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INDEX

EDITORIAL

The BENV as a tool for disseminating information

Dear readers,

in this first issue of 2018, the BENV is presenting a lot of interesting articles. In the section **In recent months,** you can find the usual update on the trend of the diseases occurred in the national territory. An article describes the incursion of Bluetongue virus (BTV) serotype 3 in Italy: in November 2017, a 3 years old female sheep belonging to a flock located in Trapani (Sicily island) showed clinical signs consistent with bluetongue infection. The laboratory results of the samples collected identified the Seg 2 of BTV-3, which was identical to that of BTV-3 TUN2016, first detected in Tunisia in 2016. The detection of BTV 3 in Sicily emphasizes the importance for the EU of having in place robust collaborations and surveillance activities with Northern African authorities for early warning systems in animal health and the assessment of proper preventive measures.

Another article, in the same section, is focused on the recognition of the entire national territory as officially free from enzootic bovine leucosis (Decision n. 2017/1910/EC of 17 October 2017). Enzootic bovine leucosis is a contagious disease affecting cattle. The etiologic agent belongs to the Retroviridae family which includes viruses able to cause tumours in mammals, birds and reptiles. The infection can lead to significant economic damages attributable in particular to the blocking of national and international trade of animals, the depreciation of animals belonging to an infected holding and the costs for eradication or surveillance plans. Since 1996, an eradication plan (Legislative Decree No. 358 of 2 May 1996) has been in place throughout Italy. The recognition of the officially free status was achieved proving that the prevalence level of infected herds in the Italian territory was lower the 0.2% and, therefore, the risk of spread of the infection outside the persistent clusters was negligible. Thanks to the changed epidemiological framework, starting from 2018 all Italian regions can put in place a surveillance plan aiming at monitoring the officially status of their territory.

In the section **Around us**, an article presents the main findings of the EFSA-ECDC joint report on the trend and sources of zoonoses in 2016 (EUSR 2016), focusing on the most relevant information on zoonoses and food-borne outbreaks within the EU in 2016. The report presents the results of the monitoring and surveillance of zoonoses in animals, food, feed and humans in 37 European countries (28 Member States (MS) and nine non-MS). The EUSR presents for the first time the data analyses according to a categorisation of zoonoses and food-borne outbreaks monitoring data, depending to the levels of data quality and harmonisation.

In the same section an article on Chronic Wasting disease (CWD) presents and discusses the epidemiological situation of the disease in Europe. CWD is a contagious neurological disease affecting white tailed deer (*Odocoileus virginianus*), Rocky Mountain elk (*Cervus elaphus nelsoni*) Shiras moose (*Alces alces shirasi*) and likely other subspecies of *Cervus elaphus*. The disease belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs): within this group, there are several other variants that affect domestic animals: scrapie, bovine spongiform encephalopathy (BSE) in cattle and transmissible mink encephalopathy in farmed mink. The disease appeared for the first time in Europe in April 2016 in a young reindeer (*Rengifer tarandus*) in Norway: up to now, thanks to the surveillance implemented since 2016, 22 cases have been confirmed in the country. The first Finnish case of CWD was recognized in March 2018, in a European elk (*Alces alces*).

Regarding the data on outbreaks, in the **Hand on data** section, you can consult the tables with the data on outbreaks of animal diseases reported to SIMAN in the first four months of 2018, the health status of the territories and the animal species involved in the outbreaks. The **Maps** show the distribution of the main animal diseases occurred in Italy the same time period.

If you are interested in publishing articles on the BENV, in the section **Submit your article**, you can consult the author's guidelines. To contact us write to benv@izs.it , otherwise fill in the form on line in **Suggestion** section.

I wish you a pleasant reading of this new issue.

Simona Iannetti
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IN THESE MONTHS

The main events of epidemiological interest in the last months in Italy and in the European Union

Italy finally complies with the requirements to be declared as free from Enzootic Bovine Leukosis

Enzootic Bovine Leucosis (EBL) is a lymphatic neoplasm sustained by a virus (BLV - Genus Deltaretrovirus in the Retroviridae family) (Hunter *et al.*, 2000).

The target of disease is represented by cattle herds, but many other farm animals are susceptible to BLV infection; either naturally (eg. in water buffalo or experimentally induced (eg. in sheep) (Burny *et al.*, 1988).

We remember that European Union declared "Eradication of EBL as mandatory" (Council Directive EEC n 432, 1964).

The Italian normative references for the National Plan for the Eradication of the EBL are: Health Ministry Decree 358 (2 May 1996) and the Legislative Decree n. 196 (22 May 1999).

On September 18, 2007, the "Standing Committee for plants, animals, food and feed" recognized Italy as officially free of Enzootic Bovine Leucosis Country.

In brief a farm can qualify to be disease free, if all animals over age of 12 months have reacted negatively to two diagnostic checks (performed with an interval of, at least, four months during the last 12 months of life).

Tests required by the law (regulations for the diagnosis of EBL) are serological such as AGID and ELISA, the latter being the option of choice, offering the possibility of using serum pools.

A territory is accredited as EBL free, if all the cattle and buffalo farms have been checked (on an annual basis) and if the prevalence of infected farms does not exceed 0.02% of controllable farms; in Italy the minimum territorial base, that can qualified as a "free area", corresponds to the administrative district, qualified as a Province.

A regional district is defined as undamaged when all its Provinces are recognized as such.

The documentation for recognition of disease free area is realized by the Region of competence and then submitted by the Ministry of Health to the European Commission; if the assessment is positive, the Commission shall amend Chapter 2 of Annex III to Decision 2003/467 / EC containing the list of regions officially EBL free; the list of States whose entire territory is EBL free is indicated in Chapter 1.

In any case, the finding of infected animals, entails the suspension or loss of disease free area status, and therefore may have repercussions on the entire territory of reference.

Considering the European norms foresee that the indemnity of a territory can be demonstrated also on a statistical basis (Legislative Decree n. 196 (1999) annex D chapter 1, point E, C paragraph "... a method shows, with a confidence rate of 99%, that the infected farms are less than 0.2%"), the prevalence of infection in Italy, has been estimated; to this purpose the target population was considered as: "total of the farms subject to the eradication plan".

In order to estimate the prevalence, the total number of farms found infected has been placed in the numerator, while the total number of serologically controlled herds was taken as denominator.

Data were extracted from the national veterinary information systems VET-INFO; Website: https://www.vetinfo.sanita.it.

Epidemiological evolution of EBL in Italy

In Figure 1 the epidemiological situation of the EBL is reported (as shown in Annex III, Chapter 2 of Decision 467 EC (2003; updated to 11/10/2016).
In red: non officially free territories, in green: officially free territories.
Regions and Provinces free from EBL are listed in the table.

Figure 1. LEB-free Provinces (as set out in Annex III, Chapter 2 of Decision 467 EC; 2003)

Regione	Province indenni	Regione	Province indenni
Abruzzo	Pescara	Sardegna	Tutte
Campania	Avellino	Sicilia	Agrigento
	Benevento		Caltanissetta
	Napoli		Catania
Emilia Romagna	Tutte		Enna
Friuli Ven. Giulia	Tutte	Sicilia	Palermo
Lazio	Frosinone		Ragusa
	Latina		Siracusa
	Rieti		Trapani
	Viterbo	Toscana	Tutte
Liguria	Tutte		Bolzano
Lombardia	Tutte		Trento
Marche	Tutte	Umbria	Tutte
Molise	Tutte	V. d'Aosta	Tutte
Piemonte	Tutte	Veneto	Tutte
Puglia	Brindisi	Aggiornato al 11/10/2016	

Figure 2. Infection outbreaks registered in Italy (2013-2016) (source: SIMAN - Information System Animal Disease (Italian Ministry of Heath)

Figure 2 shows the outbreaks of EBL infection recorded in the 2013 - 2016 years.

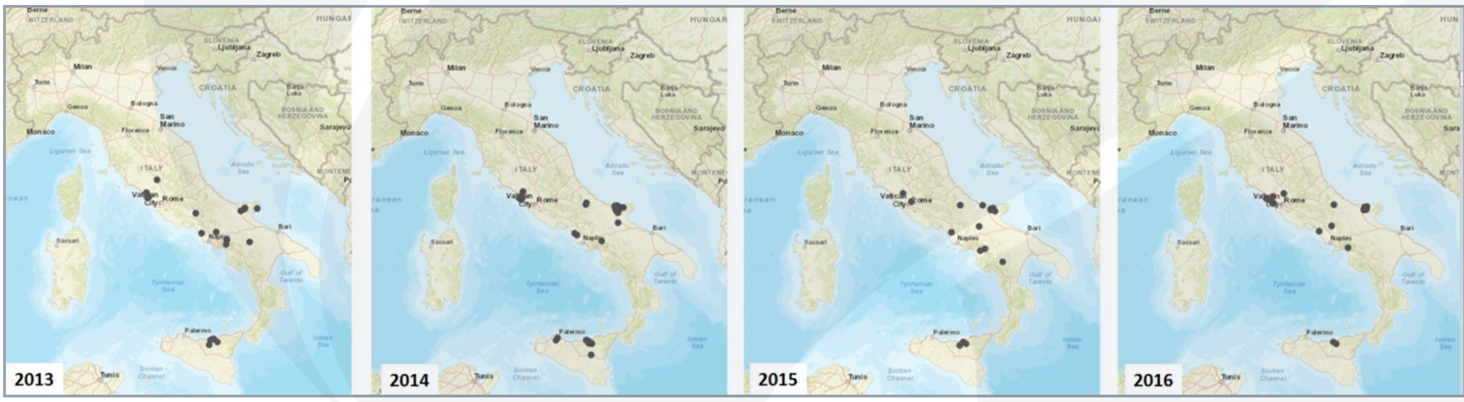


Figure 3 highlights the outbreaks of infection (for periods 2013-2016), in some specific areas; epidemiological links have been highlighted for at least four infection clusters in Lazio, Campania, Puglia and Sicily Regions. Data on activities related to the EBL eradication plan for the years 2013-2016, have been reported;

