

Switzerland

TRENDS AND SOURCES OF ZOONOSES AND ZONOTIC AGENTS IN FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

including information on foodborne outbreaks,
antimicrobial resistance in zoonotic and indicator bacteria
and some pathogenic microbiological agents

IN 2019

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/EC*. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Switzerland during the year 2019.

The information covers the occurrence of these diseases and agents in animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and indicator bacteria as well as information on epidemiological investigations of foodborne outbreaks.

Complementary data on susceptible animal populations in the country is also given. The information given covers both zoonoses that are important for the public health in the whole European Union as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the European Union legislation, while for the other zoonoses national approaches are applied.

The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.

The information covered by this report is used in the annual European Union Summary Reports on zoonoses and antimicrobial resistance that are published each year by EFSA.

The national report contains two parts: tables summarising data reported in the Data Collection Framework and the related text forms. The text forms were sent by email as pdf files and they are incorporated at the end of the report.

* Directive 2003/ 99/ EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/ 424/ EEC and repealing Council Directive 92/ 117/ EEC, OJ L 325, 17.11.2003, p. 31

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ANIMAL POPULATION TABLES

Table Susceptible animal population

Animal species	Category of animals	Population		
		holding	animal	slaughter animal (heads)
Cattle (bovine animals)	Cattle (bovine animals)	34,251	1,524,820	616,355
Gallus gallus (fowl)	Gallus gallus (fowl) - breeding flocks, unspecified	1,842	295,413	
	Gallus gallus (fowl) - broilers	1,039	6,849,269	77,765,873
	Gallus gallus (fowl) - laying hens	20,402	4,354,132	
Goats	Goats	6,415	80,469	41,457
Pigs	Pigs	5,821	1,359,684	2,466,692
Sheep	Sheep	8,149	343,581	244,697
Solipeds, domestic	Solipeds, domestic	19,984	111,959	1,965
Turkeys	Turkeys - fattening flocks	323	68,466	

DISEASE STATUS TABLES

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Number of animals serologically tested under investigations of suspect cases	Number of herds under investigations of suspect cases	Number of seropositive animals under investigations of suspect cases	Number of animals positive to BST under investigations of suspect cases	Number of animals positive in microbiological testing under investigations of suspect cases	Number of herds with status officially free	Number of infected herds	Total number of animals	Number of herds tested under surveillance	Number of animals tested under surveillance	Total number of herds	Number of infected herds tested under surveillance	Number of herds tested under surveillance by bulk milk	Number of animals or pools tested under surveillance by bulk milk	Number of infected herds tested under surveillance by bulk milk	Number of notified abortions whatever cause under investigations of suspect cases	Number of isolations of Brucella abortus under investigations of suspect cases	Number of abortions due to Brucella infection under investigations of suspect cases	Number of animals tested by microbiology under investigations of suspect cases
SWITZERLAND	146	2	0	0	0	34,251	0	1,524,820	0	0	34,251	0	0	0	0	4,481	0	0	2

Table Ovine or Caprine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Number of animals serologically tested under investigations of suspect cases	Number of suspended herds under investigations of suspect cases	Number of seropositive animals under investigations of suspect cases	Number of animals positive in microbiological testing under investigations of suspect cases	Number of herds with status officially free	Number of infected herds	Total number of animals	Number of herds tested under surveillance	Number of animals tested under surveillance	Total number of herds	Number of infected herds tested under surveillance	Number of animals tested by microbiology under investigations of suspect cases
SWITZERLAND	323	0	0	0	14,564	0	424,050	615	8,720	14,564	0	10

DISEASE STATUS TABLES

Table Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programme

Region	Number of herds with status officially free	Number of infected herds	Total number of animals	Interval between routine tuberculin tests	Number of animals tested with tuberculin routine testing	Number of tuberculin tests carried out before the introduction into the herds	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological examinations	Number of animals detected positive in bacteriological examination	Total number of herds
SWITZERLAND	34,251	0	1,524,820	0	0	0	124	0	34,251

PREVALENCE TABLES

Table Brucella:BRUCELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N.A	Not Available	animal	3	0	Brucella	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N.A	Not Available	animal	2	0	Brucella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N.A	Not Available	animal	9	0	Brucella	0

Table Campylobacter:CAMPYLOBACTER in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Birds - wild - game birds, farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Budgerigars - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	0	Campylobacter	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	413	8	Campylobacter	6
							Campylobacter jejuni	1
							Campylobacter upsaliensis	1
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	93	27	Campylobacter	15
							Campylobacter hyointestinalis	1
							Campylobacter jejuni	11
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	2	Campylobacter	0
							Campylobacter jejuni	2
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	880	53	Campylobacter	41
							Campylobacter jejuni	4
							Campylobacter upsaliensis	8
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	1	Campylobacter	1
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	8	2	Campylobacter	0
							Campylobacter jejuni	2
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Marten - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	0	Campylobacter	0
	Pigs - Slaughterhouse - Switzerland - animal sample - caecum - Monitoring - Official sampling - Objective sampling	N_A	Detection method of microorganisms	animal	350	231	Campylobacter	0
							Campylobacter coli	229
							Campylobacter jejuni	2
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	354	233	Campylobacter	2
							Campylobacter coli	229
							Campylobacter jejuni	2
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	12	0	Campylobacter	0
Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Campylobacter	0	
						Campylobacter jejuni	1	
Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Campylobacter	0	
Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	11	3	Campylobacter	0	
						Campylobacter fetus	3	
Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0	
Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	71	0	Campylobacter	0	
Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	133	5	Campylobacter	0	
						Campylobacter hyointestinalis	1	
						Campylobacter jejuni	4	

Table Campylobacter:CAMPYLOBACTER in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	batch (food/feed)	1	Gram	N.A	ISO 10272-2:2017 Campylobacter	130	42	Campylobacter	0
			25	Gram	N.A	ISO 10272-2:2017 Campylobacter	485	117	Campylobacter coli	4
									Campylobacter jejuni	38
									Campylobacter	117
	Meat from broilers (Gallus gallus) - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	61	24	Campylobacter	20
									Campylobacter jejuni	4
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	12	4	Campylobacter	4
		single (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	33	8	Campylobacter	6
									Campylobacter jejuni	2
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	27	9	Campylobacter	9
		single (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	39	12	Campylobacter	11
									Campylobacter jejuni	1
	Meat from broilers (Gallus gallus) - fresh - with skin - Slaughterhouse - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	197	84	Campylobacter	61
									Campylobacter coli	3
									Campylobacter jejuni	20
	Meat from broilers (Gallus gallus) - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	11	4	Campylobacter	4
		single (food/feed)	10	Gram	N.A	ISO 10272-1:2017 Campylobacter	2	1	Campylobacter	1
			25	Gram	N.A	ISO 10272-1:2017 Campylobacter	4	0	Campylobacter	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	444	0	Campylobacter	0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 10272-1:2017 Campylobacter	2	0	Campylobacter	0	
Meat from turkey - carcase - Slaughterhouse - Switzerland - food sample - neck skin - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	10	Gram	N.A	ISO 10272-1:2017 Campylobacter	24	15	Campylobacter	0	
								Campylobacter coli	3	
								Campylobacter jejuni	12	
Meat from turkey - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	10	Gram	N.A	ISO 10272-1:2017 Campylobacter	11	3	Campylobacter	0	
								Campylobacter coli	1	
								Campylobacter jejuni	2	

Table COXIELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sampling Details	Method	Total units tested	Total units positive	N of clinical affected herds	Zoonoses	N of units positive
SWITZERLAND	Alpacas - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Real-Time PCR (qualitative or quantitative)	3	1		Coxiella	0
								Coxiella burnetii	1
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Real-Time PCR (qualitative or quantitative)	1	0		Coxiella	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	2970	39		Coxiella	0
								Coxiella burnetii	39
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Real-Time PCR (qualitative or quantitative)	478	125		Coxiella	0
								Coxiella burnetii	125
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	2	0		Coxiella	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	181	5		Coxiella	0
Coxiella burnetii								5	
Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	2	0		Coxiella	0	

Table Echinococcus:ECHINOCOCCUS in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	2	Echinococcus Echinococcus multilocularis	0 2
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	40	13	Echinococcus Echinococcus multilocularis	0 13
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	78	31	Echinococcus Echinococcus multilocularis	31 31
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Mice - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	1	Echinococcus Echinococcus multilocularis	0 1
	Pigs - Slaughterhouse - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	7	Echinococcus Echinococcus multilocularis	0 7
	Squirrels - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Echinococcus	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	2	Echinococcus Echinococcus multilocularis	0 2

Table FLAVIVIRUS in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Vaccination status	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Gallus gallus (fowl) - laying hens - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Real-Time PCR (qualitative or quantitative)	1	0	West Nile virus	0
	Gulls - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Real-Time PCR (qualitative or quantitative)	1	0	West Nile virus	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Real-Time PCR (qualitative or quantitative)	3	0	West Nile virus	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Real-Time PCR (qualitative or quantitative)	16	0	West Nile virus	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Enzyme-linked immunosorbent assay (ELISA)	10	0	Flavivirus	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	No	N_A	Real-Time PCR (qualitative or quantitative)	11	0	West Nile virus	0

Table Francisella:FRANCISELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Francisella tularensis	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Francisella tularensis	1
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Francisella tularensis	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	31	27	Francisella tularensis	27
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Mice - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Polecats - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Squirrels - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Francisella tularensis	0

Table Listeria: LISTERIA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	1	Listeria	0
							Listeria monocytogenes	1
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	12	4	Listeria	0
							Listeria monocytogenes	4
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Listeria	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	2	Listeria	0
							Listeria monocytogenes	2
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	14	0	Listeria	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	5	Listeria	0
							Listeria monocytogenes	5
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	1	Listeria	0
							Listeria monocytogenes	1
Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Listeria	0	

Table Listeria: LISTERIA in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Total units tested	Total units positive	Method	Zoonoses	N of units tested	N of units positive
SWITZERLAND	Cheeses made from cows' milk - hard - made from raw or low heat-treated milk - Processing plant - Switzerland - food sample - Monitoring - Industry sampling - Selective sampling	single (food/feed)	25	Gram	N.A	322	0	detection	Listeria monocytogenes	322	0
	Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - Processing plant - Switzerland - food sample - Monitoring - Industry sampling - Selective sampling	single (food/feed)	25	Gram	N.A	750	0	detection	Listeria monocytogenes	750	0

Table Lyssavirus:LYSSAVIRUS in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Bats - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	18	0	Lyssavirus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	15	0	Lyssavirus	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	5	0	Lyssavirus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	65	0	Lyssavirus	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	12	0	Lyssavirus	0
	Jackals - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0
	Marten - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0
	Rats - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Squirrels - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	2	0	Lyssavirus	0

Table Mycobacterium:MYCOBACTERIUM in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Alpine chamois - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Visual inspection	animal	1	0	Mycobacterium	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	5	1	Mycobacterium Mycobacterium microti	0 1
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	4	0	Mycobacterium	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Microbiological standard tests	animal	1	0	Mycobacterium	0
	Gallus gallus (fowl) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Llamas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Mycobacterium	0
	Oscine birds - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Microbiological standard tests	animal	1	0	Mycobacterium	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Visual inspection	animal	1	0	Mycobacterium	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	2	0	Mycobacterium	0
	Steinbock - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Visual inspection	animal	1	0	Mycobacterium	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	25	0	Mycobacterium	0

Table Salmonella:SALMONELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive							
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	7	1	Salmonella	0							
									Salmonella enterica, subspecies enterica	1							
	Budgerigars - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	8	0	Salmonella	0							
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	439	5	Salmonella	2							
									Salmonella enterica, subspecies enterica	3							
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1991	231	Salmonella	142							
									Salmonella enterica, subspecies enterica	89							
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0							
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	4	0	Salmonella	0							
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	889	12	Salmonella	7							
									Salmonella enterica, subspecies enterica	5							
	Ducks - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	9	4	Salmonella	0							
									Salmonella enterica, subspecies enterica	4							
	Falcons - wild - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0							
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0							
	Gallus gallus (fow) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	4529	N	N_A	ISO 6579:2002 Salmonella	507	12	Salmonella Albany	1							
Salmonella Livingstone									1								
Salmonella Mbandaka									1								
Salmonella Mikawasima									1								
Salmonella Tennessee									4								
Salmonella Typhimurium									2								
Salmonella Typhimurium, monophasic									1								
Salmonella Welikade	1																
	Gallus gallus (fow) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	4529	Y	N_A	ISO 6579:2002 Salmonella	569	0	Salmonella	0							
	Gallus gallus (fow) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	4529	N	N_A	ISO 6579:2002 Salmonella	62	1	Salmonella	0							
									Salmonella Albany	1							
	Gallus gallus (fow) - laying hens - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	1212	Y	N_A	ISO 6579:2002 Salmonella	582	1	Salmonella Enteritidis	1							
									N	N_A	ISO 6579:2002 Salmonella	582	11	Salmonella Enteritidis	2		
																Salmonella Tennessee	1
																Salmonella Typhimurium	5
									Salmonella Typhimurium, monophasic	3							
	Gallus gallus (fow) - parent breeding flocks for broiler production line - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	83	Y	N_A	ISO 6579:2002 Salmonella	57	0	Salmonella	0							
									N	N_A	ISO 6579:2002 Salmonella	57	1	Salmonella Typhimurium, monophasic	1		
	Gallus gallus (fow) - parent breeding flocks for egg production line - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	155	Y	N_A	ISO 6579:2002 Salmonella	44	0	Salmonella	0							
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0							
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	34	1	Salmonella	0							
									Salmonella enterica, subspecies enterica	1							
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	10	0	Salmonella	0							
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0							
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	7	3	Salmonella	0							
									Salmonella enterica, subspecies enterica	3							

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	N of flocks under control programme	Target verification	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive	
SWITZERLAND	Marten - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0	
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	0	Salmonella	0	
	Ostriches - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0	
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	7	0	Salmonella	0	
	Peafowl - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0	
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	16	3	Salmonella	0
										Salmonella enterica, subspecies enterica	3
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	172	19	Salmonella	7
										Salmonella enterica, subspecies enterica	12
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	4	1	Salmonella	0
										Salmonella enterica, subspecies enterica	1
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	45	9	Salmonella	0
										Salmonella enterica, subspecies enterica	9
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Unspecified - Not applicable - Not specified		animal		N_A	N_A	Not Available	56	4	Salmonella	0
										Salmonella enterica, subspecies enterica	4
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0	
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	18	8	Salmonella	4
										Salmonella enterica, subsp. houtenae	2
										Salmonella enterica, subspecies diarizonae	2
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	242	30	Salmonella	16
										Salmonella enterica, subspecies diarizonae	12
										Salmonella enterica, subspecies enterica	2
	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	1	Salmonella	1	
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	209	13	Salmonella	0
										Salmonella enterica, subspecies enterica	13
	Swans - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	3	1	Salmonella	0
										Salmonella enterica, subspecies enterica	1
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census		herd/flock	92	N	N_A	ISO 6579:2002 Salmonella	30	5	Salmonella Albany	5
										Salmonella	0
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census		herd/flock	92	Y	N_A	ISO 6579:2002 Salmonella	34	1	Salmonella Typhimurium	1
										Salmonella	0
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census		herd/flock	92	N	N_A	ISO 6579:2002 Salmonella	4	2	Salmonella Albany	1
										Salmonella Typhimurium	1
										Salmonella	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal			N_A	N_A	Not Available	1	0	Salmonella	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified		animal		N_A	N_A	Not Available	265	47	Salmonella	1
									Salmonella Ago	1	
									Salmonella enterica, subsp. houtenae	7	
									Salmonella enterica, subspecies arizonae	2	
									Salmonella enterica, subspecies diarizonae	7	
									Salmonella enterica, subspecies enterica	24	
								Salmonella enterica, subspecies salamae	5		

