European Food Safety Authority

ZOONOSES MONITORING

Switzerland

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

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

IN 2018

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 2018.

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

List of Contents

ANIMAL POPULATION TABLES

Table Susceptible animal population

		Population		
Animal species	**Category of animals**	**holding**	**animal**	**slaughter animal (heads)**
Cattle (bovine animals)	Cattle (bovine animals)	34,890	1,543,345	629,984
Gallus gallus (fowl)	Gallus gallus (fowl) - breeding flocks, unspecified	1,841	199,093	
	Gallus gallus (fowl) - broilers	1,043	7,087,294	76,946,476
	Gallus gallus (fowl) - laying hens	19,808	4,192,754	
Goats	Goats	6,436	80,552	39,940
Pigs	Pigs	6,175	1,417,549	2,577,888
Sheep	Sheep	8,238	343,470	242,101
Solipeds, domestic	Solipeds, domestic - horses	11,335	79,934	1,987
Turkeys	Turkeys - fattening flocks	315	84,979	

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 suspended 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	560	0	0	0	0	34,890	0	1,543,345	0	0	34,890	0	0	0	0	4,534	0	0	0

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	320	0	0	0	14,674	0	424,022	1,578	19,104	14,674	0	70

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	34,890	0	1,543,345	0	0	0	99	0	34,890

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
	Alpacas - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Brucella	0
	Bison - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Brucella	0
	Deer - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Brucella	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	1	Brucella suis	1
	Lamas - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Brucella	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	44	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
	Steinbock - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Brucella	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	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	All animals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	9	0	Campylobacter	0
	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Alpacas - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Antelopes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Bears - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	27	6	Campylobacter	0
							Campylobacter lari	6
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Campylobacter	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Campylobacter	0
	Capybaras - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	1	Campylobacter	0
							Campylobacter hyointestinalis	1
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	485	11	Campylobacter	9
							Campylobacter jejuni	1
							Campylobacter upsaliensis	1
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	76	20	Campylobacter	6
							Campylobacter coli	1
							Campylobacter fetus	3
							Campylobacter hyointestinalis	4
							Campylobacter jejuni	6
	Cheetahs - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Campylobacter	0
							Campylobacter jejuni	1
	Chipmunk - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Deer - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	967	45	Campylobacter	31
							Campylobacter jejuni	4
							Campylobacter upsaliensis	9
							Campylobacter, unspecified sp.	1
	Ducks - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Campylobacter	0
	Emus - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Ferrets - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Gallus gallus (fowl) - broilers - before slaughter - Slaughterhouse - Switzerland - animal sample - caecum - Monitoring - Official sampling - Objective sampling	N_A	Detection method of microorganisms	herd/flock	642	180	Campylobacter	0
							Campylobacter coli	38
							Campylobacter jejuni	142
	Giraffes - zoo animal - Zoo - 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	9	0	Campylobacter	0
	Guinea pigs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	9	1	Campylobacter	0
							Campylobacter jejuni	1
	Guinea pigs - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	1	Campylobacter	0
							Campylobacter hyointestinalis	1
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Hedgehogs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Kangaroos - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	1	Campylobacter	0
							Campylobacter jejuni	1
	Lamas - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	31	4	Campylobacter	0
							Campylobacter hyointestinalis	2
							Campylobacter jejuni	2
	Moose - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0

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	Oscine birds - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	0	Campylobacter	0
	Other carnivores - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	1	Campylobacter	0
							Campylobacter upsaliensis	1
	Otter - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Owls - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Campylobacter	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Parrots - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Campylobacter	0
	Peafowl - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Penguin - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	8	4	Campylobacter	4
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Campylobacter	0
	Rabbits - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Rats - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	13	0	Campylobacter	0
	Reptiles - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	19	0	Campylobacter	0
	Rodents - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Campylobacter	0
	Seals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	0	Campylobacter	0
	Snakes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Campylobacter	0
	Solipeds, domestic - donkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	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
	Squirrels - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	0
	Toucans - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Campylobacter	0
	Turtles - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Campylobacter	0
	Wild boars - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Campylobacter	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	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	225	40	Campylobacter	2
									Campylobacter coli	7
									Campylobacter jejuni	31
			10	Gram	N_A	ISO 10272-2:2017 Campylobacter	261	162	Campylobacter	162
			25	Gram	N_A	ISO 10272-2:2017 Campylobacter	252	22	Campylobacter	22
	Meat from broilers (Gallus gallus) - fresh - Retail - France - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	9	6	Campylobacter	0
									Campylobacter coli	3
									Campylobacter jejuni	3
	Meat from broilers (Gallus gallus) - fresh - Retail - Germany - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	36	8	Campylobacter	0
									Campylobacter coli	2
									Campylobacter jejuni	6
	Meat from broilers (Gallus gallus) - fresh - Retail - Hungary - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	26	20	Campylobacter	0
									Campylobacter coli	6
									Campylobacter jejuni	14
	Meat from broilers (Gallus gallus) - fresh - Retail - Slovenia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	31	25	Campylobacter	0
									Campylobacter coli	3
									Campylobacter jejuni	22
	Meat from broilers (Gallus gallus) - fresh - Retail - Switzerland - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	209	81	Campylobacter	0
									Campylobacter coli	10
									Campylobacter jejuni	71
	Meat from broilers (Gallus gallus) - fresh - Retail - Unknown - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	1	0	Campylobacter	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 10272-1:2017 Campylobacter	132	37	Campylobacter	24
									Campylobacter jejuni	13
	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	15	5	Campylobacter	5
		single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	15	6	Campylobacter	1
									Campylobacter coli	1
									Campylobacter jejuni	4
	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 10272-1:2017 Campylobacter	49	19	Campylobacter	19
	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	14	3	Campylobacter	3
		single (food/feed)	10	Gram	N_A	ISO 10272-1:2017 Campylobacter	10	0	Campylobacter	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 10272-1:2017 Campylobacter	250	120	Campylobacter	90
									Campylobacter coli	7
									Campylobacter jejuni	23
	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	19	3	Campylobacter	3
		single (food/feed)	25	Gram	N_A	ISO 10272-1:2017 Campylobacter	43	1	Campylobacter	1
	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	450	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	29	18	Campylobacter	0
									Campylobacter coli	4
									Campylobacter jejuni	14

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 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	12	0	Campylobacter	0

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	Staining	1	0		Coxiella	0
	Antelopes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	1	0		Coxiella	0
	Bison - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	1	0		Coxiella	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	3058	59		Coxiella	0
								Coxiella burnetii	59
	Deer - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	1	0		Coxiella	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Staining	149	11		Coxiella	0
								Coxiella burnetii	11
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	N_A	Real-Time PCR (qualitative or quantitative)	1	1		Coxiella burnetii	1
	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	207	4		Coxiella	0
								Coxiella burnetii	4
	Solipeds, domestic - horses - Unspecified - 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	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	1	Echinococcus	0
							Echinococcus multilocularis	1
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Echinococcus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	37	9	Echinococcus	0
							Echinococcus multilocularis	9
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	71	31	Echinococcus	1
							Echinococcus multilocularis	30
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	4	Echinococcus	0
							Echinococcus multilocularis	4
	Oscine birds - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Echinococcus	0
	Pigs - Slaughterhouse - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	91	29	Echinococcus	0
							Echinococcus multilocularis	29
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Echinococcus	0
							Echinococcus multilocularis	1
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Echinococcus	0

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	Bears - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	1	0		Flavivirus	0
	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	5	0		Flavivirus	0
	Owls - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	4	0		Flavivirus	0
	Penguin - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	1	0		Flavivirus	0
	Pheasants - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	1	0		Flavivirus	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal	Not Available	N_A	Real-Time PCR (qualitative or quantitative)	10	0		Flavivirus	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 - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Francisella tularensis	0
	Deer - 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	53	27	Francisella tularensis	27
	Monkeys - zoo animal - Zoo - 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	3	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	1	0	Listeria	0
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	23	12	Listeria	5
							Listeria monocytogenes	7
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	1	Listeria	0
							Listeria monocytogenes	1
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Listeria	0
							Listeria monocytogenes	1
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	1	Listeria	0
							Listeria monocytogenes	1
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	15	0	Listeria	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	9	1	Listeria	0
							Listeria monocytogenes	1
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	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 - fresh - 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	409	1	detection	Listeria monocytogenes	409	1
	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	933	1	detection	Listeria monocytogenes	933	1

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	24	0	Lyssavirus	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	21	0	Lyssavirus	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	56	0	Lyssavirus	0
	Foxes - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	10	0	Lyssavirus	0
	Marten - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Raccoons - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	1	0	Lyssavirus	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence method	animal	1	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	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Staining	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	3	0	Mycobacterium	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	3	0	Mycobacterium	0
	Elephants - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Microbiological standard tests	animal	23	1	Mycobacterium	0
							Mycobacterium avium	1
	Falcons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Staining	animal	1	0	Mycobacterium	0
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Other carnivores - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Mycobacterium	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Microbiological standard tests	animal	9	1	Mycobacterium	0
							Mycobacterium avium	1
	Reptiles - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Staining	animal	1	0	Mycobacterium	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Staining	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	2	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	All animals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	12	0	Salmonella	0
	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	7	0	Salmonella	0
	Alpacas - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Alpine chamois - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Antelopes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Bears - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Beavers - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	43	2	Salmonella	0
									Salmonella Typhimurium	2
	Bison - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Bison - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	6	0	Salmonella	0
	Camels - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Canary - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	1	Salmonella	0
									Salmonella Typhimurium	1
	Capybaras - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	486	3	Salmonella	3
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2470	261	Salmonella	192
									Salmonella 4,12:i:-	16
									Salmonella enterica, subspecies diarizonae	2
									Salmonella Enteritidis	5
									Salmonella Typhimurium	46
	Cheetahs - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Chipmunk - Zoo - 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
	Deer - zoo animals - Zoo - 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	955	21	Salmonella	6
									Salmonella 4,12:i:-	2
									Salmonella Derby	1
									Salmonella enterica, subspecies enterica	2
									Salmonella Enteritidis	2
									Salmonella Nigeria	1
									Salmonella Oranienburg	3
									Salmonella Typhimurium	1
									Salmonella Typhimurium, monophasic	2
									Salmonella Veneziana	1
	Ducks - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Ducks - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	14	2	Salmonella	0
									Salmonella enterica, subspecies enterica	1
									Salmonella Typhimurium	1
	Emus - zoo animals - Zoo - 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

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	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	4149	N	N_A	ISO 6579:2002 Salmonella	472	12	Salmonella	0
									Salmonella Braenderup	1
									Salmonella Coeln	1
									Salmonella enterica subsp. enterica rough	1
									Salmonella Livingstone	1
									Salmonella Typhimurium, monophasic	7
									Salmonella Welikade	1
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	4149	Y	N_A	ISO 6579:2002 Salmonella	526	0	Salmonella	0
	Gallus gallus (fowl) - broilers - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official sampling - Census	herd/flock	4149	N	N_A	ISO 6579:2002 Salmonella	54	13	Salmonella	0
									Salmonella Agona	1
									Salmonella Anatum	1
									Salmonella Tennessee	11
	Gallus gallus (fowl) - laying hens - adult - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	800	Y	N_A	ISO 6579:2002 Salmonella	501	0	Salmonella	0
				N	N_A	ISO 6579:2002 Salmonella	501	12	Salmonella Abony	1
									Salmonella Enteritidis	4
									Salmonella Idikan	1
									Salmonella Livingstone	1
									Salmonella Mikawasima	1
									Salmonella Typhimurium	3
									Salmonella Typhimurium, monophasic	1
	Gallus gallus (fowl) - 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	64	Y	N_A	ISO 6579:2002 Salmonella	56	0	Salmonella	0
	Gallus gallus (fowl) - 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	111	Y	N_A	ISO 6579:2002 Salmonella	36	0	Salmonella	0
	Geese - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Giraffes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	126	3	Salmonella	2
									Salmonella enterica, subspecies diarizonae	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
	Guinea pigs - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Gulls - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	1	Salmonella Typhimurium	1
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Hares - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Hedgehogs - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Insectivores - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Kangaroos - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Lamas - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Mice - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Monkeys - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	0	Salmonella	0
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	28	0	Salmonella	0
	Moose - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	0	Salmonella	0
	Oscine birds - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	6	0	Salmonella	0
	Other carnivores - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	4	0	Salmonella	0

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	Other ruminants - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	4	0	Salmonella	0
	Otter - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Owls - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	6	0	Salmonella	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Parrots - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	9	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
	Peafowl - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Penguin - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Pheasants - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	23	7	Salmonella	1
									Salmonella Enteritidis	6
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	0	Salmonella	0
	Pigeons - wild - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Pigs - fattening pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	28	0	Salmonella	0
	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	127	2	Salmonella	1
									Salmonella Typhimurium	1
	Quails - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	11	0	Salmonella	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	25	7	Salmonella	0
									Salmonella enterica, subspecies enterica	2
									Salmonella Typhimurium	5
	Rabbits - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Rats - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Reptiles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	25	17	Salmonella	4
									Salmonella Beaudesert	1
									Salmonella Bredeney	1
									Salmonella Carmel	1
									Salmonella enterica, subspecies enterica	3
									Salmonella enterica, subspecies salamae	2
									Salmonella Kisarawe	2
									Salmonella Montevideo	3
	Reptiles - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	33	22	Salmonella	0
									Salmonella enterica, subspecies diarizonae	10
									Salmonella enterica, subspecies enterica	8
									Salmonella enterica, subspecies salamae	1
									Salmonella Montevideo	1
									Salmonella Ohlstedt	1
									Salmonella Runby	1
	Rodents - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	0	Salmonella	0
	Seals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	733	105	Salmonella	83
									Salmonella enterica, subspecies diarizonae	21
									Salmonella Typhimurium	1
	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	21	17	Salmonella	1
									Salmonella Adelaide	1
									Salmonella enterica, subspecies arizonae	2

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	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	21	17	Salmonella enterica, subspecies diarizonae	4
									Salmonella enterica, subspecies enterica	3
									Salmonella Enteritidis	2
									Salmonella Muenchen	1
									Salmonella Paratyphi B	2
									Salmonella Sandiego	1
	Snakes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	21	8	Salmonella	0
									Salmonella enterica, subsp. houtenae	2
									Salmonella enterica, subspecies arizonae	4
									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	0	Salmonella	0
	Solipeds, domestic - horses - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	219	9	Salmonella	0
									Salmonella enterica, subspecies enterica	4
									Salmonella Enteritidis	2
									Salmonella Napoli	1
									Salmonella Newport	1
									Salmonella Typhimurium	1
	Squirrels - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Squirrels - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Starlings - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Steinbock - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	6	0	Salmonella	0
	Swans - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Swans - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0
	Toucans - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	4	0	Salmonella	0
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Industry sampling - Census	herd/flock	89	N	N_A	ISO 6579:2002 Salmonella	26	4	Salmonella Albany	4
	Turkeys - fattening flocks - before slaughter - Farm - Switzerland - environmental sample - boot swabs - Control and eradication programmes - Official and industry sampling - Census	herd/flock	89	Y	N_A	ISO 6579:2002 Salmonella	26	0	Salmonella	0
	Turtles - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	3	1	Salmonella	0
									Salmonella Oranienburg	1
	Turtles - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	5	0	Salmonella	0
	Wild boars - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	2	0	Salmonella	0
	Wild boars - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	animal		N_A	N_A	Not Available	1	0	Salmonella	0

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	633	2	Salmonella	0
									Salmonella Chester	1
									Salmonella enterica	1
	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	219	1	Salmonella	0
									Salmonella Typhimurium	1
	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	14	0	Salmonella	0
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	148	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	92	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	14	0	Salmonella	0
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	172	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	207	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	417	1	Salmonella	0
									Salmonella Infantis	1
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	160	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	452	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	280	0	Salmonella	0
	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	253	0	Salmonella	0
		single (food/feed)	25	Gram	N_A	ISO 6579-1:2017 Salmonella	256	0	Salmonella	0
	Meat from pig - carcase - Slaughterhouse - Switzerland - food sample - carcase 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	1135	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	125	5	Salmonella	0
									Salmonella Albany	5
	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	140	3	Salmonella	0
									Salmonella Typhimurium	3
	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	130	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	7	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	3	0	Salmonella	0
			25	Gram	N_A	ISO 6579:2002 Salmonella	172	2	Salmonella	0
									Salmonella Tennessee	2
	Compound feedingstuffs for cattle - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	18	1	Salmonella	0
									Salmonella Tennessee	1
	Compound feedingstuffs for fish - 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 for horses - 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 horses - final product - 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
	Compound feedingstuffs for pigs - final product - 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
	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 pigs - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	12	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	2	0	Salmonella	0
			25	Gram	N_A	ISO 6579:2002 Salmonella	44	0	Salmonella	0
	Compound feedingstuffs for poultry (non specified) - final product - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	42	1	Salmonella	0
									Salmonella Tennessee	1
	Compound feedingstuffs, not specified - final product - 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 cereal grain origin - barley derived - Feed mill - 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 - Border inspection activities - Non European Union - feed sample - Monitoring - Not applicable - Not specified	single (food/feed)	25	Gram	screening	ISO 6579:2002 Salmonella	6	0	Salmonella	0
	Feed material of cereal grain origin - maize 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 - 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	5	0	Salmonella	0
	Feed material of cereal grain origin - maize derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect 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 - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Feed material of land animal origin - dairy products - 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 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	19	0	Salmonella	0
	Feed material of oil seed or fruit origin - linseed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect 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	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	4	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	4	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	1	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	6	0	Salmonella	0
	Feed material of oil seed or fruit origin - rape seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	40	17	Salmonella	0
									Salmonella Tennessee	17
	Feed material of oil seed or fruit origin - soya (bean) derived - Border inspection activities - European Union - feed sample - Monitoring - Not applicable - Not specified	single (food/feed)	25	Gram	screening	ISO 6579:2002 Salmonella	4	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Border inspection activities - Non European Union - feed sample - Monitoring - Not applicable - Not specified	single (food/feed)	25	Gram	screening	ISO 6579:2002 Salmonella	15	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)	25	Gram	N_A	ISO 6579:2002 Salmonella	5	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)	10	Gram	N_A	ISO 6579:2002 Salmonella	1	1	Salmonella	0
									Salmonella Mbandaka	1
			25	Gram	N_A	ISO 6579:2002 Salmonella	19	1	Salmonella	0
									Salmonella Agona	1
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Non European Union - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	10	Gram	N_A	ISO 6579:2002 Salmonella	1	0	Salmonella	0
			25	Gram	N_A	ISO 6579:2002 Salmonella	82	13	Salmonella	0
									Salmonella Livingstone	2
									Salmonella Mbandaka	11
	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	5	0	Salmonella	0
	Feed material of oil seed or fruit origin - soya (bean) derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	23	15	Salmonella	0
									Salmonella Tennessee	15
	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	1	0	Salmonella	0
	Feed material of oil seed or fruit origin - sunflower seed 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 oil seed or fruit origin - sunflower seed derived - Feed mill - European Union - feed sample - Monitoring - Official sampling - Suspect 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	2	1	Salmonella	0
									Salmonella Tennessee	1
	Feed material of oil seed or fruit origin - sunflower seed derived - Feed mill - Switzerland - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	18	13	Salmonella	0
									Salmonella Albany	3
									Salmonella Tennessee	10
	Other feed material - tubers, roots and similar products - Feed mill - European Union - feed sample - Monitoring - Official sampling - Selective sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Other feed material - tubers, roots and similar products - Feed mill - European Union - feed sample - Monitoring - Official sampling - Suspect sampling	single (food/feed)	25	Gram	N_A	ISO 6579:2002 Salmonella	2	0	Salmonella	0
	Other feed material - tubers, roots and similar products - 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
	Premixtures - 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