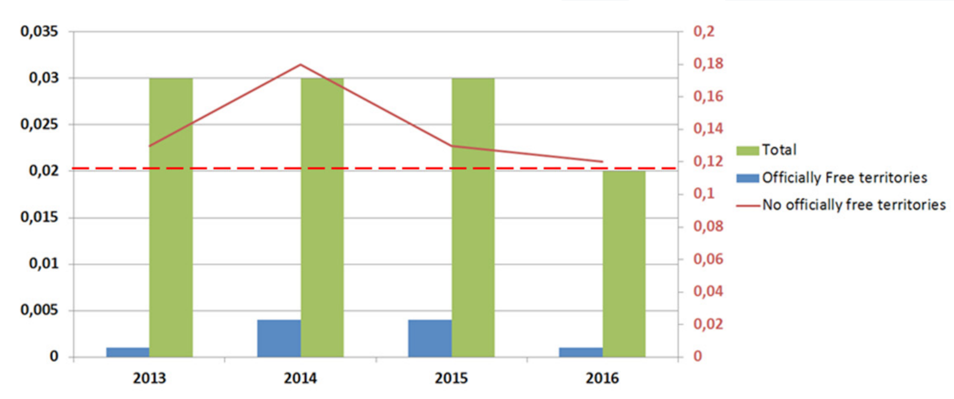
Figure 3.
Farms infected by EBL; period 2013-2016;
(the red border shows clusters of infection in pasture grazing while the blue one indicate infection clusters in pens)

Year	Territory	Number of herds under the plan	Number of checked herds	% herd coverage	Number of positive herds	% of positive herds (prevalence)	Number of officially free herds	% officially free herds
2013	Officially Free territories	76659	30896	100	1	0,001	76656	99,99
	No officially free territories	24124	23917	99,14	32	0,13	23885	99,87
	Total	**100783**	**54813**	**99,57**	**33**	**0,03**	**100541**	**99,93**
2014	Officially Free territories	74876	25759	100	3	0,004	74837	99.96
	No officially free territories	20840	20536	98,54	36	0,18	20500	99,82
	Total	**95716**	**46295**	**99,27**	**39**	**0,03**	**121041**	**99,87**
2015	Officially Free territories	75457	35488	100	3	0,004	75441	99,98
	No officially free territories	25988	20536	99,27	28	0,13	20508	99,86
	Total	**101445**	**56024**	**99,635**	**31**	**0,03**	**95949**	**99,92**
2016	Officially Free territories	70367	32706	100	1	0,001	70206	99,77
	No officially free territories	27258	21561	99,03	27	0,12	21534	99,87
	Total	**97625**	**54267**	**99,515**	**28**	**0,02**	**91740**	**99,82**

Table 1.
Data about activities carried out by the Italian Veterinary Services in the EBL eradication plan (2013-2016)

The Figure 4 shows the prevalence of infected farms. Activities carried out in Italy.

Figure 4.
Prevalence of Farms infected by EBL in Italy in the 2013-2016



The prevalence of infection (period 2013-2016), is summarized in table 2.

Table 2.
Evaluation of the infection prevalence in Italy; period: 2013-2016. (Calculated confidence limits, assuming the 99% confidence level)

Year	Target population	Tested herds	Infected herds	Estimated prevalence	99% confidence level	
					lower limit	upper limit
2013	100783	54813	33	0,06	0,04	0,1
2014	95716	46295	39	0,08	0,06	0,13
2015	101445	56024	31	0,06	0,03	0,09
2016	97625	54267	28	0,05	0,03	0,08

Conclusions

Eradication of EBL has been achieved with great efficiency in the northern Regions of Italy. The implementation of the "Zootechnical Registry", contributed to achieving the programmed objectives.

The Southern Regions, in spite of the presence of modern livestock breeding farms characterized by an adequate entrepreneurial spirit, are penalized by the presence of outdated animal husbandry structures, located in marginal areas, in which breeders (for social, cultural and economic limits), often don't act collaboratively with the veterinary services.

Besides, recently these faced various health emergencies (Blue tongue, Avian influenza) and endemic diseases (Brucellosis, Tuberculosis) that have had the precedence over Leucosis.

In addition to this, the three remaining infection clusters (in Lazio, Puglia and Sicily Regions) are characterized by extensive cattle bred, with indocile or even feral like animals, that made the surveillance on Enzootic Bovine Leukosis even more difficult.

Basically a lack of controls may encourage animal exchange and illegal trade activities.

This results in positive tests that occur even after a prolonged period of negative findings on the controlled population.

Not officially considered EBL free Regions (eg. Abruzzo, Molise, Basilicata, Calabria), where there have been no outbreaks for years; can't take advantage of government reimbursement, because of the lack of control of some farms. The Ministry of Health has tackled these problems by promoting extraordinary measures in order to advantage unscathed Regions. EBL, Brucellosis and Tuberculosis have been the subject of some regulations, starting from the Ministerial Ordinance (28 May 2015).

Thanks to these initiatives, and a renewed commitment by the competent Regions, BLV infection is now reduced in Italy to a few well-identified areas that do not represent a real risk of infection. The surveillance system, which is guaranteed by the Veterinary Service, has allowed to exclude the presence of viral circulation in uninjured herds: so, no new "outbreaks" have been recorded. Given the epidemiological situation, it was decided to ask for the recognition of EBL free status for the entire Country. Looking ahead, work is being done to save resources by making the minimum surveillance level in Leukosis free territories, to ensure the maintenance of the health status, while more stringent measures will be adopted in the affected territory. In these areas, where the eradication plan activities have not been sufficient to vanquish the infection, it's necessary to adopt specific plans to re-qualify the breeding system itself.

The experience allowed to develop concrete proposals:

create livestock control facilities in extensive farms, adopt electronic animal identification tools and rehabilitate animal populations that are not attributable to any owner, create sustainable and (bio) safe commercial flows that allow infected livestock to be moved for the finishing phase of breeding.

The ultimate objective is to find solutions to the problem of controlling infectious diseases avoiding to destroy the extensive system of breeding, which allows the social, cultural and economic survival of marginal areas of the Country.

Therefore, it is necessary to protect the business interests of the intensive food supply chains and maintain biodiversity and food quality that made Italy famous all over the world.

References

1. A. Burny, Y. Cleuter, R. Kettmann, M. Mammerickx, G. Marbaix, D. Portetelle, A. van den Broeke, L. Willems, R. Thomas Bovine leukemia: facts and hypotheses derived from the study of an infectious cancer Veterinary Microbiology, 17 (1988), pp. 197-218
2. Buehring G.C., Shen H.M., Jensen H. M., Jin D. L., Hudes M., Block G. Exposure to Bovine Leukemia Virus Is Associated with Breast Cancer: A Case-Control Study PLOS ONE: September 2, 2015 https://doi.org/10.1371/journal.pone.0134304
3. Chi J., Vanleeuwen J.A., Weersink A., Keefe G.P. Direct production losses and treatment costs from bovine viral diarrhoea virus, bovine leucosis virus. Mycobacterium avium subspecies paratuberculosis and Neospora caninum Prev. Vet. Med., 55 (2002), pp. 137-153
4. Ott S. *et al.* 2003. Association between bovine-leukosis virus seroprevalence and herd-level productivity on US dairy farms. Prev Vet Med 61:249-262.
5. Rhodes J. et al. 2003. Economic implications of bovine leukemia virus infection in mid-Atlantic dairy herds. J Am Vet Med Assoc 223:346-352.

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Bluetongue virus serotype 3 in Italy

Bluetongue virus (BTV), genus Orbivirus - family Reoviridae, causes the bluetongue (BT) disease, one of the OIE - listed major diseases of ruminants. BT has a global distribution normally coinciding with that of the corresponding competent Culicoides midges, vectors of the virus.

BTV exists into multiple serotypes and two major geographic groups of BTVs have been identified and designated as eastern (e) or western (w) topotypes. They include viruses from Australia and the Middle/Far East, or Africa and the Americas, respectively (Maan *et al.*, 2008).

Since 1998, southern Europe has experienced multiple incursions of different serotypes and topotypes of BTV. Predominantly, BTV incursions have entered southern Europe via two distinct routes. Strains of BTV-1e, BTV-4w, BTV-9e and BTV-16e have all entered the eastern Mediterranean region. BTV-1w, BTV-2w and BTV-4w have entered Europe most likely as a result of wind-blown dissemination of infected midges from Northern Africa. Specifically, the virus had been likely introduced to Europe from Northern Africa via two major gateways: (i) from Morocco to Spain through the Straits of Gibraltar, (ii) from Tunisia to Italy through Sicily or Sardinia (Wilson and Mellor, 2008).