Table Salmonella:SALMONELLA in food

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Meat from broilers (Gallus gallus) - carcase - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	586	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	24	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - skinned - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	13	0	Salmonella	0
		single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	159	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	19	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	28	0	Salmonella	0
		single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	129	0	Salmonella	0
	Meat from broilers (Gallus gallus) - fresh - with skin - Slaughterhouse - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	198	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	237	9	Salmonella	0
									Salmonella Enteritidis	5
									Salmonella Infantis	4
		single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	140	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	444	0	Salmonella	0
	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	2	0	Salmonella	0
	Meat from broilers (Gallus gallus) - mechanically separated meat (MSM) - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	245	1	Salmonella	0
									Salmonella Heidelberg	1
	Meat from broilers (Gallus gallus) - minced meat - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	255	0	Salmonella	0
		single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	267	0	Salmonella	0
	Meat from pig - carcase - Slaughterhouse - Switzerland - food sample - carcass swabs - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	single (food/feed)	400	Square centimetre	N.A	ISO 6579-1:2017 Salmonella	1091	0	Salmonella	0
	Meat from turkey - carcase - Slaughterhouse - Switzerland - food sample - neck skin - Surveillance - based on Regulation 2073 - HACCP and own check - Objective sampling	batch (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	120	3	Salmonella	0
									Salmonella Albany	3
	Meat from turkey - fresh - skinned - Cutting plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	225	3	Salmonella	0
									Salmonella Albany	2
									Salmonella Typhimurium	1
	Meat from turkey - meat preparation - Processing plant - Switzerland - food sample - Monitoring - HACCP and own check - Objective sampling	single (food/feed)	25	Gram	N.A	ISO 6579-1:2017 Salmonella	125	0	Salmonella	0

Table Salmonella:SALMONELLA in feed

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Compound feedingstuffs for cattle - final product - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Compound feedingstuffs for cattle - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	10	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
			25	Gram	N.A	ISO 6579:2002 Salmonella	150	0	Salmonella	0
	Compound feedingstuffs for pigs - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	9	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	10	Gram	N.A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
			25	Gram	N.A	ISO 6579:2002 Salmonella	66	0	Salmonella	0
	Compound feedingstuffs for sheep - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Compound feedingstuffs, not specified - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of cereal grain origin - wheat derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Feed material of cereal grain origin - wheat derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Feed material of land animal origin - dairy products - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - other oil seeds derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	3	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	8	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	8	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	10	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
			25	Gram	N.A	ISO 6579:2002 Salmonella	14	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	6	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	8	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Unknown - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
	Other feed material - legume seeds and similar products - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Other feed material - straws - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N.A	ISO 6579:2002 Salmonella	1	0	Salmonella	0

Table Staphylococcus:STAPHYLOCOCCUS AUREUS METICILLIN RESISTANT (MRSA) in animal

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total Units Tested Attribute	Total Units Positive Attribute	Zoonoses	CC	Spa type ML	Units positive
SWITZERLAND	Cattle (bovine animals) - calves (under 1 year) - Slaughterhouse - Switzerland - animal sample - nasal swab - Monitoring - Official sampling - Objective sampling	animal		Not Available	N_A	Detection method of microorganisms	299	11	Methicillin resistant Staphylococcus aureus (MRSA)	398		11
	Pigs - fattening pigs - Slaughterhouse - Switzerland - animal sample - nasal swab - Monitoring - Official sampling - Objective sampling	animal		Not Available	N_A	Detection method of microorganisms	303	160	Methicillin resistant Staphylococcus aureus (MRSA)	398		159
												1

Table Staphylococcus:STAPHYLOCOCCUS AUREUS METICILLIN RESISTANT (MRSA) in food

Area of sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling unit	Sample weight	Sample weight unit	Sampling Details	Method	Total Units Tested Attribute	Total Units Positive Attribute	Zoonoses	CC	Spa type ML	Units positive
SWITZERLAND	Meat from bovine animals - fresh - chilled - Retail - Argentina - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	7	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Australia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Austria - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Brazil - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Estonia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	2	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Ireland - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	12	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Italy - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Latvia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Lithuania - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	3	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Paraguay - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	8	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Romania - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Switzerland - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	260	2	Methicillin resistant Staphylococcus aureus (MRSA)	398		2
	Meat from bovine animals - fresh - chilled - Retail - United States - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from bovine animals - fresh - chilled - Retail - Uruguay - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	10	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from pig - fresh - chilled - Retail - Germany - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)			0
	Meat from pig - fresh - chilled - Retail - Switzerland - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/fe ed)	5	Gram	N_A	Detection method of microorganisms	310	1	Methicillin resistant Staphylococcus aureus (MRSA)	398		1

Table Toxoplasma:TOXOPLASMA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	2	1	Toxoplasma	1
	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	1	Toxoplasma	0
							Toxoplasma gondii	1
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	273	99	Toxoplasma	1
							Toxoplasma gondii	98
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	51	15	Toxoplasma	0
							Toxoplasma gondii	15
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	4	0	Toxoplasma	0
	Llamas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	32	9	Toxoplasma	8
							Toxoplasma gondii	1
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	4	0	Toxoplasma	0

Table Trichinella:TRICHINELLA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Badgers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Trichinella	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Trichinella	0
	Lynx - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	15	2	Trichinella	0
							Trichinella britovi	2
	Pigs - breeding animals - not raised under controlled housing conditions - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	not raised under controlled housing conditions as requirements in Regulation (EU) No 216/2014 are not fully met	Magnetic stirrer method for pooled sample digestion	animal	30099	0	Trichinella	0
	Pigs - fattening pigs - not raised under controlled housing conditions - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	not raised under controlled housing conditions as requirements in Regulation (EU) No 216/2014 are not fully met	Magnetic stirrer method for pooled sample digestion	animal	22852 31	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	1535	0	Trichinella	0
	Wild boars - wild - Hunting - Switzerland - animal sample - Unspecified - Not applicable - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	9171	0	Trichinella	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	8	1	Trichinella	0
							Trichinella britovi	1

Table Yersinia:YERSINIA in animal

Area of Sampling	Matrix - Sampling stage - Sampling origin - Sample type - Sampling context - Sampler - Sampling strategy	Sampling Details	Method	Sampling unit	Total units tested	Total units positive	Zoonoses	N of units positive
SWITZERLAND	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Birds - wild - game birds, farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Budgerigars - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Yersinia	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	361	2	Yersinia	2
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	52	1	Yersinia	0
Yersinia enterocolitica unspecified							1	
	Chinchillas - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Deer - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	612	9	Yersinia	9
	Ferrets - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	10	0	Yersinia	0
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	1	Yersinia	0
Yersinia pseudotuberculosis							1	
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	1	Yersinia	0
Yersinia pseudotuberculosis							1	
	Marten - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Yersinia	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	2	Yersinia	0
Yersinia enterocolitica							2	
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	13	0	Yersinia	0
	Reindeers - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	0	Yersinia	0
	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	72	0	Yersinia	0
	Zoo animals, all - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	140	4	Yersinia	0
Yersinia enterocolitica							1	
Yersinia enterocolitica unspecified							1	
Yersinia intermedia							2	

FOODBORNE OUTBREAKS TABLES

Foodborne Outbreaks: summarized data

when numbers referring to cases, hospitalized people and deaths are reported as unknown, they will be not included in the sum calculation

Causative agent	Food vehicle	Outbreak strenght				Outbreak strenght			
		Strong		Weak		Strong		Weak	
		N outbreaks	N human cases	N hospitalized	N deaths	N outbreaks	N human cases	N hospitalized	N deaths
Campylobacter, unspecified sp.	Meat and meat products	1	3	0	0				
Norovirus	Tap water, including well water	1	53	0	0				
	Mixed food	1	6	0	0				
	Unknown					1	17	0	0
Unknown	Fish and fish products	1	2	0	0				
	Crustaceans, shellfish, molluscs and products thereof	1	30	1	0				
	Mixed food					5	25	2	0
	Unknown					12	195	3	0

Strong Foodborne Outbreaks: detailed data

Causative agent	H	AG	VT	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Campylobacter, unspecified sp.	unk	Not Available	Not Available	Escherichia coli	N_A	General	Meat and meat products	Chicken breast stuffed with mozzarella cheese	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	3	0	0
Norovirus	unk	Not Available	Not Available	Not Available	N_A	General	Tap water, including well water	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Others	Not Available	Not Available	Not Available	N_A	1	53	0	0
							Mixed food	Harm sandwich	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	6	0	0
Unknown	unk	Not Available	Not Available	Not Available	N_A	General	Fish and fish products	Tuna	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	0
							Crustaceans, shellfish, molluscs and products thereof	Oysters	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	30	1	0

Weak Foodborne Outbreaks: detailed data

Causative agent	H	AG	VT	Other Causative Agent	FBO nat. code	Outbreak type	Food vehicle	More food vehicle info	Nature of evidence	Setting	Place of origin of problem	Origin of food vehicle	Contributory factors	Comment	N outbreaks	N human cases	N hosp.	N deaths
Norovirus	unk	Not Available	Not Available	Not Available	N_A	General	Unknown	N_A	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	17	0	0
Unknown	unk	Not Available	Not Available	Not Available	N_A	General	Mixed food	Assorted pizzas	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	3	0	0
								cordon bleu and pasta	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	0
								Dürüm kebab	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	2	0	0
								N_A	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	1	16	2	0
							Unknown	N_A	Descriptive epidemiological evidence	Others	Not Available	Not Available	Not Available	N_A	1	23	0	0
								Unknown	Unknown	Others	Not Available	Not Available	Not Available	N_A	1	90	0	0
									Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Not Available	N_A	9	62	3	0
									Unknown	Temporary mass catering (fairs or festivals)	Not Available	Not Available	Not Available	N_A	1	20	0	0
						Household	Mixed food	Lamb burger	Product-tracing investigations	Household	Not Available	Not Available	Not Available	N_A	1	2	0	0

ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER

Table Antimicrobial susceptibility testing of *Campylobacter coli* in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling details:

AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
ECOFF	0.5	8	2	16	4	2
Lowest limit	0.12	1	0.12	1	0.25	0.5
Highest limit	16	128	16	64	16	64
N of tested isolates	229	229	229	229	229	229
N of resistant isolates	128	9	0	128	194	145
MIC						
<=0.12	74		8			
0.25	23		45			
<=0.5						61
0.5	4		142		1	
<=1		153				
1			34		4	19
2		42			21	4
4	2	20		38	9	2
8	40	5		49	1	6
16	60	1		14	21	16
>16	26				172	
32						59
64		1		16		36
>64				112		26
>128		7				

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella 9,12:-:- in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.03									2					
0.03						1								
0.064						1								
<=0.25			2										1	2
<=0.5				2				2						
<=1							2							
1													1	
<=2												2		
2	2													
<=4										2				
<=8					2									
8		2												
16											2			

Table Antimicrobial susceptibility testing of Salmonella Abony in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
0.03						1								
0.064									1					
<=0.25			1										1	1
<=0.5				1				1						
<=2												1		
2	1						1							
<=4										1				
<=8					1									
8		1												
16											1			

Table Antimicrobial susceptibility testing of Salmonella Abortusovis in Sheep

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2		1										1		
<=4										1				
<=8					1						1			

Table Antimicrobial susceptibility testing of Salmonella Abortusovis in Goats

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2		1										1		
<=4										1				
<=8					1						1			

Table Antimicrobial susceptibility testing of Salmonella Agona in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						2								
<=0.03									2					
<=0.25			2											2
<=0.5				2				2						
0.5													1	
<=1	1						2							
1													1	
<=2												2		
2	1													
<=4										2				
4		2												
<=8					2									
16											2			

Table Antimicrobial susceptibility testing of Salmonella Albany in Turkeys - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	8	8	8	8	8	8	8	8	8	8	8	8	8	8
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						5								
<=0.03									8					
0.03						3								
<=0.25			8										6	8
<=0.5				8				7						
0.5													2	
<=1	8						8							
1								1						
<=2												8		
<=4										8				
4		8												
<=8					8						1			
16											7			

Table Antimicrobial susceptibility testing of Salmonella Albany in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									4					
0.03						2								
0.064						1								
<=0.25			4										4	4
<=0.5				4				4						
<=1	4						4							
<=2												4		
<=4										4				
4		4												
<=8					4						1			
16											2			
32											1			

Table Antimicrobial susceptibility testing of Salmonella Brandenburg in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	1	0	0
MIC														
<=0.03									1					
0.03						1								
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=4										1				
<=8					1									
8		1												
16												1		
64											1			

Table Antimicrobial susceptibility testing of Salmonella Bredeney in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.03									1					
0.03						1								
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2												1		
<=4										1				
4		1												
<=8					1									
64											1			

Table Antimicrobial susceptibility testing of Salmonella Dublin in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	1	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1													
<=2												1		
<=4										1				
4		1												
<=8					1						1			
8							1							

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.03									3					
0.03						4								
0.064									1					
<=0.25			4										3	4
<=0.5				4				4						
0.5													1	
<=1	1						2							
<=2												4		
2	3						2							
<=4										4				
4		3												
<=8					4									
8		1												
16											2			
32											2			

Table Antimicrobial susceptibility testing of Salmonella Enteritidis in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	11	11	11	11	11	11	11	11	11	11	11	11	11	11
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									11					
0.03						10								
<=0.25			11										11	11
<=0.5				11				11						
<=1	3						8							
<=2												11		
2	8						3							
<=4										10				
4		9												
<=8					11									
8		2								1				
16											8			
32											3			

Table Antimicrobial susceptibility testing of Salmonella Heidelberg in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON pnl2

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	32	0.5	0.5	8	2	2	0.06	1	0.125	32
Lowest limit	0.06	0.25	0.06	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	1	1	1	1	1	0	0	0	0
MIC										
0.03							1			
0.064									1	
0.5								1		
1	1									
16					1	1				1
32		1	1							
>64				1						

Table Antimicrobial susceptibility testing of Salmonella Heidelberg in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	0	1	1	0	1	0	0	0	1	1	1	0	0
MIC														
0.064									1					
<=0.25														1
0.25						1								
<=0.5								1						
0.5													1	
2							1							
>4			1											
<=8					1									
8		1												
>8				1										
>64	1											1		
>128										1				
>1024											1			

Table Antimicrobial susceptibility testing of Salmonella Hessarek in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
0.064									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2		1										1		
<=4										1				
<=8					1						1			