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	Premixtures - Feed mill - Non European Union - 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 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 broilers (Gallus gallus) - fresh - Retail - France - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	9	0	Methicillin resistant Staphylococcus aureus (MRSA)				0
	Meat from broilers (Gallus gallus) - fresh - Retail - Germany - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	36	4	Methicillin resistant Staphylococcus aureus (MRSA)	398	34		1
											571		1
											1430		1
											13177		1
	Meat from broilers (Gallus gallus) - fresh - Retail - Hungary - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	26	0	Methicillin resistant Staphylococcus aureus (MRSA)				0
	Meat from broilers (Gallus gallus) - fresh - Retail - Slovenia - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	31	0	Methicillin resistant Staphylococcus aureus (MRSA)				0
	Meat from broilers (Gallus gallus) - fresh - Retail - Switzerland - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	209	0	Methicillin resistant Staphylococcus aureus (MRSA)				0
	Meat from broilers (Gallus gallus) - fresh - Retail - Unknown - food sample - meat - Monitoring - Official sampling - Objective sampling	single (food/feed)	50	Gram	N_A	Detection method of microorganisms	1	0	Methicillin resistant Staphylococcus aureus (MRSA)				0

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	Real-Time PCR (qualitative or quantitative)	animal	3	1	Toxoplasma	1
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	244	90	Toxoplasma	0
							Toxoplasma gondii	90
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	58	18	Toxoplasma	0
							Toxoplasma gondii	18
	Giraffes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	1	0	Toxoplasma	0
	Goats - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	11	1	Toxoplasma	0
							Toxoplasma gondii	1
	Kangaroos - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	1	1	Toxoplasma	1
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Real-Time PCR (qualitative or quantitative)	animal	1	0	Toxoplasma	0
	Other carnivores - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	2	0	Toxoplasma	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Immunofluorescence assay tests (IFA)	animal	42	8	Toxoplasma	7
							Toxoplasma gondii	1

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	4	0	Trichinella	0
	Bears - 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	11	0	Trichinella	0
	Lynx - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	21	4	Trichinella	3
							Trichinella britovi	1
	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	31252	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	2372722	0	Trichinella	0
	Solipeds, domestic - horses - Slaughterhouse - Switzerland - animal sample - Surveillance - Official sampling - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	1706	0	Trichinella	0
	Wild boars - wild - Hunting - Switzerland - animal sample - Unspecified - Not applicable - Census	N_A	Magnetic stirrer method for pooled sample digestion	animal	5904	0	Trichinella	0
	Wolves - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	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	All animals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	9	0	Yersinia	0
	Alpacas - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Alpacas - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Antelopes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Bears - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Birds - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	20	1	Yersinia	0
							Yersinia intermedia	1
	Budgerigars - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	0	Yersinia	0
	Camels - farmed - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Capybaras - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Cats - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	453	1	Yersinia	0
							Yersinia pseudotuberculosis	1
	Cattle (bovine animals) - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	30	0	Yersinia	0
	Chipmunk - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Deer - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Dogs - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	854	8	Yersinia	7
							Yersinia enterocolitica	1
	Ducks - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Yersinia	0
	Emus - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Ferrets - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Geese - 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	9	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
	Guinea pigs - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Hamsters - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Hares - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Hedgehogs - wild - Natural habitat - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Kangaroos - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	0	Yersinia	0
	Lamas - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Monkeys - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	35	1	Yersinia	0
							Yersinia pseudotuberculosis	1
	Moose - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Oscine birds - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	6	0	Yersinia	0
	Other carnivores - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Otter - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Owls - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Yersinia	0
	Parrots - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Parrots - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Peafowl - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Penguin - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Pigeons - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0

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	Pigs - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	14	1	Yersinia	1
	Quails - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	3	0	Yersinia	0
	Rabbits - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	10	2	Yersinia	0
							Yersinia pseudotuberculosis	2
	Rabbits - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Rats - pet animal - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Reptiles - pet animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	13	0	Yersinia	0
	Reptiles - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	19	0	Yersinia	0
	Rodents - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Yersinia	0
	Seals - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Sheep - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Snakes - pet animals - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	5	0	Yersinia	0
	Snakes - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	7	0	Yersinia	0
	Solipeds, domestic - donkeys - 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	73	0	Yersinia	0
	Squirrels - Unspecified - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Squirrels - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Starlings - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	1	0	Yersinia	0
	Toucans - zoo animal - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	4	0	Yersinia	0
	Turtles - zoo animals - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0
	Wild boars - Zoo - Switzerland - animal sample - Clinical investigations - Not applicable - Not specified	N_A	Not Available	animal	2	0	Yersinia	0

FOODBORNE OUTBREAKS TABLES

Foodborne Outbreaks: summarized data

		Outbreak strenght	Strong			Weak			
Causative agent	**Food vehicle**	**N outbreaks**	**N human cases**	**N hospitalized**	**N deaths**	**N outbreaks**	**N human cases**	**N hospitalized**	**N deaths**
Bacillus cereus	Cereal products including rice and seeds/pulses (nuts, almonds)	1	4	0	0				
Salmonella	Eggs and egg products					1	8	1	0
Salmonella Enteritidis	Eggs and egg products	1	7	0	0				
Salmonella Weltevreden	Mixed food	1	4	3	0				
Unknown	Vegetables and juices and other products thereof	1	10	0	0				
	Mixed food	1	8	0	0	2	9	1	0
	Buffet meals					1	4	0	0
	Unknown					3	103	0	0

Strong Foodborne Outbreaks: detailed data

Causative agent	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
Bacillus cereus	Not Available	N_A	General	Cereal products including rice and seeds/pulses (nuts, almonds)	Rice	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Unknown	N_A	1	4	0	0
Salmonella Enteritidis	Not Available	N_A	Household	Eggs and egg products	Omelette	Detection of causative agent in food chain or its environment - Detection of indistinguishable causative agent in humans	Household	Not Available	Not Available	Other contributory factor	N_A	1	7	0	0
Salmonella Weltevreden	Not Available	N_A	General	Mixed food	Pulled-pork sandwich with chilli oil	Descriptive epidemiological evidence	Temporary mass catering (fairs or festivals)	Not Available	Not Available	Unknown	N_A	1	4	3	0
Unknown	Not Available	N_A	General	Vegetables and juices and other products thereof	Pumpkin soup with coconut milk	Product-tracing investigations	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Other contributory factor	N_A	1	10	0	0
				Mixed food	Asparagus and morel risotto	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Other contributory factor	N_A	1	8	0	0

Weak Foodborne Outbreaks: detailed data

Causative agent	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
Salmonella	Not Available	N_A	General	Eggs and egg products	Chocolate mousse	Analytical epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Unknown	N_A	1	8	1	0
Unknown	Not Available	N_A	General	Mixed food	Cheeses and meats to grill, sauces, side dishes	Descriptive epidemiological evidence	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Unknown	N_A	1	6	0	0
					Samosa with snails and seafood ravioli	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Unknown	N_A	1	3	1	0
				Buffet meals	N_A	Unknown	Restaurant or Cafe or Pub or Bar or Hotel or Catering service	Not Available	Not Available	Storage time/temperature abuse	N_A	1	4	0	0
				Unknown	N_A	Analytical epidemiological evidence	School or kindergarten	Not Available	Not Available	Infected food handler	N_A	1	25	0	0
						Descriptive epidemiological evidence	Canteen or workplace catering	Not Available	Not Available	Unknown	N_A	1	73	0	0
						Unknown	Temporary mass catering (fairs or festivals)	Not Available	Not Available	Unknown	N_A	1	5	0	0

ANTIMICROBIAL RESISTANCE TABLES FOR CAMPYLOBACTER

Table Antimicrobial susceptibility testing of Campylobacter coli in Meat from broilers (Gallus gallus) - 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: Slovenia

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	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**3**	**0**	**0**	**3**	**2**	**2**
0.25				1			
<=0.5							1
0.5				2			
<=1			2				
2			1			1	
16		3					
>16						2	
32							1
64					1		
>64					2		1

Table Antimicrobial susceptibility testing of Campylobacter coli in Meat from broilers (Gallus gallus) - 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 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	**10**	**10**	**10**	**10**	**10**	**10**
MIC	**N of resistant isolates**	**6**	**0**	**0**	**6**	**6**	**6**
<=0.12		2					
0.25		2		5			
<=0.5							2
0.5				5			
<=1			7				
1						4	2
2			2				
4					1		
8		1	1		2		1
16		5			1		1
>16						6	
32					1		
64					1		1
>64					4		3

Table Antimicrobial susceptibility testing of Campylobacter coli in Meat from broilers (Gallus gallus) - 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: Germany

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	**2**	**2**	**2**	**2**	**2**	**2**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**1**	**0**	**1**
<=0.12		1					
0.25				1			
<=0.5							1
0.5				1			
<=1			2				
1						1	
2						1	
8					1		
>16		1					
64					1		
>64							1

Table Antimicrobial susceptibility testing of Campylobacter coli in Meat from broilers (Gallus gallus) - 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: France

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	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**2**	**0**	**0**	**2**	**0**	**1**
<=0.12		1		1			
<=0.5							2
0.5				2		1	
<=1			2				
1						1	
2			1			1	
4					1		
16		2					
>64					2		1

Table Antimicrobial susceptibility testing of Campylobacter coli in Meat from broilers (Gallus gallus) - 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: Hungary

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	**6**	**6**	**6**	**6**	**6**	**6**
MIC	**N of resistant isolates**	**6**	**0**	**0**	**6**	**1**	**4**
0.25				3			
<=0.5							2
0.5				3			
<=1			2				
1						3	
2			2			2	
4			2				
8		2					
16		2					
>16		2				1	
64					2		2
>64					4		2

Table Antimicrobial susceptibility testing of Campylobacter coli in Gallus gallus (fowl) - broilers

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

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 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	**37**	**37**	**37**	**37**	**37**	**37**
MIC	**N of resistant isolates**	**15**	**0**	**0**	**15**	**12**	**20**
<=0.12		15					
<=0.25						1	
0.25		7		23			
<=0.5							13
0.5				14			
<=1			22				
1						14	4
2			10			9	
4			4		13	1	
8		3	1		9		1
16		10				2	1
>16		2				10	
32							1
64					4		3
>64					11		14

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - 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: Slovenia

Sampling details:

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**22**	**22**	**22**	**22**	**22**	**22**
MIC	**N of resistant isolates**	**16**	**1**	**0**	**14**	**0**	**6**
<=0.12		5		13			
<=0.25						3	
0.25				8			
<=0.5							15
0.5		1		1		7	
<=1			19				
1						10	1
2			2		2	1	
4					5	1	
8		4			1		
16		11					
>16		1					
64					2		2
>64					12		4
>128			1				

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - 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 substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**67**	**67**	**67**	**67**	**67**	**67**
MIC	**N of resistant isolates**	**32**	**0**	**0**	**32**	**0**	**24**
<=0.12		30		29			
<=0.25						5	
0.25		5		33			
<=0.5							42
0.5				5		20	
<=1			46		1		
1						35	1
2			17		3	7	1
4			4		25		
8		2			6		
16		23					
>16		7					
32							3
64					3		4
>64					29		16

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - 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: Germany

Sampling details:

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**6**	**6**	**6**	**6**	**6**	**6**
MIC	**N of resistant isolates**	**5**	**0**	**0**	**5**	**1**	**3**
<=0.12				6			
<=0.25						2	
<=0.5							2
0.5		1					
<=1			6				
1						3	1
8					1		
16		4					
>16		1				1	
64							1
>64					5		2

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - 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: France

Sampling details:

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**2**	**0**	**0**	**2**	**0**	**1**
<=0.12				3			
0.25		1					
<=0.5							1
0.5						3	
<=1			3				
1							1
8					1		
16		2					
64					1		
>64					1		1

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Meat from broilers (Gallus gallus) - 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: Hungary

Sampling details:

	AM substance	Ciprofloxacin	Erythromycin	Gentamicin	Nalidixic acid	Streptomycin	Tetracycline
	ECOFF	**0.5**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**14**	**14**	**14**	**14**	**14**	**14**
MIC	**N of resistant isolates**	**11**	**0**	**0**	**11**	**3**	**5**
<=0.12		2		8			
<=0.25						1	
0.25		1		6			
<=0.5							9
0.5						4	
<=1			9		1		
1						5	
2			3			1	
4			2		2		
8		3					
16		6				1	
>16		2				2	
64					3		2
>64					8		3

Table Antimicrobial susceptibility testing of Campylobacter jejuni in Gallus gallus (fowl) - broilers

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**	**4**	**2**	**16**	**4**	**1**
	Lowest limit	**0.12**	**1**	**0.12**	**1**	**0.25**	**0.5**
	Highest limit	**16**	**128**	**16**	**64**	**16**	**64**
	N of tested isolates	**138**	**138**	**138**	**138**	**138**	**138**
MIC	**N of resistant isolates**	**63**	**5**	**0**	**63**	**4**	**42**
<=0.12		56		78			
<=0.25						7	
0.25		19		51			
<=0.5							95
0.5				8		36	
<=1			104				
1				1		84	1
2		1	25		4	5	
4			4		48	2	1
8		11	2		21		
16		40			2		3
>16		11				4	
32							4
64					9		10
>64					54		24
>128			3				

ANTIMICROBIAL RESISTANCE TABLES FOR SALMONELLA

Table Antimicrobial susceptibility testing of Salmonella Abony 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1										
0.5														1	
<=1		1													
1									1						
<=2													1		
2								1							
<=4											1				
<=8						1									
16			1												
64												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	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1								1							
<=2													1		
2		1													
<=4											1				
<=8						1									
8			1												
64												1			

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	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										4					
0.03							5								
0.064										1					
<=0.25				5										4	5
<=0.5					4				5						
0.5														1	
<=1		4						5							
1					1										
<=2													4		
2		1													
<=4											5				
4			1										1		
<=8						5						1			
8			4												
16												1			
32												3			

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	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										3					
0.03							2								
<=0.25				3										2	3
<=0.5					3				3						
0.5														1	
<=1		3						3							
<=2													3		
<=4											3				
4			2												
<=8						3						1			
8			1												
32												2			

Table Antimicrobial susceptibility testing of Salmonella Anatum 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=4											1				
<=8						1									
8			1												
64												1			

Table Antimicrobial susceptibility testing of Salmonella Braenderup 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											
<=0.5					1				1						
0.5														1	1
<=1		1						1							
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			

Table Antimicrobial susceptibility testing of Salmonella Coeln 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**
<=0.03										1					
0.03							2								
0.064										1					
<=0.25				2											2
<=0.5					2				2						
0.5														2	
<=1								2							
<=2													2		
2		2													
<=4											2				
4			2												
<=8						2									
>1024												2			

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	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**
<=0.015							1								
<=0.03										3					
0.03							4								
0.064										2					
<=0.25				5										3	2
<=0.5					5				3						
0.5														2	2
<=1		1						3							
1									2						1
<=2													5		
2		3						2							
<=4											5				
4		1	3												
<=8						5									
8			2												
16												1			
32												1			
64												2			
>1024												1			

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	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										8					
0.03							8								
0.064										1					
<=0.25				9										7	7
<=0.5					9				7						
0.5														2	2
<=1		3						5							
1									2						
<=2													9		
2		6						4							
<=4											8				
4			1												
<=8						9						1			
8			8								1				
16												4			
32												3			
128												1			

Table Antimicrobial susceptibility testing of Salmonella Idikan 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0.03							1								
0.064										1					
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=4											1				
<=8						1									
8			1												
256												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**
MIC	**N of resistant isolates**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1								1							
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			
>64		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	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							5								
<=0.03										8					
0.03							5								
0.064										2					
<=0.25				10										2	7
<=0.5					10				9						
0.5														8	3
<=1		8						9							
1									1						
<=2													10		
2		2						1							
<=4											10				
4			2												
<=8						9									
8			8												
16						1						2			
32												1			
64												5			
128												2			

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	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**	**25**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							8								
<=0.03										21					
0.03							16								
0.064							1			4					
<=0.25				25										10	24
<=0.5					25				24						
0.5														15	1
<=1		9						25							
1									1						
<=2			1										25		
2		16													
<=4											23				
4			15												
<=8						25						4			
8			9								2				
16												4			
32												16			
64												1			

Table Antimicrobial susceptibility testing of Salmonella Typhimurium 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**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=1		1						1							
<=2													1		
<=4											1				
<=8						1									
8			1												
32												1			

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	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=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						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	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**12**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.015							1								
<=0.03										8					
0.03							10								
0.064							1			4					
<=0.25				12										4	12
<=0.5					12				12						
0.5														7	
<=1		6						12							
1														1	
<=2													12		
2		5													
<=4											12				
4		1	10												
<=8						12						5			
8			2												
16												4			
32												3			

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	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**
MIC	**N of resistant isolates**	**12**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**13**	**12**	**0**	**1**
<=0.015							3								
<=0.03										7					
0.03							9								
0.064							1			6					
<=0.25				13										1	12
<=0.5					13				12						
0.5														12	
<=1								10							
1									1						
<=2													1		
2		1						3							
<=4											9				
4			6												
<=8						10									
8			7								4				
16						1									
>32															1
>64		12											12		
128						1									
>128						1									
>1024												13			

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	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**
MIC	**N of resistant isolates**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**3**	**0**	**0**
<=0.03										10					
0.03							13								
0.064										3					
<=0.25				13										2	13
<=0.5					13				12						
0.5														10	
<=1		1						10							
1									1					1	
<=2													10		
2		4						3							
<=4											9				
4			7												
<=8						11						2			
8			6								4				
16						2						1			
32												1			
>64		8											3		
256												1			
>1024												8			

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	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
MIC	**N of resistant isolates**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
<=0.03										1					
0.03							1								
<=0.25				1											1
<=0.5					1				1						
0.5														1	
<=2													1		
2		1						1							
<=4											1				
<=8						1									
8			1												
32												1			

ANTIMICROBIAL RESISTANCE TABLES FOR INDICATOR ESCHERICHIA COLI

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Slovenia

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	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
ECOFF		0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
Lowest limit		0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
Highest limit		32	64	64	64	64	128	128	128	2	16	16	64
N of tested isolates		26	26	26	26	26	26	26	26	26	26	26	26
MIC	N of resistant isolates	23	26	8	8	8	26	8	8	0	0	0	0
<=0.015										18			
<=0.03												26	
0.03										5			
<=0.064				18									
0.064										3			
<=0.12								10			11		
0.12		3											
0.25		6						5	3		15		
0.5		6											
1		2					7						
2			2			2	2						1

	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	Not Available	Not Available	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	128	128	128	2	16	16	64
	N of tested isolates	26	26	26	26	26	26	26	26	26	26	26	26
MIC	N of resistant isolates	23	26	8	8	8	26	8	8	0	0	0	0
4		7	2		2	14			2				12
8		1	11		4	2	5		4				12
16		1	3		2		7		2				1
32			4			3	5						
64			4			5							

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Slovenia

Sampling Details:

	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	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**
MIC	**N of resistant isolates**	**26**	**1**	**26**	**26**	**0**	**23**	**0**	**1**	**0**	**22**	**9**	**6**	**0**	**4**
<=0.015							3								
<=0.03										26					
0.12							3								
<=0.25														22	13
0.25							6								
<=0.5									14						
0.5														3	6
<=1								26							
1					7		2		11					1	2
<=2			4										17		
2					2		3								1
<=4											3				
4			14	6			4						3		
>4				20											
<=8						25						13			
8			6		8		4								
>8					9		1								
16			1			1			1		1	4			
32			1												
>32															4
64											7		4		

