

About this dossier

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Eradication: Final report for Rabies 2019

For each approved annual or multi-annual programme Member States shall submit to the Commission by the 30 April each year an annual detailed technical and financial report covering the previous year. That report shall include the results achieved and a detailed account of eligible costs incurred (Art 14 of Regulation (EU) No 652/2014).

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Country code: HU

Reporting period

From: 2019

To: 2019

Year of implementation: 2019

1. Technical implementation of the programme

1.1 Description and evaluation of the evolution of the epidemiological situation, the technical implementation of the activities foreseen under the programme and the cost-effectiveness of the programme.

Oral vaccination of red foxes was first performed in 1992 in the western part of Hungary. The vaccination area was gradually increased. The whole territory of the country was vaccinated between 2005 and 2007, and the number of rabies cases decreased drastically. Between 2008 and spring 2013 a 50 km wide zone along the southern and eastern country border was vaccinated.

In 2011 and 2012 rabies was detected only in bats. In September 2013 a rabid fox was found in Bács-Kiskun county. Until end of 2013, altogether 24 rabies cases were confirmed (22 foxes, 2 cattle). All cases were found in the central area of the country, not vaccinated since 2008. An emergency ring vaccination was performed in an 50 km radius-area around the first case, along with the 2013 autumn vaccination campaign. In 2014, vaccination area was extended to the north until M3 highway, and in the infected area double bait density was applied (40 baits/km²). 23 rabies cases were detected in 2014 (1 roe deer, 20 foxes, 1 goat and 1 dog). In 2015 no rabies cases were found in Hungary (only one bat and one fox was found positive, the latter proved to be a vaccine induced case, confirmed by the EURL as well). The vaccination area was extended to all the northern territories of Hungary east of the Danube in 2015 according to the request of the European Commission. The same area of 66.884 km² was vaccinated in 2016 and 2017.

In February 2016 rabies was confirmed in the laboratory of the Veterinary Diagnostic Directorate (NRL for rabies) of the National Food Chain Safety Office of Hungary, from a red fox originating from Borsod-Abaúj-

Zemplén county (north-eastern part of Hungary), within the vaccination area. The virus strain isolated from the sample was different from the strain detected during the 2013-2014 rabies epidemic in Hungary. In March 2017, in the same area, a red fox showing neurological symptoms was found positive. The strain was identical to the one isolated in 2016. Two weeks later, in a nearby farm, rabies was confirmed in two goats. During the years 2018 and 2019, no classical rabies cases were detected in Hungary (only one case of EBLV-1 in bats, Pest county, January 2018).

In spring 2018 oral vaccination against rabies was performed only in an appr. 30 km-radius area in Borsod-Abaúj-Zemplén county, where the rabies cases were confirmed in 2016-2017. In autumn 2018, following a new tender procedure, an area of 41.970 km² was vaccinated.

In 2019, 2 vaccination campaigns were performed: spring campaign between 30.03.2019-04.04.2019 and autumn campaign between 05.10.2019-11.10.2019. During each campaign, 839.400 vaccine baits (Lysvulpen) were purchased and distributed in the 41.970 km² vaccination area. The baits were distributed with the use of airplanes. All airplanes are equipped with GPS systems to record the flight routes and dropping of baits. The average bait density on the area covered was 20 baits/km². The distributor companies and the personnel of the airplanes were instructed not to drop baits in densely inhabited areas and water bodies. Distance between flight lines was 1000 m, the flying speed is usually between 100 and 120 km/h. In each new campaign flying lines are rotated with appr. 90 degrees compared to the lines of the previous campaign. GPS is used for flying navigation and following the planned flight routes. On each airplane the vaccine dropping machine is controlled by a computer connected with GPS. Flying lines and the dropping places of each vaccine bait are recorded by a computer (connected with the GPS system). The flight routes are also recorded by an independent system and the data are sent automatically to the CA. During the vaccination campaign the central authority is able to control the distribution work on a daily basis.

Manual distribution was only supplementary (less than 1% of the baits were distributed manually). This distribution method is applied only in some specified areas where flying is prohibited or where a more precise distribution of baits is needed (i.e. around oil and power plants and railway transfer zones), and it is carried out by qualified wildlife biologists. The bait density is 20 baits/km².