Table Antimicrobial susceptibility testing of Salmonella Infantis in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON pnl2

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	32	0.5	0.5	8	2	2	0.06	1	0.125	32
Lowest limit	0.06	0.25	0.06	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	1	0	0	1	0	0	0	0	0
MIC										
<=0.015							1			
<=0.03									1	
0.12			1							
0.25								1		
0.5						1				
4				1						
16	1									1
64					1					
>64		1								

Table Antimicrobial susceptibility testing of Salmonella Infantis in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	0	1	1	1	1	0	0	0	0	1	1	0	1
MIC														
<=0.03									1					
<=0.25													1	
1								1						
2						1	1							
4		1												
>4			1											
>8				1										
16										1				
>32														1
64					1							1		
>64	1													
>1024											1			

Table Antimicrobial susceptibility testing of Salmonella Kentucky in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	1	0	0	0	1	0	0	0	0
MIC														
<=0.03									1					
<=0.25			1										1	1
0.25						1								
<=0.5				1				1						
<=1	1						1							
<=2												1		
4		1												
<=8					1									
32											1			
>128										1				

Table Antimicrobial susceptibility testing of Salmonella Livingstone in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.03									1					
0.03						1								
<=0.25			1										1	
<=0.5				1				1						
0.5														1
<=1	1						1							
<=2												1		
<=4										1				
4		1												
<=8					1									
32											1			

Table Antimicrobial susceptibility testing of Salmonella Mbandaka in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	1	1	0	0	0	1	0	0	0	0
MIC														
<=0.03									1					
<=0.25			1											1
<=0.5								1						
0.5						1								1
<=1							1							
1				1										
4	1											1		
16		1												
32					1									
64											1			
>128										1				

Table Antimicrobial susceptibility testing of Salmonella Mikawasima in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.03									3					
0.03						3								
<=0.25			3											3
<=0.5				3				3						
0.5													3	
<=1							3							
<=2												3		
2	3													
<=4										3				
<=8					3									
8		3												
32											2			
64											1			

Table Antimicrobial susceptibility testing of Salmonella Schleissheim in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2												1		
<=4										1				
4		1												
<=8					1									
16											1			

Table Antimicrobial susceptibility testing of Salmonella Tennessee in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	4	4	4	4	4	4	4	4	4	4	4	4	4	4
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						3								
<=0.03									3					
0.03						1								
0.064									1					
<=0.25			4										3	4
<=0.5				4				4						
0.5													1	
<=1	3						3							
<=2												4		
2	1						1							
<=4										4				
<=8					4									
8		4												
32											1			
64											3			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2	
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25	
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32	
N of tested isolates	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MIC															
<=0.015						4									
<=0.03									17						
0.03						20									
0.064									7						
<=0.25			24									19	18		
<=0.5				24					22						
0.5												4	6		
<=1	15							23							
1								2						1	
<=2												24			
2	9							1							
<=4									23						
4			20												
<=8					24							3			
8			4								1				
16											8				
32											10				
64											3				

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Turkeys - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
0.03						3								
0.064									3					
<=0.25			3										2	3
<=0.5				3				3						
0.5													1	
<=1	3						1							
<=2												3		
2							2							
<=4										3				
4		3												
<=8					3						2			
16											1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	16	16	16	16	16	16	16	16	16	16	16	16	16	16
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						5								
<=0.03									11					
0.03						11								
0.064									5					
<=0.25			16										14	16
<=0.5				16				12						
0.5													2	
<=1	10						11							
1								4						
<=2												16		
2	6						5							
<=4										16				
4		16												
<=8					16						2			
16											7			
32											7			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Cattle (bovine animals) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	9	9	9	9	9	9	9	9	9	9	9	9	9	9
N of resistant isolates	8	0	0	0	1	0	0	0	0	0	9	7	0	1
MIC														
<=0.015						2								
<=0.03									5					
0.03						7								
0.064									4					
<=0.25			9										4	8
<=0.5				9				9						
0.5													5	
<=1	1						6							
<=2								3				1		
2														
<=4										8				
4		6										1		
<=8					8									
8		3								1				
>32														1
64	1													
>64	7											7		
>128					1									
>1024											9			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Pigs - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	2	0	0	0	0	0	0	0	0	0	2	2	0	0
MIC														
<=0.03									2					
0.03						2								
<=0.25			2										1	2
<=0.5				2				2						
0.5													1	
<=1							1							
2							1							
<=4										2				
4		1												
<=8					2									
8		1												
>64	2											2		
>1024											2			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium, monophasic in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	6	6	6	6	6	6	6	6	6	6	6	6	6	6
N of resistant isolates	5	0	0	0	0	0	0	0	0	0	5	5	0	0
MIC														
<=0.015						2								
<=0.03									5					
0.03						4								
0.064									1					
<=0.25			6										4	6
<=0.5				6				6						
0.5													2	
<=1	1						4							
<=2												1		
2							2							
<=4										6				
4		5												
<=8					6									
8		1												
32											1			
>64	5											5		
>1024											5			

Table Antimicrobial susceptibility testing of Salmonella Veneziana in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIC														
<=0.015						1								
<=0.03									1					
<=0.25			1										1	1
<=0.5				1				1						
<=1	1						1							
<=2												1		
<=4										1				
<=8					1									
8		1												
16											1			

Table Antimicrobial susceptibility testing of Salmonella Welikade in Gallus gallus (fowl) - unspecified

Sampling Stage: Unspecified

Sampling Type: animal sample

Sampling Context: Unspecified

Sampler: Not applicable

Sampling Strategy: Not specified

Programme Code: OTHER AMR MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.5	2	16	0.064	2	2	0.125	16	256	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	3	3	3	3	3	3	3	3	3	3	3	3	3	3
N of resistant isolates	0	0	0	0	0	0	1	0	0	0	1	0	0	0
MIC														
<=0.015						1								
<=0.03									2					
0.03						2								
0.064									1					
<=0.25			3										2	2
<=0.5				2				3						
0.5													1	1
<=1	2						1							
1				1										
<=2												3		
2	1						1							
<=4										3				
4							1							
<=8					3									
8		3												
64											2			
512											1			

ANTIMICROBIAL RESISTANCE TABLES FOR INDICATOR ESCHERICHIA COLI

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA

Sampler: Official sampling

Sampling Strategy: Objective sampling

specifications

Programme Code: AMR MON pnl2

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	2	2	1	0	2	1	0	0	0	0
MIC										
<=0.015							1			
<=0.03									1	
<=0.064			1							
0.064							1		1	
0.25						1		1		
0.5								1		
1					1	1				
2					1					
4	1		1	2						
8	1									2
64		2								

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications
Programme Code: AMR MON

Sampler: Official sampling

Sampling Strategy: Objective sampling

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2	
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25	
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32	
N of tested isolates	199	199	199	199	199	199	199	199	199	199	199	199	199	199	
N of resistant isolates	52	1	2	2	14	9	0	8	0	8	62	72	0	26	
MIC															
<=0.015						173									
<=0.03										199					
0.03						17									
0.12						2									
<=0.25			197								185	139			
0.25						6									
<=0.5				197					140						
0.5													14	32	
<=1	8							198							
1				1					48						
<=2			23								119				
2	49				1			1	3						
<=4										190					
4	84	140													
>4			2												
<=8					182						112				
8	6	31						1			1	1			
>8						1									
16			4				3			4	16				
32			1				1			1	9	2			
>32								2							26

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	199	199	199	199	199	199	199	199	199	199	199	199	199	199
N of resistant isolates	52	1	2	2	14	9	0	8	0	8	62	72	0	26
64					1					2		25		
>64	52											45		
128					3					4				
>128					9					2				
>1024											62			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications
Programme Code: ESBL MON pn12

Sampler: Official sampling

Sampling Strategy: Objective sampling

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin	
	Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32	
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5	
Highest limit	32	64	64	64	128	128	2	16	16	64	
N of tested isolates	98	98	98	98	98	98	98	98	98	98	
N of resistant isolates	69	98	33	33	97	32	0	0	0	0	
MIC											
<=0.015							72				
<=0.03									98		
0.03							22				
<=0.064	10	56									
0.064							4				
<=0.12						28	58				
0.12	19	7									
0.25	3	2		35			40				
0.5	5	2	4	1		3					
1	4	9	12	18		2					
2	9	12	14	7	15	8					
4	28	16	2	41	17	9				31	
8	17	2	17		26	12				60	
16	3	8	1	9	17	1				7	

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	98	98	98	98	98	98	98	98	98	98
N of resistant isolates	69	98	33	33	97	32	0	0	0	0
MIC										
32		18		9	4					
64		19		14						
>64		12		1						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications
Programme Code: ESBL MON

Sampler: Official sampling

Sampling Strategy: Objective sampling

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	98	98	98	98	98	98	98	98	98	98	98	98	98	98
N of resistant isolates	98	7	98	97	36	41	0	47	0	21	77	78	0	42
MIC														
<=0.015						52								
<=0.03									98					
0.03						5								
0.12						2								
<=0.25													86	39
0.25						12								
<=0.5				1				34						
0.5			2			13							12	16
<=1							97							
1			6	20				16						1
<=2		6										19		
2			20	18			1	1						
<=4										62				
4		53	10	15								1		
>4			60											
<=8					62						12			
8		28		28		3		6		13				
>8				16		11								
16		4						5		2	2	1		
32		3			3			11			5	1		
>32								25						42

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	98	98	98	98	98	98	98	98	98	98	98	98	98	98
N of resistant isolates	98	7	98	97	36	41	0	47	0	21	77	78	0	42
64		4								2	2	16		
>64	98											60		
128					11					1				
>128					22					18				
1024											1			
>1024											76			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications
Programme Code: AMR MON

Sampler: Official sampling

Sampling Strategy: Objective sampling

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2	
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25	
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32	
N of tested isolates	189	189	189	189	189	189	189	189	189	189	189	189	189	189	
N of resistant isolates	24	0	0	0	3	5	0	2	0	5	57	40	0	24	
MIC															
<=0.015						175									
<=0.03										189					
0.03						9									
0.12						1									
<=0.25			189									177	138		
0.25						4									
<=0.5				189					137						
0.5												9	22		
<=1	7							189							
1								49				3	5		
<=2		30											142		
2	55												1		
<=4										184					
4	97	134											6		
<=8					186							100			
8	6	25											1		
16												22			
32					1				1						8
>32								1							24
64					1						2	23			
>64	24												17		

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	189	189	189	189	189	189	189	189	189	189	189	189	189	189
N of resistant isolates	24	0	0	0	3	5	0	2	0	5	57	40	0	24
MIC														
128					1					4				
>128										1				
1024											1			
>1024											56			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA

Sampler: Official sampling

Sampling Strategy: Objective sampling

specifications

Programme Code: ESBL MON pn12

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	40	40	40	40	40	40	40	40	40	40
N of resistant isolates	30	40	13	14	38	13	0	0	0	0
MIC										
<=0.015							28			
<=0.03								39		
0.03							9			
<=0.064	4	24								
0.064							3			
<=0.12						18	20			
0.12	6	3								
0.25	3					7	19			
0.5	3				2	2	1			
1	3	5	8	6						
2	6	5	3	4	9	6	3			
4	9	6	1	20	8	3	14			
8	4			2	5	3	21			
16	2	8	1	8	7	2				

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	40	40	40	40	40	40	40	40	40	40
N of resistant isolates	30	40	13	14	38	13	0	0	0	0
MIC										
32		3		2						
64		10		4	3					
>64		3								
128						1				

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim	
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2	
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25	
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32	
N of tested isolates	40	40	40	40	40	40	40	40	40	40	40	40	40	40	
N of resistant isolates	40	1	40	38	10	17	0	9	0	9	23	23	0	14	
MIC															
<=0.015						22									
<=0.03										40					
0.03							1								
<=0.25														38	20
0.25						4									
<=0.5					2										
0.5							5								
<=1								39							
1			2	9											
<=2			2												
2				9	6	2	1								
<=4											23				
4			23	5	8										
>4				24											
<=8						30									
8			14	8											
>8					7	4									
16									1	2	3				
32										1					
>32											5				
64													6		

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Colistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	40	40	40	40	40	40	40	40	40	40	40	40	40	40
N of resistant isolates	40	1	40	38	10	17	0	9	0	9	23	23	0	14
MIC														
>64	40	1										17		
128					6					2				
>128					4					7				
>1024											23			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from bovine animals - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnI2

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin
Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	2	16	16	64
N of tested isolates	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	1	1	1	1	1	0	0	0	0
MIC										
<=0.03										1
0.03								1		
0.25	1									
4			1	1						
8						1				
16					1					
64				1						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from bovine animals - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	1	1	1	1	1	1	1	1	1	1	1	1	1	1
N of resistant isolates	1	0	1	1	0	0	0	1	0	0	1	1	0	0
MIC														
<=0.03									1					
0.03						1								
<=0.25														1
0.5													1	
<=1							1							
<=4										1				
4		1	1											
<=8					1									
>8				1										
16								1						
>64	1											1		
>1024											1			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from pig - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON pnl2

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid	Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid	Ertapenem	Imipenem	Meropenem	Temocillin	
	Cefotaxime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Ceftazidime synergy test	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	
ECOFF	0.125	0.25	0.25	8	0.5	0.5	0.06	0.5	0.125	32	
Lowest limit	0.064	0.25	0.064	0.5	0.25	0.12	0.015	0.12	0.03	0.5	
Highest limit	32	64	64	64	128	128	2	16	16	64	
N of tested isolates	2	2	2	2	2	2	2	2	2	2	
N of resistant isolates	1	2	1	1	2	1	0	0	0	0	
MIC											
<=0.015							1				
<=0.03									1		
0.03							1				
<=0.064			1								
0.064									1		
<=0.12						1					
0.12	1										
0.25								2			
1			1								
2						1					
4				1	1						
8	1					1					
16				1							
>64			1								

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from pig - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: ESBL MON

Analytical Method:

Country of Origin: Switzerland

Sampling Details:

AM substance	Ampicillin	Azithromycin	Cefotaxim	Ceftazidim	Chloramphenicol	Ciprofloxacin	Collistin	Gentamicin	Meropenem	Nalidixic acid	Sulfamethoxazole	Tetracycline	Tigecycline	Trimethoprim
ECOFF	8	16	0.25	0.5	16	0.064	2	2	0.125	16	64	8	1	2
Lowest limit	1	2	0.25	0.5	8	0.015	1	0.5	0.03	4	8	2	0.25	0.25
Highest limit	64	64	4	8	128	8	16	32	16	128	1024	64	8	32
N of tested isolates	2	2	2	2	2	2	2	2	2	2	2	2	2	2
N of resistant isolates	2	1	2	2	1	1	0	0	0	1	1	1	0	1
<=0.015						1								
<=0.03									2					
<=0.25													2	1
<=0.5								1						
<=1							2							
1								1						
<=2												1		
2			1											
<=4										1				
4		1		1										
>4			1											
<=8					1									
8				1										
>8						1								
16											1			
>32														1
64		1												
>64	2											1		
128					1									
>128										1				
>1024											1			