	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	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**
MIC	**N of resistant isolates**	**26**	**1**	**26**	**26**	**0**	**23**	**0**	**1**	**0**	**22**	**9**	**6**	**0**	**4**
>64		26											2		
128											7				
>128											8				
>1024												9			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	128	128	128	2	16	16	64
	N of tested isolates	44	44	44	44	44	44	44	44	44	44	44	44
MIC	N of resistant isolates	32	44	17	17	17	41	17	17	0	0	0	0
<=0.015										36			
<=0.03												44	
0.03										6			
<=0.064		6		25									
0.064										2			
<=0.12								17	3		31		
0.12		6		2									
0.25		12						7			13		
0.5		5	2		1		3						
1		7	1			1	4						
2		2	5		3	5	3		2				3
4		3	19		10	10	9		8				19
8		2	8		3	11	7		7				20
16		1	2			3	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**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
	Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
	Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**64**
	N of tested isolates	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**
MIC	**N of resistant isolates**	**32**	**44**	**17**	**17**	**17**	**41**	**17**	**17**	**0**	**0**	**0**	**0**
32			6			7	9						
64			1			7	2						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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	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	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**
MIC	**N of resistant isolates**	**44**	**1**	**44**	**41**	**0**	**26**	**0**	**7**	**0**	**23**	**20**	**14**	**0**	**12**
<=0.015							14								
<=0.03										44					
0.03							3								
0.064							1								
0.12							6								
<=0.25														34	28
0.25							8								
<=0.5					3				19						
0.5							1							10	3
<=1								44							
1				4	6		1		17						1
<=2			10										29		
2				5	3				1						
<=4											18				
4			23	19	7								1		
>4				16											
<=8						43						13			
8			10		9		5				3				
>8					16		5								
16						1			2			8			
32			1						3		3	3	1		

	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	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**
MIC	**N of resistant isolates**	**44**	**1**	**44**	**41**	**0**	**26**	**0**	**7**	**0**	**23**	**20**	**14**	**0**	**12**
>32									2						12
64		3									5		2		
>64		41											11		
128											3				
>128											12				
>1024												20			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Germany

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**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**64**
N of tested isolates	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
MIC **N of resistant isolates**	**12**	**15**	**4**	**4**	**4**	**15**	**4**	**4**	**0**	**0**	**0**	**0**
<=0.015									10			
<=0.03											15	
0.03									5			
<=0.064			8									
<=0.12							5			11		
0.12	3		3									
0.25	5						5			4		
0.5	2						1					
1	1	2										
2		2			1	6						
4		5		2	6	2		2				5
8	4	2		2	4	2		2				10
16						5						
32		2			2							

	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	Not Available	Not Available	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	128	128	128	2	16	16	64
	N of tested isolates	15	15	15	15	15	15	15	15	15	15	15	15
MIC	N of resistant isolates	12	15	4	4	4	15	4	4	0	0	0	0
64			2			2							

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Germany

Sampling Details:

	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	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
MIC	**N of resistant isolates**	**15**	**0**	**15**	**15**	**1**	**5**	**1**	**3**	**0**	**4**	**7**	**3**	**0**	**2**
<=0.015							6								
<=0.03										15					
0.03							3								
0.064							1								
<=0.25														12	12
0.25							2								
<=0.5									9						
0.5							2							3	
<=1								14							
1				3					3						1
<=2			2										11		
2				2	6										
<=4											10				
4			10	4	2			1					1		
>4				6											
<=8						14						3			
8			3		3				2		1				
>8					4		1								
16												2			
32												3			
>32									1						2

	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	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**
MIC	**N of resistant isolates**	**15**	**0**	**15**	**15**	**1**	**5**	**1**	**3**	**0**	**4**	**7**	**3**	**0**	**2**
64						1							1		
>64		15											2		
128											1				
>128											3				
>1024												7			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: France

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	Positive/Present	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
ECOFF	0.125	0.25	0.25	8	0.5	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	0.12	0.015	0.12	0.03	0.5
Highest limit	32	64	64	64	128	128	128	2	16	16	64
N of tested isolates	3	3	3	3	3	3	3	3	3	3	3
N of resistant isolates	3	3	0	0	3	0	0	0	0	0	0
MIC											
<=0.015								3			
<=0.03										3	
<=0.064			3								
<=0.12						1			2		
0.25						1	1				
0.5									1		
1	1				1						
2					1						
4	1	1		1							
8	1			2							3
32		1									
64		1			1						

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: France

Sampling Details:

	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	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
MIC	**N of resistant isolates**	**3**	**0**	**3**	**3**	**0**	**1**	**0**	**0**	**0**	**1**	**3**	**3**	**0**	**1**
<=0.015							1								
<=0.03										3					
0.03							1								
<=0.25															1
0.5														2	
<=1								3							
1					1				3					1	1
2					1										
<=4											2				
4			2												
>4				3											
<=8						3									
8			1												
>8					1		1								
>32															1
>64		3											3		
>128											1				
>1024												3			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Hungary

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	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	128	128	128	2	16	16	64
	N of tested isolates	21	21	21	21	21	21	21	21	21	21	21	21
MIC	N of resistant isolates	17	21	15	15	16	21	15	15	1	0	0	0
<=0.015										7			
<=0.03												21	
0.03										7			
<=0.064				5									
0.064										6			
<=0.12								4			10		
0.12		4		1						1			
0.25		9						2			11		
0.5		5											
1							1						
2		1	3		2		1		2				
4		1	3		4	5	3		2				5
8			9		8		3		8				15
16			5		1	3	8		3				1

	AM substance	Cefepime	Cefotaxim	Cefotaxime + Clavulanic acid		Cefoxitin	Ceftazidim	Ceftazidime + Clavulanic acid		Ertapenem	Imipenem	Meropenem	Temocillin
	Cefotaxime synergy test	**Not Available**	**Not Available**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
	Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
	Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**64**
	N of tested isolates	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
MIC	**N of resistant isolates**	**17**	**21**	**15**	**15**	**16**	**21**	**15**	**15**	**1**	**0**	**0**	**0**
32		1				3	5						
64						5							
>64			1			5							

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - 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: Hungary

Sampling Details:

	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	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
MIC	**N of resistant isolates**	**21**	**0**	**21**	**21**	**2**	**19**	**0**	**4**	**0**	**16**	**12**	**8**	**0**	**7**
<=0.03										21					
0.03							1								
0.064							1								
<=0.25														15	8
0.25							5								
<=0.5									9						
0.5														6	6
<=1								21							
1					1		3		7						
<=2													13		
2				2	1		1		1						
<=4											4				
4			18	3	5		2								
>4				16											
<=8						18						5			
8			3		1		4				1				
>8					13		4								
16						1						2			
32											1	2	1		
>32									4						7
64													1		

	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	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
MIC	**N of resistant isolates**	**21**	**0**	**21**	**21**	**2**	**19**	**0**	**4**	**0**	**16**	**12**	**8**	**0**	**7**
>64		21											6		
128						1					2				
>128						1					13				
>1024												12			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers

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	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	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**
MIC	**N of resistant isolates**	**55**	**0**	**0**	**0**	**2**	**98**	**0**	**5**	**0**	**97**	**48**	**34**	**0**	**32**
<=0.015							99								
<=0.03										214					
0.03							15								
0.064							2								
0.12							13								
<=0.25				214										181	131
0.25							65								
<=0.5					214				128						
0.5							11							33	45
<=1		3						213							
1							6		74						6
<=2			14										162		
2		69						1	7						
<=4											114				
4		80	90										17		
<=8						200						90			
8		7	100				2		1		3		1		
>8							1								
16		1	10			12			4			54			
32											3	20			
>32															32

	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	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**	**214**
MIC	**N of resistant isolates**	**55**	**0**	**0**	**0**	**2**	**98**	**0**	**5**	**0**	**97**	**48**	**34**	**0**	**32**
64		1				1					34	2	20		
>64		53											14		
128											39	1			
>128						1					21				
256												2			
1024												3			
>1024												42			

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers

Sampling Stage: Slaughterhouse

Sampling Type: animal sample - caecum

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	Positive/Present	Negative/Absent	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	Positive/Present	Negative/Absent	Not Available	Not Available	Not Available	Not Available
	ECOFF	0.125	0.25	0.25	0.25	8	0.5	0.5	0.5	0.06	0.5	0.125	32
	Lowest limit	0.064	0.25	0.064	0.064	0.5	0.25	0.12	0.12	0.015	0.12	0.03	0.5
	Highest limit	32	64	64	64	64	128	128	128	2	16	16	64
	N of tested isolates	94	94	94	94	94	94	94	94	94	94	94	94
MIC	N of resistant isolates	79	94	34	34	35	88	34	34	0	0	0	0
<=0.015										69			
<=0.03												94	
0.03										21			
<=0.064		7		52									
0.064										4			
<=0.12								28	6		49		
0.12		8		7									
0.25		23			1			22	2		45		
0.5		8	2		7		6	1	1				
1		17	8		1	1	14		4				
2		8	4		2	13	16		6				7
4		14	17		7	19	8		5				31
8		4	30		16	26	11		18				49
16		4	13		1	11	21		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**	**Positive/Present**	**Negative/Absent**	**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**	**Positive/Present**	**Negative/Absent**	**Not Available**	**Not Available**	**Not Available**	**Not Available**
	ECOFF	**0.125**	**0.25**	**0.25**	**0.25**	**8**	**0.5**	**0.5**	**0.5**	**0.06**	**0.5**	**0.125**	**32**
	Lowest limit	**0.064**	**0.25**	**0.064**	**0.064**	**0.5**	**0.25**	**0.12**	**0.12**	**0.015**	**0.12**	**0.03**	**0.5**
	Highest limit	**32**	**64**	**64**	**64**	**64**	**128**	**128**	**128**	**2**	**16**	**16**	**64**
	N of tested isolates	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**
MIC	**N of resistant isolates**	**79**	**94**	**34**	**34**	**35**	**88**	**34**	**34**	**0**	**0**	**0**	**0**
32			10			4	16						
>32		1											
64			6			20	2						
>64			4										

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers

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	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	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**
MIC	**N of resistant isolates**	**94**	**1**	**94**	**82**	**3**	**62**	**0**	**9**	**0**	**55**	**50**	**35**	**0**	**34**
<=0.015							28								
<=0.03										94					
0.03							4								
0.12							9								
<=0.25														66	49
0.25							23								
<=0.5					12				48						
0.5				1			7							25	11
<=1								94							
1				8	10		2		36					3	
<=2			16										54		
2				7	14				1						
<=4											34				
4			58	20	12								5		
>4				58											
<=8						90						26			
8			18		11		13				5				
>8					35		8								
16			1			1			3			12			
32			1						2		4	3	1		
>32									4						34

	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	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**
MIC	**N of resistant isolates**	**94**	**1**	**94**	**82**	**3**	**62**	**0**	**9**	**0**	**55**	**50**	**35**	**0**	**34**
64		2									3	3	13		
>64		92											21		
128											14				
>128						3					34				
1024												3			
>1024												47			

OTHER ANTIMICROBIAL RESISTANCE TABLES

Table Antimicrobial susceptibility testing of Methicillin resistant Staphylococcus aureus (MRSA) in Meat from broilers (Gallus gallus) - 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:Germany

Sampling Details:

			AM Substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
			Performed CC MRSA characterisation	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
			Performed MLST MRSA characterisation	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
			ECOFF	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													4						
			<=0.12				1															
			<=0.25			1		1														
			0.25											1								
			<=0.5						4				4		1				1	1		
			<=1							4		1										4
			1											1	1					1		
			<=2																		2	
			2									3										
			>2											2								
			<=4		1						4						2					
			>4				3								2					2		
			8	2	1	2											1					
			>8			1		3														
			16	2	2																	
			>16																3			
			>32														1				2	
			<=64															3				

		AM Substance	Cefoxitin	Chloramphenicol	Ciprofloxacin	Clindamycin	Erythromycin	Fusidic acid	Gentamicin	Kanamycin	Linezolid	Mupirocin	Penicillin	Quinupristin/Dalfopristin	Rifampicin	Streptomycin	Sulfamethoxazole	Tetracycline	Tiamulin	Trimethoprim	Vancomycin
		Performed CC MRSA characterisation	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
		Performed MLST MRSA characterisation	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
		ECOFF	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
		256															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
CARBAMON	Gallus gallus (fowl) - broilers	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Slaughterhouse	N_A	Monitoring - EFSA specifications	Official sampling	animal sample - caecum	animal	Switzerland	ChromID Carba and ChromID Oxa-48 agar	307	0
	Meat from broilers (Gallus gallus) - fresh - chilled	Escherichia coli, non-pathogenic, unspecified	Objective sampling	Retail	N_A	Monitoring - EFSA specifications	Official sampling	food sample - meat	single (food/feed)	France	ChromID Carba and ChromID Oxa-48 agar	9	0
										Germany	ChromID Carba and ChromID Oxa-48 agar	36	0
										Hungary	ChromID Carba and ChromID Oxa-48 agar	26	0
										Slovenia	ChromID Carba and ChromID Oxa-48 agar	31	0
										Switzerland	ChromID Carba and ChromID Oxa-48 agar	209	0
										Unknown	ChromID Carba and ChromID Oxa-48 agar	1	0

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

Latest Transmission set

Table Name	Last submitted dataset transmission date
Antimicrobial Resistance	07-Jan-2020
Esbl	22-Jul-2019
Animal Population	22-Jul-2019
Disease Status	22-Jul-2019
Food Borne Outbreaks	22-Jul-2019
Prevalence	12-Sep-2019

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. Institute of Veterinary Bacteriology (IVB) 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 2018 (data status May 2019). Number of animals slaughtered in the year 2018.
Living animals and herds: Coordinated census of agriculture. Swiss federal office of agriculture and Swiss federal office of statistics. 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: holding with goats).
Poultry industry: the number of holdings with laying hens decreased slightly by 0.7% and the one with broilers by 0.7%. Over 90% of poultry meat is produced by 4 major meat producing companies. The number of holdings with breeding hens 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 breeding hens is quite constant (41 in 2018) keeping over 90% of all breeding hens.

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

Average size of the farms in 2018: 44 cattle, 230 pigs, 42 sheep, 13 goats, 212 laying hens and 6'795 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 increased from 31 in 2017 to 35 million in 2018 (11.9%), the number of imported day-old chicks of the broiler type decreased strongly from 74'041 to 2'000. Day-old chicks of the egg line were imported less (11'832 in 2018 instead of 18'576 in 2017).

(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. *B. abortus* in bovines was last reported in 1996, *B. melitensis* in small ruminants in 1985.

Freedom from bovine brucellosis was proven the last time in 1997 when a random sample of 139‘655 cows (in general older than 24 months) from 4’874 farms was tested negative using a serological test. Since 1998 the freedom of the sheep and goat population from brucellosis is documented annually with serological testing of randomly selected farms according to EU regulation 91/68/EEC.

B. suis in pigs is very rare. However, it is known that *B. suis* Biovar 2 is prevalent in wild boars [1]. Outdoor pigs which are outside the whole day, close to the forest (<50m) and with low fences (<60cm) have the highest risk of contact with wild boars. From 252 wild boars tested from 2008 until 2010 28.8% (95% CI 23.0%-34.0%) were *B. suis* Biovar 2 positive by culture and PCR and 35.8% (95% CI 30.0%-42.0%) had antibodies against *B. suis* [6]. These findings were significantly higher than in previous studies indicating a spread of *B. suis* Biovar 2 in Swiss wild boars. A questionnaire revealed that 31% of the gamekeeper and 25% of outdoor pig holders observed at least 1 interaction between wild boars and pigs in the past 20 years. 5% of holdings reported hybrids [7]. After a reported case in wild boars in 2001, the first outbreak since many years with *B. suis* Biovar 2 occurred in domestic pigs in 2009. The primary case was in a farm with Mangalitza pigs, which were reared outdoor and contact to wild boars was very likely. Two secondary farms were infected via animal traffic of the diseased boar. The outbreak isolates constituted a unique cluster by Multi locus variable number of tandem repeats (MLVA) and was distinct from that of isolates obtained from wild boars, suggesting that direct transmission of the pathogen from wild boars to domestic pigs was not responsible for this outbreak [5]. In 2010, *B. suis* Biovar 2 was again detected in one wild boar.

A clinical case of *B. ovis* in rams was detected in 2010, after 9 years of no reported cases. *B. ovis* in rams was mainly detected between 1994 and 2001. In this time period 101 cases were reported, ranging from 1 to 34 per year.

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

In 2018 5 brucellosis cases in humans were reported (in 2017: 9 cases). In 2 cases *B. melitensis* could be identified. Affected were 2 men and 3 women between the age of 38 and 72 years. In the last 10 years the notified cases ranged between 1 and 14 cases per year.

In 2018, one case of brucellosis in a hare was reported by the cantonal veterinarians. The hare tested positive for *B. suis*. It is known that hares as well as boars in Switzerland can sporadically be infected with *B. suis*.

B. suis Biovar 2 seem to occur occasionally in holdings which keep pigs of special breed, such as Mangalitza (last time reported in 2009). *B. suis* Biovar 2 is very rarely notified in humans, probably as it is known to be less virulent to humans than Biovar 1 and 3.
In the yearly national survey all blood samples from sheep and goats in 2018 tested negative for *B. melitensis.*
In veterinary diagnostic laboratories antigen testing for brucellosis was carried out in 44 pigs, 4 alpacas, 4 lamas, 2 horses, 1 bison, 1 deer, 1 Steinbock, 1 wildboar and 1 hare in the context of clinical investigations.
Human infections with *Brucella* spp. through the consumption of Swiss raw milk or dairy products from non-heat-treated milk (for example sheep or goat cheese) is considered to be of negligible risk because its prevalence is close to zero in the Swiss animal population as no new cases in dairy livestock have been found for many years. Cases of brucellosis in humans are anticipated to be attributable to stays abroad or to the consumption of foreign products.

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. A research study was conducted in 2008 -2010 to obtain recent *B. suis* prevalence data in wild boars and to evaluate risk factors for the infection of pigs which are reared outdoor (results see above).

4. Additional information

[1] Leuenberger R, Boujon P, Thür B, Miserez R, Garin-Bastuji B, Rüfenacht J, Stärk KD (2007): Prevalence of classical swine fever, Aujeszky's disease and brucellosis in a population of wild boar in Switzerland, Vet Rec; 160(11):362-8.
[2] Hinić V., Brodard I., Thomann A., Cvetnić Z., Makaya P.V., Frey J., Abril C. (2008): Novel identification and differentiation of *Brucella melitensis*, *B. abortus*, *B. suis*, *B. ovis*, *B. canis*, and *B. neotomae* suitable for both conventional and real-time PCR systems; J Microbiol Methods Oct 75(2):375-8.
[3] Hinić V, Brodard I, Thomann A, Holub M, Miserez R, Abril C. (2009a): IS*711*-based real-time PCR assay as a tool for detection of *Brucella* spp. in wild boars and comparison with bacterial isolation and serology; BMC Veterinary Research. Jul 14; 5:22.
[4] Hinić V., Brodard I., Petridou E., Filiousis G., Contos V., Frey J., Abril C. (2009b): Brucellosis in a dog caused by *Brucella melitensis* Rev 1, Vet Microbiol, Sept 26.
[5] Abril C, Thomann A, Brodard I, Wu N, Ryser-Degiorgis MP, Frey J, Overesch G. (2011): A novel isolation method of *Brucella* species and molecular tracking of *Brucella suis* biovar 2 in domestic and wild animals, Vet Microbiol. 2011 Mar 5.
[6] Wu, N Abril, C., Hinic, V., Brodard, I., Thür, B., Fattebert, J., Hüssy, D., Ryser-Degiorgis, M.P. (2011): Free-ranging wild boar may represent a threat to disease freedom in domestic pigs in Switzerland. J Wildl Dis.
[7] Wu, N., Abril, C., Thomann, A., Grosclaude, E., Doherr, M.G., Boujon, P., Ryser-Degiorgis, M.P. (2012): Risk factors for contacts between wild boar and outdoor pigs in Switzerland and investigations on potential *Brucella suis* spill-over. BMC Vet Res.
[8] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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). Freedom from disease has been proven in 1997 conducting a survey in a randomized sample of 4874 farms. 139‘655 cows (in general older than 24 months) were tested using serological test. Tests were performed in blood samples from 31042 animals and in 18952 bulk milk samples. There were no positive findings in these samples.

2. Measures in place[(b)]

Vaccination is prohibited since 1961.
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 since 1956. 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 occurred in the passive surveillance after 1997, when freedom was proven in a nationwide survey.
There are no observations that would challenge the freedom of Swiss cattle population from brucellosis.