The introduction of BTV from Tunisia to Italy was reported the first time in 2000, when the first BT incursion in Sardinia, was immediately linked with BTV-2w circulation in the northeastern part of Tunisia in 1999 (Calistri et al., 2004). In 2012, a novel reassortant strain of BTV-4w was identified in Sardinia together with BTV-1w (Lorusso et al., 2013). This reassortant BTV-4w was shown to be closely related to BTV-4w isolated in Tunisia in 2007 and 2009. Likewise, BTV-1w Sardinian strain originated from a strain closely related to a BTV-1w isolated in Tunisia in 2011 (Lorusso *et al.*, 2014).

On November 1st 2016, an eight years old red-head Barbarine ewe, located in the Gouvernorat de Nabeul, delegation Beni Khalled, Imada Hannous (36°37059.04"N-10°42039.52"E), in the north-eastern part of Tunisia, in the central area of Cap Bon, showed clinical signs consistent with BTV infection. The animal belonged to a flock composed by 46 sheep, seven goats and eight cattle. The newly identified BTV was typed as western BTV-3 with a clear African origin (NCBI, KY432369-KY432378; Lorusso et al., 2017). Further surveillance activities conducted in collaboration between the Tunisian and Italian authorities, revealed the presence of BTV-3 RNA and antibodies in sheep of some Tunisian regions. Moreover, an additional western BTV-3 strain, named BTV 3 TUN2016/Zarzis (NCBI, MF124292 MF124301) was identified nearby the border with Libya. The two viruses are different by comparative analysis of the genome constellations (Lorusso et al., 2018).

In November 2017, a 3 years old female crossbred sheep belonging to a flock of nearly 400 animals located in the surroundings of Trapani (Western part of the island of Sicily, facing the peninsula of Cap Bon) showed clinical signs consistent with BT infection. Symptoms included fever, oedema of the head, nasal discharge, and depression. The veterinary services of local health unit (ASL) visited the entire flock and collected EDTA-blood and serum samples from the symptomatic sheep. The Seg 2 of BTV-3 identified in Sicily was identical to that of BTV-3 TUN2016, first detected in Cap Bon in November 2016 (Lorusso *et al.,* 2017) (figure 1).

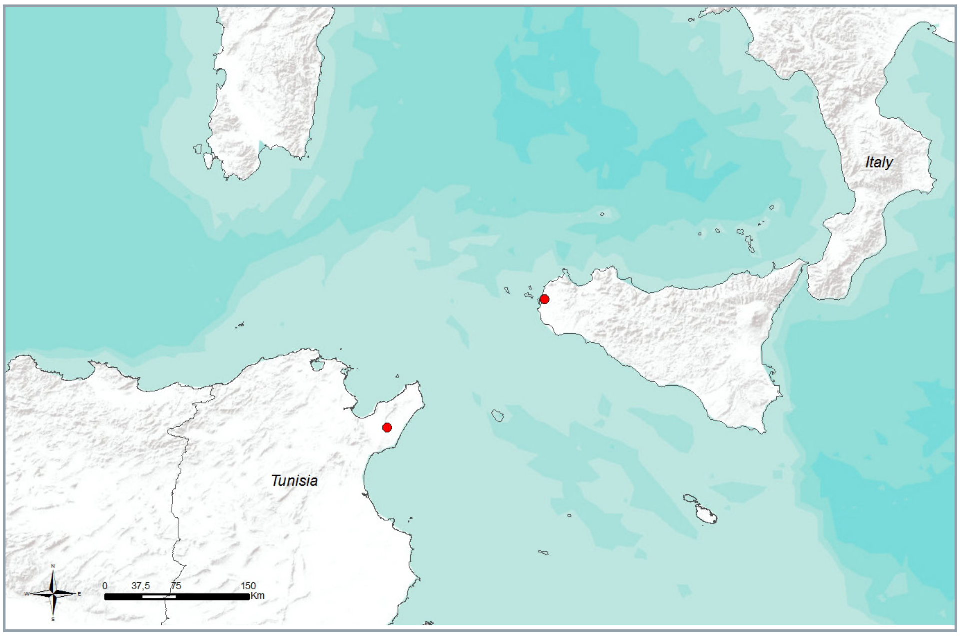

Figure 1.
BTV-3 outbreaks in Italy and Tunisia

References

1. ArCalistri, P., Giovannini, A., Conte, A., Nannini, D., Santucci, U., Patta, C., Rolesu, S., Caporale, V., 2004. Bluetongue in Italy: part I. Vet. Ital. 40 (3), 243–251
2. Lorusso, A., Sghaier, S., Carvelli, A., Di Gennaro, A., Leone, A., Marini, V., Pelini, S., Marcacci, M., Rocchigiani, A.M., Puggioni, G., Savini, G., 2013. Bluetongue virus serotypes 1 and 4 in Sardinia during autumn 2012: new incursions or re-infection with old strains? Infect. Genet. Evol. 19, 81–87.
3. Lorusso, A., Guercio, A., Purpari, G., Cammà, C., Calistri, P., D'Alterio, N., Hammami, S., Sghaier, S., Savini, G. Bluetongue virus serotype 3 in Western Sicily, November 2017. Vet Ital. 2017 Dec 29;53(4):273-275. doi: 10.12834/VetIt.251.520.178
4. Lorusso, A., Sghaier, S., Di Domenico, M., Barbria ME., Zaccaria, G., Megdich A., Portanti, O., Seliman, IB., Spedicato, M., Pizzurro, F., Carmine, I., Teodori, L., Mahjoub, M., Mangone, I., Leone, A., Hammami, S., Marcacci, M., Savini, G. Analysis of bluetongue serotype 3 spread in Tunisia and discovery of a novel strain related to the bluetongue virus isolated from a commercial sheep pox vaccine. Infect Genet Evol. 2018 Apr;59:63-71. doi: 10.1016/j.meegid.2018.01.025. Epub 2018 Jan 31
5. Lorusso, A., Guercio, A., Purpari, G., Cammà, C., Calistri P., D'Alterio N., Hammami, S., Sghaier S., Savini, G. Bluetongue virus serotype 3 in Western Sicily, November 2017. Vet Ital. 2017 Dec 29;53(4):273-275. doi: 10.12834/VetIt.251.520.178. PMID: 29307120
6. Maan, S., Maan, N.S., Ross-smith, N., Batten, C.A., Shaw, A.E., Anthony, S.J., Mertens, P.P.C., 2008. Sequence analysis of bluetongue virus serotype 8 from the Netherlands 2006 and comparison to other European strains. Virology 377 (2), 308–318.
7. Meroc, E., Herr, C., Verheyden, B., Hooyberghs, J., Houdart, P., Raemaekers, M., Minties, K. (2009). Bluetongue in Belgium: Episode II. Transboundary and Emerging Diseases, 56, 39–48
8. Wilson, A., Mellor, P., 2008. Bluetongue in Europe: vectors, epidemiology and climate change. Parasitol. Res. 103, 69–77.

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HAND ON DATA

Processing date: 10th May 2018

Number of outbreaks reported to SIMAN in the four month period 2018

Number of outbreaks reported to SIMAN in the four month period 2018					
Disease	Januray	February	March	April	Total outbreaks
Agalassia contagiosa degli ovini e dei caprini	1	1	6	3	11
Anemia infettiva degli equini	8	2	5		15
Brucellosi dei bovini, dei bufalini, degli ovini, dei caprini e dei suini	32	37	51	27	147
Carbonchio ematico			1		1
Colera aviare	1				1
Febbre Catarrale degli ovini (Bluetongue)	14	7		3	24
Febbre Q	1		1		2
Influenza Aviaria -Alta patogenicità nel pollame			3		3
Influenza Aviaria -Bassa patogenicità nel pollame	1		1		2
Leptospirosi animali	1	2	2		5
Leucosi bovina enzootica		1		3	4
Malattia Vescicolare		1			1
Malattia virale emorragica del coniglio	1	1	2	1	5
Mastite catarrale contagiosa dei bovini			1	1	2
Peste americana			1	3	4
Peste europea				1	1
Peste Suina Africana	24	1			25
Salmonellosi aviare non tifoidee			4	1	5
Salmonellosi delle varie specie animali	1		1	1	3
Salmonellosi ovina	3	1			4
Schmallenberg		1			1
Scrapie		4	2	1	7
Setticemia emorragica virale		1			1
Trichinosi	3	1	1		5
Tubercolosi altri Mammiferi		2			2
Tubercolosi Bovina	20	15	16	13	64
West Nile Fever	1				1