OTHER ANTIMICROBIAL RESISTANCE TABLES

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Cattle (bovine animals) - calves (under 1 year)

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - nasal swab

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country Of Origin:Switzerland

Sampling Details:

AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Pencillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
Perfor med CC MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Perfor med MLST MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOF	4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2
Lowest limit	0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1
Spa T. M.Seq. C.C. MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16
<=0.016													11						
<=0.12				5															
<=0.25			3																
<=0.5						11				11									7
0.5			2		5														
<=1							11		1										11
1			1											1					1
<=2																			8
2			4						9										
>2											11								
<=4								11											1
4									1										
>4				6															3
8	4	10																	6
>8			1		6														
16	7																		
>16																			
>32																			4
																			3

	AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
	Perfor med CC MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
	Perfor med MLST MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
	ECOF F	4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2
	Lowe st limit	0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1
Spa T. M.Seq. C.C.	MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16
	<=6															10				
	4																			
	64		1																	
	128															1				

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Pigs - fattening pigs

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - nasal swab

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country Of Origin:Switzerland

Sampling Details:

	AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
Perfor med CC MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Perfor med MLST MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOF F	4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2	
Lowe st limit	0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1	
Spa T. M.Seq. C.C. MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16	
<=0.016													158							
<=0.12				113																
<=0.25			83		36															
0.25				1																
<=0.5						156				159		111					8	104		
0.5			26		98									1						
<=1							132		6										159	
1							2						5					10		
<=2																			109	
2			1						144											
>2												159								
<=4		6						130							58					
4			2	7		1	1		9				10						1	
>4				38									3					45		
8	95	133	22				5	2						56						
>8			25		25															
16	62						9													
>16	2						12										151			
32		1													1					
>32															44				49	
<=64																156				

		AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
Perfor med CC MRSA chara cteris ation		Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Perfor med MLST MRSA chara cteris ation		Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOF F		4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2	
Lowe st limit		0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1	
Spa T.	M.Seq. C.C.	MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16
		64	18				9														
		>64	1				18														
		128	2																		
		>51 2	1																		

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Meat from bovine animals - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country Of Origin:Switzerland

Sampling Details:

	AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
Perfor med CC MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Perfor med MLST MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOF F	4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2	
Lowe st limit	0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1	
Spa T. M.Seq. C.C. MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16	
<=0.016													2							
<=0.12				1																
<=0.25			2																	
<=0.5					2					2		1						1		
0.5					1															
<=1							2													2
<=2																			1	
2									2											
>2											2									
<=4								2												
4													1							
>4				1															1	
8	2	2													1					
>8					1															
>16																2				
>32														1					1	
<=64																2				

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Meat from pig - fresh - chilled

Sampling Stage: Retail

Sampling Type: food sample - meat

Sampling Context: Monitoring - EFSA specifications

Sampler: Official sampling

Sampling Strategy: Objective sampling

Programme Code: OTHER AMR MON

Analytical Method:

Country Of Origin:Switzerland

Sampling Details:

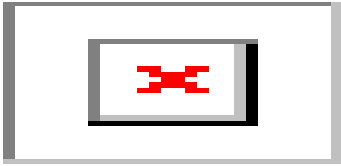
	AM Subst ance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
Perfor med CC MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
Perfor med MLST MRSA chara cteris ation	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
ECOF F	4	16	1	0.25	1	0.5	2	8	4	1	0.12	1	0.03	16	128	1	2	2	2	
Lowest limit	0.5	4	0.25	0.12	0.25	0.5	1	4	1	0.5	0.12	0.5	0.016	4	64	0.5	0.5	2	1	
Spa T. M.Seq. C.C. MIC	16	64	8	4	8	4	16	64	8	256	2	4	0.5	32	512	16	4	32	16	
<=0.016													1							
<=0.12				1																
<=0.25					1															
<=0.5						1							1				1	1		
<=1							1			1										1
1											1									
>2												1								
<=4								1							1					
8	1	1																		
>8			1																	
16																			1	
<=64																1				

Specific monitoring of ESBL-/AmpC-/carbapenemase-producing bacteria and specific monitoring of carbapenemase-producing bacteria, in the absence of isolate detected

Programme Code	Matrix Detailed	Zoonotic Agent Detailed	Sampling Strategy	Sampling Stage	Sampling Details	Sampling Context	Sampler	Sample Type	Sampling Unit Type	Sample Origin	Comment	Total Units Tested	Total Units Positive											
CARBA MON	Cattle (bovine animals) - calves (under 1 year)	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring - EFSA specifications	Official sampling	animal sample - caecum	animal	Switzerland	N_A	298	0											
												Meat from bovine animals - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	single (food/feed)	Argentina	N_A	7	0
																					Australia	N_A	1	0
																					Austria	N_A	1	0
																					Brazil	N_A	1	0
																					Estonia	N_A	2	0
																					Ireland	N_A	12	0
																					Italy	N_A	1	0
																					Latvia	N_A	1	0
																					Lithuania	N_A	3	0
																					Paraguay	N_A	8	0
																					Romania	N_A	1	0
																					Switzerland	N_A	260	0
																					United States	N_A	1	0
Uruguay	N_A	10	0																					

Specific monitoring of ESBL-/AmpC-/carbapenemase-producing bacteria and specific monitoring of carbapenemase-producing bacteria, in the absence of isolate detected

Programme Code	Matrix Detailed	Zoonotic Agent Detailed	Sampling Strategy	Sampling Stage	Sampling Details	Sampling Context	Sampler	Sample Type	Sampling Unit Type	Sample Origin	Comment	Total Units Tested	Total Units Positive
CARBA MON	Meat from pig - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	single (food/feed)	Germany	N_A	1	0
										Switzerland	N_A	310	0
	Pigs - fattening pigs	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring - EFSA specifications	Official sampling	animal sample - caecum	animal	Switzerland	N_A	306	0



Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	27-Jul-2020
Esbl	27-Jul-2020
Animal Population	27-Jul-2020
Disease Status	27-Jul-2020
Food Borne Outbreaks	27-Jul-2020
Prevalence	27-Jul-2020

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Institutions and Laboratories involved in zoonoses monitoring and reporting

- 1: Centre for Zoonoses, Bacterial Animal Diseases Antimicrobial Resistance (ZOBA) at the Institute of Veterinary Bacteriology, Vetsuisse Faculty, University of Bern
National Reference Laboratory for Brucellosis, Salmonellosis, Campylobacteriosis, Listeriosis, Yersiniosis, Tularemia, Coxiellosis, Antimicrobial Resistance
2. Institute for Food Safety and Hygiene (ILS), Vetsuisse Faculty University of Zurich,
National Reference Laboratory for STEC, enteropathogenic bacteria
3. Section of Veterinary Bacteriology (VB), Institute for Food Safety and Hygiene, Vetsuisse Faculty University of Zurich
National Reference Laboratory for Tuberculosis
4. Institute of Parasitology IPB, Vetsuisse Faculty and Faculty of Medicine University of Bern
National Reference Laboratory for Trichinellosis, Toxoplasmosis
5. Swiss Rabies Center (SRC) at the Institute of Veterinary Virology, Vetsuisse Faculty University of Bern
National Reference Laboratory for Rabies
6. Institute of Parasitology (IPZ), Vetsuisse Faculty University of Zurich,
National Reference Laboratory for Echinococcosis
7. Research Station Agroscope Liebefeld-Posieux (ALP)
Official feed inspection service and Listeria Monitoring
8. Institute for Virology and Immunology (IVI)
National Reference Laboratory for West Nil Fever
9. National Reference Center for Poultry and Rabbit Diseases, University of Zurich (NRGK)
West Nile Fever data in wild birds

Short description of the institutions and laboratories involved in data collection and reporting

Animal population

1. Sources of information and the date(s) (months, years) the information relates to^(a)

Number of animals held in farms in Switzerland in 2019 (data status May 2020). Number of animals slaughtered in the year 2019.

Living animals and herds: Coordinated census of agriculture. Swiss federal office of agriculture, Swiss federal office of statistics and the animal movement database. Slaughtered animals: Official meat inspection statistics (FSVO) and monthly agricultural statistics (Swiss Farmer's Federation).

2. Definitions used for different types of animals, herds, flocks and holdings as well as the production types covered

The indicated number of holdings is identical to the number of farms holding respective species. Agriculture census counts the number of farms.

3. National changes of the numbers of susceptible population and trends

In general, the number of animal holdings is decreasing slightly year by year (exception in 2019: holding with laying hens).

Poultry industry: the number of holdings with laying hens increased by 3% and the one with broilers decreased by 0.4%. Over 90% of poultry meat is produced by 4 major meat producing companies. The number of holdings with breeders have a large fluctuation due to a large number of very small flocks on farms which are counted in agricultural census. However, the number of holdings with more than 250 breeders is constant (41 in 2019) keeping over 90% of all breeders.

4. Geographical distribution and size distribution of the herds, flocks and holdings^(b)

Average size of the farms in 2019: 45 cattle, 234 pigs, 42 sheep, 13 goats, 213 laying hens and 6'592 broilers.

5. Additional information

Day-old chicks and hatching eggs are imported on a large scale to Switzerland. In the broiler sector, far more fertilized eggs than day-old chicks are imported. Whereas the number of imported fertilized eggs of the broiler type is constant at 35 million in 2019 (0.4%), the number of imported day-old chicks of the broiler type decreased from 2'000 to 0. Day-old chicks of the egg line were imported less (8'466 in 2019 instead of 11'832 in 2018).

(a): National identification and registration system(s), source of reported statistics (Eurostat, others)

(b): Link to website with density maps if available, tables with number of herds and flocks according to geographical area

General evaluation: Brucella

1. History of the disease and/or infection in the country^(a)

Brucellosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). The number of detections of *Brucella* (B.) spp. in humans has been rare for many years.

Brucellosis in animals is notifiable (TSV, Article 3: disease to be eradicated: bovine brucellosis since 1956, in sheep and goats since 1966; Article 4: disease to be controlled: brucellosis in rams). Government measures are applied to control brucellosis in sheep and goats (*B. melitensis*, TSV, Articles 190-195), in cattle (*B. abortus*, TSV, Articles 150-157), in pigs (*B. suis* as well as *B. abortus* and *B. melitensis*, TSV, Articles 207 – 211) and in rams (*B. ovis*, TSV, Articles 233-236). Cattle, pigs, sheep and goats must be tested for brucellosis in cases where the causes of abortion are being investigated (TSV, Article 129). Vaccination is prohibited since 1961. Switzerland is officially recognized as free of brucellosis in cattle, sheep and goats by the EU (Bilateral Agreement on Agriculture, Veterinary Annex). Requirements of section 3.2.1.5 of the OIE International Animal Health Code are fulfilled since 1963.

2. Evaluation of status, trends and relevance as a source for humans

In 2019 7 brucellosis cases in humans were reported (in 2018: 5 cases). In 3 cases *B. melitensis* was identified. Affected were 5 men and 2 women between the age of 31 and 90 years. In the last 10 years the notified cases ranged between 1 and 14 cases per year.

In 2019, no cases of brucellosis in animals were reported by the cantonal veterinarians. In the yearly national survey all blood samples from sheep and goats in 2019 tested negative for *B. melitensis*.

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

National surveys on a yearly basis are carried out to document freedom from brucellosis in sheep and goat.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Cattle and Brucella abortus

1. Monitoring/Surveillance/Control programmes system^(a)

Switzerland is officially acknowledged as free from bovine brucellosis since 1959. Bovine brucellosis is notifiable since 1956. Requirements of section 3.2.1.5 of the OIE International Animal Health Code are fulfilled since 1963. Free status is recognized by EU (Bilateral Agreement on Agriculture, Veterinary Annex).

2. Measures in place^(b)

Vaccination is prohibited. Actions to be taken in suspicious farms are the ban of all animal traffic and investigation of the whole herd as well as the placenta of calving cows. In confirmed cases (herds) all diseased cattle have to be killed. All placentas, abortion material and the milk of diseased and suspicious cows have to be disposed of. The barn has to be disinfected. Official meat inspection includes each carcass, its organs and lymphatic tissue on the prevalence of abnormal alterations. Whole carcasses need to be destroyed if lesions typical for brucellosis are confirmed positive by a laboratory test. Without lesions or in case of unclear laboratory results the udder, genitals and the blood need to be destroyed (VHyS, Annex 7).

3. Notification system in place to the national competent authority^(c)

Notification of suspicious cases and outbreaks is mandatory. Brucellosis in bovine animals is regulated as zoonosis to be eradicated (TSV, Art. 150 - Art. 157).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

No cases of Brucella abortus were reported in 2019.

There are no observations that would challenge the freedom of Swiss cattle population from brucellosis.

5. Additional information

None.

Description of Monitoring/Surveillance/Control programmes system: Sheep and Goats and *Brucella melitensis*

1. Monitoring/Surveillance/Control programmes system^(a)

Switzerland is officially acknowledged as free from ovine and caprine brucellosis.

2. Measures in place^(b)

Vaccination is prohibited. Actions to be taken in suspicious farms are ban of all animal traffic and the investigation of the whole herd. In confirmed cases the whole herd has to be killed immediately. All placentas, abortion material and the milk of diseased and suspicious animals have to be disposed of. The barn has to be disinfected. Official meat inspection is investigating each carcass, its organs and lymphatic tissue on the prevalence of abnormal alterations. Whole carcasses need to be destroyed if lesions typical for brucellosis could be confirmed by a laboratory test. Without lesions or in case of unclear laboratory results the udder, genitals and the blood need to be destroyed (VHyS, Annex 7).

3. Notification system in place to the national competent authority^(c)

Notification of suspicious cases and outbreaks is mandatory. Brucellosis in sheep and goats is regulated as zoonosis to be eradicated (TSV, Art. 190 - Art. 195).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In the yearly national survey a randomized sample of 437 sheep farms (7161 blood samples) and 178 goat farms (1599 blood samples) were tested negative for *B. melitensis* in 2019 using serological tests. In addition, no cases of brucellosis in sheep and goats were reported. There are no observations that would challenge the freedom of Swiss sheep and goat population from brucellosis.

5. Additional information

None.

General evaluation: Mycobacterium

1. History of the disease and/or infection in the country^(a)

Tuberculosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Human tuberculosis cases due to *Mycobacterium (M.) bovis* are reported on a low scale (not more than 15 cases per year since 2005), which corresponds to less than 2% of all reported tuberculosis cases.

In animals, tuberculosis is notifiable (TSV, Article 3: disease to be eradicated and 158 – 159).

Vaccination is prohibited. Requirements of section 3.2.3.10 of the OIE International Animal Health Code are fulfilled. Free status is recognized by EU (Bilateral Agreement on Agriculture, Veterinary Annex).

2. Evaluation of status, trends and relevance as a source for humans

Data of human tuberculosis cases in 2019 could not be provided before the final date of this report.

In general, human tuberculosis cases due to *M. bovis* / *M. caprae* are reported on a low scale and correspond to less than 2% of all reported tuberculosis cases over the last 10 years. As Swiss livestock is recognized free of bovine tuberculosis, human cases of tuberculosis are anticipated to be mainly attributable to stays abroad or to the consumption of foreign food products. However, natives aged over 65 years could have been infected in their childhood, when the disease in Swiss cattle was more frequent.