5. Additional information

None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for ‘Prevalence’ and ‘Disease Status’: one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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. Since 1998 every year a survey in a randomized sample of farms is conducted proving freedom from disease. Free status is recognized by the EU (Bilateral Agreement on Agriculture, Veterinary Annex). EU regulation 91/68/EEC that defines populations of sheep and goat as one epidemiological unit is the basis of the survey, following a risk-based design of repeated surveys for the documentation of freedom from non-highly contagious diseases [1].
2. Measures in place[(b)]
Vaccination is prohibited since 1961. 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 since 1966. 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 639 sheep farms (9637 blood samples) and 907 goat farms (9599 blood samples) were tested negative for *B. melitensis* in 2018 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
[1] Hadorn et al. (2002): Risk-based design of repeated surveys for the documentation of freedom from non-highly contagious diseases. Preventive Veterinary Medicine (2002) 56: 179-192.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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 since 1959. Free status is recognized by EU (Bilateral Agreement on Agriculture, Veterinary Annex). Between 1960 and 1980, the entire bovine population was tested every other year in an active surveillance program. Since 1980, passive surveillance at the slaughterhouse is performed. Isolated cases of bovine tuberculosis have been found, which were partly due to reactivation of *M. bovis* infections in geriatric humans with subsequent transmission of the agent to bovines.
In 1997 a survey in a randomized sample of about 10% of farms (4874 farms) was conducted to prove freedom from disease. 111‘394 cattle were tested using the comparative cervical intradermal test. On 72 farms, tests had to be repeated. All farms were negative. In 1998, lymph nodes from slaughtered captive deer from 124 sampled holdings (from a total of 485 farmed deer holdings) showed no lesions typical of bovine tuberculosis and were tested negative in culture for *M. bovis* and *M. tuberculosis* [1].
In a study conducted in 2010, 23 of 582 cattle of the Canton St. Gallen, which had spent the Alpine pasturing season 2009 on Alpine pastures in Austria, reacted with an unclear result in the comparative cervical intradermal test, but were negative after retesting with the comparative cervical intradermal test and/or the Interferon-gamma test. In addition, in 6 of 165 wild boars (4%) bacteria from the MTBC complex were detected, but none of these tested positive for *M. bovis* or *M. caprae*. 269 wild red deer were tested negative for tuberculosis [2].
Since 1991 tuberculosis cases in animals were reported extremely rarely (not more than 2 cases per year). Only in 2013/2014more cases (in total 10) were reported due to two outbreaks in cattle (one due to *M. bovis*, the other due to *M. caprae*). Whereas the origin of infection of the first outbreak (*M. bovis*) remained unclear, the origin of infection of the *M. caprae* outbreak was deer in Austria. All infected animals of the second *M. caprae* outbreak were kept during summer on Alpine pastures in Austria in regions where *M. caprae* is endemic. These cases were the first in cattle since 1998. Next to these bovine cases other reports from 2009 until 2018 affected mainly cats (6x), but also dogs, horses, elephants and lamas (each 1x).

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

In 2018, 468 diagnostically confirmed human cases of tuberculosis and 47 non-laboratory confirmed cases were reported. 350 of the laboratory confirmed cases were caused by *M. tuberculosis*, 3 by *M. bovis* and 5 by *M. africanum*. 110 strains were *M. tuberculosis*-complex positive, but could not be identified further. From the 3 human cases of *M. bovis* all were over 75 years old. All were Swiss.
In animals, no tuberculosis outbreak was reported in 2018. There were no further outbreaks in cattle after the two outbreaks in 2013/2014.
In veterinary diagnostic laboratories antigen testing for *Mycobacterium* was carried out in 23 elephants, 9 pigs, 3 dogs, 3 cats, 2 wildboars, 1 horse, 1 monkey, 1 reptile, 1 falcon, 1 other bird and 1 other carnivore in the context of clinical investigations. 1 elephant and 1 pig tested positive for M. avium, which is not an unusual result.
Human tuberculosis cases due to *M. bovis / M. caprae* were reported on a low scale and corresponded to less than 2% of all reported tuberculosis cases over the last 10 years. 2018 they comprised less than

0.6%. Swiss livestock is recognized free of bovine tuberculosis. The outbreaks in 2013/2014 showed that isolated TB cases can occur. The risk of a TB infection by contact with infected bovines or by consumption of food products containing mycobacteria (like raw milk, which is however mostly pasteurised) within Switzerland is negligible. Raw milk is not ready for consumption and needs to be heat treated (minimum 70°C) before consumption. Products from pasteurized milk are no risk as bacteria are inactivated through the heat treatment. Infections over contact (aerogen transmission) are more likely to take place as only a few bacteria are needed. 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. 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. The cases in 2013 in eastern Switzerland proved, that summer grazing in Tyrolia and Vorarlberg, Austria, where *M. caprae* infection in red deer is endemic in these regions since the 90ties, is a risk for infection for Swiss cattle. Although the source of infection of the first outbreak with *M. bovis* remains unclear, international trade needs to be looked at closer. In some member states like in UK, France, Italy, Spain and Portugal tuberculosis cases seem to be increasing in the recent years according to the EU ADNS system. Infected wild animals are a potential reservoir and were found in all these countries (wild boar, deer, badgers), especially in areas with high wildlife densities.

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

As detecting suspect cases during meat inspection in slaughterhouses is a challenge in a country with a very low prevalence disease, awareness at slaughterhouses was strengthened. In 2013, after the detection of the first case in cattle since 1998, a new project was lanced in Switzerland to improve the disease awareness at the meat inspection in slaughterhouses, called LyMON. A manual with pictures on how bovine TB looks like was distributed to all meat inspectors at the slaughterhouse.
2018 3 lymphatic tissue and organ material suspicious for bovine TB were tested with negative result. In addition, submission of lymphatic tissue with unspecific alterations for analysis was enhanced.
2018 within the framework of the LyMON monitoring lymphatic tissue with unspecific alterations of 95 cattle were analysed using a graduated diagnostic scheme (pathological investigation, Ziehl-Neelsen staining, genus-specific mycobacterial real-time PCR, MTBC culture and histology) (2017: 108; 2016: 121; 2015: 119). All samples were negative for bacteria of the *M. tuberculosis*-complex.
In 2014 an early detection and monitoring programme for bovine TB in wildlife was launched in the eastern part of Switzerland and the Principality of Liechtenstein in areas bordering Austria. Lymphatic tissue and organ material were analysed in a multi-step diagnostic scheme consisting of a detailed pathological investigation, Ziehl-Neelsen staining, a genus-specific mycobacterial real-time PCR, MTBC culture and histology. 2018 **226** red deer, , 1 ibex and 2 chamoix were investigated (2017: 230 red deer, 4 roe deer, 1 ibex, 1 chamoix; 2016: 166 red deer, 5 roe deer, 1 ibex; 2015: 260 red deer, 4 chamoix, 5 ibex, 2 roe deer; 2014: 97 red deer, 1 roe deer, 1 ibex). All samples were negative for bacteria of the *M. tuberculosis*-complex. In one deer culture revealed *M. vaccae*, a non-tuberculous mycobacteria which is not known to be pathogenic for humans or animals. M. vaccae is mainly found in the environment in the soil, dust and water. It was detected so far in cattle, wild boar, mice, elephants and deer.
In 2010 a study investigated cattle which were kept on Alpine pastures in Austria 2009 as well as red deer and wild boar in the Alpine region in 2010. All animals were tested negative.

4. Additional information

[1] Wyss D., Giacometti M., Nicolet J., Burnens A., Pfyffer GE., Audige L., (2000). Farm and slaughter survey of bovine tuberculosis in captive deer in Switzerland. Vet. Rec. 147,713 -717.

[2] Schöning, J. 2012: Untersuchungen zum Vorkommen der Rindertuberkulose bei Wildtieren und zum Risiko der Entwicklung eines Reservoirs bei Wildungulaten in der Schweiz und im Fürstentum Liechtenstein. Inauguraldissertation der Vetsuisse Fakultät der Universität Bern, 2012.
[3] Further information can be found on the FSVO website http://www.blv.admin.chwww.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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. Freedom from disease has been proven in 1997 conducting a survey in a randomized sample of 4874 farms. 111'394 cattle were tuberculin tested. In 72 farms tests had to be repeated. All farms were negative.

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 since 1950 (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 2018 no cases in cattle were reported. There were no further outbreaks in cattle after the last two outbreaks in 2013/2014.

5. Additional information

None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**
(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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). In the 1980s, campylobacteriosis was the second most reported food borne disease in humans behind salmonellosis. In 1995 the case curve for campylobacteriosis crossed over that for enteric S*almonellae*. Since then campylobacteriosis has been the main reported food-borne infectious disease in Switzerland. After reaching a peak in 2000 with 97 reports per 100,000 inhabitants, the incidence declined steadily until 2005, always remaining over 65 reports per 100,000 inhabitants. From 2005 until 2012 an increasing trend could be observed, reaching its peak of 105 reports per 100,000 inhabitants in 2012. *C. jejuni* has always been the most isolated species in humans.

Campylobacteriosis in animals is notifiable (TSV, Article 5: disease to be monitored). In poultry and pigs *Campylobacter jejuni/coli* are commensals. Other animal species, i.e. dogs and calves, show mild clinical signs of diarrhea. Thus, only a few campylobacteriosis cases were reported by cantonal veterinarians. From 2004 until 2012 the reports ranged between 5 and 26 per year. Since 2013 case numbers increased and reached a peak of about 160 cases per year in 2014 and 2015. Since then, the number of reports is steadily declining. In the past 10 reported cases fluctuated between 8 and 164 per year, affecting mainly dogs (64%), cattle (16%) and cats (11%).

Fresh poultry meat represents the most important reservoir of human campylobacteriosis. The occurrence of this pathogen in broiler chicken farms is studied since 2002 as part of the antimicrobial resistance monitoring program. Since 2015 the antimicrobial resistance program foresees, that broilers are sampled every second year and that caecal samples are collected at the slaughterhouse level. In 2016, the prevalence in caecal samples was within the range of the previous years (35%). In the years, when broilers are not tested, pigs are tested for *Campylobacter* within the antimicrobial resistance program at the slaughterhouse level by examining caecal samples. In 2017, the prevalence in caecal samples from pigs accounted for 57%.

In an EU-wide baseline study from 2008, 71% of the broiler carcasses at slaughter house were *Campylobacter*-positive (cumulated qualitative and quantitative approach). In another EU-wide study from 2009/2010, the prevalence of *Campylobacter* in broiler meat at retail was estimated to be 38%. In both studies it could be shown that frozen products and products without skin have a smaller risk to be contaminated with *Campylobacter* than fresh products and products with skin.

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

The number of notified human campylobacteriosis cases increased from 7221 in 2017 to 7675 reported cases in 2018 (2018: 90 new infections per 100'000 inhabitants; 2017: 85 infections per 100'000). 2012 remains the year with the highest rate of new infections since the introduction of mandatory notification (8'442 cases or 105 per 100'000 inhabitants). Similar to previous years, the most affected age group was adults aged 15 to 24 years (123/100'000). Within the past two decades, there was a notable increase in case reports among the elderly aged $\geq$ 65: the notification rate more than doubled (from 43/100'000 in 1997 to 104/100'000 in 2018). Whereas over the same time period the notification rate in children under the age of 5 decreased (from 147 to 92 cases per 100'000). With 4'077 cases (53%) slightly more men than women (3'561 cases; 46%) were affected. In accordance with previous years, most cases were caused by *C. jejuni* (51% of all cases, in 16% of cases no distinction was made between *C. jejuni* and *C. coli*). In 2018 the typical summer peak occurred in the months of July and August accounting for 2'056 cases. The winter peak stretched from December 17 to January 18 leading to 1'060 cases.

In 2018, a random sample of broiler meat was investigated at retail in the framework of the antimicrobial resistance monitoring program. 140 of 312 meat samples (45%) were *Campylobacter*-positive (*116x C. jejuni*, 24x *C. coli)*. In addition, a random sample of broilers was investigated at slaughter in the framework of the antimicrobial resistance monitoring program using caecal samples. 180 of 642 broilers (28%) were *Campylobacter*-positive (*142x C. jejuni*, 38x *C. coli)*. 88 cases of campylobacteriosis were reported in animals by cantonal veterinarians in 2018, corresponding to a slight decline in notifications since 2013. As usual, mainly dogs (43x), cattle (18x) and cats (10x) were affected. The increase in reported cases from 2013 onwards was mainly due to an increase in reported cases in dogs. An increase in the number of cases is likely, as the number of tests on *Campylobacter* undertaken in 2013 until 2015 only varied slightly. Risk factors for *Campylobacter* infections in dogs are age, poor hygiene, high density of dogs (i.e. shelters) and the feeding of raw meat (i.e. barf diet). The latter has become more popular in recent years. However, dogs play a small role as source of infections in humans (only 9% of the cases were dog-related in a study in 2013, see Kittl et al, 2013).Mainly the handling of raw poultry meat and the consumption of undercooked contaminated poultry meat and poultry liver leads to campylobacteriosis cases in humans. Cattle and the contact to pets was shown to be less important. Molecular typing of Swiss isolates from humans and animals collected between 2001 and 2012 identified chickens as the main source for human campylobacteriosis (71% of the human cases were attributed to chickens, 19% to cattle, 9% to dogs and 1% to pigs [2]. It is assumed that the high rate of disease in young adults aged 15-24 years is attributable to less regard for kitchen hygiene at this age and increased travel. Data from 2009 indicated that approximately 18% of the cases were travel associated (Niederer et al. 2012). 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. Any recent specific action in the Member State or suggested for the European Union[(b)]

Three legal regulations were put into place. One of them decrees that from January 1st 2014 poultry liver from *Campylobacter*-positive herds can only be sold frozen (SR 817.024.1, Ordinance on Hygiene, article 33a). As there is no official method in Switzerland for testing *Campylobacter* freedom on herd level poultry liver is sold only frozen. According to the second regulation, pre-packed fresh poultry meat and meat preparations need a label informing the consumers to thoroughly cook the products before consumption and to follow certain rules of kitchen hygiene (SR 817.022.108, Ordinance on Food of Animal Origin, article 9). Since 01.05.2017 a process hygiene criteria was put into place for poultry carcasses (with a transition period until 30.04.2018). A certain number of poultry carcasses needs to be tested for *Campylobacter* after cooling. A certain microbiological count is not allowed to be exceeded. If not, the slaughterhouse must take measures to reduce the microbiological count.
In addition a communication campaign was launched to improve the kitchen hygiene in private households (www.sichergeniessen.ch).

4. Additional information

[1] Jonas et al. (2015). Genotypes and antibiotic resistance of bovine *Campylobacter* and their contribution to human campylobacteriosis. Epidemiology and Infection 143, 2373-2380.
[2] Amar et al. (2014). Genotypes and antibiotic resistance of canine *Campylobacter jejuni* isolates. Veterinary Microbiology 168, 124-130.
[3] Kittl et al. (2013a). Source attribution of human *Campylobacter* isolates by MLST and *fla*-typing and association of genotypes with quinolone resistance. PLoS One 8(11):e81796.
[4] Kittl et al. (2013b). Comparison of genotypes and antibiotic resistances of *Campylobacter jejuni* and *Campylobacter coli* on chicken retail meat and at slaughter. Applied and Environmental Microbiology 79, 3875-3878.

[5] Niederer et al. (2012). Genotypes and antibiotic resistances of *Campylobacter jejuni* and *Campylobacter coli* isolates from domestic and travel-associated human cases. Applied and Environmental Microbiology 78, 288-291.
[6] Wirz et al. (2010). Genotype and antibiotic resistance analysis of *Campylobacter* isolates from ceaca and the carcasses of slaughtered broiler flocks Applied and Environmental Microbiology 76, 6377-6386.
[7] Kittl et al. (2011). Comparison of genotypes and antibiotic resistance of *Campylobacter jejuni* isolated from humans and slaughtered chickens in Switzerland. Journal of Applied Microbiology 110, 513-520.
[8] Egger et al. (2011). Genotypes and antibiotic resistance of *Campylobacter coli* in fattening pigs. Veterinary Microbiology 155, 272-278.
[9] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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 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 the slaughterhouse, cutting plant and processing plant. No imported poultry meat was included in the data analysis.
2. Measures in place[(b)]
Since 01.05.2017 a process hygiene criteria was put into place for broiler carcasses (with a transition period until 30.04.2018). A certain number of broiler carcasses must be tested quantitatively for *Campylobacter* after cooling Thereby, a certain *Campylobacter* count must not be exceeded too frequently. Otherwise, the slaughterhouse must take 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 1'776 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2018. Of them, 436 (24.5%) proved to be positive for *Campylobacter* spp.: 85x *C. jejuni* (19.5%), 19x *C. coli* (4.4%) and 332x unspecified (76.1%), see also *Campylobacter* poultry meat table. Of all 1'735 broiler meat samples (carcasses and meat), 418 (24.1%) proved to be positive for *Campylobacter*. Thereby, 30.4% of the 738 tested broiler carcasses and 19.5% of the 997 tested broiler meat samples were positive. Furthermore, 18 (43.9%) of all 41 turkey meat samples (carcasses and meat) proved to be positive for *Campylobacter*. Thereby, 62.1% of the 29 tested turkey carcasses and none of the 12 tested turkey meat samples were positive.
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.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

General evaluation*:
Coxiella

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

A big outbreak occurred back in 1983 when 12 flocks of sheep apparently shedding *Coxiella (C.) burnetii* were descending from mountain pastures. During this outbreak over 400 human cases were registered. Most of them lived close to the roads where the sheep passed through. From 1989 to 1991, 32 to 52 human cases were reported per year. Mandatory notification was discontinued in 1999 as the number of reported cases decreased. After a small outbreak in 2012 notification of Q-fever was reintroduced in November 2012 (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases).

In 2005-2006 various foodstuff (bovine, ovine, caprine milk and egg shells) where screened for *C. burnetii* using PCR. In 4.7% (N=359) bovine milk samples *C. burnetii* could be detected, corresponding to 8 from 27 (29.6%) farms. 504 egg shells, 81 resp. 39 samples from 13 sheep resp. 39 goat farms tested negative [2]. In 2007, 49,5% (N=872) bulk tank milk samples, each representing one farm, were positive using a different PCR method with a higher sensitivity. The prevalence of *C. burnetii* in bovine bulk tank milk was estimated to be between 30% and 50% [3].

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.

At the beginning of the 1990s the number of notifications was high with about 100 reported cases a year. Notifications then steadily declined to about 40 cases per year in the time period 1996 to 2005. In 2006 coxiellosis reports rose again to above 60 cases per year. Since then cases were never below 60 cases per year. In 2012 a peak with 86 cases was reached, but case reports dropped again. Since 2015 a rising trend can be observed, reaching again over 100 cases as in the 1990. In the past 10 years) the average of case reports was 80 per year (Min: 58, Max: 131). Affected were mainly cattle (84%), while in goats (11%) and sheep (5%) less cases were reported.

The seroprevalence of the pathogen is estimated about 30% in cattle and about 1–3% in sheep and goats (data from the Swiss reference laboratory). In 2011 the herd seroprevalence of coxiellosis was 11% in goat farms (N=72) and 5% in sheep farms (N=100). At animal level the seroprevalence was 3.5% in goats (11/321) and 1.8% in sheep (9/500). In 97 collected abortion samples (43 from goats and 54 from sheep) the bacterial load was quantified by real-time PCR. In 13% of the tested samples a high amount of >104 bact/mg placenta was detected.

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

In 2018, 52 human cases were reported with a notification rate of 0.6 per 100'000 inhabitants. The number of reported cases stayed rather low as in the year before, suggesting that cases with severe clinical symptoms are not that frequent in Switzerland. The last outbreak occurred from February to August 2012. 17 human Q-Fever cases were registered in the canton of Vaud, of which 10 people were hospitalised. In 12 cases an epidemiological link could be established to an infected sheep herd with roughly 200 sheep. Only 4 cases lived next to this sheep herd, most other patients came from the surrounding area.