Number of outbreaks reported by Regions to SIMAN in the four month period 2018

Number of outbreaks reported by Regions to SIMAN in the four month period 2018						
Region	**Disease name**	**January**	**February**	**March**	**April**	**Total outbreaks**
ABRUZZO	Brucellosis of cattle, buffalo, sheep, goats and pigs		1			1
	Equine infectious anaemia		1			1
APULIA	Bovine leucosis				3	3
	Bovine tuberculosis	3	1	1		5
	Brucellosis of cattle, buffalo, sheep, goats and pigs	2	3	8	2	15
	Equine infectious anaemia			2		2
BASILICATA	Bovine tuberculosis	2		1		3
	Brucellosis of cattle, buffalo, sheep, goats and pigs	1	2	5	2	10
BOLZANO	American foulbrood of honey bees				1	1
CALABRIA	Bovine tuberculosis	1	2	3		6
	Brucellosis of cattle, buffalo, sheep, goats and pigs	2	6	6	6	20
	Equine infectious anaemia		1			1
CAMPANIA	Bluetongue	1				1
	Bovine tuberculosis	3	3	2	1	9
	Brucellosis of cattle, buffalo, sheep, goats and pigs	9	6	7	8	30
	Equine infectious anaemia	3				3
	Q fever			1		1
EMILIA ROMAGNA	Leptospirosis	1				1
	Low patogenicity Avian influenza in poultry	1				1
LAZIO	Antrax			1		1
	Avian cholera	1				1
	Bluetongue	1				1
	Bovine leucosis		1			1
	Equine infectious anaemia	5		3		8
	Non-typhoidal avian salmonellosis			1		1
	Salmonellosis (S. abortusovis)	1				1
	Scrapie				1	1
LIGURIA	Rabbit haemorrhagic disease	1				1
LOMBARDY	American foulbrood of honey bees			1	2	3
	European foulbrood of honey bees				1	1
	High patogenicity Avian influenza in poultry			3		3
	Low patogenicity Avian influenza in poultry			1		1
	Non-typhoidal avian salmonellosis			2		2
	Q fever	1				1
	Salmonellosis of animals			1	1	2
	Viral haemorrhagic septicaemia (VHS)		1			1
MARCHE	Scrapie		1	1		2
MOLISE	Bovine tuberculosis	1				1
	Brucellosis of cattle, buffalo, sheep, goats and pigs			1		1
PIEDMONT	Non-typhoidal avian salmonellosis				1	1
	Schmallengberg disease		1			1
	Scrapie			1		1
SARDINIA	African swine fever	24	1			25
	Bluetongue	5	3		1	9
	Brucellosis of cattle, buffalo, sheep, goats and pigs			1		1
	Contagious agalactia	1	1	6	3	11
	Contagious bovine mastitis			1		1
	Leptospirosis			2		2
	Non-typhoidal avian salmonellosis			1		1
	Salmonellosis (S. abortusovis)	2				2
	Scrapie		1			1
	Trichinellosis	3	1	1		5
SICILY	Bluetongue	7	4		1	12
	Bovine tuberculosis	10	9	9	12	40
	Brucellosis of cattle, buffalo, sheep, goats and pigs	18	19	23	9	69
	Rabbit haemorrhagic disease		1			1
	Scrapie		2			2
	Swine vescicular disease		1			1
	Tuberculosis of other mammals		2			2
	West Nile Disease	1				1
TRENTO	Contagious bovine mastitis				1	1
	Rabbit haemorrhagic disease			2	1	3
TUSCANY	Leptospirosis		2			2
	Salmonellosis (S. abortusovis)		1			1
	Salmonellosis of animals	1				1
UMBRIA	Bluetongue				1	1

Animals involved in outbreaks reported to SIMAN in the four month period 2018

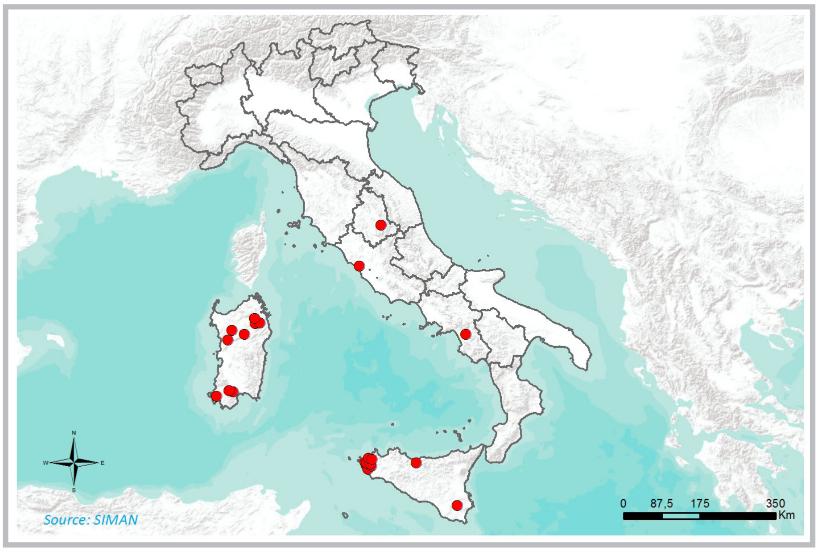
Animals involved in outbreaks reported to SIMAN in the four month period 2018						
Disease	**Animals involved**	**No. Of animal in the holding**	**No. Of diseased animals**	**No. Of died animals**	**No. Of culled animals**	**No. Of destroyed animas**
African swine fever	Suidae	69	32	3	36	35
American foulbrood of honey bees	Bees	64	32	2	5	7
Antrax	Ruminants	195	1	1	0	1
Avian cholera	Birds	29	3	3	0	3
Bluetongue	Ruminants	3859	88	6	0	6
Bovine leucosis	Ruminants	403	25	0	0	0
Bovine tuberculosis	Ruminants	3763	278	2	80	35
Brucellosis of cattle, buffalo, sheep, goats and pigs	Ruminants	21199	1299	3	55	6
	Suidae	288	2	0	0	0
Contagious agalactia	Ruminants	3162	955	0	0	0
Contagious bovine mastitis	Ruminants	204	12	0	0	0
Equine infectious anaemia	Equines	100	19	3	0	2
European foulbrood of honey bees	Bees	1	1	1	0	0
High patogenicity Avian influenza in poultry	Poultry	279563	41944	3591	275972	279563
Infectious hematopoietic necrosis	Acquatic animals		80000	0	0	0
Leptospirosis	Domestic carnviores	1	1	1	0	0
	Ruminants	53	1	0	0	0
	Suidae	9975	33	30	0	30
	Wild animals	1	1	1	0	0
Low patogenicity Avian influenza in poultry	Birds	7224	11	0	7224	1190
Non-typhoidal avian salmonellosis	Poultry	97908	2454	0	1484	1484
Q fever	Ruminants	191	32	2	0	2
Rabbit haemorrhagic disease	Lagomorphs	242	197	197	0	50
Salmonellosis (S. abortusovis)	Ruminants	2441	6	2	0	2
Salmonellosis of animals	Birds	60	1	1	0	1
	Suidae	1260	1090	4	0	0
Schmallengberg disease	Ruminants	22	2	0	0	0
Scrapie	Ruminants	4625	8	3	0	1
Swine vescicular disease	Suidae	22	2	0	0	0
Trichinellosis	Suidae	271	3	0	271	270
	Wild animals	2	2	2	0	2
Tuberculosis of other mammals	Suidae	103	4	0	0	0
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]

A LOOK AT THE MAPS

The geographical distribution of the main animal diseases reported to SIMAN in 2018

Processing date: 10th May 2018

Bluetongue



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Geographical distribution of the outbreaks

High patogenicity Avian influenza in poultry

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Geographical distribution of the outbreaks

Low patogenicity Avian influenza in poultry

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Geographical distribution of the outbreaks

Swine vesicular disease

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Geographical distribution of the outbreaks

African swine fever

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Geographical distribution of the outbreaks

West Nile Disease

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Geographical distribution of the outbreaks

AROUND US

The main events of epidemiological interest in the last months in the European Union and in the neighbour countries

The European Union Summary Report on Trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2016: main outcomes and conclusions

On 12 of December 2017 EFSA and ECDC published the joint European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2016 (EUSR 2016)(EFSA Journal 2017;15(12):5077). The report presents the results of the zoonoses monitoring activities carried out in 2016 in 37 European countries (28 Member States (MS) and nine non-MS).

Data collected in 2016

The human data reported in the EUSR 2016 were collected within the Food and Waterborne Diseases and Zoonoses programme of the ECDC and based on data submitted via the European Surveillance System (TESSy), hosted at ECDC. TESSy is a software platform that is operational since April 2008 and where data on 52 diseases and special health issues are registered. The denominators used for the calculation of the notification rates were the human population data from Eurostat, as on 1stJanuary 2017.

Regarding data collection on food, animals, feed, and food-borne outbreaks (FBO), 28 MS and four non-MS European Free Trade Association (EFTA) countries (Iceland, Norway, Liechtenstein and Switzerland) submitted data and information on monitoring results in food, animals, feed and FBO. During 2017 reporting season, EFSA received also data and reports from pre-accession countries Albania, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia for some food, animal and feed matrices and FBO. Data were submitted electronically to the EFSA zoonoses database, through EFSA's Data Collection Framework (DCF). The zoonoses and food-borne outbreaks monitoring data obtained in the DCF, varied according to the level of data quality and harmonisation, thus the types of analyses done with these monitoring data, strongly depended on those levels of data quality and harmonisation. Therefore, the EUSR 2016 presents the data analyses according to a categorisation of zoonoses and food-borne outbreaks monitoring data:

1) the first category includes data collected among MS within harmonised monitoring or surveillance schemes, thus assuring the comparability of results among MS and their representability at European (EU) level;
2) the second category contains data derived from not fully harmonised monitoring or surveillance programmes, so no trend analysis is possible at the EU-level;
3) the third category embraces non-harmonised data, collected in various ways through different collection systems, and thus not comparable among MS and summarised only at national or EU level.