In animals, one tuberculosis outbreak (*M. microti*) was reported in 2019 in a cat by the cantonal veterinarians.

At slaughterhouses 5 lymphatic tissue and organ material of cattle suspicious for bovine TB were taken in 2019 during meat inspection. All samples tested negative. Within the framework of the LyMON monitoring lymphatic tissue with unspecific alterations of 119 cattle were analysed using a graduated diagnostic scheme (pathological investigation, Ziehl-Neelsen staining, genus-specific mycobacterial real-time PCR, MTBC culture and histology). All samples were negative for bacteria of the *M. tuberculosis*-complex.

In addition, lymphatic tissue and rarely unspecific alterations of organs of 226 wild animals (mainly red deer and some ibex and chamoix) were investigated in 2019. All samples were tested negative for bacteria of the *M. tuberculosis*-complex.

Tuberculosis cases in animals are reported extremely rarely (not more than 2 cases per year) and affect often cats. In 2013/2014 more cases (in total 10) were reported due to two unusual outbreaks in cattle (one due to *M. bovis*, the other due to *M. caprae*). Risk factors for the incursion of the disease are international trade with animals and summer grazing of Swiss cattle in risk areas such as the border areas with Austria and Germany where contact with infected cattle or wildlife cannot be excluded.

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

The detection of suspect cases during meat inspection in slaughterhouses is a challenge in a country with a very low disease prevalence. The special monitoring program LyMON at the slaughterhouses continues to keep awareness at slaughterhouses high.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Cattle and *M. bovis*

1. Monitoring/Surveillance/Control programmes system^(a)

Switzerland is officially acknowledged as free from bovine tuberculosis since 1959.

2. Measures in place^(b)

Actions to be taken in suspicious farms are ban of all animal traffic and investigation of the whole herd. In confirmed cases (herds) all diseased or suspicious cattle has to be slaughtered and the milk of them is disposed. The barn has to be disinfected.

3. Notification system in place to the national competent authority^(c)

Bovine tuberculosis is notifiable (TSV, Art. 3: disease to be eradicated and Art. 158 - Art. 165). Notifications of suspicious cases are mandatory.

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In 2019 no cases in cattle were reported. There were no further outbreaks in cattle since the last two unusual outbreaks in 2013/2014.

5. Additional information

None.

General evaluation: *Campylobacter*

1. History of the disease and/or infection in the country^(a)

Human campylobacteriosis is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Campylobacteriosis is the most commonly reported food borne infectious disease in humans.

In animals, campylobacteriosis is also notifiable (TSV, Article 5: disease to be monitored).

2. Evaluation of status, trends and relevance as a source for humans

The number of notified human campylobacteriosis cases decreased from 7'675 in 2018 to 7'223 confirmed cases in 2019. Slightly more men (56%) than women (44%) were affected. In accordance with previous years, most cases were caused by *C. jejuni* (68% of all cases, in 24% of cases no distinction was made between *C. jejuni* and *C. coli*). In 2019 the typical summer peak occurred in the months of July and August accounting for 1'817 cases.

149 cases of campylobacteriosis were reported in animals by cantonal veterinarians in 2019. The number of notifications rose and the decreasing trend since 2013 stopped. As usual, mainly dogs, cattle and cats were affected. The rise is mainly due to more reported cases in cattle and dogs.

In 2019, a random sample of pigs was investigated at slaughter in the framework of the antimicrobial resistance monitoring program using caecal samples. 231 (66%) of 350 pigs were *Campylobacter*-positive (2x *C. jejuni*, 229x *C. coli*). Compared to 2017 the percentage of positive samples increased slightly.

Mainly the handling of raw poultry meat and the consumption of undercooked contaminated poultry meat and poultry liver leads to cases of campylobacteriosis in humans. Cattle and the contact to pets were shown to be less important as sources of human campylobacteriosis. It is assumed that the high rate of disease in young adults aged 15 to 24 years is attributable to less regard for kitchen hygiene at this age and increased travel. Infections above average in summer (July/August) could be related to the higher infection rate in poultry flocks, higher barbecue activities and travels abroad, the peak around New Year Eve to increased consumption of meat dishes such as "Fondue Chinoise" and travelling abroad.

3. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Fresh poultry meat, poultry meat preparations and poultry meat products and *Campylobacter*

1. Monitoring/Surveillance/Control programmes system^(a)

The industry takes responsibility for the monitoring of the poultry meat production in a system of self-auditing following the HACCP principles. Results of the *Campylobacter* monitoring of the largest poultry slaughterhouses and poultry meat producers are available, covering more than 92% of the poultry meat production. Samples are taken several times a year at random. Carcasses, fresh poultry meat, poultry meat preparations and poultry meat products were tested at different stages, such as slaughterhouses, cutting plants, and processing plants. No data of imported poultry meat was included in the analysis.

2. Measures in place^(b)

The Ordinance on Hygiene (SR 817.024.1) lays down a process hygiene criterion for broiler carcasses. At the slaughterhouse level, a certain number of broiler carcasses must be tested quantitatively for *Campylobacter* after cooling. *Campylobacter* counts must thereby not exceed a certain limit too frequently. Otherwise, the slaughterhouse must implement measures (improvement of hygiene, review of process control etc.) to ensure adequate *Campylobacter* counts on the broiler carcasses.

3. Notification system in place to the national competent authority^(c)

None.

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

Within the framework of the self-auditing system of the poultry meat industry, a total of 1'482 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2019. Of them, 323 (21.8%) proved to be positive for *Campylobacter* spp. (2018: 24.5%): 79x *C. jejuni* (24.5%), 11x *C. coli* (3.4%), and 233x unspecified (72.1%), see also *Campylobacter* poultry meat table.

Of all 1'447 broiler meat samples (carcasses and meat), 305 (21.1%) proved to be positive for *Campylobacter*. Thereby, 159 (25.9%) of the 615 tested broiler carcass samples and 146 (17.5%) of the 832 tested broiler meat samples were positive. Furthermore, 18 (51.4%) of all 35 turkey meat samples (carcasses and meat) proved to be positive for *Campylobacter*. Thereby, 15 (62.5%) of the 24 tested turkey carcass samples and 3 (27.3%) of the 11 tested turkey meat samples were positive.

In order to verify the correct implementation of the process hygiene criterion for *Campylobacter* on broiler carcasses by the food business operators, 390 samples from broiler carcasses were analyzed quantitatively. Overall, 55 (14.1%) of the 390 tested samples from broiler carcasses exceeded 1'000 CFU/g. In addition, 76 samples from broiler carcasses showed *Campylobacter* counts above the detection limit but $\leq 1'000$ CFU/g. Of all *Campylobacter* positive samples (below and above 1'000 CFU/g), 35 samples showed counts ≤ 100 CFU/g, 41 samples were in the range from >100 to $\leq 1'000$ CFU/g, 38 samples were in the range from $>1'000$ to $\leq 10'000$ CFU/g and 17 samples exceeded 10'000 CFU/g.

5. Additional information

The poultry industry encourages farmers to lower the *Campylobacter* burden by incentives for *Campylobacter*-free herds at slaughter. No immunoprophylactic measures are approved.

General evaluation: *Coxiella*

1. History of the disease and/or infection in the country^(a)

Coxiellosis in animals is notifiable (TSV, Article 5: disease to be monitored). Cumulative abortions in cattle after three months of pregnancy and every abortion in sheep, goats and pigs have to be reported to a veterinarian. If more than one animal in a holding of ruminants aborts within the space of four months, or if an abortion occurs in a dealer's stable or during alpine pasturing, cattle, sheep and goats undergo laboratory investigation. If clinically suspected cases are confirmed by a laboratory, the cantonal veterinarian is notified.

The seroprevalence of the pathogen in cases of abortion is estimated about 15.9% in cattle and about <1% in sheep and goats (data from the Swiss reference laboratory).

2. Evaluation of status, trends and relevance as a source for humans

In 2019, 103 human cases were reported with a notification rate of 1.2 per 100'000 inhabitants. Compared to the previous year, the number of cases doubled. This is largely due to an outbreak in spring 2019 in Ticino. The outbreak was most likely related to two infected herds of goats in the most affected area.

In 2019, 124 cases of coxiellosis mainly in ruminants were reported to the FSVO by cantonal veterinarians, which is comparable to 2018. The numbers include the two infected goat herds in Ticino, which most likely were the source of the human outbreak in spring 2019. As usual, mainly cases in cattle (83%) were reported. In sheep and goats underreporting is estimated to be higher than in cattle.

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

Coxiella burnetii as a cause of abortions seems to be more frequent in cattle. However, infected cattle are less important as source of infection for humans than infected sheep and goats. This could also again be seen in the outbreak in Ticino in spring 2019. Especially during lambing of small ruminants the risk of human infection is higher.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

Q-Fever in humans is again notifiable. Disease awareness and knowledge how to avoid infections must be improved. Farmers need to be motivated to send abortion material to the laboratories for further investigation.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

General evaluation: *Cysticercus*

1. History of the disease and/or infection in the country^(a)

Cysticercosis in animals and humans is not notifiable. Cattle, small ruminants, and swine are inspected at slaughter for cysticerci. According to the ordinance on hygiene during slaughter (VHyS; SR 817.190.1), all cattle older than 6 weeks must be checked for cysticerci by incisions into the jaw muscles (*M. masseter* and *M. pterygoideus* on both sides) and incisions into the heart. Carcasses with few cysticerci must be frozen before the carcasses can be used for human consumption. Carcasses with generalized infestation of the musculature are condemned.

2. Evaluation of status, trends and relevance as a source for humans

Taenia saginata cysticerci in cattle remain a parasitic disease of food safety (zoonotic) and economic significance. Based on routine slaughterhouse reports, the prevalence is probably underestimated in the cattle population. Data from carcasses with generalized infestation of the musculature are documented in FLEKO (meat inspection statistics), however without diagnosis of the species. No data exist for carcasses with few cysticerci.

In 2019, 17 carcasses with generalized infestation of the musculature were recorded in FLEKO. They comprised 14 cattle carcasses, two sheep carcasses, and one goat carcass. FLEKO data (meat inspection statistics) from 2006 to 2019 support the finding that cattle are the most affected species. Of 402 carcasses with generalized infestation of the musculature, 83% were cattle, 14% sheep, 3% pigs and 0.5% goats.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

General evaluation: *Echinococcus*

1. History of the disease and/or infection in the country^(a)

Echinococcus granulosus sensu lato, the causative agent of Cystic Echinococcosis has nearly been extinct in Switzerland, sporadically imported cases are diagnosed in humans or animals (dogs or cattle and sheep, probably infected from imported infected dogs).

Alveolar echinococcosis (AE) is caused by the fox tapeworm *Echinococcus multilocularis*. An infection results in disease with severe consequences for the person concerned.

In animals, echinococcosis is notifiable (TSV, Article 5: disease to be monitored).

2. Evaluation of status, trends and relevance as a source for humans

The hospitalization rate of human AE-cases (patients who were hospitalized for the first time due to AE) rose since 2009 and was 0.5 cases per 100'000 inhabitants in 2018 (hospital-based data), however remained stable to the two previous years. Albeit the increased risk of infection, an infection of humans with *E. multilocularis* is rare.

2019, 9 outbreaks in animals were registered in pigs, wild boars, beavers, a lemur, a golden jackal and a dog. The reported cases were within the range of previous years.

In Wildlife there is a severe underreporting and the reports shown do not represent the reality. The prevalence of *E. multilocularis* in foxes, the main reservoir, is estimated to lie between 20% and 70%, with lower prevalence in the alpine regions and higher prevalence in the Swiss Plateau and Jura. The Institute of Parasitology of the University of Zurich tested in a small study since 2016 418 hunted foxes from the Zurich region (2019: 74, 2018: 64, 2017: 201, 2016: 79). 41% were positive for *E. multilocularis* (2019: 31, 2018: 29, 2017: 93, 2016: 20). Of hunted foxes from Eastern Switzerland in 2012 and 2013 53% (105 of 200) and 57% (57 of 100) were positive for *E. multilocularis*. Fox tapeworm eggs can be found in fresh foodstuff (outdoor cultivation). The scientific literature provides several reports on microscopic findings of taeniid eggs in vegetables (reviewed Alvarez Rojas et al., 2018).

A research project on the prevalence of *E. multilocularis* in slaughter pigs and associated risk factors was conducted in a 12-month period between 2016 and 2018. In total, 456 pig livers with lesions suggestive of *E. multilocularis* infection were submitted of which 200 livers were confirmed as *E. multilocularis* positive. Related to the number of slaughtered pigs during the study period the prevalence was below 0.1%. No geographical clusters were observed.

Due to the ending of the research project, the number of reported cases in pigs decreased to the normal sporadic findings at slaughterhouses. Without laboratory confirmation, liver alterations do not need to be reported. Livers are destroyed at slaughterhouse as they are not fit for human consumption. Pigs are - like humans - an incidental host for *E. multilocularis*. Thus, infected pigs are no source of infection for humans. Host densities (red foxes and rodent species) and predation rates are key drivers for infection with parasite eggs.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

Owners from dogs which are hunting mice are encouraged to deworm their dogs regularly. The public is advised, not to feed or tame foxes and to keep at a distance. The monthly distribution of anthelmintic baits (Praziquantel) for foxes proved to be effective.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

[1] Alvarez Rojas, C.A. C, Mathis A, Deplazes P 2018. Assessing the contamination of food and the environment with Taenia and *Echinococcus* eggs and their zoonotic transmission. Current Clinical Microbiology Reports <https://doi.org/10.1007/s40588-018-0091-0>

[2] Information on fox tapeworm: www.paras.uzh.ch/infos, Expert group ESCCP_CH and guidelines for deworming of dogs and cats: <http://www.esccap.ch>

General evaluation: *Francisella*

1. History of the disease and/or infection in the country^(a)

Tularemia in humans is a notifiable disease (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Positive test results have to be declared to the Federal Office of Public Health (FOPH) and the cantonal physicians. Physicians have to fill in a form concerning information on manifestation and exposure and to send it to the cantonal physician who forwarded this form to the Federal Office of Public Health. Tularemia is also notifiable in animals (TSV, Article 5: disease to be monitored).

2. Evaluation of status, trends and relevance as a source for humans

162 cases of tularemia were registered at the Federal Office of Public Health in 2019. The case numbers more than doubled compared to 2016. The notification rate was 1.9 cases per 100'000 inhabitants. 103 cases were men and 58 women, aged between 3 and 89 years old. The cases cluster in the canton of Zurich, Aargau and St. Gallen.

The reasons for the increase of reported cases is unclear. Tick bite was the most frequent single source of infection. Other reported sources of infection for humans are contact to wild animals (mainly mice and hares), bites of insects as well as the inhalation of dust/aerosol and contaminated water or food. Those at risk are mainly gamekeepers, hunters, people who work in agriculture or forestry, wild animal veterinary practitioners and laboratory staff.