In 2018, 131cases of coxiellosis mainly in ruminants (106 in cattle, 18 in goats, 6 in sheep and 1 monkey from a zoo) were reported to the FSVO by cantonal veterinarians. In sheep and goats underreporting is estimated to be higher than in cattle. Since 2015 the number of case reports rose steadily and reached again the high levels of over 100 cases last seen in the 1990ies. As usual, mainly cases in cattle were

reported. The case in a monkey was the first one reported in Switzerland. The monkey was also examined due to an abortion.
In veterinary diagnostic laboratories 3423 tests for *Coxiella spp.* were carried out in the context of clinical investigations. Samples were derived from cattle (89%), sheep (6%) and goats (4%).
Coxiella burnetii as a cause of abortions seems to be more frequent in cattle. However, infected cattle are less dangerous for humans than infected sheep and goats. Although the seroprevalence of *C. burnetii* in the Swiss small ruminant population is rather low, Q-fever in small ruminants remains under certain epidemiological circumstances a public health threat**.**

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

Due to the outbreak in 2012 Q-Fever in humans is again notifiable since November 2012. 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

[1] Metzler AE *et al*., 1983: Distribution of *Coxiella burnetii*: a seroepidemiological study of domestic animals and veterinarians [in German]. Schweizer Archiv für Tierheilkunde, 125, 507-517.
[2] Fretz, R., Schaeren, W., Tanner, M., Baumgartner, A., 2007: Screening of various foodstuffs for occurrence of *Coxiella burnetii* in Switzerland. Int J Food Microbiol 116, 414-418.
[3] Baumgartner, A., Niederhauser, I., Schaeren, W. 2011: Occurrence of *Coxiella burnetii* DNA in bulk tank milk samples in Switzerland. Archiv für Lebensmittelhygiene 62, 200-204.
[4] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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 lesions of cysticerci. According to the ordinance of 23 November 2005 on hygiene in the slaughter process (VHyS; SR 817.190.1), all cattle older than 6 weeks must be checked with incisions into the jaw muscles and heart. Carcasses with few lesions are frozen, whereas carcasses with massive lesions are condemned.
Studies in six Swiss abattoirs from 2002 until 2005 showed that in about 0.58% of livestock animal, lesions in the muscles caused by *Taenia saginata* cysticerci were found [1]. The animals most heavily infected were cows. However, the routinely performed standard meat inspection protocol has a low diagnostic sensitivity for the detection of *T. saginata* cysticerci. In an abattoir trial of 2008/2009 [2], several additional heart incisions were performed in 1'088 slaughtered cattle originating from Swiss 832 farms. With the EU-approved routine meat inspection, bovine cysticercosis was diagnosed in 1.8% (20/1088) of the slaughtered cattle. Additional incisions into the heart muscle revealed further 29 cases, indicating a prevalence of at least 4.5%.
Data on carcasses with massive lesions are documented in the FLEKO (meat inspection statistics), however without species diagnosis. No data exist on carcasses with few lesions, which need to be frozen.
Data of the FLEKO (meat inspection statistics) from 2006 until 2018 support that cows are the most affected species: of 385 carcasses with massive lesions 83% were cattle, 14% sheep, 3% pigs and 0.3% goats. On average 30 carcasses (ranging from 13 to 45) with massive lesions were detected each year.

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

The illness for intestinal *Taenia saginata* infections in humans is mostly of mild character and can be treated. No autochthon cases of cysticercosis caused by *T. solium* are known, but single imported cases do occur in humans. Intestinal *Taenia* sp. infections in humans are occasionally treated in Switzerland, but no prevalence has so far been determined.
Taenia saginata cysticerci in cattle remain a parasitic disease of food safety (zoonotic) and economic significance. Based on the routine abattoir reports, the prevalence is underestimated in the cattle population. The sensitivity of the routine meat inspection method used at slaughter is estimated to be 15.6% (95% CI; 13-21), but the sensitivity could be improved with additional heart incisions [3].
In 2018, 19 carcasses (all from cattle) with massive lesions were recorded in the FLEKO (meat inspection statistics). Because data of cases with few lesions are not recorded in the FLEKO, comprehensive data are lacking. A case-control study in 2005/2006 considered the risk of infection for bovines to be primarily associated with external, significant risk factors: pastures bordering a railway line, pastures close to a recreational area, farmyard visitors, and raw feed that has been bought. In cases with massive lesions, other aspects may also play a role, such as not being connected to the sewage system or the presence of a tapeworm carrier on the farm.

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

None.

4. Additional information

[1] Flütsch et al. (2008). Case-control study to identify risk factors for bovine cysticercosis on farms in Switzerland; Parasitology 135, 641-646..
[2] Eichenberger et al. (2011). Increased sensitivity for the diagnosis of *Taenia saginata* cysticercus infection by additional heart examination compared to the EU-approved routine meat inspection. Food Control 22, 989-992.

[3] Eichenberger et al. (2013). Multi-test analysis and model-based estimation of the prevalence of *Taenia saginata* cysticercus infection in naturally infected dairy cows in the absence of a gold standard reference test. International Journal for Parasitology 43, 853-859.
[4] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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. Since 1999 no official data of human cases of Echinococcosis are available, as they are no longer notifiable to FOPH. However, the Institute of Parasitology of the University of Zurich collects data on human cases from cohorts of large treatment centres and centres for serodiagnosis of the disease. The frequency of AE increased between 2001 and 2005 by the 2.5-fold compared to the time period 1990-2000. From 2006-2010 the average incidence was 0.25 cases per 100'000 inhabitants per year, adding up to approximately 20 newly diagnosed cases annually. From 1984 to 2010 the average age at time of diagnosis was roughly 55 years. With every 20 years of life the age specific incidence increased significantly. 55% had been diagnosed in patients living in urban areas. However, the incidence in rural areas was still significantly higher (0.26 per 100'000 per year compared to 0.12 in urban areas). Incidence increased mainly in 6 major agglomeration areas: around Constanz, Zurich, Bern, Basel, Lausanne and Geneva. 55% were female cases.

Data on hospitalisations due to alveolar echinococcosis are available at the Federal Statistical Office (FSO) from 2008 until 2017 [6]. The numbers are comparable to the aforementioned data. In this time frame the number of people hospitalized the first time doubled and ranged from 25 to 55 people, corresponding to an incidence rate of 0.32 to 0.67 cases per 100'000 inhabitants per year. Although cases can occur already at the age of 19, the data from 2008 until 2014 of the FSO show that the risk of infection rose constantly the older the people were (0.2 cases per 100000 in the age group 15-24, 0.3 in the age group 25-44, 0.5 in the age group 45-64, 1.3 > 65 years old).

In animals, echinococcosis is notifiable (TSV, Article 5: disease to be monitored). In the past ten years between 1 and 10 cases per year were reported in animals excluding pigs, affecting mainly dogs (39%) and foxes (22%). Unusual is the high number of reported pigs since 2016. This is due to a research project, for which 2016 a pilot study started including laboratory testing. Organs with lesions of parasites are not fit for human consumption and are destroyed at slaughterhouse. Without laboratory confirmation, these alterations do not need to be reported. Due to the laboratory confirmation in the pilot study these liver lesions became cases with an obligation to be reported. In 2017 and partly 2018 the research study was ongoing to examine the prevalence in pigs further. Its aim is to be able to roughly estimate the contamination of *E. multilocularis eggs* in the environment.

In 2007 and 2008, the Institute of Parasitology of the University of Zurich tested mice and faecal fox samples in the region of Zurich. About 17% of the mice (100 mice from 634 in 2007 resp. 66 from 393 in 2008) were positive for *E. multilocularis*. In the fox faecal samples the number of positive samples declined in general from 26% in 2007 to 19% in 2008 (361/1376 in 2007 resp. 202/1044 in 2008). However in regions without deworming baits containing praziquantel fox faecal samples remained at the same level (63/254 (25%)).

In a dog survey in 2009 the prevalence of *E. multilocularis* (determined by egg isolation and species specific PCR) was found to be 0% (0.0/0.0-2.5) in 118 randomly collected pet dogs, but 2.4% (0.5-6.9%) in 124 farm dogs with free access to the surrounding fields. Eggs were also isolated from hair samples of dogs: no taeniid-eggs were found on the surface of pet dogs, whereas in 2 cases (1.6%) taeniid-eggs were isolated from farm dogs. Species identification in these two cases could not be achieved by PCR.

In 2012, the first reported case of probably cystic echinococcosis in a cow since 1991 was detected during meat inspection. No laboratory data was available for this case.

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 2008 and was 0.6 cases per 100'000 inhabitants in 2017 (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. The increased risk was probably caused by a general increase of the fox population from 1984 to 2000 due to the successful immunization campaigns against rabies in foxes, and by the encroachment of foxes to the urban areas. The prevalence of *E. multicularis* in foxes is estimated to lie between 30% and 70%. The Institute of Parasitology of the University of Zurich found in a research project 2016 25% (20 of 79) hunted foxes only from the Zurich region positive for *E. multilocularis*, 2012 53% (105 of 200) and 2013 57% (57 of 100) of hunted foxes from Eastern Switzerland positive for *E. multilocularis.* 2013 the prevalence in rodents in the Zürich region was low: only 3 of 200 *A. scherman* or 6 of 259 *M. arvalis* were infected. 2018 5 outbreaks in animals other than pigs were registered: 2 in wild boars, 2 in dogs and 1 in beavers. The reported cases were within the range of previous years. Due to the ending of the research project the number of reported cases in pigs decreased in 2018 to 29 cases (2018: 89 cases). Pigs are - like humans - an incidental host for *E. multilocularis*. Thus, infected pigs are no source of infection for humans. The aim of the research project is to estimate the burden of *E. multilocularis* eggs in the environment.

The life cycle of the zoonotic cestode *E. multilocularis* depends on canids (mainly red foxes) as definitive hosts and on their specific predation on rodent species (intermediate hosts). Host densities and predation rates are key drivers for infection with parasite eggs. Vaccination against rabies in wildlife, elimination of top predators and changing attitude towards wildlife (feeding and lower hunting rates) contribute to high fox densities and modify their anti-predator response ('landscape of fear'), promoting their tameness, which in turn facilitates the colonization of residential areas and modifies parasite transmission. These factors should be considered in the assessment of any intervention and prevention strategy. Thus, promoting the wariness of foxes by public campaigns that ask people not to feed or tame foxes, and to keep at a distance, is a recommended part of every prevention strategy [1].

In fresh foodstuffs, outdoor cultivation for example can lead to the occurrence of fox tapeworm eggs. The scientific literature provides several reports on microscopic findings of taeniid eggs in vegetables (reviewed Alvarez Rojas est al., 2018). Presently, there is no standardized methodology for the detection of taeniid eggs in food samples and some molecular approaches have been critically discussed in the recent literature.

An investigation in Switzerland on the presence of cestode eggs in feed (vegetables, fruits) was triggered by frequent cases of alveolar echinococcosis in primates kept in captivity at a Zoo (Federer et al., 2016). Egg-DNA PCR using multiplex PCR/sequencing on filtered samples revealed non-zoonotic *Taenia* spp. of dogs, foxes, or cats in 14 of the total 95 samples (each consisting of the washing of around 40 heads of lettuce enriched with a day ration of fruits and vegetables) originating from Switzerland. Taeniid-DNA was further detected in 13 (28%) of 46 samples of vegetables originating from different parts of Europe (vegetables and fruits as mentioned above), including *E. granulosus s.l*. (2), T. crassiceps (1), *T. hydatigena* (2), *T. multiceps/serialis* (2), *T. saginata* (1) and *T. taeniaeformis* (5). Although DNA of *E. multilocularis* was not identified in this study, the detection of DNA of other taeniids of foxes reveals that feed potentially pose a source for *E. multilocularis* eggs. So far, methods used to estimate the environmental or food contamination with taeniid eggs/DNA are not allowing to assess their viability, and hence, the results of all studies have to be carefully interpreted.

Moreover, people can also become infected through contact with soil, shoes and also dogs that are contaminated with fox tapeworm eggs. Pigs are – like humans – dead-end-hosts for *E. multilocularis*

Infected Pigs are no threat for human health. The aim of the research project is to use the number of infected pigs as an indirect measure how contaminated the environment is with *E. multilocularis* 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 [5]. The public is advised, not to feed or tame foxes and to keep at a distance. The Institute of Parasitology of the University of Zurich evaluated the control of the disease in the urban periphery of Zurich from 2006-2011 [2]. The monthly distribution of anthelmintic baits (Praziquantel) for foxes proved to be effective. Areas with bait distribution showed a significant decrease of the *E. multilocularis* egg contamination. However, the positive effect lasts only a few years. Therefore the distribution of anthelmintic baits needs to be repeated regularly which is expensive. All in all these experiments and studies in Germany, France and Japan confirmed the feasibility of this approa**ch. Regarding the** long latency of 5 –15 years of alveolar echinococcosis, however, such measures can only be cost effective if they are pursued for several decades and concentrate on highly endemic areas in densely populated zones. Thus, the implementation of this approach strongly depends on factors such as public attitude, available financial resources and priority setting of political decision-makers.

4. Additional information

[1] Hegglin D, Bontadina F, Deplazes D. Human-wildlife interactions and zoonotic transmission of *Echinococcus multilocularis*. Trends Par. 31: 167-173 (2015).
[2] Hegglin, D., & Deplazes, P., 2013, Control of *Echinococcus multilocularis*: Strategies, feasibility and cost-benefit analyses. Int. J. Par., 43: 327–337
[3] Torgerson, P.R., Schweiger, A., Deplazes, et al., 2008, Alveolar echinococcosis: From a deadly disease to a well-controlled infection. Relative survival and economic analysis in Switzerland over the last 35 years. J. of Hepatol. 49: 72-77.
[4]. Schweiger A, Ammann RW, Candinas D, Clavien P-A, Eckert J, Gottstein B, et al. Human alveolar echinococcosis after fox population increase, Switzerland. Emerg Infect Dis. 2007 Jun: http://www.cdc.gov/EID/content/13/6/878.htm.
[5] Federer, K., Armua-Fernandez, M.T., Gori, F., Hoby, S., Wenker, C., Deplazes. P.: Detection of Taeniid (Taenia spp., *Echinococcus* spp.) eggs contaminating vegetables and fruits sold in European markets and the risk for metacestode infections in captive primates. Int. J. Parasitol. Parasites and Wildlife 5, 249-253 (2016)
[6] 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
[7] 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
[8] Data for hospitalisation due to Echinococcosis (FSO): www.bfs.admin.ch.
[9] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

General evaluation*:
Francisella

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

Tularemia in humans is a notifiable disease since 2004 (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. At the Federal Office of Public Health all laboratory and clinical information is collated in a centralized database. Tularemia is also notifiable in animals (TSV, Article 5: disease to be monitored).

Tularemia in humans is sporadic. Until 2010, the annual number of human cases usually was below 10 confirmed cases. However, since 2012 more cases were reported than the years before. In 2012 there were 40 confirmed cases, in 2017 already 137 confirmed cases and in 2018 112 cases. There are regional differences with most cases reported in the north-east of Switzerland. Tick bites were the most often reported infection route.

In the past ten years (between 1 and 9 cases per year were reported in animals by cantonal veterinarians). In 91% of the cases hares were affected and in 8% monkeys (from zoos). The maximum of 9 cases in 2012 were detected due to a research project at the University of Bern.

In 2012, also wild mice which had died in a research barn in the canton of Zurich were tested positive for *F. tularensis.* The wild mice had free access to go in and out of this barn. None of the researchers from the research barn in the canton of Zurich developed tularemia and there was no link to any of the human cases reported in the canton of Zürich.

The biological cycle of *F. tularensis* is not well understood. To better understand the source of infection as well as the ecology of this bacterium including the maintenance of *F. tularensis* and its boosting in the environment which are a matter of biological safety, a project aiming to dissect the life cycle of this microorganism *sensu lato* was performed between 2012 and 2014 at the University of Bern (Paola Pilo: "Ecology of *Francisella tularensis* and its impact on biological safety"). 2012 24 mice, 18 hares, 2 monkeys and 1 stone marten, 2013 9 hares and 2014 1 hare tested positive for *F. tularensis.*

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

112 cases of tularemia were registered at the Federal Office of Public Health in 2018. The case numbers more than doubled compared to 2016. The notification rate was 1.3 cases per 100'000 inhabitants. 58 cases were men and 54 women, aged between 3 and 89 years old. Half of the cases were less than 46 years. The cases cluster in the canton of Zurich, Bern and St. Gallen.

The reasons for the increase of reported cases is unclear. Tick bite was the most frequent single source of infection (2018: 64/112). 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. 2018 23 cases in animals were reported by cantonal veterinarians, all in hares. Up to date never more than 9 cases of tularemia per year were reported. The increase in reported numbers 2018 is due to the fact that more hares were send into laboratories for investigation. The reason for this is unknown. There was no research project and hares originated from 15 different cantons excluding clustering. From 80 hares 30 (38%) tested positive. The positivity rate of 38% is within the range of recent years when less hares were tested.

Voluntary testing of wild animals found dead or hunted is a big challenge of the monitoring in place. Although more wild animals were send to laboratories in 2018, the results of the passive surveillance in wild animals still need to be considered as rather poor and inconsistent. It can only be concluded from these data, that tularemia is present in the Swiss wild hare population.
To obtain more detailed understanding of tick-associated diseases Spiez Laboratory launched a study in 2009 to collect samples of ticks from all over Switzerland in collaboration with NBC Defence Lab 1. It was possible to define six regions (3 in canton ZH, confirming the epidemiological data in humans, where most case were registered in Zürich, and 1 each in St. Gallen, Obwalden and Basel-Landschaft) where there is an increased prevalence of *F. tularensis holarctica (Fth)*. Well over 100'000 ticks were analysed. Only 0.01‰ proved to be positive for *Fth*. In collaboration with the Robert Koch Institute in Berlin it was possible to cultivate and isolate *F. tularensis* from positive tick lysates for the first time. The successful cultivation has confirmed the role of ticks as vectors and is prerequisite for the subsequent phylogenetic typing with next generation sequencing methods. To determine the epidemiological connection between tick isolates and human infections more precisely, a total of 59 *Fth* isolates were obtained from castor bean ticks (*Ixodes ricinus)*, animals and humans and a high resolution phylogeny was inferred using WGS methods. The majority of the *Fth* population in Switzerland belongs to the west European B.11 clade and shows an extraordinary genetic diversity underlining the old evolutionary history of the pathogen in the alpine region. Moreover, a new B.11 subclade was identified which was not described so far. The combined analysis of the epidemiological data of human tularemia cases with the whole genome sequences of the 59 isolates provide evidence that ticks play a pivotal role in transmitting *Fth* to humans and other vertebrates in Switzerland. This is further underlined by the correlation of disease risk estimates with climatic and ecological factors influencing the survival of ticks.

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

None.

4. Additional information

[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] Origgi et al, 2016: *Francisella tularensis* clades B.FTN002-00 and B.13 are associated with distinct pathology in the European brown hare (Lepus europaeus). Veterinary Pathology 2016, Vol. 53(6) 1220-1232
[3] Origgi et al, 2015. Tularemia among Free-Ranging Mice without Infection of Exposed Humans, Switzerland, 2012. Emerg Infect Dis. 2015 Jan; 21(1): 133–135.
[4] Dobay et al (2015). Dynamics of a tularemia outbreak in a closely monitored free-roaming population of wild house mice. PLoS ONE. 10(11):e0141103.
[5] Origgi et al (2014). Characterisation of a new group of *Francisella tularensis* subsp. *holarctica* in Switzerland with altered antimicrobial susceptibilities, 1996 to 2013. Eurosurveillance, Volume 19, Issue 29, 24 July 2014.
[6] https://www.frontiersin.org/articles/10.3389/fcimb.2018.00089/full
[7] Dwibedi et al, 2016: Long-range dispersal moved *Francisella tularensis* into Western Europe from the East. Microbial Genomics, 2016 2.
[8] Publication in the FOPH Bulletin 18/18 from 30.04.2018.
[9] Further information can be found on the FSVO website www.blv.admin.ch and the FOPH website www.bag.admin.ch.