Examples of the data included in these three categories are given in Table 1.

Table 1. Categorisation of zoonoses and food-borne outbreaks monitoring data used in EUSR 2016

Category	Type of analyses	Type/comparability between MS	Examples
I	Descriptive summaries at national level and EU-level	Programmed and harmonised monitoring or surveillance	Salmonella national control programmes in poultry
	EU trend watching (trend monitoring)		Bovine tuberculosis
	Spatial and temporal trends analyses at the EU-level	Comparable between MS; results at EU-level are interpretable	Trichinella in pigs at the slaughterhouse
			Echinococcus granulosus at slaughterhouse
II	Descriptive summaries at national level and EU-level	Not fully harmonised monitoring or surveillance	Food-borne outbreaks data
	EU trend watching (trend monitoring)	Not fully comparable between MS; caution needed when interpreting results at EU-level	Monitoring of compliance with process hygiene and food safety criteria for L. monocytogenes, Salmonella and E. coli according Reg No 2073/20055
	No trend analysis at the EU-level		Monitoring of rabies
III	Descriptive summaries at national level and EU-level	Non-harmonised monitoring or surveillance data with no (harmonised) reporting requirements	Campylobacter
	No EU trend watching (trend monitoring)	Not comparable between MS; extreme caution needed when interpreting results at EU-level	Yersinia
	No trend analysis at the EU-level		Q fever
			Francisella tularensis West Nile virus Taenia spp.
			other zoonoses
			Toxoplasma

Summary human zoonoses data

Since 2015, campylobacteriosis is the most commonly reported zoonosis, representing in 2016 almost 70% of all the reported human cases, followed by other bacterial diseases: salmonellosis, yersiniosis and STEC infections. The number of reported confirmed cases of human campylobacteriosis was 246,307, with an EU notification rate of 66.3 per 100,000 population, representing an increase of 6.1% compared with 2015.

Regarding *Salmonella*, the top five most commonly reported serovars in human cases acquired in the EU during 2016 were, in decreasing order: *S. Enteritidis*, *S. Typhimurium*, *S. Typhimurium* variante monofasica, S. Infantis and *S. Derby*. The proportion of human illnesses due to *S. Enteritidis* continued to increase in 2016.

Shiga toxin-producing *Escherichia coli* (STEC) confirmed cases were 6,378 in the EU: as in previous years, the most commonly reported STEC serogroup in 2016 was O157 (38.6%) followed by O26, which has increased in the last 3 years, since 2014. In

2016, for the first time, serogroup O26 was the most frequently reported cause of haemolytic uraemic syndrome (HUS) instead of serogroup O157.

Based on data on severity, listeriosis was the most severe zoonosis, with the highest hospitalisation and case-fatality rate followed by West Nile fever. A statistically significant increasing trend of confirmed human cases of listeriosis in the EU was observed during the overall period 2008–2016, with 2,536 confirmed invasive human cases reported in 2016.

Surveillance and monitoring of the main zoonotic agents in the EU

Below the main outcomes of the EUSR 2016 for Campylobacter, Salmonella and other zoonotic agents in food, animals and related food-borne outbreaks.

Campylobacter
Monitoring data on Campylobacter from food and animals submitted to EFSA are collected without harmonised design (category III, table1), therefore these data allowed only descriptive summaries and precluded trend analyses and trend watching at the EU-level. Regarding food, few MS reported monitoring results, mainly concerning fresh meat from broilers and turkeys, and relative meat products. In these foods, the occurrence was, respectively, 36.7% and 11% in fresh meat from broilers and turkeys respectively. The occurrence of Campylobacter in milk and milk products (including cheeses) was around 1%. Regarding animals, 65% of the samples originated from broilers, in 14 MS, and from turkeys, in 5 MS and the highest apparent prevalence was reported in turkeys.

Salmonella
The data reported on food and animals showed that S. Enteritidis was markedly associated with laying hens, broilers and broiler meat. During 2015–2016, a similar increasing evolution was observed between the proportion of S. Enteritidis illnesses in humans and the EU flock prevalence of S. Enteritidis in laying hens. S. Typhimurium was reported in pigs and cattle and meats from these species and to a lesser extent from poultry and meat thereof. Monophasic S. Typhimurium was mostly reported and associated with (contact with) pigs and (consumption of) pig meat. S. Infantis was mostly reported in the broiler and turkey production chains, massively spreading along the entire broiler production system. S. Infantis represents an important public health concern, because of its frequent multidrug resistance.

In relation to the compliance of foods with Salmonella food safety criteria, the highest level of non-compliance was reported for certain meat categories intended to be eaten cooked (mechanically separated meat, minced meat, meat products preparations from poultry). For fresh poultry meat, the percentage of non-compliant samples was negligible. The overall percentage of non- compliance for the Salmonella process hygiene criterion for pig carcass swabs was about 2%.

Regarding Salmonella monitoring data originating from the Salmonella National Control Programmes in poultry, the target to be reached by the poultry categories under the control programmes was fixed at 1% for all with the exception of laying hens, which was 2% for all MS with the exception of Poland, for which it was set at 2.5%. The EU-level flock prevalence of targeted Salmonella serovars in breeding hens, broilers, breeding and fattening turkeys decreased or stabilised compared with previous years. However, the decreasing EU-level flock prevalence of targeted Salmonella serovars in laying hens reported since the implementation in 2008 of National Control Programmes, has been reversed into a statistically significant increasing trend during the last two years (Figure 1). Also, the EU prevalence of S. Enteritidis in laying hens notably increased. The trends in the EU flock prevalence of target Salmonella serovars in poultry flocks since the implementation of the National Control Programmes is displayed in figure 1.

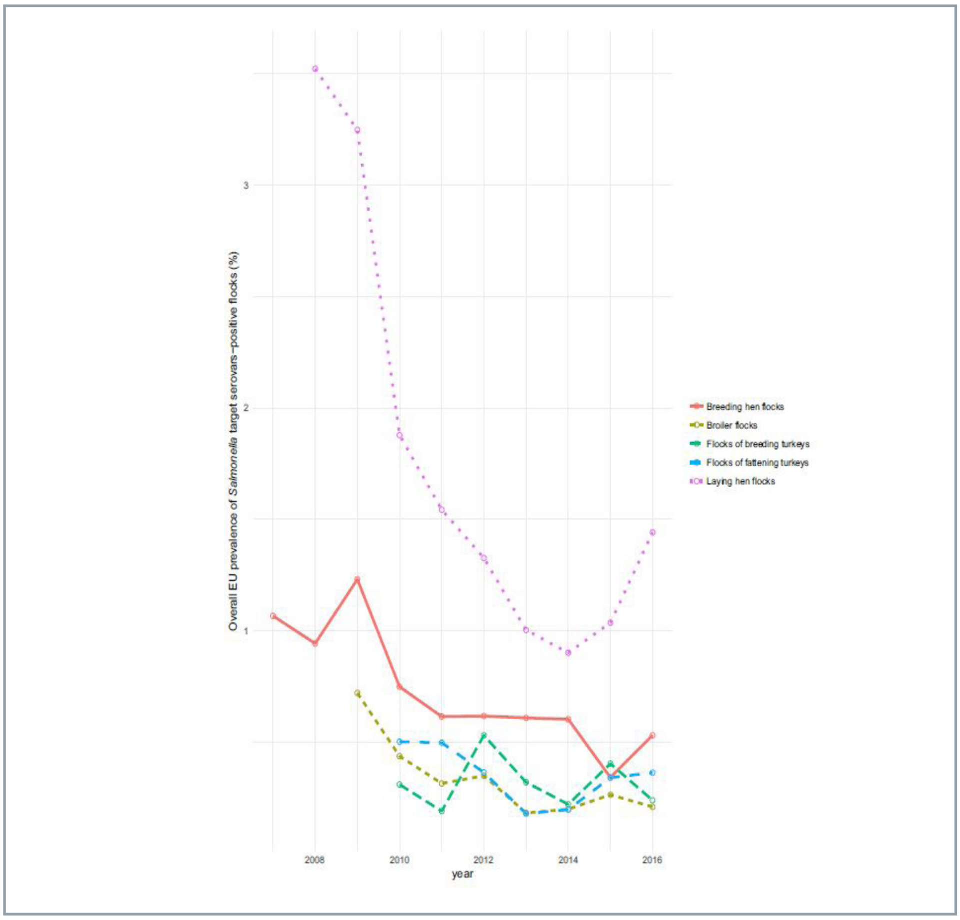


Figure 1.
Overall prevalence of poultry flocks positive for Salmonella target serovars, 2007–2016

Listeria

Monitoring of *L. monocytogenes* in foods is mainly based on data originating from the reporting obligations of MS under the EU Regulation (EC) No 2073/2005 on microbiological criteria. In food, compliance was assessed for 10 ready-to-eat (RTE) categories according to the food safety criteria listed in Regulation (EC) No 2073/2005. Among the different RTE food categories and across all sampling stages, *L. monocytogenes* was most frequently detected in 'fishery products' (5.6%) and 'fish' (4.7%), followed by 'pork meat products other than fermented sausages' (3.1%) and in 'soft and semi-soft cheeses made from raw milk' (2.5%). Listeriosis in animals is a relatively uncommon disease and most of the monitoring data on *L. monocytogenes* in animals provided by the MS are generated by non-harmonised monitoring schemes across MS and for which no mandatory reporting requirements exist. The 2016 data originated primarily from clinical investigations (61.8% of the total number of units tested) and more particularly from suspect animals (95.4% of the total number of units tested). Findings of *Listeria* spp. (mainly *L. monocytogenes*) were reported in various animal species and mainly in domestic ruminants (cattle, sheep and goats), originating primarily from clinical (suspect) investigations.