Each batch of oral vaccine used in 2019 has been sampled by the competent authority before distribution. The samples were tested for virus titer at the laboratory of the NFCSO Veterinary Medicinal Products Directorate. No batch was rejected.

As an additional measure, to control the effectiveness of cold chain, vaccine bait samples taken from the airfields during or after distribution have been tested for vaccine titers. The titration results showed that the cold chain during the campaign was appropriate.

The efficiency of oral vaccination shall be monitored by laboratory methods. According to the Hungarian national legislation the number of samples to be collected is four foxes per 100 km² in a year. Accordingly, after each campaign 2 foxes/50 km² (only from the vaccination area) shall be collected. Foxes are shot by licensed hunters who submit the whole body of the fox to the veterinary authority for laboratory testing, and provide information about the place and time of shooting. As of 2016, golden jackals can be submitted for testing as well. Hunters are legally obliged to submit the samples by an official decision issued by the competent county government office and payed [REDACTED] HUF [REDACTED] EUR) excl. VAT per fox or jackal for this activity. During the pre-campaign meetings organized in each county, the hunters are called upon to shoot and submit the suspect foxes and other suspect wild animals as well, over the obligatory shooting of the prescribed number of foxes and jackals for monitoring of effectiveness of OV.

Routine diagnostics of rabies in all animal species is carried out in three laboratories of the Veterinary Diagnostic Directorate (VDD) of the National Food Chain Safety Office: a central laboratory in Budapest, which is the NRL for Rabies, and two regional laboratories in Debrecen and in Kaposvár.

The tests for monitoring the efficiency of the oral immunization of foxes are also carried out in the laboratories of the VDD with the following methods:

- direct immunofluorescence test (fluorescent antibody test -FAT) of imprints of the brain - test for exclusion/confirmation of rabies,
- transversal tooth section from jaw - test for the presence of tetracycline biomarker (test for bait uptake)
- serological test (ELISA) of blood samples - test for the presence of anti-rabies antibodies (this test is carried out only in Budapest).

An awareness campaign was started in 2016 with the aim to increase reporting of rabies suspected animals. As a part of the awareness programme, in 2019 services for road panels and the distribution of online advertisements and TV spots were purchased.

1.2 Details on the level of achievement of the targets set in the approved programme and technical difficulties.

The final objective of the Hungarian rabies eradication program is to eliminate (sylvatic) rabies from wild animals in the whole territory of Hungary, applying measures and methods in accordance with Community legislation and international recommendations. The main objective of the 2017-2019 programme is to reduce the number of new rabies cases, and to prevent introduction of the disease from non-rabies free neighbouring areas. In 2015, no rabies cases were diagnosed in domestic animals or wildlife. Only one bat (EBLV-1, Pest county) and one fox was found positive (Békés county, vaccine induced case, confirmed by the EURL). In 2016 one fox was found positive in Szerencs (Borsod-Abaúj-Zemplén county). According to the sequencing of the rabies virus, the strain was different from the 2013-2014 rabies virus strain. In March 2017, in the same area, a red fox showing neurological symptoms was found positive again. The strain was identical to the one isolated in 2016. Two weeks later, in a nearby farm, rabies was confirmed in two goats. In 2018 and 2019, no rabies cases were found in Hungary (except one case of only EBLV-1, Pest county, January 2018).

The target numbers of vaccines distributed and tests performed as set out in the submitted program plan for 2019 have been achieved.

The 2019 spring vaccination campaign was performed successfully between 30.03.2019.-04.04.2019., and the autumn campaign between 05.10.2019.-11.10.2019, without any difficulties during the implementation. Based on the findings of the FVO audit on the rabies programme in February 2015, in order to strengthen control over and verify effectiveness of the cold chain of vaccine storage, after/during the distribution of vaccines, we performed titration from vaccine samples taken from the airfields to control if there was any decrease in the titer. (The results were sufficient).

The target minimum number of foxes and jackals to be tested in the framework of monitoring of effectiveness of OV was 1700. The yearly target number and the evaluation of the results refers to hunting year (01.03.2019-28.02.2020), because the sampling period after the autumn campaign (October) lasts until 29 February next year (from the practical point of view, it is impossible to shoot 2 foxes/50 km² in 6 weeks, and from the professional point of view, the foxes shot in early 2019 are indicators of the previous years' autumn campaign effectiveness and not those of the 2019 vaccination, whereas the foxes shot and tested in early 2020 belong to the autumn sampling period of 2019). However, our financial report refers to calendar year (sampling costs and tests performed between 01.01.2019-12.31.2019).

