
Bleu: central point of admin unit

(*) Messina et al (2017): human outbreak data until 2012



Published CCHF outbreak locations (data type) – Balkan and Black-Sea Region

Messina et al (2017): human outbreak data until 2012



Published CCHF outbreak locations (time series) – Balkan and Black-Sea Region

Messina et al (2017): human outbreak data until 2012



MEDILABSECURE MULTISECTORAL EXERCISE:

Enhancing integrated surveillance for CCHF

BALKANS and Black Sea REGIONAL MEETING

MAY 9th-12th 2023

Evaluation

My sector:

Human virology

Animal virology

Entomology

Animal health

Public health

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?



MLS MULTISECTORAL EXERCISE

Enhancing integrated surveillance for CCHF

Maria Grazia Dente, Alessia Milano, Claudia Robbiati, Laura Amato

BALKANS and Black Sea REGIONAL MEETING 9-12 May 2023



Funded by the European Union



- Background Document (including report on CCHF/V Multisectoral Risk Assessment Exercise, 2016)
 - Risk maps
 - Guiding Framework for Participants
 - Slide templates for restitution in plenary
- Data/information provided by countries



Objectives

- 1) to **design/describe** an integrated surveillance system for CCHF following the **One Health approach** (i.e. considering human, animal, entomological and environmental surveillance), through the following steps:
 - Outline objectives, steps and components of the integrated surveillance system following the OH approach
 - Identify possible challenges associated with the implementation of the designed surveillance and propose feasible solutions
 - Outline a monitoring system to assess the performance of the integrated surveillance system



MULTISECTORAL, BY EACH INDIVIDUAL COUNTRY
THREE SLIDES FOR PLENARY RESTITUTION



Objectives

2) To identify approaches and strategies facilitating a **cross-country regional surveillance system** for CCHF



MULTISECTORAL, MULTICOUNTRY,
ONE SLIDE FOR PLEANTY RESTITUTION



Outcomes

- Description of in place or in progress national OH surveillance system for CCHF in the Balkan and Black Sea regions;
- Identification of approaches and strategies facilitating a cross-country regional surveillance system for CCHF;
- Strengthening the cross-sectorial and cross-country collaborations.



11:30-13:00

1° Objective: 45 minutes

2° Objective: 45 minutes

14:30-16:00

Restitution

5' for each country [9 countries]

5' for each group [4 groups]

Discussion



Working Groups

Group	Countries	Facilitators
1	Albania, North Macedonia	Maria Grazia+ Miguel Angel + Cédric
2	Armenia, Georgia, Serbia	Alessia + Guy + Pilar
3	Kosovo*, Turkey	Claudia+ Elisa + Anais
4	Bosnia&Herzegovina, Montenegro	Laura+ Florence + Guillain

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and ICI Advisory opinion on the Kosovo declaration of independence*



Outcome 1° Objective

Country:

-national surveillance system for CCHF/V : YES or NOT

-national epidemiological situation for CCHF/V:

- priority objectives of your surveillance system:



Outcome 1° Objective

- sector/s are involved in the surveillance system
- type of surveillance activities and data collection



Outcome 1° Objective

- Data/Indicators/Procedures to monitor the efficacy of your surveillance system



- Countries:
- possible data and information which can be collected at regional level
- strategies/approaches to overcome possible challenges and barriers