Tularemia affects mainly wild animals, especially hares and rodents but also zoo animals. 2019 14 cases in animals were reported by cantonal veterinarians, all in hares. After the increase in reported numbers in 2018 (with a positivity rate of 30%), the number of reported cases dropped again in 2019. However, laboratory data show, that the positivity rate (46%) increased slightly compared to 2018 (38%).

Furthermore, *Francisella tularensis subsp. holarctica* was detected in Switzerland in urine of a cat with urinary tract infection. This is a very rare event. There are no publications known in Switzerland about this. Published cases of *F. tularensis* in cats are related to North America so far (Baldwin et al., 1991; Woods et al., 1998; Farlow et al., 2001; DeBey et al., 2002; Staples et al., 2006). *F. tularensis subsp. holarctica* seems to be of minor importance, in North America mainly *F. tularensis subsp. tularensis* were found.

In 2019, a monitoring of ticks was conducted between April and August in a specific area in the canton of Bern. The ticks were homogenized in pools and analyzed by PCR. Two samples were positive for *F. tularensis subsp. holarctica*.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#) or [website of the FOPH](#).

[1] Wittwer et al, 2018: Population Genomics of *Francisella tularensis* subsp. *holarctica* and its implication on the eco-epidemiology of Tularemia in Switzerland; *Frontiers in Cellular and Infection Microbiology*, Volume 8, Article 89.

[2] Publication in the FOPH Bulletin 18/18 from 30.04.2018.

General evaluation: *Listeria*

1. History of the disease and/or infection in the country^(a)

Listeriosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). People mainly affected are adults aged over 60.

Listeriosis in animals is notifiable (TSV, Article 5: disease to be monitored).

2. Evaluation of status, trends and relevance as a source for humans

In 2019, 36 human cases were reported (notification rate: 0.4 per 100'000 inhabitants). Thus, the number of notifications was within the range of normal annual fluctuations. Persons over 65 years of age remained the most affected age group.

In 2019, 10 cases of animal listeriosis were registered, mainly in ruminants (7 in cattle, 1 in goats, 1 in sheep). Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

L. monocytogenes is repeatedly leading to disease in humans. Even if the number of cases is relatively small, the high mortality, especially in older people, makes it very significant. Monitoring the occurrence of *Listeria* spp. at different stages in the food chain is extremely important to prevent infections with contaminated food. Milk products and cheeses are a potential source of infection. With regard to *Listeria* spp. in the dairy industry, the situation has remained on a constantly low level for many years. In animals, the reported listeriosis cases have remained stable at a low level over the last years.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: dairy products and *Listeria monocytogenes*

1. Monitoring/Surveillance/Control programmes system^(a)

Agroscope Food Microbial Systems (MSL) is running a *Listeria* monitoring program (LMP) for early detection of *Listeria* in production facilities. Products are tested for *Listeria* as part of the quality assurance programs.

2. Measures in place^(b)

The concerned food has to be confiscated and destroyed. Depending on the situation the product is recalled and a public warning is submitted. The implementation of a hygiene concept in order to control the safety of the products is in the responsibility of the producers. All larger cheese producers run a certified quality management fulfilling ISO 9000.

3. Notification system in place to the national competent authority^(c)

None.

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In the framework of the *Listeria* Monitoring Program (LMP) 1'280 samples (202 environmental samples and 1'078 cheese samples) were tested for the presence of *Listeria* spp. in 2019. *L. monocytogenes* were not detected. Other species of *Listeria* were found in 11 samples (0.9%).

5. Additional information

None.

General evaluation: *Salmonella*

1. History of the disease and/or infection in the country^(a)

Salmonellosis in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases).

2. Evaluation of status, trends and relevance as a source for humans

In 2019, 1'547 human cases were reported representing a notification rate of 18 cases per 100'000 inhabitants (2018: 1'467 cases or 17/100'000), which is an increase. As in previous years the most affected age group was children under 5 years. The typical seasonal increase of notifications during summer and autumn was also observed in 2019. The most frequently reported serovars remained *S. Enteritidis* (30%), *S. Typhimurium* (15%) and the monophasic strain 4,12:i:- (12%).

The longstanding *S. Enteritidis* control program showed its effect in the decline of human cases. However, salmonellosis is still the second most frequent zoonosis in Switzerland.

It remains unclear to what extent pigs and cattle play a role as source of infection for humans. Stepping up and expanding the national control program might be needed in order to further reduce human salmonellosis cases.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

Control measures were implemented according to following Commission Regulations (EC): No. 200/2010 (breeding flocks), No. 517/2011 (laying hen flocks), No. 200/2012 (broilers) and No. 1190/2012 (turkeys).

The Hygiene Ordinance lays down limits for *Salmonella* in various foods. If these limits are exceeded, the cantonal laboratories are required to report this to the FSVO. The foods affected are confiscated and destroyed. Depending on the situation, the products may be recalled, and a warning is issued to the population. All larger manufacturers have a hygiene management system in place fulfilling ISO 9000.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: All animals and *Salmonella* spp.

1. Monitoring/Surveillance/Control programmes system^(a)

Salmonellosis is notifiable in all animals (passive surveillance). Animal keepers, livestock inspectors, AI technicians, animal health advisory services, meat inspectors, slaughterhouse personnel, police and customs officers have to report any suspected case of salmonellosis in animals to a veterinarian. If *Salmonella* are confirmed by a diagnostic laboratory, this must be reported to the cantonal veterinarian. Cases in cows, goats or dairy sheep must be reported to the cantonal health and food safety authorities.

2. Measures in place^(b)

If biungulates are affected, the sick animals must be isolated and the whole herd and the environment must be tested. Healthy animals from this herd may be slaughtered with a special official permit and subject to appropriate precautions at the slaughterhouse. Milk from animals that are excreting *Salmonella* must not be used for human consumption and may only be used as animal feed after pasteurization or boiling. If the disease occurs in animals other than biungulates, appropriate action must likewise be taken to prevent any risk to humans.

3. Notification system in place to the national competent authority^(c)

Salmonellosis in animals is notifiable (TSV, Art. 4: diseases to be controlled and Article 222-227).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

Salmonellosis in all animals is regularly reported.

2019, 90 salmonellosis cases in animals were reported. As usual mainly cows, reptiles and dogs/cats were affected. After a peak of reported cases in 2016 (127 cases) the number of cases declined slightly again in the recent years to the level of about 100 cases per year. Reported cases mainly declined in cattle and dogs.

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

5. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Poultry and *Salmonella* spp

1. Monitoring/Surveillance/Control programmes system^(a)

There is a control program in place based on Commission Regulation (EC) No. 200/2010 regarding breeding flocks with more than 250 places, Commission Regulation (EC) No. 517/2011 regarding laying hen flocks with more than 1'000 places, Commission Regulation (EC) No. 200/2012 regarding broilers with more than 333m² floor space and Commission Regulation (EC) No. 1190/2012 regarding fattening turkeys with more than 200m² floor space. Subject to state control measures are *S. Enteritidis*, *S. Typhimurium* and the monophasic variant 4,[5],12:i:- ; for breeding flocks additionally *S. Hadar*, *S. Infantis* and *S. Virchow*.

2. Measures in place^(b)

Control measures are taken according to the Swiss ordinance of epizootics (TSV, Article 255-261). If *Salmonella* serotypes subject to control measures are detected in the environment, there is a suspicion of *Salmonella* infection. In the event of a suspected infection, the official veterinarian samples 20 killed animals or fallen stock per flock and submits them to bacteriological testing for *Salmonella*. If *S. Enteritidis*, *S. Typhimurium* or the monophasic variant 4,[5],12:i:- are detected in the animal samples, or in the case of breeding flocks *S. Hadar*, *S. Infantis* and/or *S. Virchow*, a case of *Salmonella* infection is reported.

In this case animal movements from this holding are prohibited (Article 69 TSV) in order to prevent spread of disease. The flocks must not be changed either by moving animals to other flocks or by introducing animals from other flocks.

In breeding flocks the animals are culled and the eggs are no longer allowed to be used for breeding purposes. If laying hens, broilers or fattening turkeys are affected the flocks can be culled or slaughtered. Fresh meat and eggs either have to be disposed of or subjected to treatment in order to destroy the *Salmonella* before being marketed as food.

The animal movement ban is lifted when all animals have been culled or slaughtered and the premises were cleaned and disinfected. Freedom from *Salmonella* of the premises by means of bacteriological testing should be proven. Vaccination is prohibited.

3. Notification system in place to the national competent authority^(c)

Salmonella infection in poultry is notifiable (TSV, Art. 4 and Article 255-261).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In 2019, two cases were reported in the framework of the control program, in laying hens (1x *S. Enteritidis*) and turkeys (1x *S. Typhimurium*).

Further 15 suspect cases (positive environmental samples not confirmed in animal samples) were detected:

10 in laying hens >1'000 places (*S. Enteritidis* (2x), *S. Typhimurium* (5x), *S. Typhimurium* monophasic variant 4,[5],12:i:- (3x),

3 in broilers > 333m² floor space (*S. Typhimurium* (2x), *S. Typhimurium* monophasic variant 4,[5],12:i:- (1x), one in turkeys (*S. Typhimurium* (1x)), and

one in breeders > 250 places (*S. Typhimurium* monophasic variant 4,[5],12:i:- (1x)).

In addition, several serovars not covered in the control program were detected in environmental samples.

Outside from the control program, 4 smaller flocks were tested positive: in laying hens (*S. Typhimurium* (1x)), *S. Enteritidis* (1x)) and broilers (*S. Typhimurium* (1x), *S. Typhimurium* monophasic (1x)). Furthermore there were 2 suspect cases (*S. Typhimurium*) in in small laying hen flocks:

The results of the control program show that the *Salmonella* prevalence in Switzerland is low. The target of max. 1% *Salmonella* positive flocks regarding the controlled serovars in broilers, turkeys and breeding flocks as well as max. 2 % in laying hens could be reached each year according to Swiss law. Most cases occurred in laying hens.

The *Salmonella* situation in breeding flocks in Switzerland remains good. Switzerland wants to maintain the current situation by applying the aforementioned control measures.

5. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Poultry meat and *Salmonella*

1. Monitoring/Surveillance/Control programmes system^(a)

The industry takes responsibility for the monitoring of the poultry meat production in a system of self-auditing following the HACCP principles. In addition, the Ordinance on Hygiene (SR 817.024.1) lays down limits for *Salmonella* in various foods (food safety criteria and process hygiene criteria). Results of the *Salmonella* monitoring of the largest poultry slaughterhouses and poultry meat producers are available, covering more than 92% of the poultry meat production. Samples are taken several times a year at random. Carcasses, fresh poultry meat, poultry meat preparations and poultry meat products were tested at different stages such as slaughterhouses, cutting plants, and processing plants. No data of imported poultry meat was included in the analysis.

2. Measures in place^(b)

If the limits of the Ordinance on Hygiene (food safety criteria) are exceeded, the cantonal laboratories are required to report this to the FSVO. The foods affected are confiscated and destroyed. Depending on the situation, the products may be recalled and a warning is issued to the population.

3. Notification system in place to the national competent authority^(c)

None.

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

Within the framework of the self-auditing system of the poultry meat industry, a total of 3'216 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2019. Of them, 16 (0.5%) proved to be positive for *Salmonella* spp. (2018: 0.3%): 5x *S. Albany*, 5x *S. Enteritidis*, 4x *S. Infantis*, 1x *S. Typhimurium*, and 1x *S. Heidelberg*, see also *Salmonella* poultry meat table. *S. Albany* and *S. Typhimurium* originated from turkey carcasses and turkey meat. *S. Enteritidis* and *S. Infantis* originated from broiler meat preparations and *S. Heidelberg* from mechanically separated broiler meat.

Of all 2'746 broiler meat samples (carcasses and meat), 10 (0.4%) proved to be positive for *Salmonella*. Thereby, none (0%) of the 586 tested broiler carcass samples and 10 (0.5%) of the 2'160 tested broiler meat samples were positive for *Salmonella*. Furthermore, 6 (1.3%) of all 470 turkey meat samples (carcasses and meat) proved to be positive for *Salmonella*. Thereby, 3 (2.5%) of the 120 tested turkey carcass samples and 3 (0.9%) of the 350 tested turkey meat samples were positive.

5. Additional information

None.

General evaluation: Rabies virus

1. History of the disease and/or infection in the country^(a)

Rabies in humans is a notifiable disease (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases).

Rabies in animals is a disease to be eradicated (TSV, Art. 3, Art. 142-149). Government action is taken to control the disease. An animal is rabies diseased if the analytical method (see additional information) gives a positive result. Anyone who sees a wild animal or stray pet that behaves in a way that appears suspiciously like rabies is required to report this to the police, hunting authorities or a veterinarian. Also animal keepers must report pets that behave in a way that is suspiciously like rabies to a veterinarian.

2. Evaluation of status, trends and relevance as a source for humans

According to the definitions of the OIE and WHO (no cases for at least two years) the territory of Switzerland is considered to be free of rabies. In 2019, no cases of rabies were reported in Switzerland. The last imported human rabies case in Switzerland occurred in 2012. Travelling to countries with rabies can pose a threat to people, especially if they are unaware of this risk. Human infections of tourists (who usually are not vaccinated against rabies) in rabies countries were reported in the past.

2019, 1316 sera from humans were tested for neutralizing antibodies at the national reference laboratory for rabies (Swiss Rabies Center). 606 times (52%) antibody titers were controlled after pre-expositional immunization, 683 times (46%) the blood was checked after post exposure prophylaxis (PEP), 6 times the person was a clinical suspect case and in 21 cases no reason for the investigation was given. This amount of testing is comparable with the previous years. Vaccination of dogs is recommended (and common) in Switzerland, but not mandatory, if the dog does not travel abroad. (Re-)Import conditions for cats, dogs and ferrets are implemented according to the EU regulation 998/2003/EC. 1886 sera of dogs and cats were tested in the context of travelling procedures in order to detect the level of neutralizing antibodies. This was higher than in recent years.

Dogs and cats are regularly illegal imported from rabies risk countries. In Switzerland, 48 dogs and 6 cats were detected in 2019. None of these 54 animals were rabies cases. In total, 121 animals were tested for rabies at the national reference laboratory (Swiss Rabies Center) in 2019. Due to the illegal import testing the samples originated mainly from dogs (54%), cats (12%), bats (15%) and foxes (10%). All tests were negative.

Illegal imported animals pose a certain risk for pets and their owners in the EU and Switzerland and lead to timely investigations, euthanasia of contact animals, post exposure prophylaxis (PEP) and prophylactic vaccinations.

Rabies in bats in Switzerland is a very rare event. In the last 40 years 4 bats were tested positive for rabies. Thus, bat rabies remains a source, albeit little, of infection for animals and humans in Switzerland.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

The situation in neighboring countries and the EU is closely monitored. In addition, close collaboration with neighboring countries is important especially with regards to control measures in wild animals. People are instructed to be cautious in the handling of diseased and abnormally behaving wild animals.