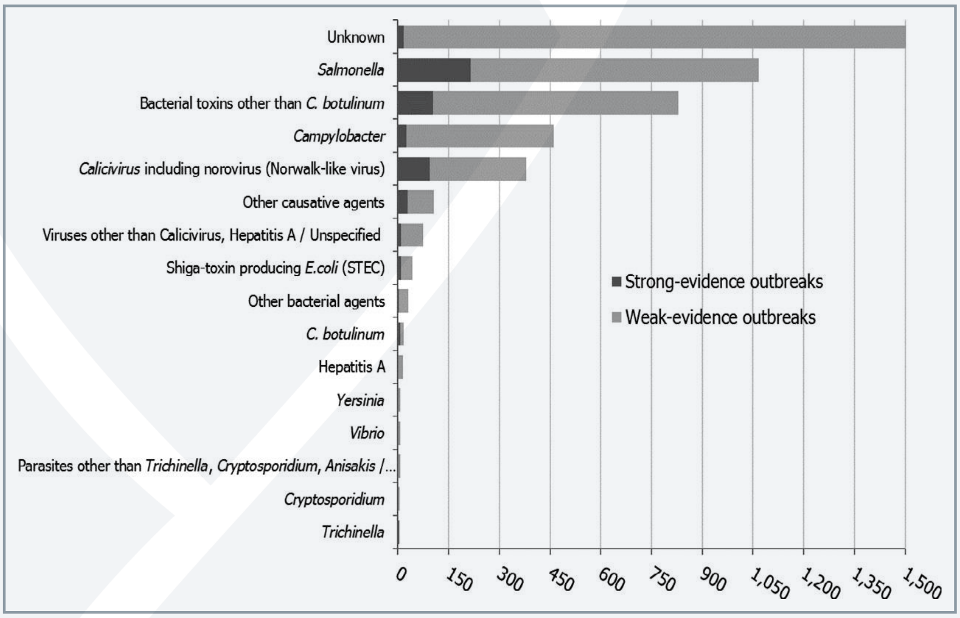
Shiga toxin-producing Escherichia coli

Similarly to what observed in humans, more STEC non-O157 serogroups than STEC O157 was reported in food samples, with STEC O26 being the most reported serogroup in 2016. This may be explained by the more widespread use by laboratories of the international standard ISO TS 13136:2012, which is unbiased in identifying specific STEC serogroups: the 91.5% of the samples tested during 2016 were tested by this reference method. The data generated by MS are based on investigation with non-harmonised sampling methods and obtained with different laboratory analytical tests; therefore, the STEC monitoring data are not fully comparable across the EU MS. Overall, the presence of STEC was reported in 2.5% of the 18,975 food samples and in 12.7% of the 2,496 animal samples tested. The highest proportion of positive food specimens was reported in meat samples, particularly from small ruminants (sheep and goat), followed by milk and dairy products. Such a finding consolidates the awareness of the importance of these food commodities in the spreading of STEC infections.

Food-borne outbreaks

In 2016, the most reported food-borne and waterborne outbreaks for which the causative agent was known were associated with bacterial agents (33.9% of all outbreaks). Bacterial toxins ranked second, among the causative agent group (17.7%), followed by viruses (9.8% of all outbreaks), other causative agents (2.2%) and parasites (0.4%). *Salmonella* was identified as the most frequently reported causative agent of food- borne and waterborne outbreaks at the EU level (22.3% of all outbreaks). Among bacterial agents *Salmonella* alone accounted for two-thirds of the outbreaks (65.8%) and, together with *Campylobacter*, for the vast majority of outbreaks caused by bacterial agents (94.1%). **Figure 2** shows the distribution of FBO per causative agent in the EU: a distinction has been made between FBO supported by 'weak' evidence and those supported by 'strong' evidence, based on the strength of evidence implicating a particular food vehicle; this evidence can be epidemiological, microbiological, descriptive environmental, or based on product tracing investigations. Strong-evidence food-borne outbreaks excluding waterborne outbreaks (n = 521) represented 10.9% of the total food-borne outbreaks recorded and were mostly (n = 313) associated with foods of animal origin. Of these, 41.5% involved 'eggs' and 'poultry meat' (23.0% and 18.5%, respectively), 22.4% involved 'fish and fisheries' 21.7% involved meat and meat products other than poultry, and 14.4% 'milk and milk products'.

Figure 2.
Distribution of food-borne outbreaks per causative agent in the EU, 2016



References

1. EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2017. The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2016. EFSA Journal 2017;15(12):50772.

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Chronic Wasting Disease

Chronic wasting disease (CWD) has been affecting North American wild ruminant populations for 50 years. It was detected in Korea in 2000 in a red deer (*Cervus elaphus*) and a sika deer (*Cervus nippon*) and currently may represent a serious challenge also for European wildlife, thus suggesting the European scientific community to make the point about the available knowledge on this disease. What is actually known about it? Are we ready to cope?

The disease

Chronic Wasting Disease (CWD) is a contagious neurological disease affecting white tailed deer (*Odocoileus virginianus*), Rocky Mountain elk (*Cervus elaphus nelsoni)* Shiras moose (*Alces alces shirasi*) and likely other subspecies of *Cervus elaphus*. Other cervid susceptibility at CWD is unknown. It causes a characteristic spongy degeneration of the brains of infected animals resulting in emaciation, abnormal behavior, loss of bodily functions and always fatal outcome.

CWD belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs). Within this group, there are several other variants that affect domestic animals: scrapie, which has been identified in domestic sheep and goats for more than 200 years, bovine spongiform encephalopathy (BSE) in cattle (also known as “mad cow disease”), and transmissible mink encephalopathy in farmed mink.

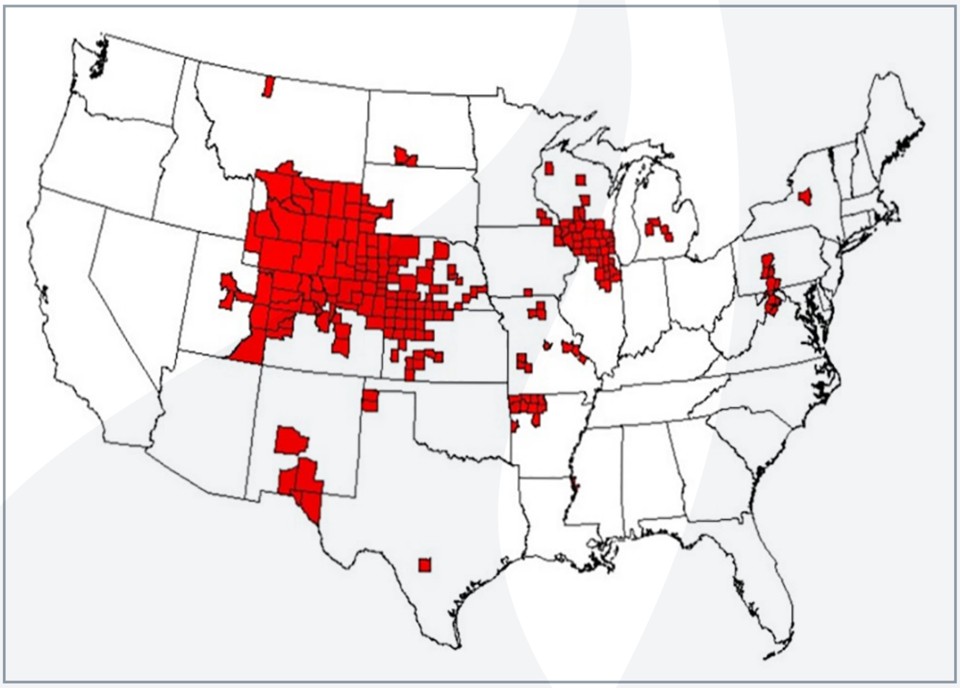
Several rare human diseases are also included in the TSEs. Creutzfeldt-Jakob disease (CJD) occurs naturally in about one out of every one million people worldwide. Variant Creutzfeldt-Jakob disease (v-CJD) has been associated with the large-scale outbreak of BSE in cattle herds in Great Britain. (http://cwd-info.org/faq/).

Distribution

As of March 27 2018, CWD in free-ranging deer, elk and/or moose has been reported in at least 23 states in the continental United States, as well as two provinces in Canada. In addition, CWD was detected in tundra reindeer (*Rangifer tarandus tarandus*) and moose (*Alces alces*) in Norway, and a small number of imported cases have been reported in South Korea. The disease has also been found in farmed deer and elk.