For the hunting year 2019/2020, 101% of the planned number of samples was submitted. The proportion of tetracycline positive foxes was 71% and the proportion of seropositive foxes was 25%. In jackals, tetracycline positivity was 73% and seropositivity 28% (these data refer to the whole vaccinated area in the country and to samples collected in hunting year 2019/2020). For details, please see Excel attached.

A multiannual Agreement between Hungary and Ukraine was signed in May 2018 in order to perform oral rabies vaccination in a buffer zone of 10.200 km² in Ukraine in years 2018-2020. According to the report received from the State Service of Ukraine on Food Safety and Consumer Protection (SSUFSCP), two successful rabies oral vaccination campaigns were performed in buffer zone included in the Hungarian co-financed programme in 2019.

1.3 Epidemiological maps for infection and other relevant data on the disease/activities (information on serotypes involved,...) (Please attach files of data using the PDF attachment feature) Use the textbox below to provide clarifications for the maps you attach, if needed.

No rabies cases have been detected in Hungary in 2019.

Please find attached the maps showing the vaccination area in 2019 spring and autumn campaign (bait dropping GPS data).

ANNEX VI TECHNICAL REPORT ON RABIES PROGRAMMES

VERY IMPORTANT: Please fill out the following tables with figures corresponding to measures performed during the implementing period (1/1 to 31/12).

Table A1 - TEST FOR THE MONITORING OF VACCINATION EFFECTIVENESS

Region	Species and age	Type of test	Test description	Number of tests	Number positive	% positive
Hungary (vaccinated area)	Foxes unknown age	Biomarker	Tetracycline in bones	1,540	1,067	69.29 %
Hungary (vaccinated area)	Foxes unknown age	Serological	VNT/FAVN/ELISA	1,131	345	30.5 %
Hungary (vaccinated area)	jackals	Biomarker	Tetracycline in bones	130	95	73.08 %

Hungary (vaccinated area)	jackals	Serological	VNT/FAVN/ELISA	103	31	30.1 %
Total				2,904	1,538	52.96 %

Table A2 - SURVEILLANCE TESTS

Region	Animal species	Category	Test description	Number of tests	Number of cases
Hungary (whole territory)	Foxes	Passive	Fluorescent antibody test (IF)	332	0
Hungary (whole territory)	Jackals	Passive	Fluorescent antibody test (IF)	4	0
Hungary (whole territory)	Dogs	Passive	Fluorescent antibody test (IF)	173	0
Hungary (whole territory)	Cats	Passive	Fluorescent antibody test (IF)	330	0
Hungary (whole territory)	cattle	Passive	Fluorescent antibody test (IF)	60	0
Hungary (whole territory)	sheep and goat	Passive	Fluorescent antibody test (IF)	38	0
Hungary (whole territory)	deers (red deer, roe deer)	Passive	Fluorescent antibody test (IF)	27	0
Hungary (whole territory)	Other wild carnivores (badger, marten, polecat)	Passive	Fluorescent antibody test (IF)	20	0
Hungary (whole territory)	Equidae	Passive	Fluorescent antibody test (IF)	6	0
Hungary (whole territory)	Other species (wild boar)	Passive	Fluorescent antibody test (IF)	1	0
Hungary (vaccination area)	Foxes	Active	Fluorescent antibody test (IF)	1,557	0
Hungary (vaccination area)	Jackals	Active	Fluorescent antibody test (IF)	132	0
Hungary (whole territory)	bats	Passive	Fluorescent antibody test (IF)	14	0
Total				2,694	0

Number of rabies virus isolates typed for differentiation from vaccine	0
Typing results (please indicate the number of field strains/vaccine strains, and (optional) comment)	0

Table B - WILDLIFE ORAL VACCINATION

Aerial distribution data files:

Downloadable via URL	[REDACTED]
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Description of the analysis performed by the Competent Authority on the aerial distribution data and conclusions of the assessment for the quality of the distribution:

During the vaccination campaigns the competent authority controls the implementation of the distribution work on a daily basis. At the end of each day of the campaign, the contractor for distribution provides daily report on the progress of work via telephone to the CA. The CA checks on the map (flight plan) which flight routes have been completed on the given day and how many baits have been distributed on the given flight lines. This is also recorded on the map to control the proper coverage of the vaccination area. Additionally, at the end of each day the GPS data of the flight routes and bait release, recorded by the computer devices of the airplanes, is sent electronically to the CA so that the checking of the quality of distribution is possible with the use of a mapping software (QGIS). The flight data are also recorded by an independent system and automatically sent to the CA at the end of the day. GPS data are merged and analyzed during and after the campaign, and after the end of each campaign a meeting takes place where the contractor has to explain all the visible gaps. Typical reason for these gaps, especially in the spring campaign was water on the agricultural fields (inland inundation). Flight personnel stops the dropping machine in every case they see people performing outdoor activities or agricultural work in the vaccination area. No significant inadequacies, no overlaps or missing areas were found during the evaluation of the 2019 data. Please find attached the maps showing 2019 spring and autumn bait dropping data.

Start date of First Campaign	30/3/2019	End date of First Campaign	4/4/2019
Start date of Second Campaign	5/10/2019	End date of Second Campaign	11/10/2019

Region/Area	Product used	Number of doses	Size of vaccinated area (km ²)	Distribution method
Hungary (vaccination area) spring campaign	Lysvulpen	839,400	41,970	Aerial
Hungary (vaccination area) autumn campaign	Lysvulpen	839,400	41,970	Aerial
Total		1,678,800	83,940	

Table C - OFFICIAL CONTROL OF ORAL VACCINES BEFORE THEIR DISTRIBUTION

Number of batches distributed	6	Number of batches controlled by CA	6	Number of batches rejected	0
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Batch number	Manufacturer	Sampling date	Virus titration result	Outcome of the titration
8525 - upon arrival	Bioveta	28/3/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,3) TCID50/dose	Acceptable
8625 - upon arrival	Bioveta	28/3/2019	1,8x10(6,0) TCID50/dose and 1,8x10(6,0)	Acceptable

			TCID50/dose	
4426 - upon arrival	Bioveta	28/3/2019	1,8x10(7,3) TCID50/dose and 1,8x10(6,8) TCID50/dose	Acceptable
8525 - from Hajdúszoboszló airport	Bioveta	2/4/2019	1,8x10(6,1) TCID50/dose and 1,8x10(6,3) TCID50/dose	Acceptable
8525 - from Jakabszállás airport	Bioveta	30/3/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,8) TCID50/dose	Acceptable
8625 - from Kaposújlak	Bioveta	3/4/2019	1,8x10(6,6) TCID50/dose and 1,8x10(6,5) TCID50/dose	Acceptable
8625 - from Békéscsaba airport	Bioveta	30/3/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,0) TCID50/dose	Acceptable
4426 - from Miskolc airport	Bioveta	1/4/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,8) TCID50/dose	Acceptable
6326R - upon arrival	Bioveta	3/10/2019	1,8x10(7,0) TCID50/dose and 1,8x10(7,6) TCID50/dose	Acceptable
6826R - upon arrival	Bioveta	3/10/2019	1,8x10(7,0) TCID50/dose and 1,8x10(7,0) TCID50/dose	Acceptable
4526 - upon arrival	Bioveta	3/10/2019	1,8x10(6,5) TCID50/dose and 1,8x10(6,8) TCID50/dose	Acceptable
4426 - upon arrival	Bioveta	3/10/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,5) TCID50/dose	Acceptable
4526 - from Hajdúszoboszló airport	Bioveta	9/10/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,5) TCID50/dose	Acceptable
4526 - from Jakabszállás airport	Bioveta	5/10/2019	1,8x10(6,3) TCID50/dose and 1,8x10(6,3) TCID50/dose	Acceptable
4526 - from Kaposújlak airport	Bioveta	10/10/2019	1,8x10(6,1) TCID50/dose and 1,8x10(6,3) TCID50/dose	Acceptable
4526 - from Miskolc airport	Bioveta	7/10/2019	1,8x10(6,1) TCID50/dose and 1,8x10(6,3) TCID50/dose	Acceptable
4526 - from Békéscsaba airport	Bioveta	6/10/2019	1,8x10(6,6) TCID50/dose and 1,8x10(6,6) TCID50/dose	Acceptable

COMMENT / ADDITIONAL CLARIFICATION

In Table 3 (Financial data), 7% overhead is included in case of the awareness campaign.