Animals with suspect symptoms originating from countries with urban rabies are tested for rabies.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

[1] Diagnostic/analytical methods used: All tests concerning rabies are carried out in the reference laboratory, the Swiss Rabies Center

http://www.ivv.unibe.ch/Swiss_Rabies_Center/swiss_rabies_center.html. It is authorized by the EU

for rabies testing, see http://ec.europa.eu/food/animal/liveanimals/pets/approval_en.htm. For rabies virus detection immunofluorescence (FAT) and virus isolation using murine neuroblastoma cell culture (RTCIT) is used and the rabies antibody detection is carried out using the rapid fluorescent focus inhibition test (RFFIT) as described in the OIE manual, see http://www.oie.int/eng/normes/mmanual/a_00044.htm.
[2] Swiss Rabies Center: http://www.ivv.unibe.ch/content/diagnostics/swiss_rabies_center/

General evaluation: *Toxoplasma*

1. History of the disease and/or infection in the country^(a)

Toxoplasmosis in humans is not notifiable. Thus, no data on the frequency of human toxoplasmosis are available. Some sporadic human cases have however been reported.

In animals, toxoplasmosis is notifiable (TSV, Article 5: disease to be monitored and Article 291). Veterinarians and diagnostic laboratories must report any suspected case of toxoplasmosis to the cantonal veterinarian, who may issue an order for the suspected case to be investigated.

2. Evaluation of status, trends and relevance as a source for humans

In 2019, 7 cases in animals (4 in cats and 1 each in a beaver, a serval and a sheep were reported by cantonal veterinarians

In the past ten years never more than 7 cases per year were recorded. Affected animals were mainly cats (23%), goats (18%) and sheep (15%). In non-immune sheep and goats (first-time infection) *T. gondii* is regarded as a major cause of abortion and loss of lambs.

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes. In addition, each year, over 1000 routine coprology of cats are carried out.

Infections with *Toxoplasma gondii* are widespread especially in meat-producing animals and cats in Switzerland. Thus, there is a risk of exposure in Switzerland both from the consumption of meat and from cats as contaminators of the environment.

Humans become infected by the oral route, either through the uptake of infectious oocysts from the environment or by means of tissue cysts from raw or insufficiently cooked meat. Pregnant women are informed about the recommendations from the FOPH to disclaim on raw or insufficient cooked meat and that caution is generally called for when faced with cat faeces (and potentially contaminated surroundings).

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

General evaluation: *Trichinella*

1. History of the disease and/or infection in the country^(a)

Trichinellosis is notifiable in humans (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals (TSV, Article 5: disease to be monitored).

The testing of slaughter pigs (as well as wild boars and horses) for trichinellosis is mandatory (Commission Regulation (EC) No. 2075/2005). Exceptions are made for slaughterhouses of small capacity, which do not export to the EU. Pig meat not being tested for trichinellosis and originating from these small slaughterhouses is labeled with a special stamp and cannot be exported.

2. Evaluation of status, trends and relevance as a source for humans

In 2019, three human cases were reported. The FOPH receives very few reports of human trichinellosis, there were never more than 4 human cases notified per year. Usually, the *Trichinella* species is not known as cases are only tested by serology. Most of the time infections are assumed to have been acquired abroad.

In 2019, 2'315'330 slaughter pigs (94% of all slaughtered pigs) were tested for *Trichinella*. All results were negative. For many decades, *Trichinella* infections have not been detected in domestic pigs. Due to the extensive testing over the last years with only negative results, Swiss slaughter pigs are projected to be free of *Trichinella*. In addition, 1'535 horses (78% of all slaughtered horses) and 9'171 wild boars were also tested for trichinellosis. All results were negative. The number of wild boars tested increased in 2019 mainly due to the fact, that in one laboratory the cost for testing dropped remarkably.

Trichinella are sporadically detected in the wild animal population other than wild boars. In 2019, 3 cases of *T. britovi* infections were reported by the cantonal veterinarians (2x in lynx, 1x in a wolf). Never more than 5 cases were reported per year in carnivorous wild animals, mainly in lynx (about 90%). The nematodes involved were always *Trichinella britovi*.

Trichinellosis in humans is very rare in Switzerland and often associated with infections acquired abroad. As infections in wild animal populations do occur and infections in wild boars in Switzerland cannot be completely excluded, meat especially from wild boars should not be consumed raw. Although the risk of transmission from wild animals to domestic pigs is negligible, the surveillance of trichinellosis in wild animals is crucial. As all infections in wildlife in the past years were due to *T. britovi*, Switzerland is considered free of *T. spiralis*.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Description of Monitoring/Surveillance/Control programmes system: Horses and *Trichinella*

1. Monitoring/Surveillance/Control programmes system^(a)

The investigation of horses is mandatory (Swiss ordinance of slaughter and meat control, VSFK, Art. 31). Slaughtered horses are tested during or immediately after the slaughter process. A piece of tongue is used to detect *Trichinella* spp. larvae using the artificial digestion method according to Commission Regulation (EC) No. 2075/2005.

2. Measures in place^(b)

A positive tested animal would be traced back and the contaminated carcass would be disposed.

3. Notification system in place to the national competent authority^(c)

Trichinellosis in animals is notifiable (TSV, Article 5).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In 2019, 1'535 horses (78% of all slaughtered horses) were tested for *Trichinella*. All results were negative. There are no observations that would challenge the freedom of Swiss horses from trichinellosis.

5. Additional information

None.

Description of Monitoring/Surveillance/Control programmes system: Pigs and *Trichinella*

1. Monitoring/Surveillance/Control programmes system^(a)

The investigation of slaughter pigs and wild boars is mandatory (Swiss ordinance of slaughter and meat control, VSFK, Art. 31). All pigs slaughtered in slaughterhouses that are approved to export to the EU are tested for *Trichinella*. Exceptions are made for small slaughterhouses of the national market, which do not export to the EU.

Census sampling with the exception of pigs slaughtered in small slaughterhouses and only produced for the local market, is done during or immediately after the slaughter process.

A piece of pillar of the diaphragm is taken at slaughter in order to detect *Trichinella* spp. larvae using the artificial digestion method or the latex agglutination test according to Commission Regulation (EC) No. 2075/2005.

2. Measures in place^(b)

A positive tested batch at a slaughterhouse would be traced back and contaminated carcasses would be disposed.

3. Notification system in place to the national competent authority^(c)

Trichinellosis in animals is notifiable (TSV, Article 5).

4. Results of investigations and national evaluation of the situation, the trends^(d) and sources of infection^(e)

In 2019, 2'315'330 slaughter pigs (94% of all slaughtered pigs) were tested for *Trichinella*. All results were negative.

Although the risk of the parasite cycle crossing from the wild animal population into the conventional domestic pig population can be regarded as negligible, the risk has to be categorized differently or higher with regard to the special situation of grazing pigs.

As all results were negative since many years in domestic pigs, it is highly unlikely that *Trichinella* infections acquired from domestic pig meat originating from Switzerland will occur in humans.

5. Additional information

None.

General evaluation: Verocytotoxigenic *E. coli* (VTEC)

1. History of the disease and/or infection in the country^(a)

Detection of VTEC in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Children under 5 years were the age group mostly affected, ranging between 3 and 9 reports per 100'000 inhabitant.

Ruminants are an important reservoir for VTEC. Shiga toxin genes and the top-five serogroups are frequently found in [\(young\) Swiss cattle at slaughter](#), but isolation of STEC strains may be a challenge. Recent studies investigating the occurrence of VTEC in food samples comprised raw milk cheeses, raw meat products, raw milk, fresh herbs and flour. In 2017, 51 [raw milk cheeses](#) and 53 [raw meat products](#) from 63 different farms in 9 different Swiss cantons were tested. VTEC were isolated from 2.0 % (1 out of 51) of the raw milk cheeses and in 1.9 % (1 out of 53) of the raw meat products. In the same year, 73 samples from [raw milk](#) sold directly from farms to consumers were tested for their microbiological quality. VTEC were thereby not found in any of the 73 raw milk samples (61 from raw milk vending machines and 12 pre-filled bottles). With regard to fresh herbs collected at retail level, a study (master thesis P. Kindle, 2017) examining the occurrence of selected bacterial pathogens did not find VTEC in 70 samples (16 of them imported from foreign countries). In 2018, 70 [flour samples](#) tested for VTEC. The reason for this was that dough made from wheat flour had recently led to VTEC infections in the USA. Nine of the 70 flour samples tested positive for genes encoding verotoxin (*vtx*). In an additional study, [93 flour samples](#) collected at Swiss retail markets, 10 (10.8%) tested positive for *stx*₁ and/or *stx*₂ by PCR assay. 10 VTEC strains were isolated and further characterized by PCR assays and Whole Genome Sequencing (WGS).

2. Evaluation of status, trends and relevance as a source for humans

In 2019, 993 laboratory confirmed cases of human VTEC infections were registered. The notification rate was 11.5 per 100'000 inhabitants (2018: 822 cases, 9.7/100'000). This is the highest notification rate since the introduction of the notification in 1999. The number of reports continued to increase compared to the previous years. There were more women (54 %) than men (46%) affected. No source of infection could be identified. The number of HUS cases remained stable with 20 cases in 2019, thereof 8 were children under 5 years of age and 6 were adults over 65 years of age.

Reported VTEC cases in humans are on the rise since 2014. As most of the laboratories did not routinely test for VTEC until then, it is very likely that the impact of VTEC was underestimated. New diagnostic tools might have led to more samples being analyzed for VTEC. In view of the low infectious dose of VTEC (<100 microorganisms) an infection via contaminated food or water is easily possible. Strict maintenance of good hygiene practices at slaughter and in the context of milk production is of central importance to ensure both public health protection and meat quality. In addition, thorough cooking of critical foods prevents infection with VTEC originally present in raw products.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

Several studies relating to verotoxigenic *E. coli* in foodstuffs, in humans and animals were performed by the national reference laboratory to generate new information in the past years.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

General evaluation: West Nile virus

1. History of the disease and/or infection in the country^(a)

WNV in humans is notifiable (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals (TSV, Article 5: disease to be monitored).

2. Evaluation of status, trends and relevance as a source for humans

Up to date no autochthonous cases in humans or animals were reported in Switzerland. Since 2010 three confirmed human cases were reported in Switzerland, all acquired their infection abroad (2012: 1x Kosovo; 2013: 1x Croatia, 2019: 1x Egypt).

In 2019, 26 horses were tested negative for WNV. In general horse should only be examined for WNV if they show neurological symptoms of unknown origin and if they were not vaccinated.

In 2019 15 birds were tested for WNV using RT-qPCR at the National Reference Center for Poultry and Rabbit Diseases, University of Zurich.

62 FTA-cards which were placed in mosquito traps in the canton Ticino and in August and September 2019 were screened for Flavivirus and Alphavirus, all negative for WNV. The FTA-cards contain a sugar solution. If consumed by the mosquitoes, the saliva, which might contain virus, of the mosquitoes gets into the FTA-cards. In the saliva contained virus is inactivated and fixed on the FTA-card.

Up to date there were no autochthonous cases of WNV reported. However, it cannot be excluded that WNV is circulating in Switzerland, especially in wild birds and mosquito populations.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

Disease awareness in Switzerland was strengthened. The WNV situation - with a special focus on neighboring countries – is evaluated regularly. If cases in animals or humans appear, the Federal Food Safety and Veterinary Office and the Federal Office of Public Health will inform themselves immediately. A vaccine for horses was approved in 2011.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

General evaluation: *Yersinia*

1. History of the disease and/or infection in the country^(a)

Yersiniosis in humans is not notifiable. In animals, yersiniosis is notifiable (TSV, Article 5: disease to be monitored and Article 291).

2. Evaluation of status, trends and relevance as a source for humans

No official data for human case reports are available because, in Switzerland, yersiniosis is not a notifiable disease. However, the number of human samples sent to the national reference laboratory NENT are at least an indicator for the recent situation. 2019, NENT tested 82 human samples positive for *Yersinia* which was within the range of the usual annual fluctuation. They found 74 *Y. enterocolitica*, 3 *Y. intermedia*, 3 *Y. fredericksonii*, 1 *Y. kristensenii* and 1 *Yersinia spp.*

In 2019 13 cases of yersiniosis in animals were reported (8 in dogs, 2 in cats, 2 in pigs and 1 in cattle). In the last 10 years never more than 12 cases per year were reported: affected were mainly dogs (49%) monkeys (11%) and cattle (11%).

Information, on how many animals were tested in veterinary diagnostic laboratories in the context of clinical investigation is available in the data tables in the annexes.

It can be assumed that more than half of all slaughter pigs carry potentially human pathogenic *Yersinia enterocolitica* in their tonsils. How often pig meat is contaminated and how often these agents cause disease in humans is not really known.

3. Any recent specific action in the Member State or suggested for the European Union^(b)

None.

4. Additional information

See previous [national reports](#) for additional information and [website of the FSVO](#).

Food-borne Outbreaks

1. System in place for identification, epidemiological investigations and reporting of food-borne outbreaks

The Swiss Federal Office of Public Health (FOPH) coordinates the national surveillance of communicable diseases. Notifications of physicians and laboratories are made to cantonal (regional) health authorities and to the FOPH under the provisions of the public health legislation, namely the Ordinance on Disease Notification of December 1 2015. Under this scheme, data provided for each notification depend on its supplier: (i) laboratories report diagnostic confirmations (subtype, method, material) while for selected diseases (ii) physicians additionally cover the subsidiaries of clinical diagnosis, exposition, development and measures. Besides the case-oriented reporting, physicians also have to report observations of unexpected clusters of any communicable disease. At the FOPH, the combined notifications of laboratories and physicians are analyzed and published in the weekly Bulletin.

The surveillance of food-borne infectious agents follows the mandatory system. The laboratories are required to report identifications of *Salmonella* causing gastroenteritis, *Salmonella* Typhi, *Salmonella* Paratyphi, *Campylobacter* spp., *Shigella* spp., verotoxin-positive *Escherichia coli*, *Listeria monocytogenes*, *Clostridium botulinum* and hepatitis A virus. A complementary notification by physicians is required for typhoid/paratyphoid fever, diseases associated with verotoxin-positive *Escherichia coli*, botulism and hepatitis A. Following a modification of the Ordinance on Disease Notification, laboratories are additionally required to report identifications of *Trichinella* spp. since January 1 2009 and hepatitis E virus since January 1 2018.

Basically, the responsibility for outbreak investigations lies with the cantonal authorities. Relevant data of food-borne outbreaks are reported to the Federal Food Safety and Veterinary Office (FSVO) in a standardized format as soon as the investigations are accomplished. On request, the FSVO and FOPH offer the cantons their expertise in epidemiology, infectious diseases, food microbiology, risk assessment and risk management. However, under the Federal Law on the Control of Human Communicable Diseases of Man and the Federal Law on Food-Stuffs and Utility Articles, the central government, respectively the FSVO and FOPH, have the duty to supervise the enforcement of the concerned legislations. In cases of outbreaks which are not limited to the territory of one canton, the federal authorities have the competence to coordinate, and if necessary, to direct control actions and information activities of the cantons. In such a situation, the concerned federal offices can conduct their own epidemiological investigations in cooperation with national reference laboratories. In the field of food-borne diseases the Federal Offices are supported by the National Centre for Enteropathogenic Bacteria and *Listeria* (NENT). This reference laboratory disposes of the facilities, techniques and agents required not only to confirm results from other laboratories but also for epidemiological typing (serotyping and molecular typing) of various bacterial pathogens.