Nationwide, the overall occurrence of CWD in free-ranging deer and elk is relatively low. However, in several locations where the disease occurred, infection rates may exceed 10 percent (1 in 10), and localized infection rates of more than 25 percent (1 in 4) have been reported. The infection rates among some captive deer can be much higher, with a rate of 79% (nearly 4 in 5) reported from at least one captive herd.

Figure 1.
In March 2018, there were 215 counties in 23 states which reported CWD in free-ranging cervids.



This map is based on the best-available information from multiple sources, including state wildlife agencies and the United States Geological Survey (USGS).

Epidemiology

TSE agents are extremely resistant in the environment and because of it, the infection can be transmitted both directly and indirectly.

Modality of transmission still needs to be defined for certain aspects.

What we actually know is that in contrast to BSE, CWD is not a foodborne disease associated with rendered ruminant meat and bonemeal. Instead, observations of CWD among captive deer and elk provide strong evidence of lateral transmission, more similarly to scrapie.

Studies confirmed that prions are shed in the environment through body excretes and secretes, as saliva (Haley et al., 2011) (Mathianson et al., 2006), urine (Haley *et al.*, 2009) (Hamir *et al.*, 2006), feces (Tamguney *et al.*, 2009) (Tamguney *et al.*, 2010) and velvet (Angers *et al.*, 2009), but for now infection transmission has been only reported via saliva and blood (Mathiason *et al.*, in 2006). Mathiason and colleagues provided that under controlled indoor conditions CWD-naive deer can acquire infection by exposure to fomites from the environment of CWD-infected deer.

Concentrating deer and elk in captivity or by artificial feeding probably increases the likelihood of direct and indirect transmission between individuals. Contaminated pastures appear to have served as sources of infection in some CWD epidemics. The apparent persistence of PrPCWD in contaminated environments represents a significant obstacle to eradication of CWD from either farmed or free-ranging cervid populations.

Europe

LThe disease appeared for the first time in Europe in April 2016. A young reindeer specimen (*Rengifer tarandus*) was sighted by chance by a biologist who worked in the rocky mountains of Nordfjella.

Up to now, thanks to the surveillance implemented since 2016, 18 cases of CWD similar to the American type have been confirmed in Norway, and all of them come from living reindeer in the mountains of Nordfjella. While in other parts of Norway, CWD has been ascertained in three other elks and a deer (*Cervus elaphus*). These four cases, however, differ from those of Nordfjella; they were older animals in which the disease is supposed to occur spontaneously and sporadically. The first Finnish case of CWD recognized in March 2018, in an European elk (*Alces alces*), is very similar to the latter cases. - See more at: https://www.vetinst.no/en/news/cwd-in-finland-is-different-from-the-nordfjella-cwd- type # sthash.6jSV9Yi3.dpuf

Clinical signs

Cases of CWD occur most commonly in adult animals, but also in yearlings. The disease is progressive and always fatal.

The most obvious and consistent clinical sign is weight loss over time. CWD affected animals continue to eat, but the amounts of feed consumed are reduced, leading to gradual loss of body condition. Excessive drinking and urination are common in the terminal stages.

Behavioral changes also occur in the majority of cases, including decreased interactions with other animals, listlessness, lowering of the head, blank facial expression and repetitive walking in set patterns. In elk, behavioral changes may also include hyper-excitability and nervousness. Excessive salivation, drooling and grinding of the teeth also are observed.

Clinical signs of CWD alone are not conclusive. There are other diseases with symptoms that mimic those of CWD. Currently there is no practical diagnostic test in live animals. The sole conclusive diagnosis is a post mortem examination of the brain, tonsils or lymph nodes.

A definitive diagnosis is based on examination of the brain to find the characteristic microscopic spongiform lesions and/or accumulation of the CWD associated prion protein in brain and lymphoid tissues using a immunohistochemistry technique. Gross lesions seen at necropsy reflect the clinical signs of CWD, primarily emaciation. Aspiration pneumonia, which may be the actual cause of death, also is a common finding in animals affected with CWD.

Researches ongoing to develop live-animal diagnostic tests for CWD. Early results indicate that a new live-test utilizing tissues from an animal's tonsils may be viable in deer, but so far has been ineffective in elk.

Risks for humans

To date, we do not know with certain if CWD can be transmitted to human as a consequence of the ingestion of meat infected with prions. Neither we have evidence that human cases of prion-like diseases increase between hunters and people who consume meat of animal hunted in endemic territories for CWD. The most interesting study, which is still ongoing, concern non-human primates. The study begun in 2009 by Canadian and German scientists(Brent Race et al. 2009) to evaluate whether CWD can be transmitted to macaque (*Macaca fascicularis*), a type of monkey that is genetically closer to human than any other animal that has been infected with CWD previously. At this point of the research they showed that after oral exposure, 2 squirrel monkeys (*Saimiri sciureus*) had PrPres in brain, spleen, and lymph nodes at 69 months post-infection. In contrast, cynomolgus macaques have not shown evidence of clinical disease as of 70 months post-infection. Thus, these 2 species differed in susceptibility to CWD. Because humans are evolutionarily closer to macaques than to squirrel monkeys, they may also be resistant to CWD. Because of the long time it takes before any symptom of disease appears, scientists expect the study to take many years before they will determine what the risk, if any, of CWD for people.

Studies made on the matter demonstrated that the barrier between cervids and humans is notable; however, prion diseases are dynamic and interspecies passage can result in prion adaptation to new host species.

As a consequence of these aspects to consume meat comes from an infected animal is discouraged. Good practices for hunters are widely explained on the CWD alliance website.

Eradication and control measures

No treatment is available for animals affected with CWD. Once clinical signs develop, CWD is invariably fatal. Similarly, no vaccine is available to prevent CWD infection in deer or elk. It follows that controlling CWD is problematic. Long incubation periods, subtle early clinical signs, absence of a reliable ante mortem diagnostic tests, extremely resistant infectious agent, possible environmental contamination, and incomplete understanding of transmission all constrain options for controlling or eradicating CWD.

One option for managing CWD in wild populations is to reduce the density of animals in the infected area to slow the transmission of the disease. This is made by selective culling of animals suspected to have been exposed to the disease. In Colorado, Nebraska, Wisconsin and Saskatchewan, efforts are underway to drastically reduce local wild cervid populations in an effort to eliminate CWD in areas where it recently was found.

The killing of an entire deer herd in a defined area where CWD was detected followed by two years quarantine was carried out in the region of Nordfjella.

Localized culling even its unpopularity actually is the most effective method to maintain low prevalence of the disease and to control it (Manjerovica *et al.*, 2013).

Sitography

1. Centers for Disease Control and Prevention
2. Chronic Wasting Disease Alliance
3. Norvegian Veterinary Institute

References

1. Angers RC, Seward TS, Napier D, Green M, Hoover E, Spraker T, et al. Chronic wasting disease prions in elk antler velvet. Emerg Infect Dis. 2009; 15(5):696–703.
2. Brent Race,corresponding author1 Kimberly D. Meade-White,1 Michael W. Miller, Kent D. Barbian, Richard Rubenstein, Giuseppe LaFauci, Larisa Cervenakova, Cynthia Favara, Donald Gardner, Dan Long, Michael Parnell, James Striebel, Suzette A. Priola, Anne Ward, Elizabeth S. Williams,2 Richard Race,3 and Bruce Chesebro Emerg Infect Dis. 2009 Sep; 15(9): 1366–1376. Susceptibilities of Nonhuman Primates to Chronic Wasting Disease
3. Collinge J1, Sidle KC, Meads J, Ironside J, Hill AF .Nature. 1996 Oct 24;383(6602):685-90. Molecular analysis of prion strain variation and the aetiology of 'new variant' CJD.
4. Haley NJ, Hoover EA. Chronic wasting disease of cervids: current knowledge and future perspectives. Annu Rev Anim Biosci. 2015; 3:305±25. PMID: 25387112.
5. Haley NJ, Mathiason CK, Carver S, Zabel M, Telling GC, Hoover EA. Detection of chronic wasting disease prions in salivary, urinary, and intestinal tissues of deer: Potential mechanisms of prion shedding and transmission. J Virol.2011;85(13):6309–18
6. Haley NJ, Seelig DM, Zabel MD, Telling GC, Hoover EA. Detection of CWD prions in urine and saliva of deer by transgenic mouse bioassay. PLoS One. 2009;4(3):e4848
7. Hamir AN, Kunkle RA, Miller JM, Hall SM. Abnormal prion protein in ectopic lymphoid tissue in a kidney of an asymptomatic white-tailed deer experimentally inoculated with the agent of chronic wasting disease. Vet Pathol. 2006;43(3):367–9
8. Hannaoui S, Schatzl HM, Gilch S (2017) Chronic wasting disease: Emerging prions and their potential risk. PLoS Pathog 13(11): e1006619.
9. Mathiason CK, Powers JG, Dahmes SJ, Osborn DA, Miller KV, Warren RJ, et al.