* **For each zoonotic agent**

(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official “disease status” to be specified for the whole country and/or specific regions within the country
(b): If applicable

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. In the 1990s human listeriosis cases fluctuated between 19 and 45 cases per year, from 2000 onwards between 28 and 76 cases per year.

The last outbreaks, leading most times to an increased number of cases, occurred 2013/2014 (serotype 4b, most probable cause was ready-to-eat salad), 2011 (serotype 1/2a, imported boiled ham) and 2005 (serotype 1/2a; cheese). The biggest epidemic outbreak (serotype 4b) in Switzerland with 122 cases and 33 deaths took place in the 1980s due to contaminated cheese. In the aftermath of the epidemic outbreak in the late 1980s the Swiss government decreed the creation of appropriate means to prevent a repetition of such a case. Agroscope Food Microbial Systems (MSL) was given the order to create a *Listeria* Monitoring Program (LMP) in cooperation with the Swiss dairy industry. From 1990 on milk and milk products have been tested for *Listeria* spp. as part of quality assurance programs. Since 2007 *Listeria monocytogenes* was present in less than in 1% of the samples in all years. Usually samples from the environment were tested positive. If rarely cheese samples were positive, *L. monocytogenes* was only found on the cheese surface. A *Listeria* Advisory Team can be called in for planning and consultation in decontamination of facilities and providing checkups of company safety concepts. An evaluation in 2008 showed that in 85% of cases the measures advised proved successful over the subsequent years of operation. In addition, from 2002 until 2011 several hundred samples of semi-hard and soft-cheese from either raw or pasteurized cow's, sheep's and goat's milk were tested every year for *Listeria* spp. within the framework of the national testing program in the dairy industry by official food control. As only a few samples were positive each year the program was stopped 2011.

Listeriosis in animals is notifiable (TSV, Article 5: disease to be monitored). From 1991 until 1995 not more than 3 cases of listeriosis per year were reported. Between 1999 and 2004 it were 27 to 34 per year. In the last ten years between 6 and 15 cases per year were notified. 95% of them affected ruminants (47% cattle, 23% sheep and 25% goats).

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

In 2018, 52 human cases were reported (notification rate: 0.6 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. Like in previous years the two most frequently identified serovars were 1/2a (46%) and 4b (46%). In addition to the sporadic cases, a cluster of 12 cases of Serotype 4b were identified, which were closely related by next generation sequencing. This was probably an outbreak due to a common food source. Although an outbreak investigation was immediately initiated, the source of the infection remained unknown.

In the framework of the *Listeria* Monitoring Program (LMP) 1539 samples (171 environmental samples, and 1342 cheese samples and 26 milk samples) were tested for the presence of *Listeria* spp. in 2018. *L. monocytogenes* were detected in 2 samples (0.1%): 1 surface sample from hard cheese and semi-hard cheese respectively. Other species of *Listeria* spp. were found in 16 samples (1.0%).

In a joint campaign in 2018, the cantonal chemists of Switzerland collected one thousand samples of ready-to-eat salads, fruits, delicatessen salads, antipasti and other mainly plant-based convenience products from the Swiss market. *Listeria monocytogenes* were found in nearly 3% of the samples. If *Listeria monocytogenes* were detected, the manufacturers were informed immediately and preventive measures were taken by the cantonal chemists.

In 2018, 12 cases of animal listeriosis were registered, all in ruminants (8 in cattle, 2 in goats, 1 in a monkey and 1 in chicken). In the context of clinical investigations diagnostic tests in veterinary

laboratories were mainly carried out in ruminants. In 2018 in total 62 tests for listeriosis were carried out (cattle, goats and sheep, 55%), pigs (24%), dogs and cats (12%), horses (6%) and monkeys (3%).
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

Further information can be found on the FSVO website www.blv.admin.ch.

*** For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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 since 2007. 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) 1'539 samples (171 environmental samples, 1'342 cheese samples and 26 milk samples) were tested for the presence of *Listeria* spp. in 2018. *L. monocytogenes* were detected in 2 samples (0.1%): 1 surface sample from hard cheese and 1 surface sample from semi-hard cheese. Other species of *Listeria* were found in 16 samples (1.0%).

5. Additional information

None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**
(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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). In the 80s salmonellosis in humans was the most reported food borne disease. After reaching a peak in 1992 with 113 reports per 100,000 inhabitants the incidence declined steadily and in 1995 campylobacteriosis took over to be the most reported food borne disease. Since 2003 the incidence of salmonellosis was never over 30 reports per 100,000 inhabitants. *S.* Enteritidis was the most frequently isolated serovar followed by *S.* Typhimurium including the monophasic variant *S. enterica* serovar 4,[5],12:i:-.

From 1995 until 2006 the infection of chicken with *S.* Enteritidis was notifiable and a control program for *S.* Enteritidis was in place for breeding flocks and laying hen flocks (TSV, Article 255-261). During this period the incidence of *S.* Enteritidis infection in breeding and laying hen flocks steadily declined from 38 to 3 infected flocks per year. Since 2007 *Salmonella* infection in poultry is notifiable according to the regulation 2160/2003 of the European community. The control program covers the detection of *S.* Enteritidis and *S.* Typhimurium, including the monophasic variant S. *enterica* serovar 4,[5],12:i:- , in breeding flocks with over 250 places, laying hen flocks with over 1000 places, broiler flocks with over 5000 places and turkey flocks with over 500 places. For breeding flocks *S.* Hadar, *S.* Virchow and *S.* Infantis are included additionally. In the last 10 years, not more than 8 cases per year were reported. Most cases covered by the control program occurred in laying hens. In broiler chickens controlled serovars were found 2010, 2011, 2014 and 2017 (in each year one case except in 2014, when 4 broiler flocks were affected in one outbreak). The first and only case in breeding flocks (S. Enteritidis) in the control program was found in 2012, in fattening turkeys 2017.

Baseline studies were carried out in 2005 – 2008 resulting in the following prevalence estimates: in laying hens 1.3% (3 of 235 flocks; 2006), in broilers 0.3% (1 of 299 flocks; 2007), in slaughter pigs 2.3% (14 of 615; 2007) and in breeding pigs 13.0% (29 of 223; 2008). In laying hens and broilers all isolates were either *S.* Enteritidis or *S.* Typhimurium. In slaughter pigs 60% and in breeding pigs 27% of the detected serovars were *S.* Enteritidis or *S.* Typhimurium - proving again the presence of these two serovars in the pig population. The prevalence in slaughter pigs in 2007 was equal as in previous research studies. As breeding pigs have not been addressed before the prevalence obtained 2008 cannot be compared with previous data. As there are not many turkey flocks and *Salmonella* did not appear to be a specific problem in turkeys in Switzerland, the baseline study on the prevalence of *Salmonella* in turkey flocks was not conducted.

From 2002 until 2009 cheese production in cheese-making facilities was officially sampled and monitored for *Salmonella* in a national surveillance program. As since 2004 no *Salmonella* were detected, the official testing on *Salmonella* in dairy products was stopped in 2009. In an additional study to the *Listeria* monitoring program conducted 2016 the prevalence of certain pathogenic organisms (including *Salmonella*) was evaluated to examine Swiss cheese made out of raw or low heat-treated milk. In 2016 104 samples were examined for the presence of *Salmonella*. No *Salmonella* could be detected.

In 2007, a study in broiler meat at retail showed that *Salmonella* prevalence was low (0.4%) in Swiss products compared to imported products (15.3%). In 2008, a baseline study of *Salmonella* spp. in neck skin from broiler carcasses yielded a *Salmonella* prevalence of 2.6%.

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

In 2018, 1’467 human cases were reported representing a notification rate of 17 cases per 100’000 inhabitants (2017: 1’835 cases or 22/100’000), which is a decrease. As in previous years the most affected age group was children under 5 years (<1 year: 51/100‘000, 1 to 4 years: 53/100‘000). The

typical seasonal increase of notifications during summer and autumn was also observed in 2018. The most frequently reported serovars remained *S.* Enteritidis (28%), *S.* Typhimurium (16%) 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. After an in 2017 the number of cases decreased again in 2018.
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

[1] In a *S.* Kentucky study conducted in 2010 (Bonalli *et al.*) 106 human *S.* Kentucky strains, isolated from patients between 2004 and 2009, were genotyped using PFGE. There was some evidence of a non-recognized outbreak of *S.* Kentucky in 2006. Travels to North Africa were a risk factor for *S.* Kentucky infection [Bonalli et al.; *S.* Kentucky associated with human infections in Switzerland: genotype and resistance trends 2004-2009, International Food Research (May 2011)].
[2] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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, abattoir 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 abattoir. 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. In the past 10 years on average 81 salmonellosis cases per year were recorded by cantonal veterinarians (Min: 50, Max: 127). Mainly cows (34%), reptiles (30%), dogs/cats (20%) and sheep (5%) were affected.
2018, 98 salmonellosis cases in animals were reported. As usual mainly cows (32x), reptiles (33x) and dogs/cats (18x) were affected.
After the increase of reported cases in 2016 the number of cases declined again in 2017 and 2018.
The rise in the number of salmonellosis reports since 2016 was mainly linked to the cattle population. In 2016 there was an outbreak in a clinic for ruminants, in which several cows from different farms were affected. Thus also the number of laboratory tests carried out in cattle rose in 2016. Animals from some holdings were tested more than once positive during this time period. In 2018, especially the reported cases in cattle dropped. In general the positivity rate in cattle animals is higher than in other non-farmed animals, as often several animals are infected on a positive farm. Serovars found in cattle are mainly S. Typhimurium and the monophasic variant 4,[5],12:i-.
In veterinary diagnostic laboratories 5571 tests for salmonellosis were carried out in the context of clinical investigations in 2018, mainly in cattle (44%), dogs/cats (26%) and sheep (13%).
In 2016 and 2017 there were outbreaks of S. Newport and S. Typhimurium in one horse holding each, affecting 6 and 5 horses, respectively.

5. Additional information

Further information can be found on the FSVO website www.blv.admin.ch.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No. (d): Minimum five years. (e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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 5'000 places and Commission Regulation (EC) No. 1190/2012 regarding fattening turkeys with more than 500 places. 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 the meat and organs 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 quarantined 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 quarantine conditions are lifted when all animals have been culled or slaughtered and the premises were cleaned, disinfected and freedom from *Salmonella* of the premises by means of bacteriological testing was 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 2018, no cases were reported in the framework of the control program.
Further15 suspect cases (positive environmental samples not confirmed in animal samples) were detected:
8 in laying hens >1'000 places (*S.* Enteritidis (4x), *S.* Typhimurium (3x), *S.* Typhimurium monophasic variant 4,[5],12:i:- (1x), as well as 7 in broilers >5'000 places (*S.* Typhimurium monophasic variant 4,[5],12:i:- (7x)).
In addition, several serovars not covered in the control program were detected in environmental samples: 4 in laying hens: S. Abony (1x), S. Idikan (5x), S. Livingstone (1x), S. Mikawasima (1x); 18 in broilers: S. Tenessee (11x), *S.* Agano (1x); *S.* Anatum (1x), *S.* monophasic (13,12:i:-) (1x) S. Braenderup (1x), S. Coeln (1x), S. Livingstone (1x), S. Wellikade (1x); 4 in fattening turkeys: S. Albany (4x).
Outside from the control program, 3 smaller flocks (24, 65 and 900 animals, respectively) were tested positive for S. Typhimurium (2x) and *S.* Enteritidis (1x) in animal samples. In addition, following serovars were detected in environmental samples in small flocks: S. Typhimurium (1x) and S. Typhimurium monophasic (1x).

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. In broiler chickens controlled serovars were found one each in 2010, 2011 and 2017 as well as in 2014, when one outbreak affecting 4 broiler flocks was detected. The first and only case in breeding flocks (S. Enteritidis) in the control program was found in 2012. It was unusual in 2017 to find 11x exotic serovars in breeding flocks. The source for these is unknown. In 2018 there were no *Salmonella* positive samples from breeding flocks. 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

Further information can be found on the FSVO website www.blv.admin.ch.

* **For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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 Hygiene Ordinance lays down limits for *Salmonella* in various foods (food safety criteria and process hygiene criteria). Results of the *Salmonella* monitoring of the largest poultry producers and abattoirs 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 imported poultry meat was included in the data analysis.
2. Measures in place[(b)]
If the limits of the Hygiene Ordinance (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 3'712 examinations including samples from broiler and turkey meat (carcasses and meat) were performed in 2018. Of them, 12 (0.3%) proved to be positive for *Salmonella* spp.: 5x *S.* Albany, 4x *S.* Typhimurium, 1x *S.* Enterica, 1x *S.* Chester and 1x *S.* Infantis (see also *Salmonella* poultry meat table). The 5 *S.* Albany originated from turkey carcasses, the 4 *S.* Typhimurium from skinned turkey meat (3x) and skinned broiler meat (1x), the *S.* Enterica and *S.* Chester from broiler carcasses, and the *S.* Infantis from a broiler meat preparation. Of all 3'317 broiler meat samples (carcasses and meat), 4 (0.1%) proved to be positive for *Salmonella*. Thereby, 0.3% of the 633 tested broiler carcasses and less than 0.1% of the 2'684 tested broiler meat samples were positive for *Salmonella*. Furthermore, 8 (2.0%) of all 395 turkey meat samples (carcasses and meat) proved to be positive for *Salmonella*. Thereby, 4.0% of the 125 tested turkey carcasses and 1.1% of the 270 tested turkey meat samples were positive for *Salmonella*.
5. Additional information
None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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). In the period from 1967 until 1999, an estimated number of some 25 000 post exposure treatments in humans were done due to the increased risk of rabies infections. Rabies caused in 1977 three human deaths. The last imported human rabies case in Switzerland was reported 2012. An American citizen was transferred of a hospital in Dubai to a hospital in Zurich, where he died. He was bitten by a bat in California 3 months before onset of the first symptoms.

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.

The last case of fox rabies occurred in 1996. The European fox rabies epizootic started in 1939 at the eastern border of Poland and reached Switzerland on March 3, 1967. From 1967 until 1999 a total of 17'108 rabies cases, of which 73% in foxes and 14% in domestic animals were diagnosed. To eliminate rabies, in 1978 the first field trial world-wide for the oral immunization of foxes against rabies was conducted in Switzerland. Between 1978 and 1998 a total of 2.8 million baits containing a modified live virus were distributed. The 1990s were characterized by a recrudescence of rabies in spite of regular oral immunization of foxes.

Since 1976 bat rabies has been diagnosed in one bat each in 1992, 1993, 2002 and 2017. 2017 European Bat Lyssavirus 1, which commonly circulates in Europe, was detected in Switzerland for the first time. The cases from 1992, 1993 and 2002 all belonged to the European Bat Lyssavirus 2.

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 since 1999. In addition, Switzerland's neighboring countries were free from European fox rabies in recent years.

In 2017 a rare event occurred in Switzerland. A citizen found a weak and disorientated bat on a pavement in Neuenburg. The person picked the bat up with his hands and was bitten by it. After the bite the bat died. The person luckily went immediately to hospital and got a post exposure prophylaxis for rabies after consultation with the Swiss Rabies Center. The bat was sent to the national reference laboratory and tested positive for European Bat Lyssavirus 1. It was the first time that European Bat Lyssavirus type 1 was detected in Switzerland. The cases from 1992, 1993 and 2002 all belonged to the European Bat Lyssavirus 2. In 2018 no events were reported.

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. Abroad (i.e. in North- and South-America) the prevalence of rabies virus in the bat population can be quite high. 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. In 2014, one man from France died after exposition in Mali and one woman from the Netherlands, after being bitten by an infected stray dog in India. In Switzerland, the last imported human case occurred in 2012, after being bitten by an infected bat in California). Thus, people travelling into rabies risk countries/areas should be better informed.

2018, 1328 sera from humans were tested for neutralizing antibodies at the national reference laboratory for rabies (Swiss Rabies Center). 686times (52%) antibody titers were controlled after pre-

expositional immunization, 615 times (46%) the blood was checked after post exposure prophylaxis (PEP), 10 times the person was a clinical suspect case and in 17 cases no reason for the investigation was given. This amount of testing is comparable with the previous years.
116 animals were tested for rabies at the national reference laboratory (Swiss Rabies Center) in 2018. The samples originated mainly from dogs (48%), cats (18%), bats (21%) and foxes (9%). tests were negative.
1419 sera of dogs and cats were tested in the context of travelling procedures in order to detect the level of neutralizing antibodies. This was slightly higher than in 2017. In 2012 there was a drop in testing numbers due to the fact that the blood test for travelling to England, Ireland and Scandinavia was no longer mandatory for domestic rabies free countries like Switzerland.
Dogs and cats are regularly illegal imported from rabies risk countries. In Switzerland, 30 dogs and 13 cats were detected in 2018. None of these 43 animals were rabies cases. However, illegal imported rabies cases into the EU were reported in the past (2015 in France, 2013 in Spain, Germany and France). The last case in a dog in Switzerland was reported 2003. The dog was a foundling picked up close to the French border with a viral sequence closely related to North African strains from dogs. This did not indicate a focus of rabies infection in Switzerland but an illegal import. Such illegal imported animals pose a certain risk for pets and their owners in the EU and Switzerland and lead to timely investigations, euthanisation of contact animals, post exposure prophylaxis (PEP) and prophylactic vaccinations.
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 were implemented in 2003 and adapted in 2004 according to the EU regulation 998/2003/EC.

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

Close collaboration with neighboring countries is important especially with regards to control measures in wild animals. Animals with suspect symptoms originating from countries with urban rabies are tested for rabies. Furthermore, the situation in neighboring countries and the EU is closely monitored. Due to the incident in 2017, when a person in the canton Neuenburg was bitten by a bat information for the public was published, to be cautious in the handling of diseased and abnormally behaving wild animals.

4. Additional information

[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 immunfluorescence (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/_
[3] http://www.promedmail.org/direct.php?id=20130623.1787886
[4] http://www.gideononline.com/tag/rabies/
[5] http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20474
[6] http://www.who-rabies-bulletin.org/
[7] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official “disease status” to be specified for the whole country and/or specific regions within the country
(b): If applicable

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. In the past ten years never more than 7 cases per year were recorded. Affected animals were goats (23%), sheep (14%), cats (14%), monkeys (9%), suricates (9%), kangaroo (6%), lemurs (6%), as well as, marmots, singing birds, ibis, chicken and other species (each 3%).

Infections with *Toxoplasma gondii* in meat-producing animals are widespread in Switzerland. In 2000, *Toxoplasma*-DNA in meat-producing animals was present in meat samples in 1% of the assessed cows, 0% of young cattle, 2% of young bulls, 1% of calves, 0% of pigs and 4% of ovine samples. *Toxoplasma* antibodies could be detected in 32% of cows and young cattle, 21% in young bulls, 4% in calves and 53% in sheep; in the breeding pigs 27% and in the fattening pigs 1% [6]. In 2009, again meat from various animal categories was sampled at the slaughterhouse. Using real-time PCR it could be shown that DNA of *T. gondii* was detectable in 4.7% of bovine, 2.2% of porcine, 2.0% of ovine and 0.7% of wild boar samples [3]. *Toxoplasma* antibodies were detected in 13% of calves (6/47), 37% of cattle (48/129), 62% of fattening bulls (62/100), 53% of cows (69/130), 14% of fattening pigs (7/50), 13% of free-ranging pigs (13/100), 36% of sows (43/120), 6.7% in wild boars (10/150), 33% of lambs (33/100) and 81% of ewes (121/150) [2]. As the same standardized ELISA was used and various other studies showed that both substrates (serum and meat juice) are directly comparable the *T. gondii* seroprevalence in all species rose over the past 10 years. With the switch from the conventional PCR to the real-time system, PCR has become more sensitive, so that the increase in the *T. gondii* DNA-prevalence in meat samples apparent in most species (except sheep) requires cautious interpretation. The difference in prevalence was only significant in calves. The increasing age of the animals was identified as a risk factor for *Toxoplasma* infection, while the housing conditions (conventional fattening pigs versus free-range pigs) appeared to have no influence on the results of serological testing. The low rate of infection in wild boars can most likely be explained by the fact that wild pigs normally live extensively in areas with low cat density. In addition, a study in free-ranging alpine ibex revealed very low numbers of *T. gondii* antibody positive ibex [4]. It seems unlikely that alpine ibex are a reservoir for this abortive agent.