2. Description of the types of outbreaks covered by the reporting

The outbreaks were categorized according to the Manual for reporting on food-borne outbreaks in accordance with Directive 2003/99/EC.

3. National evaluation of the reported outbreaks in the country^(a)

In 2019, 23 outbreaks have been reported throughout Switzerland by the supervisory authorities. In total, more than 331 people became ill and at least 6 people were hospitalized.

The number of outbreaks reported in Switzerland is relatively stable and remains very low.

In most cases, it was not possible to identify the infectious agent that caused the outbreaks. And in more than half of the cases, the evidence implicating a particular food vehicle was not strong.

Restaurants and similar settings for collective catering were the most frequent settings of outbreaks.

<p>The available clinical data are not very good since investigations in this field are not in the main focus of the competent authorities.</p> <p>In general, it is well known that systematic underestimation is made when monitoring food-borne illness (for example, not all patients consult a doctor and are not subject to biological fluid analysis). The announcement of the cases depends among other things on the number of patients, the severity of the disease, the possible hospitalizations associated with it as well as the collaboration of the various actors involved (patients, doctors, control authorities). Finally, outbreaks with a short incubation period are often detected faster than those with a longer incubation time.</p> <p>We think that the number of cases reported to the federal authorities is too low to correspond to reality. That is why a project was initiated in 2018 to address the problem and try to improve the situation, not only to raise awareness among the various authorities concerned of the importance of reporting cases, but also to provide them with the necessary investigative tools during such events.</p>
<p>4. Descriptions of single outbreaks of special interest</p> <p>A family of 3 persons fell ill two days after having dined in a restaurant. The 3 members of the family had identical symptoms: chills, fever and severe diarrhoea. <i>Campylobacter</i> spp was detected in the stools of the patients. Chicken breast stuffed with mozzarella was suspected, but no analysis was carried out as samples were not available. An investigation held with the restaurateur showed that the meat had not been sufficiently cooked.</p> <p>In a holiday camp 45 children and 8 adults from 2 chalets fell ill. The symptoms mainly concerned vomiting and in some cases together with diarrhoea. Noroviruses type I were detected in the stools of one patient. As the water supply was suspected, the analyses that were carried out showed the presence of noroviruses type I and type II as well as <i>Escherichia coli</i> and enterococci. Investigations showed that the water came from a previously undeclared, private network, whose protection zones were badly defined or inexistent.</p> <p>A restaurant chef, who was suffering from nausea and diarrhoea, still came to work. Following the meal served that evening to a group of 25 guests, 15 people displayed similar symptoms and a cook of the restaurant also fell ill (nausea, vomiting (gushing), diarrhoea, mild headaches). No foodstuff was found to be the cause and the investigation turned to a medical examination of the kitchen chef and demonstrated the presence of noroviruses in his biological samples. Most probably, he contaminated the foods that he prepared as well as his colleague in the kitchen.</p> <p>Finally, an outbreak affecting 90 people is particularly notable. In one night 90 members of the armed forces, all from the same barracks, showed the same symptoms: gastro-intestinal pains together with diarrhoea. Samples of drinking water were analysed but no conclusive evidence was discovered. On the other hand, extensive analyses of the biological samples of 2 patients also failed to detect any viral, bacterial or parasitic pathogen. Consequently, it was not possible to identify the infectious agent that caused the outbreak.</p>
<p>5. Control measures or other actions taken to improve the situation</p> <p>In Switzerland, the number of outbreaks settled down on low level and it is therefore difficult to get a further decrease.</p>
<p>6. Any specific action decided in the Member State or suggested for the European Union as a whole on the basis of the recent/current situation</p> <p>None.</p>
<p>7. Additional information</p> <p>None.</p>
<p>(a): Trends in numbers of outbreaks and numbers of human cases involved, relevance of the different causative agents, food categories and the agent/food category combinations, relevance of the different type of places of food production and preparation in outbreaks, evaluation of the severity of the human cases.</p>

Institutions and laboratories involved in antimicrobial resistance monitoring and reporting

The department of Animal Health of the Federal Food Safety and Veterinary Office (FSVO) is the competent authority to design, coordinate and report the AMR-Monitoring Program according to EFSA specifications. The competent cantonal veterinary offices are responsible for taking the caecal samples at slaughterhouses and sending them to the NRL. The competent cantonal chemists are responsible for taking the meat samples in retail stores and sending them to the NRL. The Centre for Zoonoses, Bacterial Animal Diseases and Antibiotic Resistance, University of Bern, Switzerland (ZOBA) is the NRL and responsible for the isolation of the bacteria and the AMR testing. All results are transmitted periodically to the Federal Laboratory Database Alis.

Short description of the institutions and laboratories involved in data collection and reporting

General Antimicrobial Resistance Evaluation

1. Situation and epidemiological evolution (trends and sources) regarding AMR to critically important antimicrobials^(a) (CIAs) over time until recent situation

Overall the antimicrobial resistance situation in zoonotic and indicator bacteria isolated from fattening pigs and slaughtered calves and meat thereof changed partly in comparison to 2017. Antimicrobial resistance rates of indicator *E. coli* from fattening pigs and slaughter calves showed slight decreases in antimicrobial resistance to certain antimicrobials. One ESBL-producing strain from calves were identified. Resistance to meropenem and colistin was not detected. Prevalence of ESBL-producing *E. coli* showed no significant changes. No Carbapenemase-producing *E. coli* was detected. In meat samples, prevalence of ESBL- and Carbapenemase-producing *E. coli* were very low, and 0% respectively. MRSA prevalence increased markedly in fattening pigs and decreased in slaughter calves. Overall antimicrobial resistance rate in *Salmonella* spp. was low, ESBL-producing *Salmonella* was detected for the first time.

2. Public health relevance of the findings on food-borne AMR in animals and foodstuffs

No significant improvement could be detected. The prevalence of MRSA in fattening pigs continues to increase.

3. Recent actions taken to control AMR in food producing animals and food

No specific measures are ongoing.

4. Any specific action decided in the Member State or suggestions to the European Union for actions to be taken against food-borne AMR threat

A national strategy to combat antibiotic resistance (StAR) has been developed and implemented. It follows the one health approach covering public and veterinary health and the environment as well. It includes fields in different sectors (regulatory, prudent use, surveillance, research, control in hospitals etc.) with the long-term objective to ensure the effectiveness of antimicrobials for humans and animals in order to preserve their health. For further information see <https://www.star.admin.ch/star/en/home.html>.

5. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and the occurrence of antibiotic resistance in Switzerland on the [FSVO website](#).

(a): The CIAs depends on the bacterial species considered and the harmonised set of substances tested within the framework of the harmonised monitoring:

- For *Campylobacter* spp., macrolides (erythromycin) and fluoroquinolones (ciprofloxacin);
- For *Salmonella* and *E. coli*, 3rd and 4th generation cephalosporins (cefotaxime) and fluoroquinolones (ciprofloxacin) and colistin (polymyxin);

General Description of Antimicrobial Resistance Monitoring; *Campylobacter coli*/fattening pigs caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 350 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Direct detection of *Campylobacter coli* according to ISO 10272 was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUCAMP2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

Antimicrobial resistance rates of *Campylobacter coli* from fattening pigs are comparable high for fluoroquinolones, tetracyclines and streptomycin as in 2017.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; indicator *E. coli*/fattening pigs caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 207 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Direct detection of indicator *E. coli* on Mac Conkey Agar was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013. If ESBL/Carba suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

6. Results of investigation

Antimicrobial resistance rates of indicator *E. coli* from fattening pigs showed a slight decrease for sulfamethoxazole and trimethoprim. Resistance to cefotaxime, ceftazidime, meropenem and colistin was not detected.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; indicator *E. coli*/slaughter calves caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered calves. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 212 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Direct detection of indicator *E. coli* on Mac Conkey Agar was performed. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013. If ESBL/Carba suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

6. Results of investigation

Antimicrobial resistance rates of indicator *E. coli* from slaughter calves showed a slight decrease for ampicillin, sulfamethoxazole and tetracyclines. Two isolates were identified as ESBL producing *E. coli*. Resistance to meropenem and colistin was not detected.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
 (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
 (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; ESBL-resistant *E. coli*/fattening pigs caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 306 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for ESBL -producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution MIC method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of ESBL producing *E. coli* in fattening pigs slightly decreased from 17.6% in 2017 to 13.1% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; ESBL-resistant *E. coli*/slaughter calves caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 298 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for ESBL -producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of ESBL producing *E. coli* in slaughter calves remains stable at a high level with 33.2% in 2017 and 32.9% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

(a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.

(b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.

(c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *E. coli*/fattening pigs caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 306 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for carbapenemase-producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba Blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for fattening pigs.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *E. coli*/slaughter calves caecum

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 298 caecal samples were taken. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for carbapenemase-producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate and Carba Blue test. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for slaughter calves.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
 (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
 (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; ESBL-resistant *E. coli*/pig meat

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

Fresh, chilled and untreated Swiss meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers.

3. Randomisation procedure per animal population and food category

A random sample of 311 meat samples for selective enrichment methods were investigated. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for ESBL -producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Mac Conkey Agar before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the overall detection rate of ESBL producing *E. coli* in pig meat remains very low with 0.3% in 2017 and 0.6% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
 (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
 (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; ESBL-resistant *E. coli*/beef meat

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. Approximately 20% of beef meat consumed in Switzerland is imported. Hence, 19% imported and 81% domestically produced beef meat were sampled.

3. Randomisation procedure per animal population and food category

A random sample of 309 meat samples for selective enrichment methods were investigated. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for ESBL -producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Mac Conkey Agar before MIC testing was performed. Resistance type was confirmed phenotypically with the EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the overall detection rate of ESBL producing *E. coli* in beef meat remains very low with 0.7% in 2017 and 0.3% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *E. coli*/pig meat

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

Fresh, chilled and untreated Swiss meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers.

3. Randomisation procedure per animal population and food category

A random sample of 311 meat samples for selective enrichment methods were investigated. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for carbapenemase-producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for pig meat.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
 (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
 (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; Carbapenem-resistant *E. coli*/beef meat

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

Fresh, chilled and untreated meat samples were gathered in all Swiss cantons throughout the year. The applied sampling scheme considered each canton's population density and market shares of retailers. Approximately 20% of beef meat consumed in Switzerland is imported. Hence, 19% imported and 81% domestically produced beef meat were sampled.

3. Randomisation procedure per animal population and food category

A random sample of 309 meat samples for selective enrichment methods (ESBL-producing *E. coli*) were investigated. The number of samples per week were defined in the sampling plan for each cantonal laboratory, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Selective enrichment for carbapenemase-producing *E. coli* according to the revised protocols published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Suspected isolates were recultured on the selective Carba and Oxa48 Agar before MIC testing was performed. Resistance type was confirmed phenotypically with EUVSEC2 plate. Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC, EUVSEC2) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013.

6. Results of investigation

With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for beef meat.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; MRSA/fattening pigs nasal swabs

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 303 samples for the two step selective enrichment method were investigated. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Two step selective enrichment for MRSA published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Confirmation of Methicillin resistance was performed by *mec* Gen PCR, additionally CC398 was analysed published methods (Stegger et al., 2011). Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUST) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values published by the European Committee on Antimicrobial Susceptibility Testing (EUCAST).

6. Results of investigation

With selective enrichment the MRSA prevalence in fattening pigs increased from 44.0% in 2017 to 52.8% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; MRSA/slaughter calves nasal swabs

1. General description of sampling design and strategy^(a)

A stratified random sampling approach according to EFSA specifications is used for taking samples. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The seven slaughterhouses included in the monitoring program produce over 60% of slaughtered fattening pigs. The number of samples for each slaughterhouse is determined in proportion to the number of animals slaughtered per year. The samples are taken evenly distributed over the year, in order to exclude seasonal effects.

3. Randomisation procedure per animal population and food category

A random sample of 299 samples for the two step selective enrichment method were investigated. The number of samples per month were defined in the sampling plan for each slaughterhouse, samples could be taken from Monday to Friday.

4. Analytical method used for detection and confirmation^(b)

Two step selective enrichment for MRSA published by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Confirmation of Methicillin resistance was performed by *mec* Gen PCR, additionally CC398 was analysed published methods (Stegger et al., 2011). Species identification were performed by Matrix Assisted Laser Desorption Ionisation Time Of Flight Mass Spectrometry (MALDI TOF MS) using the direct transfer protocol recommended by the manufacturer (Biotyper 3.0, Bruker Daltonics GmbH, Bremen, Germany).

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUST) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values published by the European Committee on Antimicrobial Susceptibility Testing (EUCAST).

6. Results of investigation

With selective enrichment the MRSA prevalence in slaughter calves decreased from 8.1% in 2017 to 3.7% in 2019.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values

General Description of Antimicrobial Resistance Monitoring; *Salmonella* spp/divers

1. General description of sampling design and strategy^(a)

The prevalence of *Salmonella* spp. in food-producing animals in Switzerland is very low as a consequence of long term control programs. Therefore, besides isolates from national control programs (breeding hens, laying hens, broilers and fattening turkeys, Swiss ordinance of epizootics (TSV, Article 255-261) isolates from diagnostic submissions from diverse animal species were included.

2. Stratification procedure per animal population and food category

All *Salmonella enterica* subspecies *enterica* isolates reaching the national reference laboratory in 2019 were tested for AMR.

3. Randomisation procedure per animal population and food category

No randomisation take place. A total of 110 *Salmonella* isolates were tested.

4. Analytical method used for detection and confirmation^(b)

Identification and serotyping according to ISO 6579 was performed.

5. Laboratory methodology used for detection of antimicrobial resistance^(c)

MICs were determined by broth microdilution method using Sensititre susceptibility plates (EUVSEC) (TREK Diagnostic Systems Ltd, East Grinstead, United Kingdom). Resistance was defined following the epidemiological cut-off values according to the European directive EU/652/2013. If ESBL suspicious isolates occur, the EUVSEC2 plate was used additionally for confirmation.

6. Results of investigation

In total 110 *Salmonella* isolates were tested, one isolate was confirmed as ESBL- producing strain. No colistin-resistant or carbapenemase-producing isolate was detected.

7. Additional information

Further information will be found in the bi-annual Swiss antibiotic resistance report 2020 on the usage of antibiotics and occurrence of antibiotic resistance on the [FSVO website](#).

* to be filled in per combination of bacterial species/matrix

- (a): Method of sampling (description of sampling technique: stage of sampling, type of sample, sampler), Frequency of sampling, Procedure of selection of isolates for susceptibility testing, Method used for collecting data.
- (b): Analytical method used for detection and confirmation: according to the legislation, the protocols developed by the EURL-AR should be used and reported here. In the case of the voluntary specific monitoring on Carbapenemase-producers, the selective media used (commercial plates, 'in house' media) should be also reported here. In general, any variation with regard to the EURL-AR protocols should be stated here, number of isolates isolated per sample, in particular for *Campylobacter* spp.
- (c): Antimicrobials included, Cut-off values