Infectious prions in the saliva and blood of deer with chronic wasting disease. Science. 2006;314(5796):133–6
10. Mary Beth Manjerovica, Michelle L. Greena, Nohra Mateus-Pinillaa, Jan Novakofskiba Illinois The importance of localized culling in stabilizing chronic wasting disease prevalence in white-tailed deer populations
11. Tamgüney G, Miller MW, Wolfe LL, Sirochman TM, Glidden DV, Palmer C, et al. Erratum: Asymptomatic deer excrete infectious prions in faeces (Nature (2009) 461 (529–532)

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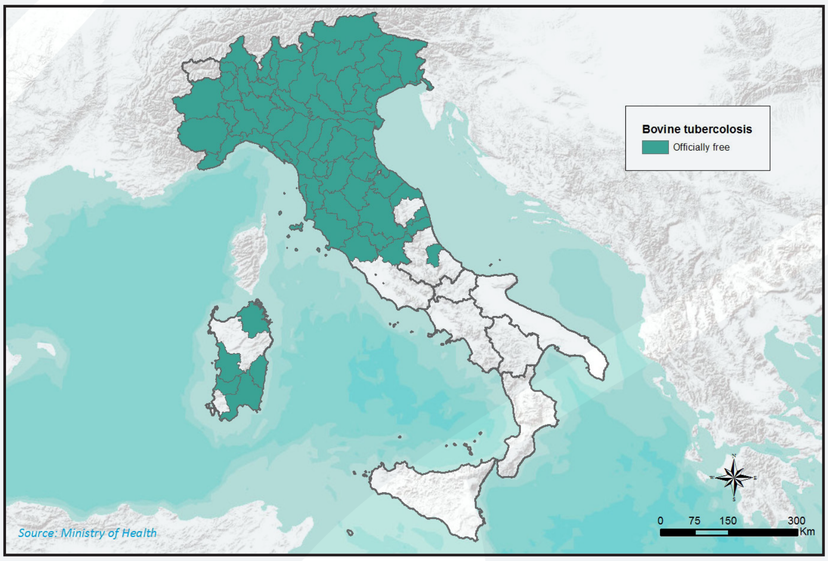
OFFICIALLY FREE TERRITORIES

Bovine tuberculosis: provinces and regions officially free according to the community legislation updated to up to 22th May 2017

Decision	Region	Province
2016/168/UE	Abruzzi	Pescara
	Emilia Romagna	The whole region
	Friuli Venezia Giulia	The whole region
	Lazio	Rieti
		Viterbo
	Liguria	The whole region
	Lombardy	The whole region
	Marche	Ancona
		Ascoli Piceno
		Fermo
		Pesaro-Urbino
	Piedmont	The whole region
	Sardinia	Cagliari
		Medio-Campidano
		Ogliastra
		Olbia-Tempio
		Oristano
	Tuscany	The whole region
	Trentino-Alto Adige	Bolzano
		Trento
	Veneto	The whole region
2017/888/UE	Umbria	The whole region

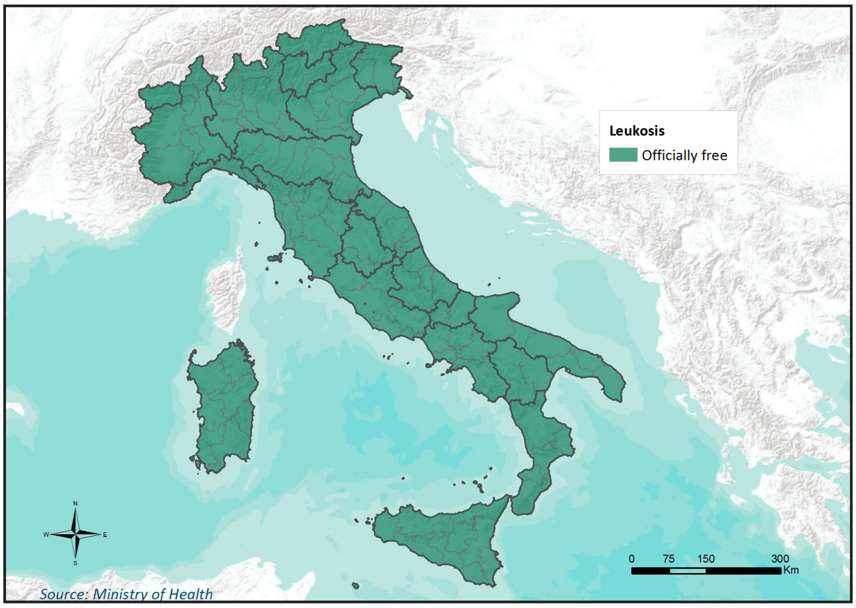
Bovine tuberculosis



Bovine leukosis: Provinces and Regions Officially Free according to the EU legislation updated to 17th October 2017

Decision	Region	Province
2017/1910/EU amending Decision 2003/467/EEC	All regions	All provinces

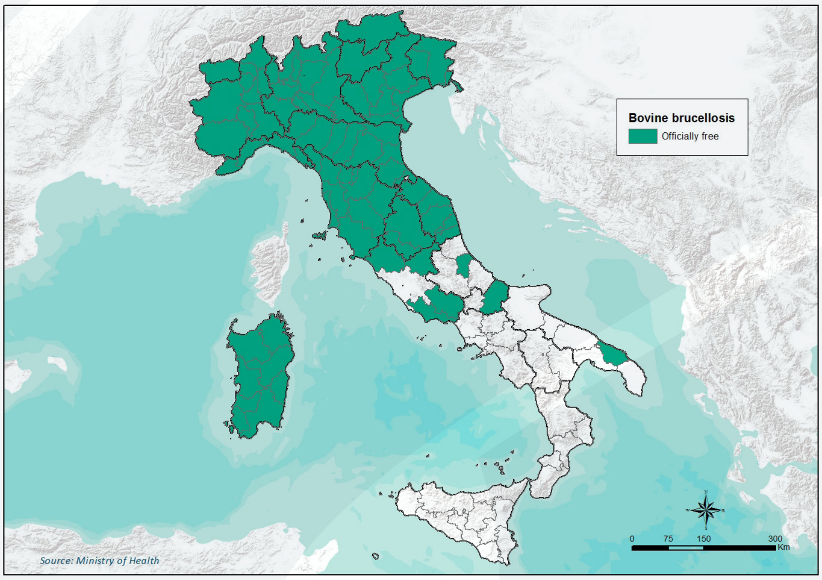
Bovine leukosis



Bovine brucellosis: Provinces and Regions Officially Free according to the EU legislation updated to 11th October 2016

Decision	Region	Province
2016/168/UE	Abruzzi	Pescara
	Emilia Romagna	The whole region
	Friuli Venezia Giulia	The whole region
	Lazio	Rieti
		Viterbo
	Liguria	The whole region
	Lombardy	The whole region
	Marche	Ancona
		Ascoli Piceno
		Fermo
		Pesaro-Urbino
	Piedmont	The whole region
	Sardinia	Cagliari
		Medio-Campidano
		Ogliastra
		Olbia-Tempio
		Oristano
	Tuscany	The whole region
	Trentino-Alto Adige	Bolzano
		Trento
	Veneto	The whole region
2017/888/UE	Umbria	The whole region

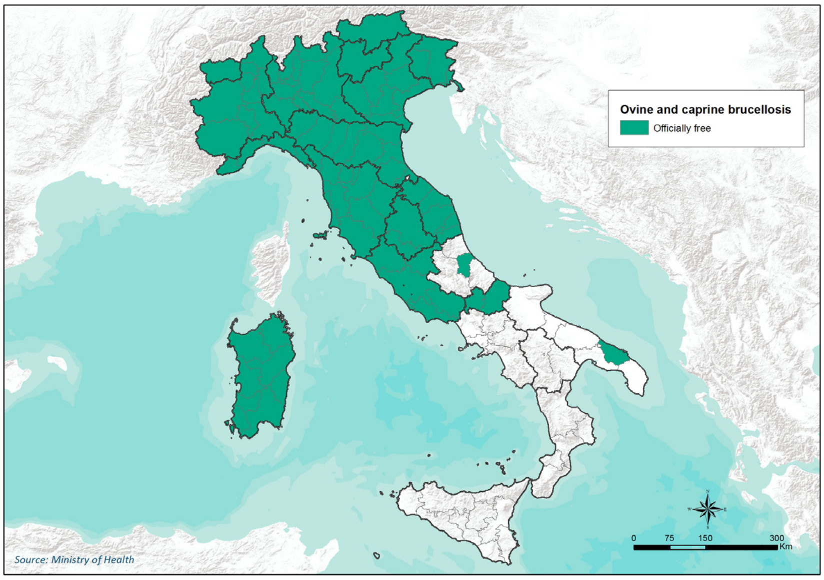
Bovine brucellosis



Ovine and caprine brucellosis: Officially Free according to the EU legislation updated to 11th October 2016

Decision	Region	Province
2014/91/EU amending annex II of Decision 93/52/EEC	Abruzzi	Pescara
	Emilia Romagna	The whole region
	Friuli Venezia Giulia	The whole region
	Lazio	The whole region
	Liguria	The whole region
	Lombardy	The whole region
	Marche	The whole region
	Molise	The whole region
	Piedmont	The whole region
	Sardinia	The whole region
	Tuscany	The whole region
	Trentino Alto Adige	Bolzano
		Trento
	Umbria	The whole region
	Valle d'Aosta	The whole region
	Veneto	The whole region
2016/1811/EU amending Annex II to Decision 93/52/EEC	Apulia	Brindisi

Ovine and caprine brucellosis



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