In order to address another source of human infection, faecal samples of 252 cats were investigated in the same study. Oocysts of *T. gondii* were found in 0.4% of the specimen. Genotyping of the isolates of the survey from 2009 indicated that all 3 classical genotypes (I, II, III) occur in Switzerland [3]. In general, findings of *Toxoplasma* oocysts in routine coprology of cats are notifiable. Each year, over 1000 routine coprology of cats are carried out.

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

In 2018, 2 cases in animals (1 in goats and 1 in cats were reported by cantonal veterinarians, which was within the range of the past 10 years.

In the context of clinical investigations 364 tests for toxoplasmosis were carried out in 2018 in veterinary diagnostic laboratories. 16 for the detection of the *Toxoplasma* agent (11x goats, 3x alpacas, 1x monkey, 1x cattle) and 348 serological test mainly in cats and dogs (87%).

There is a risk of exposure in Switzerland both from the consumption of meat and from cats as contaminators of the environment. The results of the last study from 2009 showed, that infections with *T. gondii* in meat-producing animals are widespread in Switzerland and that the risk appears to have increased in the past ten years. The oocyst excretion rate of 0.4 % found in cats may appear low. But

when one considers that an infected cat may excrete large quantities of oocysts for up to 20 days, and these can survive for a year or more under favorable conditions (i.e. not too cold, hot or dry) the environmental contamination with *T. gondii* must not be underestimated.
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). The serosurveillance of pregnant women for anti-*Toxoplasma* antibodies has been discontinued since 2009.
In non-immune sheep and goats (first-time infection) *T. gondii* is regarded as a major cause of abortion and loss of lambs.

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

None.

4. Additional information

[1] Frey CF, Berger-Schoch AE, Hermann DC, Schares G, Müller N, Bernet D, Doherr MG, Gottstein B (2012): Vorkommen und Genotypen von *Toxoplasma gondii* in der Muskulatur von Schaf, Rind und Schwein sowie im Katzenkot in der Schweiz. Schweiz. Arch. Tierheilk. 154: 251-255.
[2] Berger-Schoch A.E., Bernet D. *et al., (2011a)*, *Toxoplasma gondii* in Switzerland: A serosurvey based on meat juice analysis of slaughter pigs, wild boar, sheep and cattle. Zoonoses and Public Health, 58(7):472-8.
[3] Berger-Schoch A.E., Herrmann D.C. et al., (2011b) Molecular prevalence and genotypes of *Toxoplasma gondii* in feline faeces (oocysts) and meat from sheep, cattle and pigs in Switzerland. Veterinary Parasitology, 177: 290–297.
[4] Marreros N., et al. (2011), Epizootiologic investigations of selected abortive agents in free-ranging Alpine ibex (Capra ibex ibex) in Switzerland, J Wildl Dis. 2011 Jul;47(3):530-43.
[5] Spycher A, Geigy C, Howard J, Posthaus H, Gendron K, Gottstein B, Debache K, Herrmann DC, Schares G, Frey CF (2011). Isolation and genotyping of *Toxoplasma gondii* causing fatal systemic toxoplasmosis in an immunocompetent 10-year-old cat. J Vet Diagn Invest. 23: 104-108.
[6] Wyss R., Sager H. et al. (2000): The occurrence of *Toxoplasma gondii* and *Neospora caninum* as regards meat hygiene. Schweiz. Arch. Tierheilkd. 142(3): 95-108.
[7] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

General evaluation*:
Trichinella

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

Trichinellosis is notifiable in humans since 2009 (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals since 1966 (TSV, Article 5: disease to be monitored). Since then the Federal Office of Public Health received very few reports of human trichinellosis, never exceeding 4 per year.

The testing of all slaughter pigs on trichinellosis is mandatory since 2007 (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. *Trichinella* infections in pigs were not detected for many decades. Since 2005, the proportion of slaughter pigs tested for trichinellosis increased steadily: from 34% in 2005 to about 90% in 2009. In 2009, 20'000 slaughter pigs were tested additionally with an improved digestion method, but no antibodies against *Trichinella spp*. were found [3]. Since 2010 the proportion of tested slaughter pigs and horses was around 93% and 85%, respectively. Furthermore, between 1'700 and 6'176 wild boars were tested each year for *Trichinella* and all samples from wild boars were negative.

Cases in the wildlife population always concerned carnivorous wild animals. In the last 10 years (2008-2017), never more than 5 cases per year were reported (on average 2 cases per year). Affected animal species were mainly lynx (about 90%), followed by foxes. The nematodes involved were always *Trichinella britovi.*

A study conducted from 1999 until 2007 found that 15 of 55 (27.3%) assessed lynxes harbored *T. britovi* larvae. In 2006/2007, 21 of 1298 (1.6%) assessed foxes proved positive for *T. britovi* larvae [1].

In a study conducted in 2008, 1'458 wild boars tested negative for *Trichinella* by artificial digestion, but 3 had antibodies against *Trichinella* (seroprevalence 0.2%). This illustrates that wild boars may come in contact with this nematode [2].

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

In 2018, no human case was reported. Since the reinforcement of the notification in 2009, 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. Only in 2012, a 22 year old hunter/butcher from the French part of Switzerland got infected by eating raw sausage pastry containing wild boar meat (positive serology).

In 2018, 2'403'974 slaughter pigs (94% of all slaughtered pigs) were tested for *Trichinella*. All results were negative. 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, 1'706 horses (86% of all slaughtered horses) and 5'904 wild boars were also tested negative for trichinellosis.

However, *Trichinella* are sporadically detected in the wild animal population other than wild boars. In 2018, 5 cases of *T. britovi* infections were reported by cantonal veterinarians (4x in lynx, 1x in a wolf).

Trichinellosis in humans is very rare in Switzerland and often associated with infections acquired abroad. As infections in wild animal populations can 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 vital. As all infections in wildlife in the past were *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

[1] Frey et al. (2009). Assessment of the prevalence of *Trichinella* spp. in red foxes and Eurasian lynxes from Switzerland. Veterinary Parasitology 159, 295-299.
[2] Frey et al. (2009). Vorkommen von *Trichinella* spp. beim Wildschwein in der Schweiz. Archiv für Tierheilkunde 151, 485-489.
[3] Schuppers et al. (2010). A study to demonstrate freedom from *Trichinella* spp. in domestic pigs in Switzerland Zoonoses and Public Health, 57, e130-e135.
[4] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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). All 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 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 2018, 1'706 horses (86% of all slaughtered horses) were tested for *Trichinella* with negative results. There are no observations that would challenge the freedom of Swiss horses from trichinellosis.

5. Additional information

None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**
(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.
(c): Mandatory: Yes/No.
(d): Minimum five years.
(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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 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 2018, 2'403'974 slaughter pigs (94% of all slaughtered pigs) were tested for *Trichinella* with negative results. 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 do occur in humans.
5. Additional information
None.

*** For all combinations of zoonotic agents and matrix (Food, Feed and Animals) for 'Prevalence' and 'Disease Status': one text form reported per each combination of matrix/zoonoses or zoonotic agent**

(a): Sampling scheme (sampling strategy, frequency of the sampling, type of specimen taken, methods of sampling (description of sampling techniques) + testing scheme (case definition, diagnostic/analytical methods used, diagnostic flow (parallel testing, serial testing) to assign and define cases. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(b): The control program/strategies in place, including vaccination if relevant. If applicable a description of how eradication measures are/were implemented, measures in case of the positive findings or single cases; 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, if applicable. If programme approved by the EC, please provide link to the specific programme in the Commission`s website.

(c): Mandatory: Yes/No.

(d): Minimum five years.

(e): Relevance of the findings in animals to findings in foodstuffs and for human cases (as a source of infection).

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 since 1999 (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases). Until 2013 the notification rate of VTEC infections was never above 1.1 reports per 100,000 inhabitants. Children under 5 years were the age group mostly affected, ranging between 3 and 9 reports per 100'000 inhabitant.
A recently performed study characterized a collection of 95 Shigatoxin-producing *E. coli* (STEC) isolated from human patients in Switzerland during 2010–2014 (Fierz et al. 2017) [4]. The five most common serogroups were O157, O145, O26, O103, and O146. Of the 95 strains, 35 (36.8%) carried *stx1* genes only, 43 strains (45.2%) carried *stx2* and 17 (17.9%) harbored combinations of *stx1* and *stx2* genes. *Stx1a* (42 strains) and *stx2a* (32 strains) were the most frequently detected *stx* subtypes. Genes for intimin (*eae*), hemolysin (*hly*), iron-regulated adhesion (*iha*) and the subtilase cytotoxin subtypes *subAB1*, *subAB2-1, subAB2-2* or *subAB2-3* were detected in 70.5%, 83.2%, 74.7% and 20% of the strains, respectively. Multilocus sequence typing assigned the majority (58.9%) of the isolates to five different clonal complexes (CC), 11, 32, 29, 20, and 165, respectively. CC11 included all O157:[H7] and O55:[H7] isolates. CC32 comprised O145:[H28] isolates, and O145:[H25] belonged to sequence type (ST) 342. CC29 contained isolates of the O26:[H11], O111:[H8] and O118:[Hnt] serogroups, and CC20 encompassed isolates of O51:H49/[Hnt] and O103:[H2]. CC165 included isolates typed O80:[H2]-ST301, all harboring *stx2d*, *eae-*, *hly*, and 66.7% additionally harboring *iha*. All O80:[H2]-ST301 strains harbored at least 7 genes carried by pS88, a plasmid associated with extraintestinal virulence. Compared to data from Switzerland from the years 2000–2009 [7,8], an increase of the proportion of non-O157 STEC infections was observed as well as an increase of infections due to STEC O146. By contrast, the prevalence of the highly virulent German clone STEC O26:[H11]-ST29 decreased from 11.3% during 2000-2009 to 1.1% for the time span 2010-2014. The detection of O80:[H2]-ST301 harboring *stx2d*, *eae-*, *hly*, *iha*, and pS88 related genes suggests an ongoing emergence in Switzerland of an unusual, highly pathogenic STEC serotype.
Ruminants are an important reservoir for VTEC. Shiga toxin genes and the top-five serogroups were frequently found in young Swiss cattle at slaughter. 74.1% of the fecal samples thereby tested positive for *vtx* genes. Moreover, 42% of these samples tested positive by PCR for O145, 26% for O103, 24% for O26, 8% for O157 and 1% for O111; N=563). Success rates for STEC strain isolation, however, were low. Only 17 O26 strains could be isolated. All of them were *eae*-positive, 9 strains harbored *vtx* (*vtx1 (*8x), *vtx2 (*1x)). Of the 28 isolated O145 strains, 10 were *eae*-positive including 4 harboring *vtx1* or *vtx2*. Of the 12 O157 strains 5 harbored *vtx2* and *eae* and were identified as VTEC O157:H7/H(-). The other 7 O157 strains were negative for *vtx* and *eae* or positive only for *eae*. On the other hand, VTEC strains from fattening pigs are harboring mainly *vtx2e* and are therefore considered to be of low pathogenicity. Furthermore, wild animals, in particular wild ruminants, are also possible VTEC reservoirs In 2011, 33% of fecal samples of wild ruminants tested positive for *vtx*, 7% for *eae* and 14% for both (N=239). 45% harbored genes from the Vtx2 group, 30% from the Vtx1 group, and 21% from both groups (N=56). Strains were isolated from 18 red deer, 19 roe deer, 13 chamois and 6 ibex.
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*). The eight isolated VTEC strains belonged to six different serotypes (including O103:H2, O146:H28 or O11H48) and different *vtx* subtypes (including vtx_{2a}) were found.

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

In 2018, 822 laboratory confirmed cases of human VTEC infections were registered. The notification rate was 9.7 per 100'000 inhabitants (2017: 713 cases, 8.4/100'000). 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 (N=466, 57 %) than men (N=353, 43%) affected. No source of infection could be identified. The number of HUS cases remained stable with 23 cases in 2018, thereof 11 were children under 5 years of age and 9 were adults over 64 years of age. Children under 5 years remained the most frequently affected age group (25.3 per 100'000 inhabitants) accounting for 13% of all cases. However, the biggest share of the rise in reports concerned adults comprising 70% of all cases. The notification rate in the age group "65 plus" rose from under 1 per 100'000 inhabitants in the years before 2013 to 14.5 in 2018. The more extensive usage of multiplex-PCR detecting toxins might be the main reason for this sharp increase.

In a study conducted in 2012 O26:H11/H^- isolates from human fecal samples having bloody diarrhea and/or HUS (27x) and fecal isolates from healthy cattle (11x) and sheep (1x) were further analyzed. Within the *E. coli* O26 isolates more sequence type ST21 strains were identified than ST29 (60% and 75% of the human and animal isolates, respectively). Whereas all human isolates harbored at least one *vtx*, only one isolate each from one cattle and sheep did. Both animal strains harboring *vtx* belonged to ST29.

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. Data from the national monitoring program for dairy products 2006-2008 confirm that raw milk cheese may constitute a possible source for VTEC infections and are a relevant hazard in this type of dairy product. Especially because VTEC can survive during the ripening process of semi-hard raw milk cheeses. Although O157:H7 is the predominant cause of HUS, O26:H11/H^- has emerged to the most common non-O157 serotype causing human bloody diarrhea and HUS in many countries. Cattle and sheep are a possible reservoir of the emerging O26:H11/H^- ST29 [2].

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 [1-10].

4. **Additional information**

[1] Nüesch-Inderbinen et al. (2015). Prevalence of Subtilase cytotoxin-encoding *subAB* variants among Shiga toxin-producing *Escherichia coli* strains isolated from wild ruminants and sheep differs from that of cattle and pigs and is predominated by the new allelic variant *subAB2-2*. International Journal of Medical Microbiology 305, 124-128.

[2] Zweifel et al. (2013). Detection of the emerging Shiga toxin-producing *Escherichia coli* O26:H11/H^- sequence type 29 (ST29) clone in human patients and healthy cattle in Switzerland. Applied and

Environmental Microbiology 79, 5411-5413.
[3] Peng et al. (2013). Behavior of Shiga toxin-producing and generic *E. coli* during ripening of semi-hard raw milk cheese. Journal of Dairy Science 31, 117-120.
[4] Fierz et al. (2017). Human infections with Shiga toxin-producing *Escherichia coli*, Switzerland, 2010-2014. Frontiers in Microbiology 8:1471.
[5] Obwegeser et al. (2012). Shedding of foodborne pathogens and microbial carcass contamination of hunted wild ruminants. Veterinary Microbiology 159, 149-154.
[6] Hofer et al. (2012). Application of a real-time PCR-based system for monitoring of O26, O103, O111, O145 and O157 Shiga Toxin-producing *Escherichia coli* in cattle at slaughter. Zoonoses and Public Health 59, 408-415.
[7] Käppeli et al. (2011a). Shiga toxin-producing *Escherichia coli* non-O157 strains associated with human infections in Switzerland: 2000-2009. Emerging Infectious Diseases 17, 180-185.
[8] Käppeli et al. (2011b). Shiga toxin-producing *Escherichia coli* O157 associated with human infections in Switzerland, 2000-2009. Epidemiology and Infection 139, 1097-1104.
[9] Zweifel et al. (2010). Characteristics of Shiga Toxin-Producing *Escherichia coli* isolated from Swiss raw milk cheese within a 3-year monitoring program. Journal of Food Protection, 73, 88-91.
[10] Wacheck et al. (2010). Wild boars as an important reservoir for foodborne pathogens. Foodborne Pathogens and Disease 7, 307-312.
[11] Stephan et al. (2008). Prevalence and characteristics of Shiga toxin-producing *Escherichia coli* in Swiss raw milk cheeses collected at producer level. Journal of Dairy Science 91, 2561-2565.
[12]. Federal Office of Public Health (2008). Enterohämorrhagische *Escherichia coli* (EHEC), epidemiologische Daten in der Schweiz von 1996 bis 2006. Bulletin of the FOPH; No. 14: 240-246.
[13] Kohler et al. (2008). Shedding of food-borne pathogens and microbiological carcass contamination in rabbits at slaughter. Veterinary Microbiology 132, 149-157.
[14] Kaufmann et al. (2006). *Escherichia coli* O157 and non-O157 Shiga toxin-producing *Escherichia coli* in fecal samples of finished pigs at slaughter in Switzerland. Journal of Food Protection 69, 260-266.
[15] Zweifel et al. (2006). Bedeutung von *Escherichia coli* O157 beim Schlachtschaf in der Schweiz. Schweizer Archiv für Tierheilkunde 148, 289-295.
[16] Zweifel et al. (2004). Prevalence and characteristics of Shiga toxin-producing *Escherichia coli, Salmonella* spp. and *Campylobacter* spp. isolated from slaughtered sheep in Switzerland. International Journal of Food Microbiology 92, 45-53.
[17] Al-Saigh et al (2004). Fecal shedding of *Escherichia coli* O157, *Salmonella*, and *Campylobacter* in Swiss cattle at slaughter. Journal of Food Protection 67, 679-684.
[18] Schmid et al. (2002). Verocytotoxin-producing *Escherichia* coli in patients with diarrhea in Switzerland. European Journal of Clinical Microbiology and Infectious Diseases 21, 810-813.
[19] Stephan et al. (2000). Occurrence of verotoxin-producing *Escherichia coli* (VTEC) in fecal swabs from slaughter cattle and sheep - an observation from a meat hygiene view. Schweizer Archiv für Tierheilkunde 142, 110-114.
[20] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

General evaluation*:
West Nile virus

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

WNF in humans is notifiable since 2006 (ordinance of the Federal Department of Home Affairs (FDHA) on notification of observations on communicable diseases) and in animals since 2011 (TSV, Article 5: disease to be monitored). Up to date no autochthonous cases in humans or animals were reported in Switzerland.

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

Since 2010 two confirmed human cases were reported in Switzerland, both of whom acquired their infection abroad (2012: 1x Kosovo; 2013:1x Croatia). One probable case with possible exposure in Madagascar was reported in 2017 and two probable cases both with possible exposure in Italy in 2018.
2018 31 horses were tested for WNV. 2 horses had antibodies against WNV, and proved later on to be vaccinated. From the 31 horses 21 originated from the same stable. Initially, one horse showed neurological symptoms and was positive for other Flaviviruses than WNV, Usutuvirus (USUV), Japan Encephalitis Virus (JEV) und tick-borne Encephalitis Virus (TBEV). The other 20 horses showed no clinical signs at all and were examined for control purpose. In general horse should only be examined for WNV if they show neurological symptoms of unknown origin and if they were not vaccinated.
From 2011 until 2017 never more than 6 suspicious horses or donkeys were analysed per year. WNV was never detected.
Usually, only a few wild birds found dead per year are analysed for WNV (2018: 1; 2017:2; 2016:5; 2013: 6). In the framework of a research project at the National Reference Center for Poultry and Rabbit Diseases, University of Zurich from 2014 until 2017 brain and kidney samples of 432 wild birds (2016: 130; 2015: 67, 2014: 235) were tested for WNV with negative results.
Furthermore, no antibodies against WNV were found in 1473 blood samples from the active surveillance of avian influenza originating from free-range laying hens (2018:18; 2017: 349; 2016: 111; 2015: 894) and fattening turkeys (2017: 101).
In addition following birds were tested for WNF-antibodies : 2018 1 ural owl and 1 snowy owl (both zoo animals); 2017 45 laying hens, 12 peacock, 2 backyard fowl, 2 black-necked grebe, 1 egyptian vulture;
2016 45 backyard fowl, 26 laying hens, 7 .quails, 1 guinea fowl, 1 black swan; 2015: 279 fre ranged laying hens and backyard fowl, 12 peacock, 5 black swans, 2 great grey, 2 owls, 2 ducks). 4 samples (2018: ural owl, snowy owl; 2017: 2 peacock) were positive and further tested with Virus neutralisation test for WNV, Usutu Virus (USUV) and tick-borne encephalitis Virus (TBEV). The ural owl tested positive for WNV antibodies. No WNV was detected. The ural owl never showed neurological symptoms. As the owl was imported in 2015 from a Swiss Zoo from Vienna, where WNV is circulating since many years, it is not very likely that the owl got infected in Switzerland. However, this cannot be excluded. The snowy owl was positive for USUV. The 2 peacock were positive for Flavivirus other than WNV, USUV and TBEV.
In collaboration with Austria and Germany, Austrian sentinel ducks at the lake Constance were tested for WNV antibodies towards the end of the year between 2013 and 2017. No WNV antibodies were found in 2013, 2014 and 2016. 2015 not enough blood was available to allow also for the WNV testing. In 2017 the sentinel ducks were killed by predators and not replaced.
72 FTA-cards which were placed in mosquito traps in the canton Ticino from July until September 2018 were screened for Flavivirus and Alphavirus, all with negative results. The FTA-cards contain a sugar solution. If consumed by the mosquitoes, the saliva, which might contain virus, of the mosquitos gets into the FTA-cards. In the saliva contained virus is inactivated and fixed on the FTA-card.
In 2016 from July to October about 1400 mosquitoes, mainly *Aedes albopictus* and *Culex pipiens/torrentium*, were collected again from Canton Ticino, using different traps for adult

mosquitoes. Female mosquitoes (slightly more than a thousand) were screened for Flaviviruses and alphaviruses. No West Nile virus was detected.
In 2014 and 2015 the capture of mosquitos was optimized to be able to analyse greater numbers in future (collaboration between the Laboratorio microbiologia applicate SUPSI, the Labor Spiez, and the Swiss TPH).
2011 until 2013 the following pools of mosquitos (*Culex, Aedes vexans* and *Aedes albopictus*) were analysed: 466 (2011), 1429 (2012), 605 (2013), with negative results. In 36 pools (2012) and 5 pools (2013) non-WNV-Mosquito-Flavivirus were detected. From Canton Geneva 62 (2011) and 214 (2012) pools (only Culex) were negative. Furthermore, 123 mosquito pool samples (*Culex, Aedes vexans* and *Aedes albopictus*) collected North of Alps in 2013 were all WNV-negative.
Up to date there were no autochthonous cases of WNF reported. However, it cannot be excluded that WNV is circulating in Switzerland, especially in wild birds and mosquito populations. In Italy cases occurred in new regions which are close to the Swiss border. In eastern Austria, WNV is detected sporadically in dead found wild birds each year since 2012.

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

Disease awareness in Switzerland was strengthened. The WNF situation - with a special focus on neighbouring 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, as laid down in a concept of how to deal with WNF when it first occurs in Switzerland. A vaccine for horses was approved in 2011.

4. Additional information

[1] Engler et al. 2013: European Surveillance for West Nile Virus in Mosquito Populations. Int. J. Environ. Res. Public Health.
[2] Flacio et al. 2015: Strategies of a thirteen year surveillance programme on Aedes albopictus (Stegomyia albopicta) in southern Switzerland. Parasit Vectors 8: 208.
[3] Tran et al. 2014. Environmental predictors of West Nile fever risk in Europe. Int J Health Geogr 13: 26.
[4] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

General evaluation*:
Yersinia

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

Since 1999 yersiniosis in humans is no longer notifiable. From 1988 until 1998 the number of reported cases dropped from about 170 to 50 cases per year. Since 2005 the national reference laboratory NENT analysed about 20 to 60 human samples per year, detecting mainly Y. *enterocolitica*. From 2001 to 2010 60% of the Y. *enterocolitica* belonged to the pathogenic biotypes 2, 3 or 4 and 40% to the apathogenic biotype 1A (N=128) [2]. 5% (6 of 128) of the people had an anamnesis with travelling before they got ill.

In animals, yersiniosis is notifiable (TSV, Article 5: disease to be monitored and Article 291). In the last 10 years never more than 12 cases per year were reported: affected were mainly dogs (498%) monkeys (11%), cattle (11%), rabbits (5%) and guinea pigs (5%), as well as a single case in a hare, singing bird, wild bird, pigeon, cat, lama, horse, hedgehog, red deer and a bat from a zoo.

2001 64% (56 of 88) of fattening pig farms were *Yersinia* positive in faecal samples. 38% of the 352 faecal samples were *Y. enterocolitica* belonging to biotype 1A (37%), biotype 2/ neither O:3 nor O:9 (29%), biotype 2/O:9 (13,5%), biotype 4/O:3 (10%) and biotype 3/O:3 (4%). In this study the use of medical feed at beginning of housing was a potential risk factor.

2002 15,5% of 865 Swiss pig meat samples (Schnitzel, minced meat, chopped meat) collected in 283 different markets were *Y. enterocolitica* positive *(*mainly biotype 1A). Only in 0.7% potentially humanpathogenic *Y. enterocolitica* were isolated.

From 2003 until 2005 carcass surfaces of 80 slaughter pigs each year were sampled at the four largest slaughterhouses. From each pig samples from 4 different regions of the carcass were pooled. Between 1% and 6% of *Yersinia* contamination on the carcass surfaces were found.

In 2006, 88% of tonsils of 212 slaughter pigs representing 16 farms sampled in one single slaughterhouse were positive using real-time PCR. In culture prevalence rates were much lower (34%). 69 isolates (96%) were found to be biotype 4/O:3, 6 isolates were biotype 2/O:5;27 and 1 biotype 2/O:9 [6].

In 2007/2008 65% of 153 wild boars shot in the region of Geneva had antibodies in the tonsil fluids. Using PCR 44% of the tonsils were positive for *Yersinia* spp.: 35% for *Y. enterocolitica* and 20% for *Y. pseudotuberculosis*. In culture detection rates again were much lower: 9% for *Y. enterocolitica* and 3% for *Y. pseudotuberculosis.*

In a study conducted in 2012/2013 229 of 410 tonsils of slaughter pigs were positive for *Yersinia enterocolitica* using culture methods according to ISO 10273:2003 (56%; 95% CI 51-61%). All isolates except one belonged to the potentially humanpathogenic biotypes. 74% belonged to biotype 4/O:3 and 16% to biotype 3/O:5,27. Other rare biotypes were biotype 3/O:5, biotype 3/O:9, biotype 4/O:5 and biotype 4/O:5,27. Biotype 1A was detected only in one sample [2]. This prevalence was higher than the 34% estimate from 2006 [6].

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. 2018, NENT tested 56 human samples positive for *Yersinia* which was within the range of the usual annual fluctuation. They found 53 *Y. enterocolitica,* 1 *Y. bercovieri* and 1 *Yersinia spp.*. Of the isolated *Y. enterocolitica* 51% belonged to biotype 1A, 26% to biotype 4/O:3, 8% to biotype 2/O:9, 4% to other biotypes and in 11% the biotype could not be identified.

In 2018 7 cases of yersiniosis in animals were reported (4 in dogs, 1 in cattle, 1 in hares and 1 in rabbits).

In reporting veterinary diagnostic laboratories 1651 tests for yersiniosis were carried out in the context of clinical investigations in 2018, mainly in dogs and cats (80%), horses (4%), cattle (2%), reptiles (2%) and monkeys (2%).
It can be assumed that more than half of all slaughter pigs carry potentially humanpathogenic *Yersinia enterocolitica* in their tonsils. How often pig meat is contaminated and how often these agents cause disease in humans is not really known. Schneeberger et al. 2015 demonstrated that ***Y. enterocolitica*** BT 4 isolates from porcine tonsils, as well as from faeces, show the same virulence-associated gene pattern and antibiotic resistance properties as human isolates from clinical cases, consistent with the etiological role of porcine biotype 4 in human yersiniosis [1]. The number of tests carried out in the human reference laboratory NENT and the number of reported cases in animals are constant at a very low level in the recent years in Switzerland.
The reporting of *Yersinia pseudotuberculosis* in milk samples of three single mastitis cows remained an unusual event in 2013.

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

Switzerland carried out a *Yersinia* prevalence study in tonsils in slaughter pigs from March 2012 to February 2013 [2] according to the technical specifications for harmonized national surveys on *Yersinia enterocolitica* in slaughter pigs (EFSA Journal 2009; 7(11):1374).

4. Additional information

[1] Virulence-associated gene pattern of porcine and human Yersinia enterocolitica biotype 4 isolates. Schneeberger M, Brodard I, Overesch G. Int J Food Microbiol. 2015 Apr 2; 198:70-4. doi: 10.1016/j.ijfoodmicro.2014.12.029. Epub 2014 Dec 30.
[2] Meidinger, A. Countrywide survey on the detection and biotype distribution of Yersinia enterocolitica from slaughter pigs in Switzerland. Inauguraldissertation der Vetsuisse Fakultät der Universität Bern, 2013.
[3] Fredriksson-Ahomaa, M. et al., 2012: Yersinia enterocolitica strains associated with human infections in Switzerland, 2001-2010: Eur J Clin Microbiol Infect Dis (2012) 31:1543–1550.
[4] Fredriksson-Ahomaa, M. et al., 2011: Different enteropathogenic yersinia strains found in wild boars and domestic pigs. Foodborne Pathog Dis 8,733-7.
[5] Fredriksson-Ahomaa, M. et al., 2009: Prevalence of pathogenic Yersinia enterocolitica and Yersinia pseudotuberculosis in wild boars in Switzerland. Int J Food Microbiol, 135, 199-202.
[6] Fredriksson-Ahomaa, M. et al., 2007: Prevalence of pathogenic Yersinia enterocolitica in pigs slaughtered at a Swiss abattoir. Int J Food Microbiol, 119, 207-212.
[7] Further information can be found on the FSVO website www.blv.admin.ch.

* **For each zoonotic agent**
(a): Epidemiological evaluation (trends and sources) over time until recent/current situation for the different relevant matrixes (food, feed, animal). If relevant: the official "disease status" to be specified for the whole country and/or specific regions within the country
(b): If applicable

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) (formerly FOPH) 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 Transmissible 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 2018, 12 outbreaks have been reported throughout Switzerland by the supervisory authorities. In total, more than 153 people became ill and at least 5 people were hospitalized.

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

In 8 cases, it was not possible to identify the infectious agent that caused the outbreaks. Restaurants and similar settings for collective catering were the most frequent settings of outbreaks.

The available clinical data are not very good since investigations in this field are not in the main focus of the competent authorities.

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.
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.

4. Descriptions of single outbreaks of special interest

The chilli oil accompanying a pulled-pork sandwich caused an outbreak of salmonellosis at a Street Food festival. 3 out of 4 patients with severe and lasting symptoms had to be hospitalized. The 4th person had actually only taken two bites of the sandwich and then gave it to his husband who ate it entirely. The chilli was particularly suspected because other people, who felt no symptoms, also consumed these sandwiches, but without adding the chilli oil. A private household (a grandmother and 6 children) was also contaminated by *Salmonella* when eating omelettes, prepared with eggs from their own production. Analyses of several eggs from hens in the household confirmed the presence of *Salmonella*. The chickens were killed.
It very often happens that no direct and certain link can be established between the food consumed and the disease. Only suspicions remain. For example, during a meal in a restaurant for a group of 28 people, 8 became ill. 9 of the 28 people ate the vegetarian dish: a risotto with asparagus and morels. The other 19 ordered the meat menu. Of the 9 people who ate the vegetarian meal, 8 became ill (nausea, diarrhea and vomiting) and only 1 did not show any symptoms. Several analyses were carried out on foodstuffs and biological samples from patients, but no trace of the many parameters examined was found. Only suspicions were raised about a possible reaction to staphylococcal toxin.
Let us also report the outbreak involving 20 to 25 people, mainly children, in a school restaurant. Given the number of people affected and the information gathered following the investigations, it was necessary to stop preparing meals on site. About ten samples were collected and analyzed, but all results were consistent. On the other hand, the kitchen hygiene conditions were good and the restoration processes controlled. The investigation then lead to a medical examination of the cook, which concluded that norovirus was present in his biological samples. He most likely contaminated the food he had prepared.
Finally, the outbreak affecting 73 people is particularly notable. Overnight, 73 soldiers from the same infantry recruit school company became ill and showed the same symptoms: gastrointestinal pain accompanied in some cases by diarrhea and vomiting. The doctor suspected an infectious gastrointestinal disease, but a norovirus could be excluded. The implementation of adequate measures apparently made it possible to stop the spread of the possible pathogen involved. However, the carried out investigations did not provide any further information, and foodborne illness could not be excluded or demonstrated.

5. Control measures or other actions taken to improve the situation

In Switzerland, the number of outbreaks settled down on low level and it is therefore difficult to get a further decrease.

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

None.

7. Additional information

None.
(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.

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.
The competent cantonal veterinary offices are responsible for taking the caecal samples in the slaughterhouses according to the sampling plan from the FSVO and sending them to the NRL. The competent cantonal chemists are responsible for taking the meat samples in retail stores according to the sampling plan from the FSVO 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 broiler and meat thereof changed partly in comparison to 2016.
Antimicrobial resistance rates of *Campylobacter jejuni* and *Campylobacter coli* from poultry showed a decrease for fluoroquinolones and tetracycline, but an increase for erythromycin (*Campylobacter coli* only) and streptomycin.
Antimicrobial resistance rates of indicator *E. coli* from poultry showed an increase for fluoroquinolones.
With selective enrichment the detection rate of ESBL producing *E. coli* in poultry decreased from 52.4% in 2016 to 30.6% in 2018. Moreover, the detection rate of ESBL producing *E. coli* in chicken meat decreased from 49.3% in 2016 to 34.9% in 2018. It is unlikely, that this decrease could solely be explained by the change of the confirmation process. ESBL isolates showed an increased resistance rate to fluoroquinolones.
With selective enrichment the detection rate of Carbapenemase-producing *E. coli* was zero (0%) for broilers and meat thereof.
With selective enrichment the MRSA prevalence in chicken meat decreased from 2.9% in 2016 to 1.3% in 2018. All MRSA isolates were detected in chicken meat from abroad. No linezolid nor vancomycin resistant MRSA were detected.
In total 106 *Salmonella* isolates were tested, no isolate was confirmed as ESBL- producing strain. No colistin-resistant or carbapenemase-producing isolate was detected.

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

The decrease of fluoroquinolones and tetracycline resistance rates in *Campylobacter jejuni/coli* from broilers is important for public health, as this zoonotic agents accounts for more than 8000 human cases of campylobacteriosis in Switzerland. Moreover, the decreased detection rate of ESBL producing *E. coli* of broilers and meat thereof is desirable. In contrast, the increase of fluoroquinolone resistance rates in indicator and ESBL *E. coli* is undesirable.

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

No specific measures in Swiss broiler production 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 www.blv.admin.ch.
(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 jejuni* and *coli* / broilers caecum

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

A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in Swiss food-producing animals. The samples are taken by the competent authorities.

2. Stratification procedure per animal population and food category

The five slaughterhouses included in the monitoring program produce over 75% of slaughtered broilers. 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. Each herd should be sampled only once a year.

3. Randomisation procedure per animal population and food category

A random sample of 642 caecal samples from boilers 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* and *Campylobacter jejuni* 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.

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 jejuni* and *Campylobacter coli* from poultry showed a decrease for fluoroquinolones and tetracycline, but an increase for erythromycin (*Campylobacter coli* only) and streptomycin.

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 http://www.blv.admin.ch.

*** 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* / poultry caecum
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in Swiss food-producing animals. The samples are taken by the competent authorities.
2. Stratification procedure per animal population and food category
The five slaughterhouses included in the monitoring program produce over 75% of slaughtered broilers. 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. Each herd should be sampled only once a year.
3. Randomisation procedure per animal population and food category
A random sample of 224 caecal samples from boilers 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing 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
Antimicrobial resistance rates of indicator *E. coli* from poultry showed an increase for fluoroquinolones. 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 http://www.blv.admin.ch.
*** 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* / poultry caecum
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in Swiss food-producing. The samples are taken by the competent authorities.
2. Stratification procedure per animal population and food category
The five slaughterhouses included in the monitoring program produce over 75% of slaughtered broilers. 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. Each herd should be sampled only once a year.
3. Randomisation procedure per animal population and food category
A random sample of 307 caecal samples from boilers 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 in 2018 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.
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 poultry decreased from 52.4% in 2016 to 30.6% in 2018. It is unlikely, that this decrease could solely be explained by the change of the confirmation process. ESBL isolates showed an increased resistance rate to fluoroquinolones.
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 http://www.blv.admin.ch.
*** 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* / poultry caecum
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in Swiss food-producing. The samples are taken by the competent authorities.
2. Stratification procedure per animal population and food category
The five slaughterhouses included in the monitoring program produce over 75% of slaughtered broilers. 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. Each herd should be sampled only once a year.
3. Randomisation procedure per animal population and food category
A random sample of 307 caecal samples from broilers for selective enrichment methods (Carbapenemase-producing *E. coli*) 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)]
Selective enrichment for carbapenemase-producing *E. coli* according to the revised protocols published in 2018 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.
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 broilers.
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 http://www.blv.admin.ch.

*** 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* / chicken meat
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in fresh meat at retail. 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 one half of the chicken meat consumed in Switzerland is imported. Hence, imported and domestic meat accounted for approximately one third and two thirds, respectively, of the chicken meat samples.
3. Randomisation procedure per animal population and food category
A random sample of 312 chicken 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 ESBL -producing *E. coli* according to the revised protocols published in 2018 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.
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 chicken meat decreased from 49.3% in 2016 to 34.9% in 2018. It is unlikely, that this decrease could solely be explained by the change of the confirmation process. ESBL isolates showed an increased resistance rate to fluoroquinolones.
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 http://www.blv.admin.ch.
*** 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* / chicken meat
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in fresh meat at retail. 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 one half of the chicken meat consumed in Switzerland is imported. Hence, imported and domestic meat accounted for approximately one third and two thirds, respectively, of the chicken meat samples.
3. Randomisation procedure per animal population and food category
A random sample of 312 chicken 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 in 2018 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.
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 chicken 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 http://www.blv.admin.ch.

*** 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 / chicken meat
1. General description of sampling design and strategy[(a)]
A stratified random sampling approach is used for taking samples within the active monitoring programme on antimicrobial resistance in fresh meat at retail. 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 one half of the chicken meat consumed in Switzerland is imported. Hence, imported and domestic meat accounted for approximately one third and two thirds, respectively, of the chicken meat samples.
3. Randomisation procedure per animal population and food category
A random sample of 312 chicken meat samples for the two step selective enrichment method 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)]
Two step selective enrichment for MRSA defined by the EU-RL for Antimicrobial Resistance at the National Food Institute, Lyngby, DENMARK was performed. Confirmation of Methicillin resistance was performed by *mec* A 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). Confirmed isolates were cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing was performed.
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 chicken meat decreased from 2.9% in 2016 to 1.3% in 2018. All MRSA isolates were detected in chicken meat from abroad. No linezolid nor vancomycin resistant MRSA were 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 http://www.blv.admin.ch.
*** 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, we include isolates from national disease control programs (breeding hens, laying hens, broilers and fattening turkeys, Swiss ordinance of epizootics (TSV, Article 255-261) and isolates from diagnostic submissions as far as they were available.
2. Stratification procedure per animal population and food category
All *Salmonella enterica* subspecies *enterica* isolates from poultry, turkeys, cattle and pigs reaching the national reference laboratory in 2018 are tested for AMR.
3. Randomisation procedure per animal population and food category
No randomisation take place. A total of 106 *Salmonella* isolates were tested.
4. Analytical method used for detection and confirmation[(b)]
Serotyping according to ISO 6579 was performed and cryopreserved in tryptone soy bouillon containing 30% glycerol at a temperature of -80°C until antimicrobial resistance testing 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 106 *Salmonella* isolates were tested, no 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 http://www.blv.admin.ch.
*** 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